

Global Longevity Governance

**100 Countries Big Data Comparative Analysis of
Longevity Progressiveness**

Teaser

Table of Contents

Introduction

Approach of the Report

Executive Summary

Mindmap

The Framework of Healthy Longevity

Healthy Longevity Progressiveness

Healthy Longevity Determining Factors

Longevity Ranking Methodology

Top 100 Countries by Health Adjusted Life Expectancy

Economy

Health and Healthcare

Effect of COVID-19 on LE

Government Policy

Life Expectancy and Ageing Population

HALE and Social Development

Key Takeaways

Disclaimer

Older people are the fastest-growing demographic group (with around 2.5% annual population growth vs 0.7% for the overall population). With growing numbers, older adults represent a dynamic emerging market and human capital resource. The multi-trillion market of **1 billion people** currently on retirement can be thought of as the world's **7th continent**. The substantial increase in the population of this group is expected to be **either an opportunity or a threat**. It heavily depends on the governmental approach.

This analytical case study contains an unrivalled database that offers a deeper look at the conditions and parameters that allow countries to increase not only the life expectancy of the population but also **expand productive and healthy life span** measured by health adjusted life expectancy (HALE). **Healthy Longevity is affected by** many groups of factors such as **economic level** and growth, **government healthcare policy, the quality of the health system** and the ability of people to access it, overall institutional development, **demography, social** and **environmental factors**.

Overall, today's increased global Longevity is a **"problem of success"** coming naturally with incremental standards of living. However, to float rather than sink, Longevity must become an asset. And the quality of this **asset management** should be actively controlled by governments.

Approach of the Report

Database

100
Countries

50
Parameters

7
Regions

The database was formed based on:

- the **identification of countries** that managed to have not only high life expectancy but also high healthy lifespan;
- the **determination of parameters** that correlates with high healthy life expectancy.

Applied Research and Analytics Methods

Descriptive
Analysis

Mixed Data
Research

Data
Triangulation

Comparative
Analysis

Qualitative Data
Collection

Data
Filtering

Data Sources

Media Overview
(Articles and Specialised Blogs)

International Institutions
Databases

Publicly Available Sources
(Websites)

Scientific Papers and
Publications

Relying on various research methods and analytics techniques, the analytical provides a comprehensive overview of the Longevity Governance Landscape. This approach has certain limitations, especially when using publicly available data sources and conducting the secondary research. Aging Analytics Agency is not responsible for the quality of the secondary data presented herein; however, we do our best to eliminate the said risks using different analytics techniques and cross-checking data. Please note that we did not deliberately exclude certain companies from our analysis. Nor was it due to the data-filtering method used or difficulties encountered. The main reason for their non-inclusion was incomplete or missing information in the available sources.

Executive Summary

National Longevity Development Plans Global Landscape Overview



First Edition

- 12 countries in its analysis.
- The broad categories of a government initiative: different orders of magnitude; and the different areas of intervention, from the financial to the biomedical.
- Detailed project and initiative budget data analysis.
- Enhanced comparative analysis of government initiatives focused on aging and Longevity.

Global Longevity Governance Landscape



Second Edition

- 50 countries in its analysis.
- 200 metrics (including a precise formulation for sub-metrics, metric categorization and metric weighting) and 10000 data points analyzed.
- Big data analysis of factors that affect the gap between HALE and LE across countries.
- Full description of 50 countries' profiles, their strengths and weaknesses.
- Analysis of key problems that impede the growth of countries profiled in this report.



Third Edition

- 100 countries in its analysis.
- Detailed project and explanatory HALE factors analysis.
- Utilization of machine learning, including unsupervised (countries' clusterization) and supervised techniques (logistic regression).
- Comprehensive and precise understanding of the recent trend of development of Healthcare, and Longevity industries.
- Analysis of key features that increase investment attractiveness, and problems that impede the growth of countries profiled in this report.



100 Countries by HALE

1	Japan	13	Luxembourg	26	Slovenia	39	Panama
2	Singapore	14	Malta	27	Belgium	40	Poland
3	Hong Kong	15	Netherlands	28	New Zealand	41	Croatia
4	Republic of Korea	16	Norway	29	Kuwait	42	Slovakia
5	Switzerland	17	Canada	30	United Kingdom	43	China
6	Cyprus	18	Ireland	31	Chile	44	Ecuador
7	Israel	19	Denmark	32	Costa Rica	45	Turkey
8	France	20	Finland	33	Maldives	46	Thailand
9	Spain	21	Portugal	34	Peru	47	Cuba
10	Iceland	22	Australia	35	Estonia	48	Jordan
11	Italy	23	Austria	36	Albania	49	Uruguay
12	Sweden	24	Germany	37	Colombia	50	Bosnia and Herzegovina
		25	Greece	38	Czech Republic		

100 Countries by HALE

51	Hungary	63	Latvia	76	Libya	89	Egypt
52	Argentina	64	North Macedonia	77	Kazakhstan	90	Honduras
53	Armenia	65	United States	78	Georgia	91	Syrian Arab Republic
54	Qatar	66	Belarus	79	Uzbekistan	92	Indonesia
55	Montenegro	67	Lebanon	80	Moldova	93	Iraq
56	Serbia	68	United Arab Emirates	81	Bangladesh	94	Guatemala
57	Romania	69	Mexico	82	Ukraine	95	Turkmenistan
58	Lithuania	70	Paraguay	83	Russian Federation	96	Philippines
59	Jamaica	71	Malaysia	84	Dominican Republic	97	India
60	Algeria	72	Nicaragua	85	Saudi Arabia	98	Mongolia
61	Bulgaria	73	Brazil	86	Morocco	99	Pakistan
62	Iran	74	Belize	87	Azerbaijan	100	South Africa
		75	Vietnam	88	Bolivia		

The Framework of Healthy Longevity

HALE, a specific measure of healthy Longevity, is an indispensable metric for Aging Analytics Agency.

Today's **increased global Longevity is a “problem of success”, an inevitable consequence** of sharp increases in sanitation, diet, health care, elderly care, and geriatric medicine, a set of changes that have occurred suddenly within the lifetimes of today's elderly. But this increased Longevity is not a consequence of decreased aging; this **life extension is not accompanied by a commensurate extension in health**. As a result, increased global Longevity is producing a global aging demographic, an impending crisis frequently referred to as the **“silver tsunami”**.

In order to float rather than sink, **Longevity must become an asset**. And this means altering the nature of aging entirely, reducing the period of financially and socially inactive decrepitude at the end of life. Specifically, it means utilizing technology to ensure that these longer lives are also **healthy, productive, financially active lives**, and creating a system of government frameworks and financial incentives to create and sustain this case of affairs.

The most important technical metric for this task is **HALE (health-adjusted life-expectancy)**. It belongs to a set of metrics known as **HALYs** (health-adjusted life-year). It includes HALE, a measure of population health that takes into account mortality and morbidity, **Quality-adjusted life years (QALYs)**, and **disability-adjusted life years (DALYs)**, the latter being types of HALY whose original purposes were at variance.

HALE can be estimated at international, national or local levels to:

- Compare population health across communities and over time;
- Provide a full picture of which diseases, injuries, and risk factors contribute the most to poor health in a specific population (this is probably the most common use of summary measures of health);
- Assess which information or sources of information are missing, uncertain, or of low quality;
- Measures of HALE are normally presented by age, sex, and geographical region.

HALE | QALY | DALY: Definitions

HALE

Health Adjusted Life Expectancy (HALE) is a measure of **population health that takes into account mortality and morbidity**. It adjusts overall life expectancy by the amount of time lived in less than perfect health. Global HALE at birth for females was only 3 years greater than that for males. In comparison, female life expectancy at birth was almost 5 years higher than that for males.

Health-adjusted life years (HALYs) are population health measures permitting morbidity and mortality to be simultaneously described within a single number. They are useful for overall estimates of the burden of disease, comparisons of the relative impact of specific illnesses and conditions on communities, and in economic analyses. **Quality-adjusted life years (QALYs)** and **disability-adjusted life years (DALYs)** are types of HALYs whose original purposes were at variance.

QALY

QALY is a generic measure of disease burden, including both the quality and the quantity of life lived. It is used in economic evaluation to assess the value for money of medical interventions. **One QALY equates to one year in perfect health**. If an individual's health is below this maximum, QALYs are accrued at a rate of less than 1 per year. To be dead is associated with 0 QALYs.

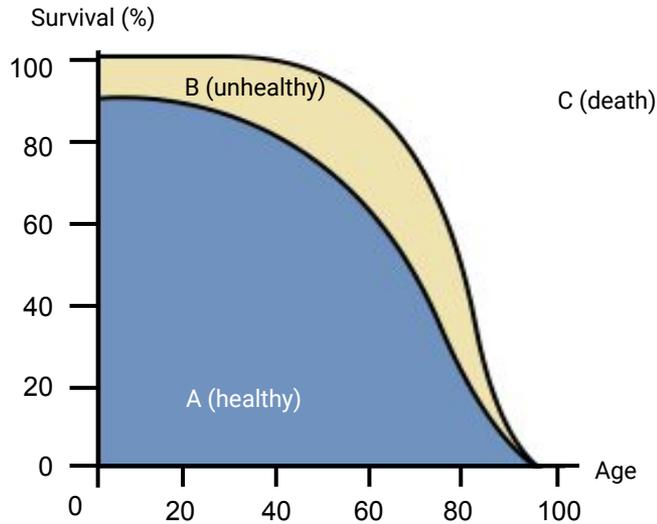
DALY

DALYs measure the amount of **life lost in a population as a result of premature death or disability**. They can be used to estimate the burden of disease on populations. DALYs were used in the Global Burden of Disease study to enable mortality and morbidity comparisons to be made across countries. Weightings were applied to conditions by using the time trade-off approach, in which people were asked to consider living more years in imperfect health compared with fewer years in perfect health.

One DALY can be thought of as one lost year of a "healthy" life. The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.

Why HALE?

Health-adjusted Life Expectancy Specification



Graph shows:

A = time lived in good health

C = time lost due to premature mortality

Life expectancy = A + B

Health expectancy indicators (e.g. healthy life expectancy and HALE) = A + f(B)

Health gaps indicators (e.g. DALYs) = C + g(B)

Disability-adjusted life expectancy (DALE) integrates data on mortality, long-term institutionalization and activity limitations in the population and represents a comprehensive index of population health status. Thus, the emphasis is not exclusively on the length of life, but also on the quality of life. **Quality-Adjusted Life Year (QALY)** specifically refers to the balance between the length of time someone lives and the quality of life in terms of the absence of disease.

Director of the National Institutes of Health (NIH) Francis Collins, have called **DALYs** and similar metrics like the **QALY (DALY = Lifetime - QALY)** “only partially successful in providing the kind of information that policy-makers need,” and urged the NIH to fund the “development and application of more rigorous models.”

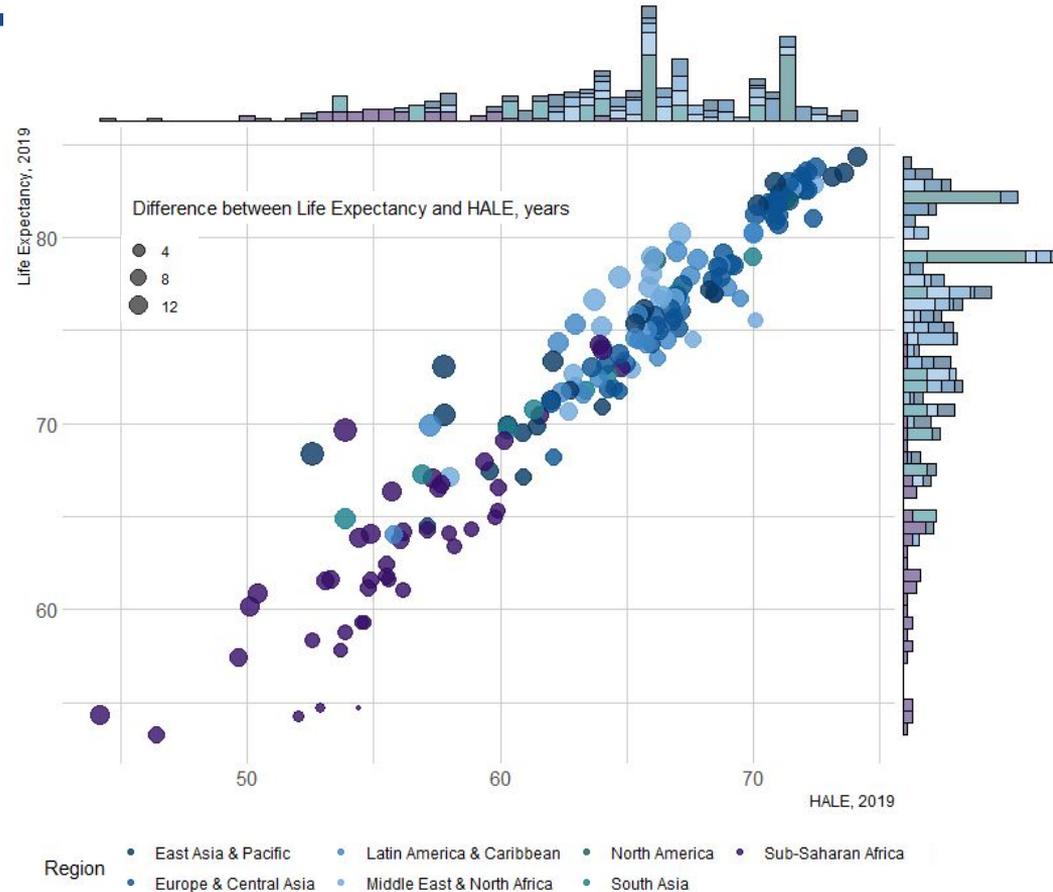
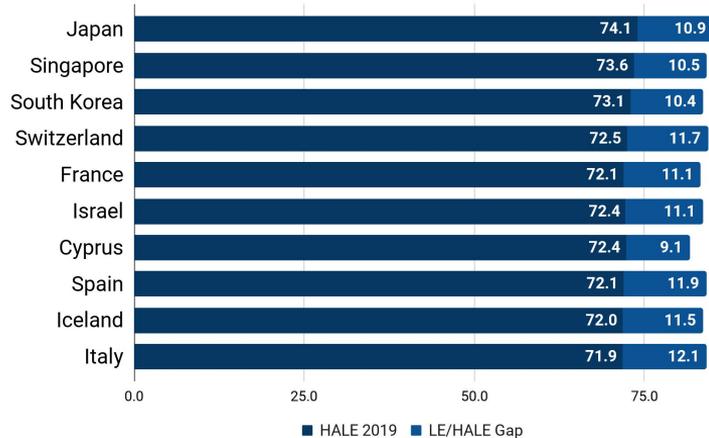
HALE provides a summary of overall health conditions for a population, which are in turn an integral part of development. While communicable diseases such as HIV/AIDS, tuberculosis, and malaria continue to cause substantial loss of health and mortality in developing countries, particularly African countries, non-communicable diseases, and injuries are responsible for more than half of all lost years of healthy life in developing as well as developed countries. HALE thus provides a more complete picture of the impact of morbidity and mortality on populations, than DALY, QALY, or simple Life Expectancy alone.

HALE and Life Expectancy

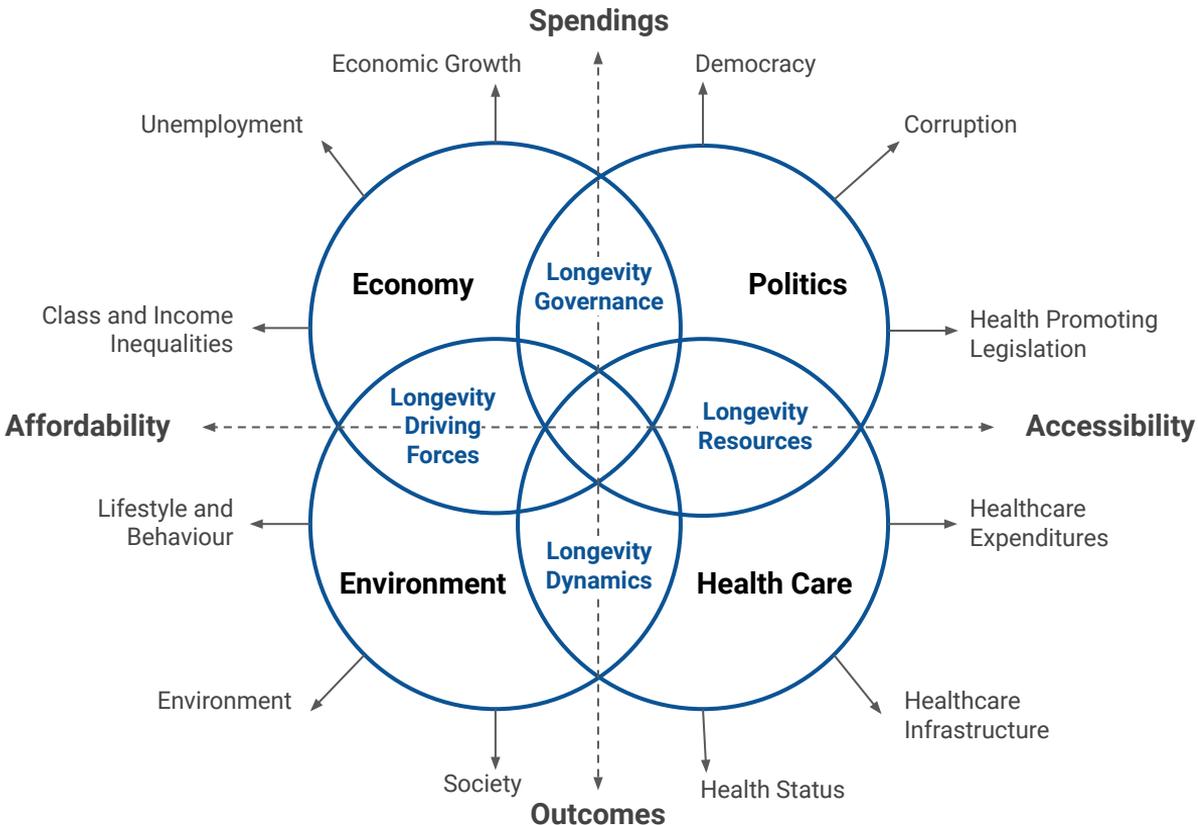
Health-Adjusted Life Expectancy (HALE), used here as a measure of Healthy Longevity, is the average number of years an individual can expect to live free of chronic age-related disease.

Life expectancy (LE) at birth reflects the overall mortality level of a population. It summarizes the mortality pattern that prevails across all age groups in a given year – children and adolescents, adults and the elderly.

Top-10 countries by HALE in 2019



Healthy Longevity Progressiveness



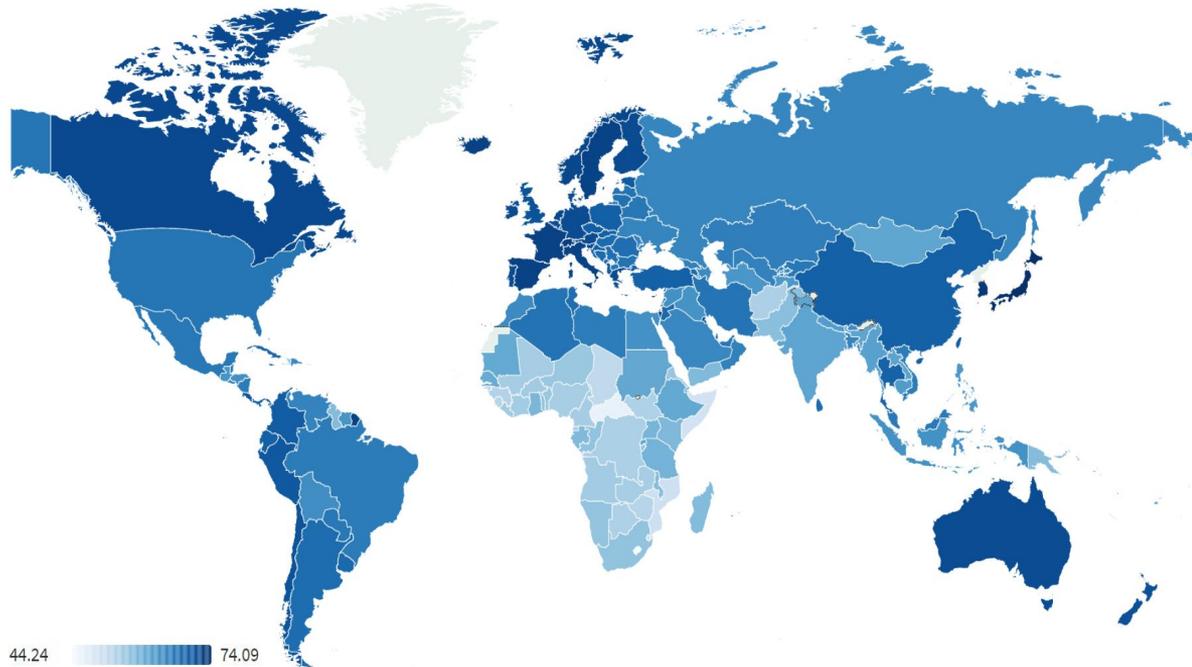
Longevity progressiveness is important for driving economic progress and competitiveness – both for developed and developing economies.

Healthy Longevity is affected by many groups of factors such as: **socioeconomic status, demography, income**, wellbeing, the quality of the health system and the ability of people to access it, health behaviours such as tobacco and excessive alcohol consumption, poor nutrition and lack of exercise, **social factors**, genetic factors and **environmental factors** including overcrowded housing, lack clean drinking water and adequate sanitation.

Longevity progressiveness should be based **on four pillars**. They are good health outcomes, cost-efficiency, affordability of healthcare treatment for the population and widest possible access to services and products.

Health-Adjusted Life Expectancy (HALE) in 2019

Geography Distribution of HALE, 2019



Source: WHO

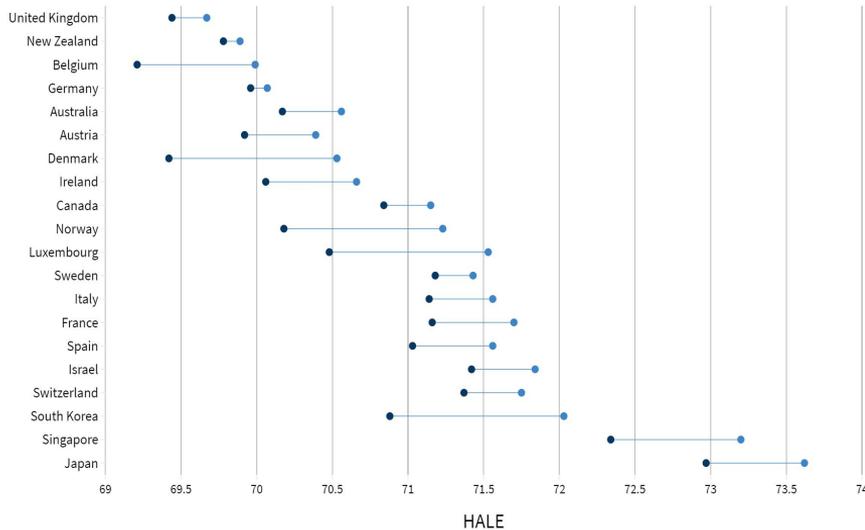
Health-Adjusted Life Expectancy (HALE), used here as a measure of Healthy Longevity, is the average number of years an individual can expect to live free of chronic age-related disease.

The average HALE around the globe **is 63.3**. However, it is quite volatile around the regions. The population of **Sub-Saharan Africa** has a more than **7-year-gap** with the world average. The average HALE in this region **is 55.8 years**. On the other hand, the **average HALE of top countries is 71 years** (for both sexes). The top 5 countries are Japan, Singapore, South Korea, Switzerland, and France. Although countries with **higher national income and health spending** tend to have longer life expectancies, these factors can only **account for a part of life expectancy differences** across countries.

Indicators Dynamics: HALE at birth

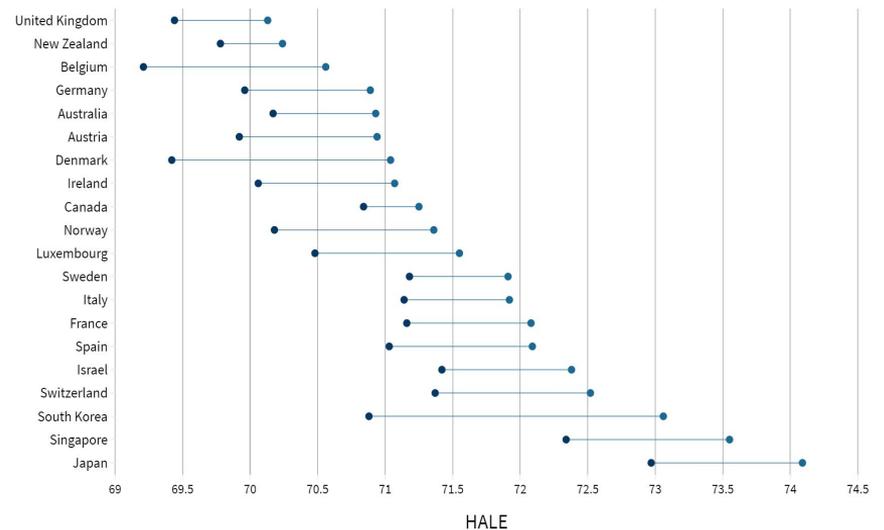
HALE at birth 2010-2015

Years ● 2010 ● 2015



HALE at birth 2015-2019

Year ● 2019 ● 2015



Overall all regions experienced a **slowdown in health-adjusted life expectancy** improvements in recent years. The slowdown in improvement since 2015 has been **greatest in those regions that had improved the fastest previously. South Asia and Europe & Central Asia regions** had increased HALE on average by 7.7 and 3.6 years respectively before 2015. However, since then, those regions have increased average HALE only by 1.7 and almost 1 year respectively. **The major contributors to the slowdown are China and Thailand** in South Asia and Kazakhstan, Estonia, and Russia in Europe & Central Asia.

Health-Adjusted Life Expectancy and Life Expectancy

This table represents **the distribution of countries** by their Health Adjusted Life Expectancy (**HALE**) and estimated average life expectancy (**LE**) and **the gap**. The gap is measured as the absolute difference between life expectancy and HALE in a particular country.

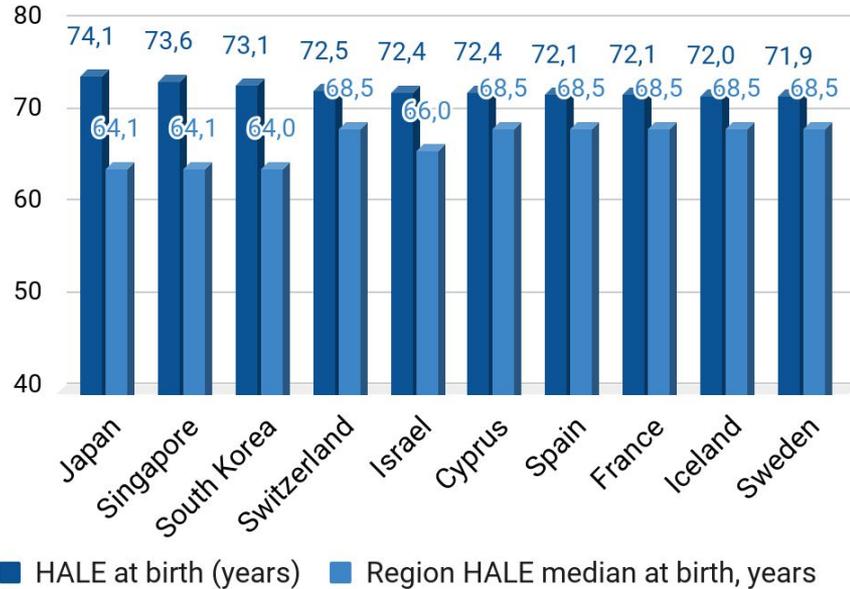
Countries are distributed unevenly because the major countries are developed countries with approximately the same level of development and welfare. Distribution into groups showed that among the 100 selected countries, some of the groups did not occur: Medium HALE & HE / Big GAP; Low HALE & HE / Big GAP; Low HALE & HE / Middle GAP; Low HALE & HE / Low GAP; Medium HALE & HE / Low GAP; Low HALE & HE / Low GAP.

As can be seen, **50 countries in the group combine a medium level of HALE and LE** and a big gap between the two indicators, which makes it the biggest group in the sample.

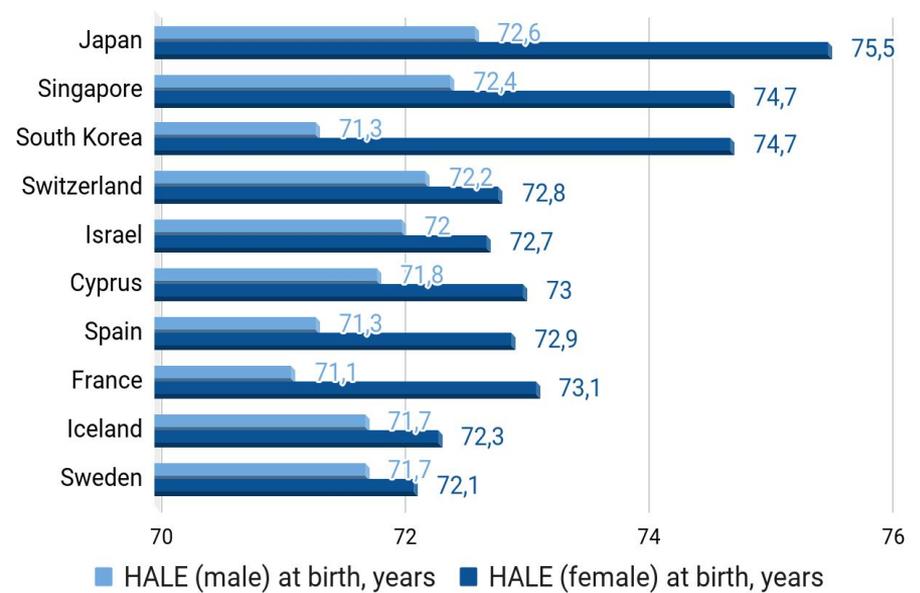
	HALE & LE	GAP	
High	Switzerland, Spain, Italy, Sweden, Luxembourg, Malta, Norway, Netherlands, Canada, Ireland, Finland, Australia, Greece, Austria, Belgium, New Zealand, United Kingdom, Cuba, Qatar, United States, Lebanon, United Arab Emirates	Big GAP	
High	Japan, Singapore, Republic of Korea, Israel, Cyprus, France, Iceland, Denmark, Portugal, Germany, Slovenia, Costa Rica, Chile, Maldives, Peru, Estonia, Albania, Colombia, Czech Republic, Panama, Poland, Croatia, Ecuador, China, Turkey, Thailand, Jordan, Uruguay, Bosnia and Herzegovina, Hungary, Argentina, Armenia, Sri Lanka, Montenegro, Serbia, Romania, Lithuania, Jamaica, Algeria, Iran, Bulgaria, Latvia, North Macedonia, Belarus, Paraguay, Malaysia, Nicaragua, Brazil, Vietnam, Belize	Middle GAP	
Medium	Azerbaijan, Bolivia, Egypt, Syrian Arab Republic, Indonesia, Iraq, Turkmenistan, Philippines, Mongolia, India, Pakistan, South Africa	Middle GAP	
High	Kuwait	Low GAP	

Health Status

Top 10 countries by HALE with the region median, 2019

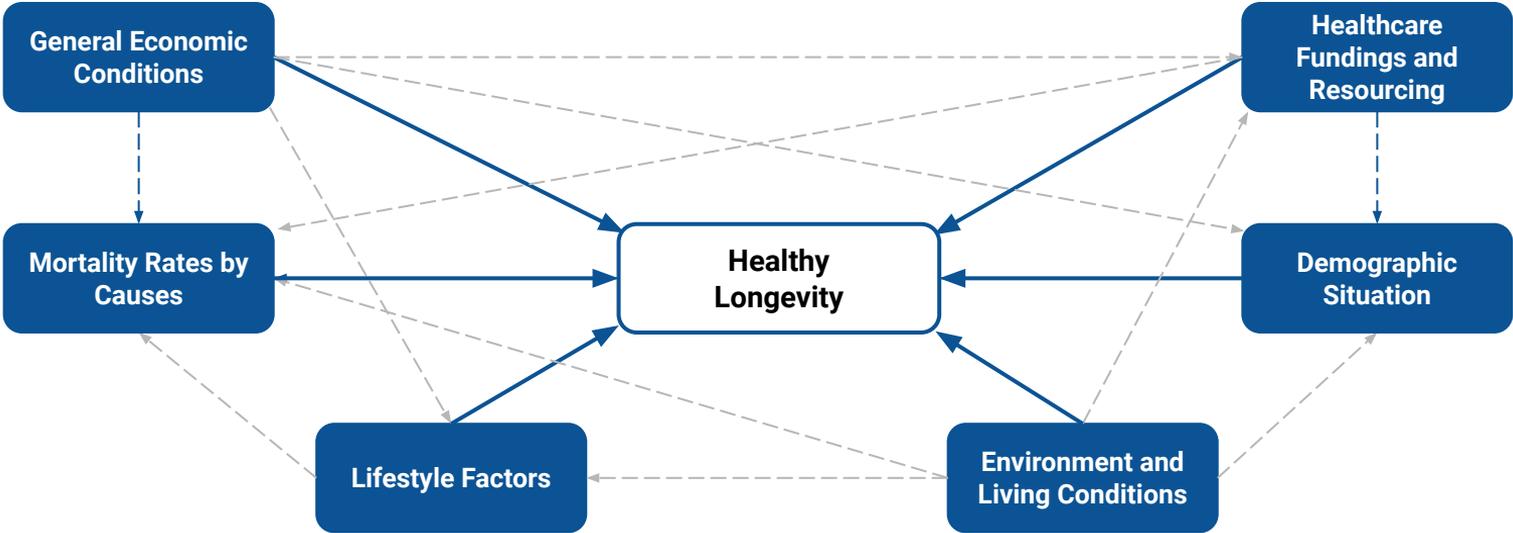


Comparison of HALE for men and women, 2019



The charts show the top 10 countries for Healthy life expectancy (HALE) at birth. **Each of the selected countries is well above the median for its region.** The HALE of Japan exceed region's median by 10 years. In addition, the HALE rate of women in each of the selected countries exceeds that of men from 0.5 to 3 years. Top 3 countries have the highest gap.

Healthy Longevity Determining Factors



The Network Graph is used to display relations between various factors that determine Longevity. All parameters are divided into **six pillars**: general economic conditions, mortality rates, lifestyle factors, environment, demography and healthcare.

The graph itself visualizes how metrics are interconnected with each other. The relationship between them are displayed with lines. **Bold arrows** indicate direct impact on health longevity, which is determined as difference between life expectancy at birth and health-adjusted life expectancy. **Dashed lines** reveal **multicollinearity**, a state of very high intercorrelations or inter-associations among the independent variables, factors across different groups.

Comparative Longevity Analysis

	Change of Gap, in years	Group parameters
Economy	<p>0.070150</p> <p>-0.037341</p> <p>-0.064837</p> <p>0.000011</p>	<p>Consumer price index (CPI), %</p> <p>Net National Savings as % of GNI</p> <p>Unemployment rate, %</p> <p>Gross domestic product per capita, \$US</p>
Public Health	<p>-0.104206</p> <p>-0.051370</p> <p>-0.046281</p> <p>0.018968</p>	<p>Cause of death by CD and maternal, prenatal and nutrition conditions, % of total</p> <p>Cause of death. by non-communicable diseases as a % of total</p> <p>Mortality from CVD. cancer. diabetes or CRD between exact ages 30 and 70, %</p> <p>Suicide mortality rate per 100.000 population</p>
Health Care System	<p>-0.044228</p> <p>0.033417</p> <p>0.074953</p> <p>-0.202128</p>	<p>Domestic private health expenditure as a % of current health expenditure</p> <p>Out-of-pocket expenditure as a % of current health expenditure</p> <p>Public health care expenditure as a % of GDP</p> <p>Biomedical engineers density per 10 000 population</p>
Life Style	<p>-0.085353</p> <p>-0.022713</p> <p>0.014407</p> <p>0.038373</p>	<p>Prevalence of undernourishment as a % of population</p> <p>Smoking prevalence. total ages 15+</p> <p>Prevalence of overweight among adults (BMI ≥ 25), %</p> <p>Total alcohol consumption per capita, liters of pure alcohol</p>
Environment and Infrastructure	<p>0.110444</p> <p>-0.004795</p> <p>-0.014788</p> <p>0.027411</p>	<p>People using at least basic drinking water services as a % of population</p> <p>Ambient and household air pollution attributable death rate</p> <p>Ambient air pollution, concentration of fine particulate matter (PM2.5), %</p> <p>People using at least basic sanitation services, % of population</p>

Longevity Ranking Methodology

Health-adjusted life expectancy is affected by various factors and their impact varies across countries. For this reason, the Ranking is based **on five domains: economy, health and healthcare, environment and infrastructure, society and demography.**

These domains consist of **50 indicators** derived from international data sources, including the World Bank, the World Health Organization (WHO), the International Labour Organization (ILO), Organization of Economic Cooperation and Development (OECD).

The rankings show how countries compare in terms of health and wellbeing. The values, on which the rankings are based, show how countries are performing. In particular, they show how different **countries compare with the best-performing countries** and their **potential for improvement**. The difference in Index values between countries is sometimes minimal, as there several countries with high level of life expectancy and of the same level of development. **A difference of 0.1 or more points can be considered statistically significant.**

The Ranking has been calculated using the most relevant, **reliable data for 2019-2020** from international sources that is comparable across countries. Data from national sources is often more up to date than international data sets because of the time it takes to process, standardise and introduce data into international data sets. This means that the Ranking does not necessarily reflect the current situation, such as the outcomes of policies that have recently been introduced.

Economy:

Measured by unemployment rate, , poverty rate in old age, living standards using GDP per capita, income Gini coefficient.

Health and Healthcare:

Measured by life expectancy at birth, healthy life expectancy at birth, chronicle disease burden, healthcare expenditures and psychological well-being. Good physical and mental health is critical to social and economic engagement of people.

Environment and Infrastructure:

Measured by access to safe water sources, physical safety, natural factors. These indicators capture the enabling attributes of the communities in which older people live.

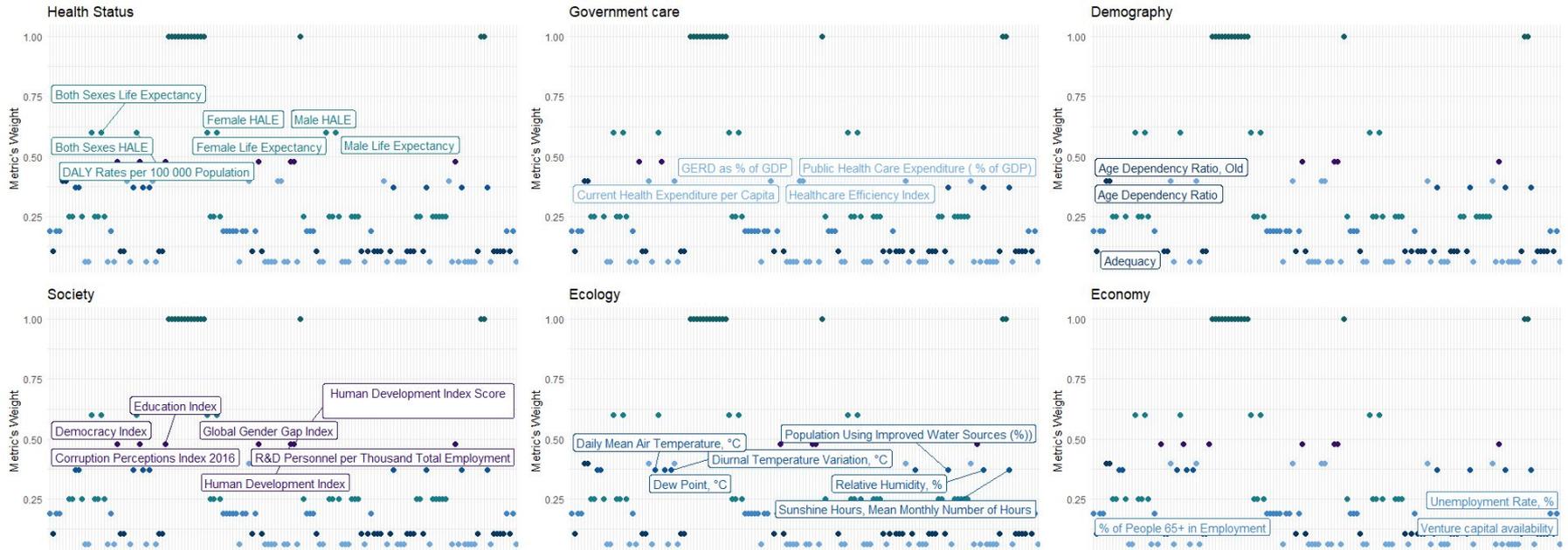
Society:

Measured by social connection and development of human capital.

Demography:

Measured by major demographic indicators.

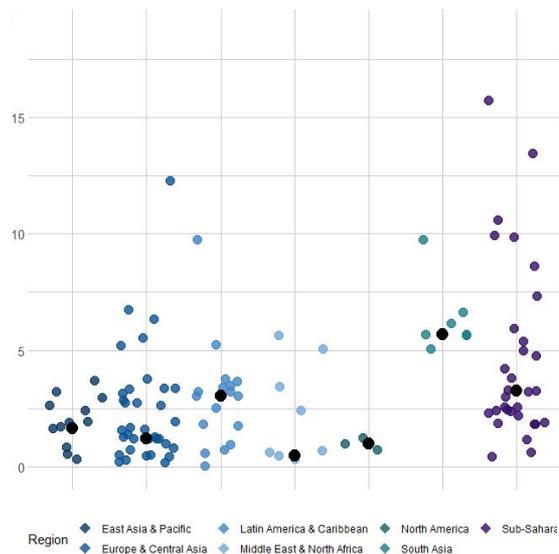
Longevity Ranking Methodology



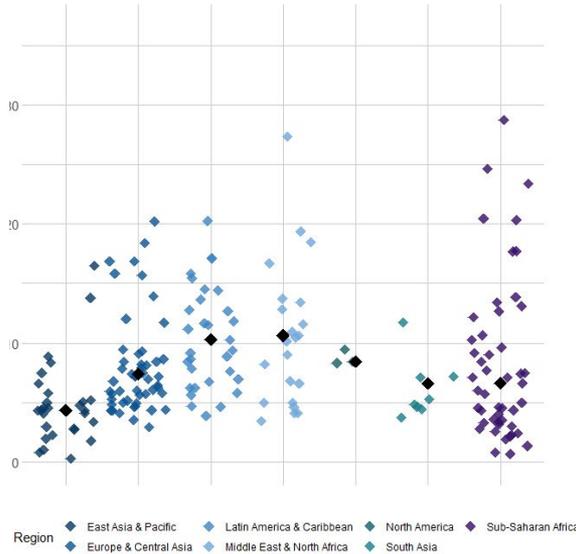
The graphs show **the metrics from each category** that influence the Longevity Ranking Methodology calculations, taking into account **the weight of each metric (y-axis)**. The greatest influence is observed in the metrics government policy (close to 1), health status (0.25-0.6), and society (~ 0.5).

Economy

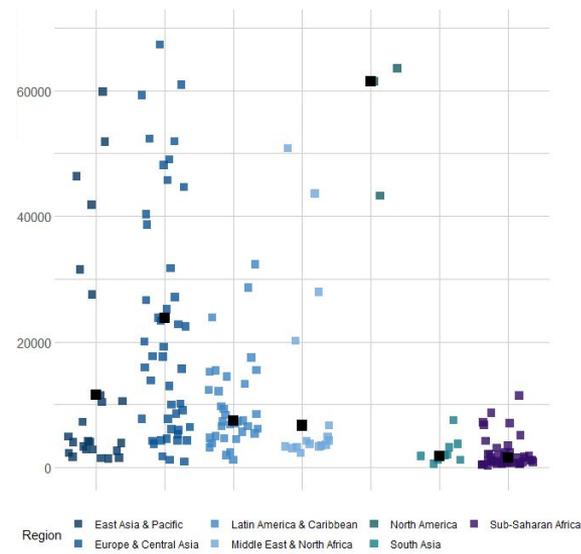
Inflation in 2020, %



Unemployment in 2020, %



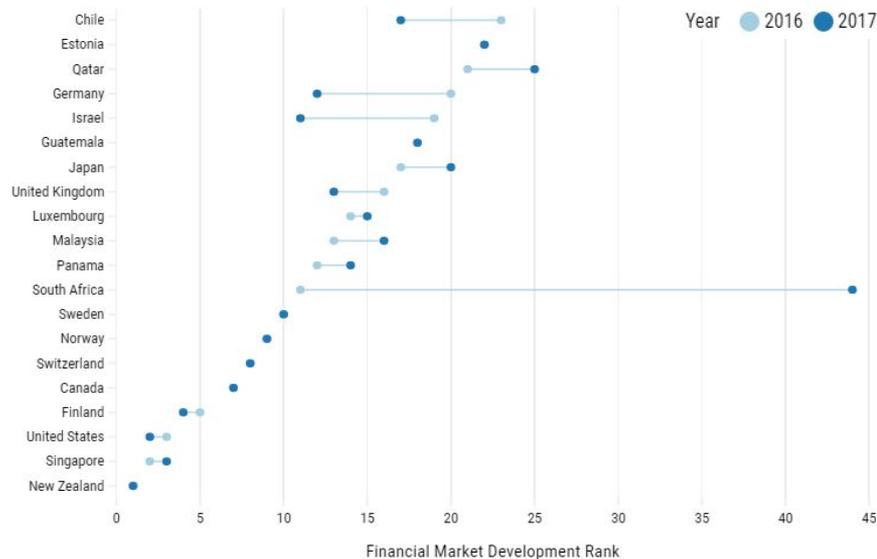
GDP per Capita in 2020, USD



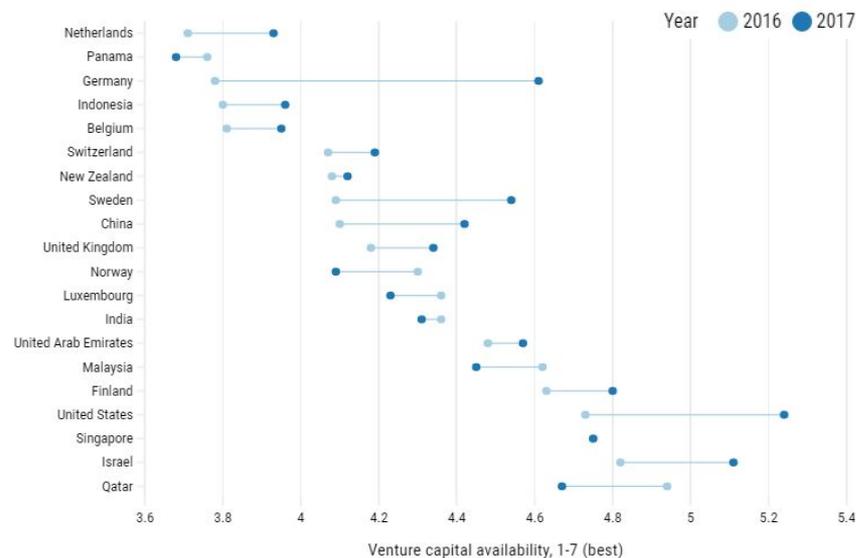
The significant effect of the economic part in the methodology depends on the rate of **inflation, unemployment, and GDP per capita**. **The largest variation** from the median values (black color points) **in CPI and unemployment in Sub-Saharan Africa, GDP in Europe & Central Asia**. Unemployment and GDP per capita directly affect poverty and healthy eating, which affect health. Developed countries through government initiatives and social programmes maintain financial security, provide proactive health care and retrain for re-employment to reduce the impact of unemployment on health.

Economy

Financial Market Development Rank, Dynamic



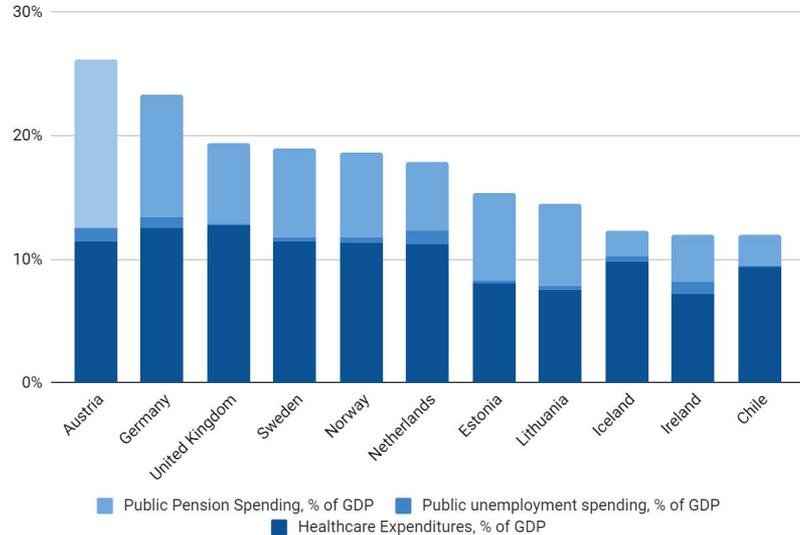
Venture Capital Availability, Dynamic



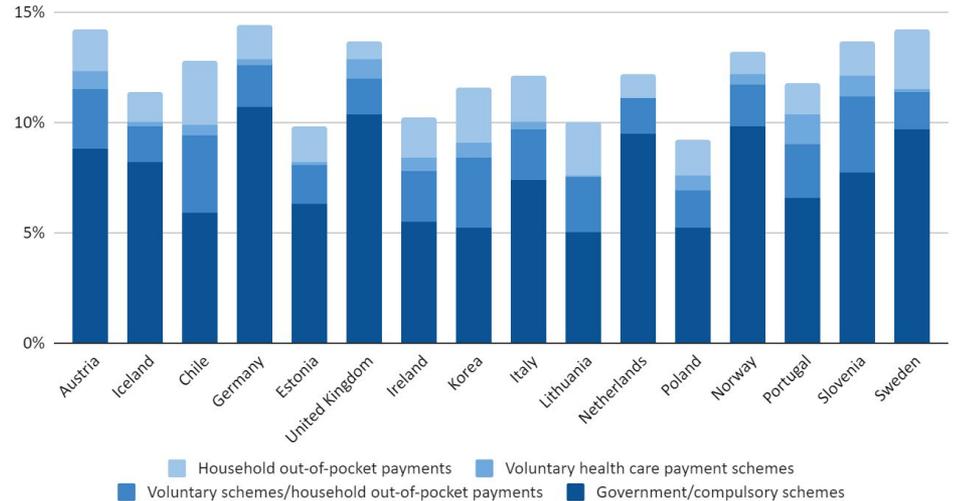
The graphs show **the top 20 countries in terms of rating in the development of financial markets** (the lower the value, the better) and **the availability of venture capital** (the closer the parameter value is to 7, the better), since these indicators directly **affect the possibilities of creating startups**, including in the longevity industry. While the United States, Germany, and Israel improved the prospects for the availability of capital, South Africa has significantly reduced its position, primarily due to the fall in the service sector, with the growth of agriculture and mining sectors.

Health and Healthcare

Social Protection Spendings as % of GDP, 2019



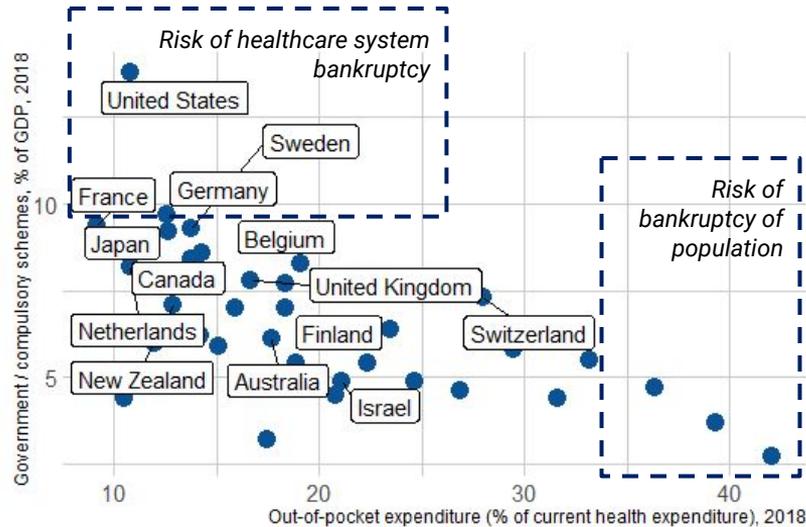
Health Spendings, 2019



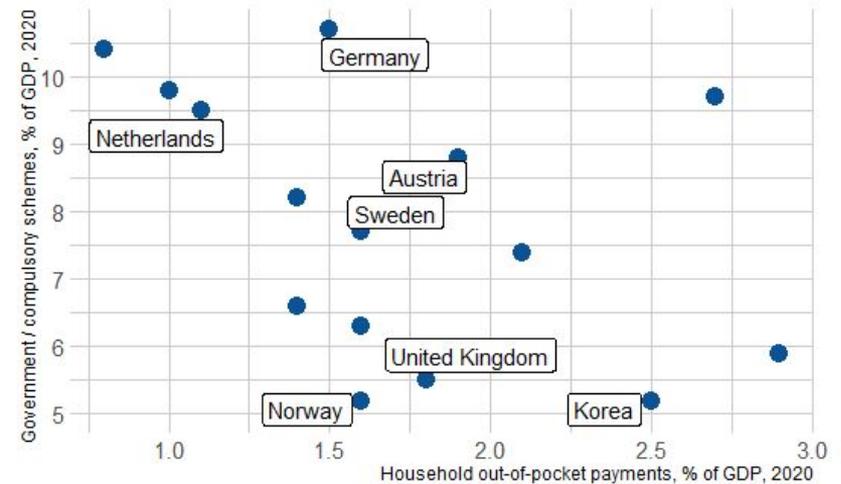
Spending on social protection is distributed unevenly across countries, as each country has particular features of political, economic, and social systems. In 2019, **the United States spent about 16.7% percent of GDP**, on health expenditures – more than twice the average among developed countries. The graphs show the available data for 2019-2020 by country. According to the available data, in 2019 **the highest unemployment costs were in Finland** (1.9% of GDP).

Public Healthcare Expenditure and Out-of-pocket Expenditure

Government vs. Out-of-pocket Spendings (as % of GDP), 2018



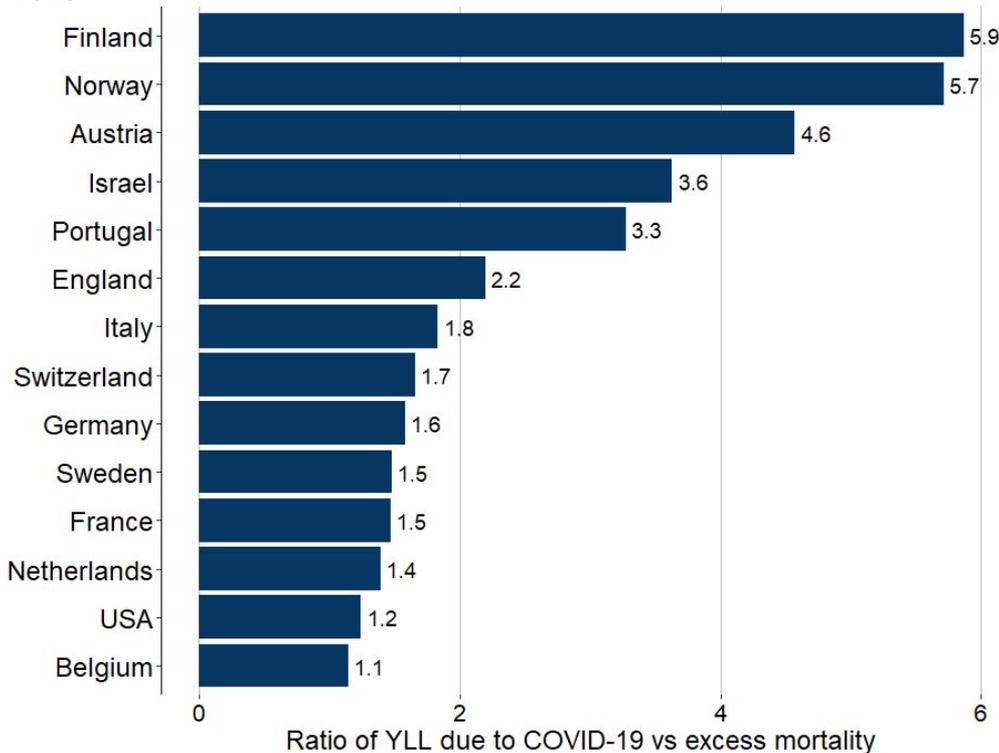
Government vs Households Spendings (as % of GDP), 2020



The data on the left graph is for 2018, on the right graph for 2020. Unregulated direct charges often constitute a major access barrier to needed health care and contribute to high out-of-pocket payments generating problems of financial protection. **Out-of-pocket payments absorb household's financial resources and make healthcare unaffordable for low socioeconomic groups.** As a result, large discrepancies appear in healthcare status. In contrast, public spending on health is central to universal health coverage and social protection, but there is no clear trend. **In the United States, high healthcare expenditure results from high administrative costs and corruption in healthcare.**

Effect of COVID-19 on Life Expectancy

Years of Life Lost due to COVID-19 to Excess Mortality Ratio, 2020



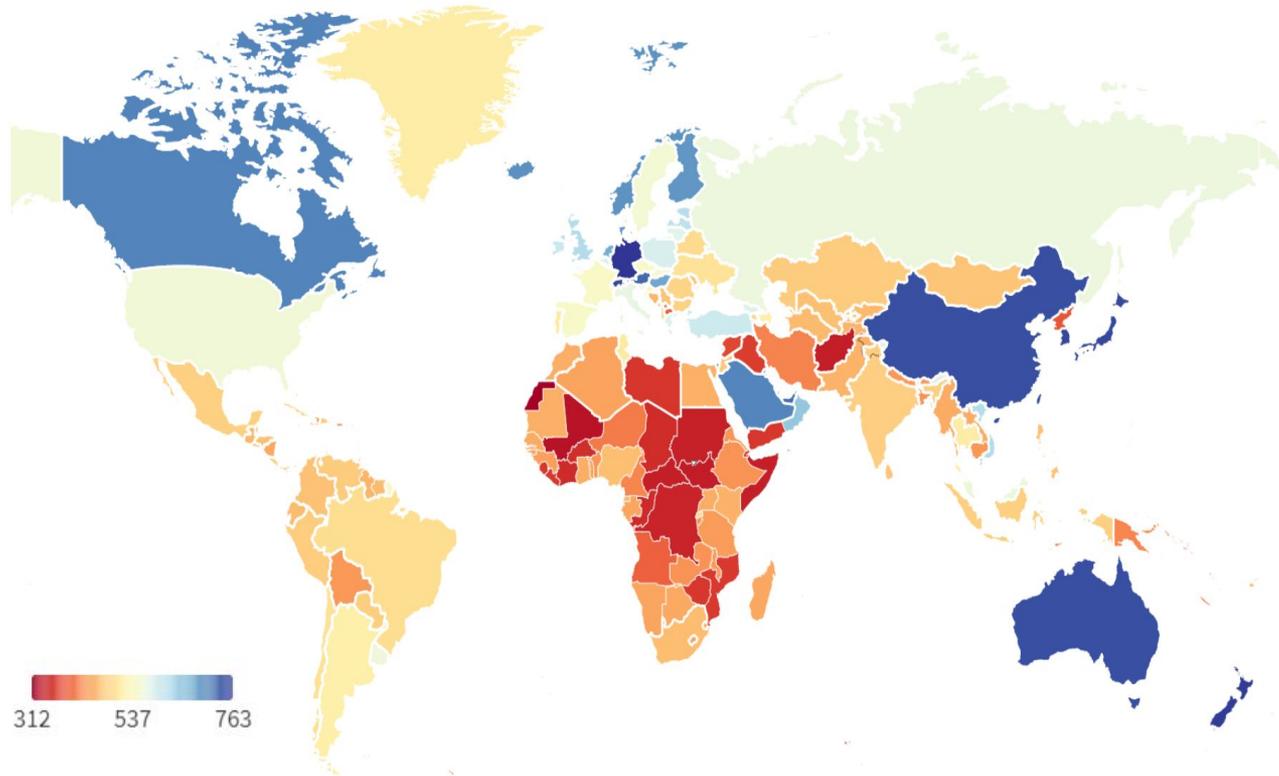
The effect of the pandemic on life expectancy extends beyond deaths attributed to COVID-19. Studies have found an even larger number of excess deaths during the pandemic, **inflated by undocumented deaths** from COVID-19 and by deaths from non-covid-19 causes resulting from disruptions by the pandemic (eg, reduced access to healthcare, economic pressures, and mental health crises).

This problem of undercounting is demonstrated on the countries with high frequency data. **For available countries ratio of years of life lost (YLL) due to COVID-19 to excess mortality was counted.** The results reveals that **the true mortality burden of COVID-19** is likely to be **underestimated from 3 to 12 times.** (Pifarré i Arolas et al. 2021)

Moreover, other study shows that **the gap in life expectancy in the US increased markedly** between 2018 and 2020. The decrease in life expectancy in the US was 8.5 times the average loss seen in 16 high income peer nations and the largest decrease since 1943 during the second world war. (Woolf, Masters, and Aron 2021)

Government Policy and COVID-19 Challenges

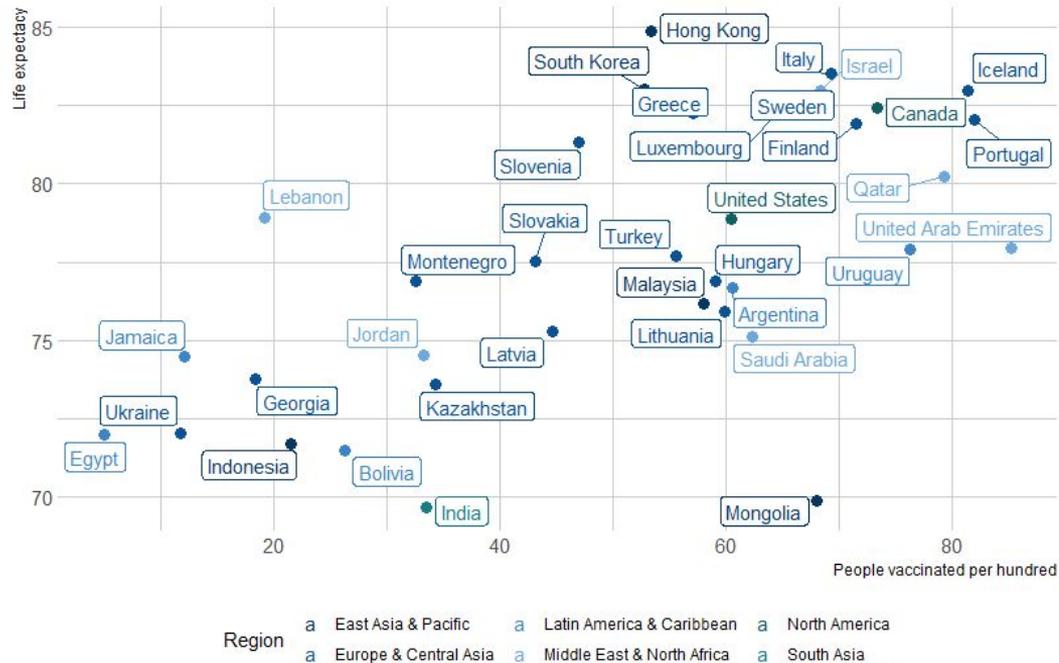
COVID-19 Regional Safety Assessment, 2020



At any rate, the coronavirus pandemic is a critical challenge that must be faced in order to plan the best strategic measures to reduce and neutralize negative repercussions. With this in mind, COVID-19 special analytical case study is designed to classify, analyze and rank the economic, social and health stability. **There are 5 parameters assessed: Quarantine Efficiency, Government Efficiency of Risk Management, Monitoring and Detection Efficiency, Health Readiness, Regional Resilience and Emergency Preparedness.** Most of the parameters estimate level of institutional development of the crucial for Longevity sectors. **As a result there is some correlation between countries with high HALE and Safety index.**

Immunization

Life Expectancy vs. Vaccinated People per 100 of Population

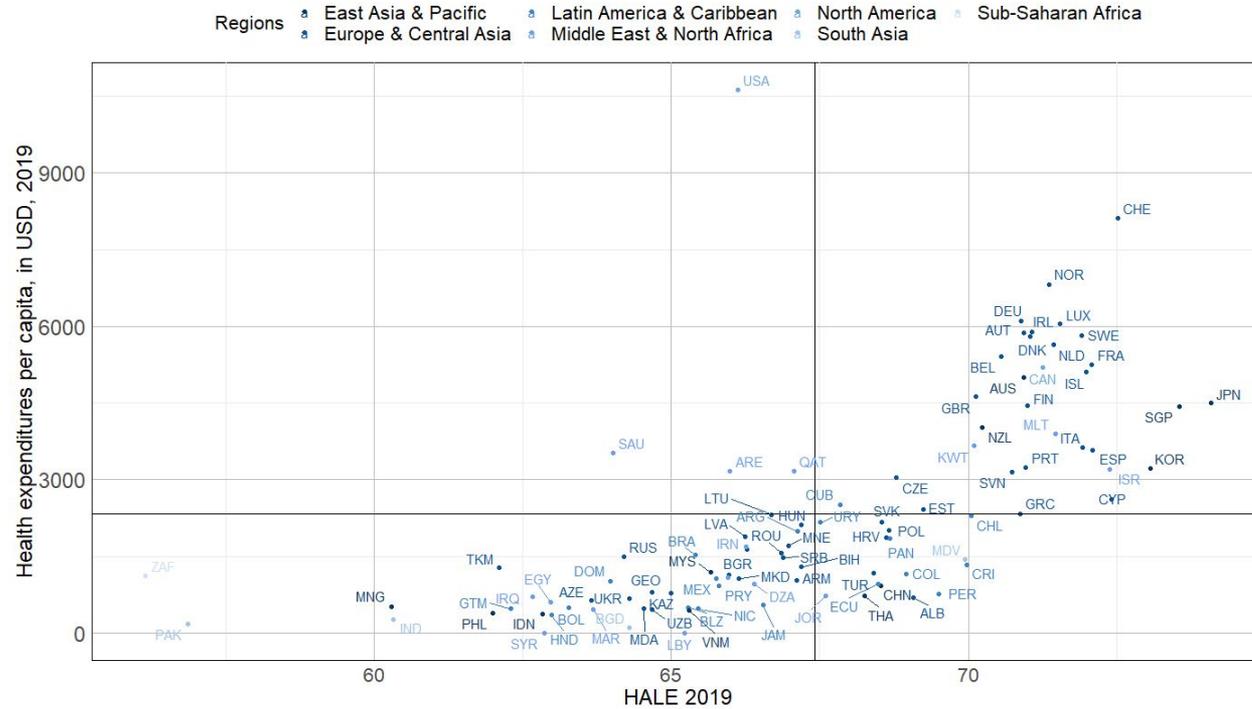


According to WHO research, vaccination greatly reduces disease, disability, death, and inequity worldwide. This parameter is influenced by the distribution of income levels. For example, research in the *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* suggests a 1.13 year reduction in life expectancy for Americans to 77.48 years. Immunization programs have improved the infrastructure of primary health care in developing countries and have reduced child mortality rates as an important counteraction factor.

Vaccination contributes to economic growth around the world by reducing morbidity and mortality, increasing life expectancy, and reducing disparities in wealth and inequities in health. For example, older people who received the flu vaccine were 20% less likely to develop cardiovascular disease and 50% less risk of death from all causes than unvaccinated people. Therefore, there is a relationship between the rate of vaccination and life expectancy, which is indicated in the graph (for example, Covid 19).

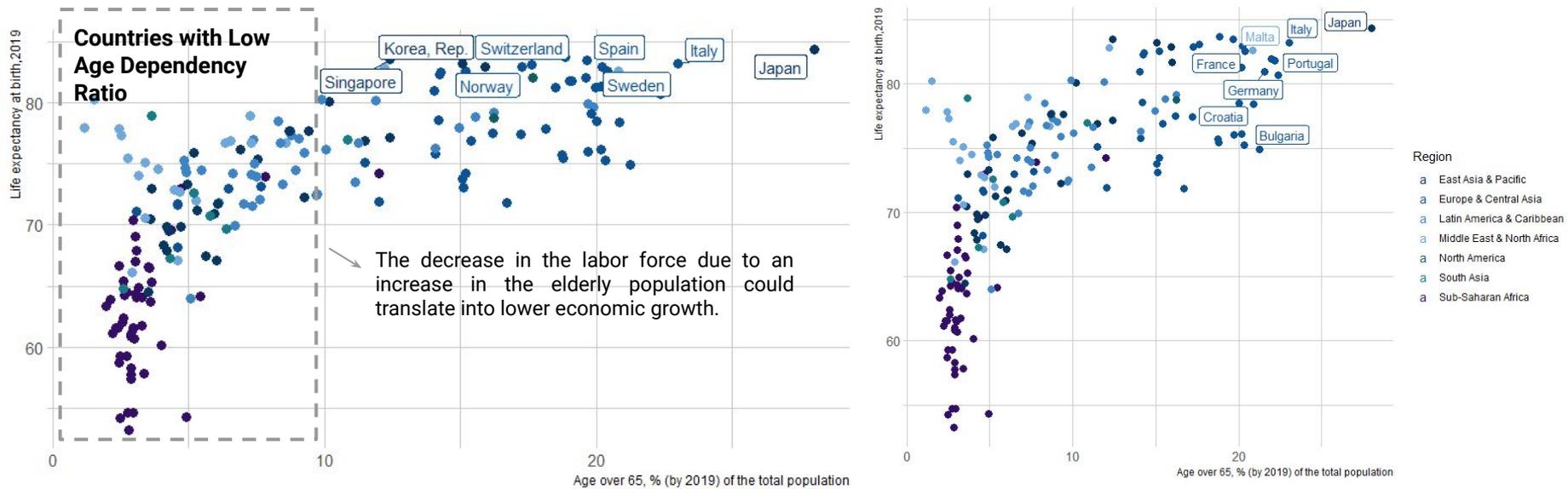
Government Policy

Health Expenditures per Capita and HALE (2019)



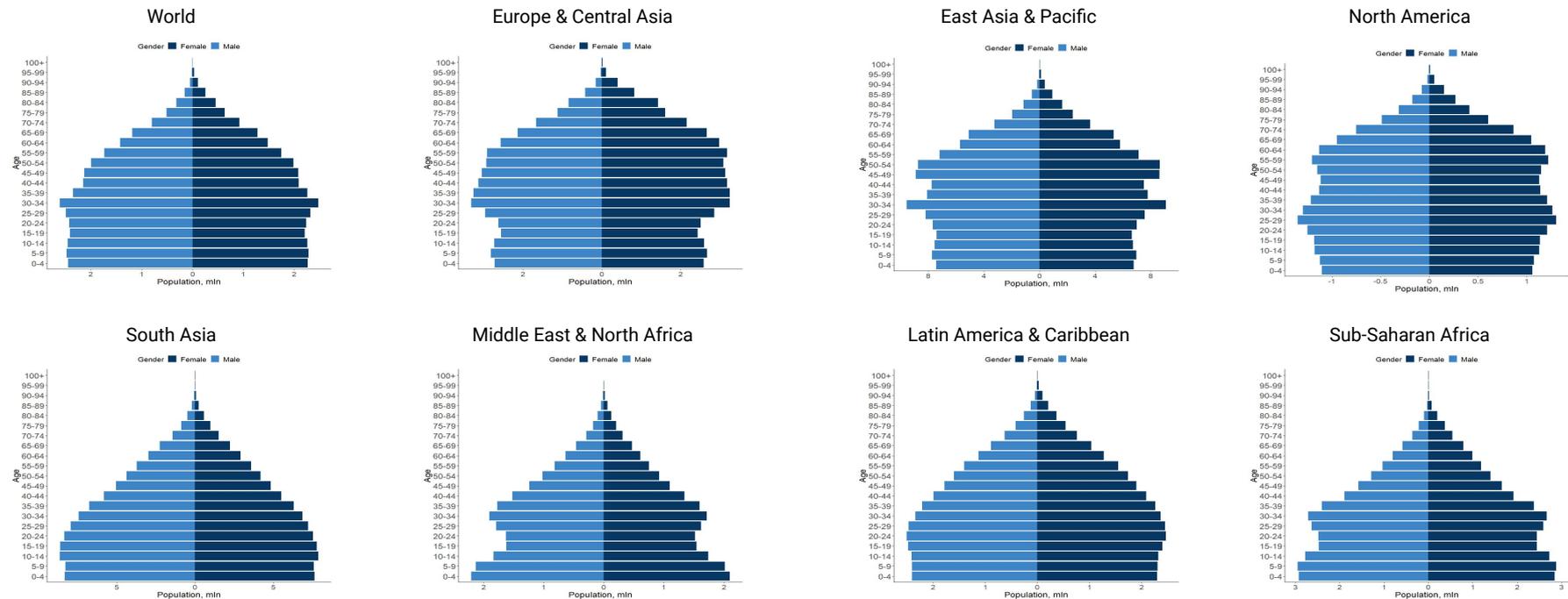
The distribution of 100 countries by current health expenditures per capita reveals that **most advanced economies** have both **high HALE and high health expenditures** (upper right corner of the chart), with exception of the USA. For such substantial health expenditures, **the US population has relatively low HALE - only 66.1**, which is comparable with the **United Arab Emirates**, Bahamas, Latvia, and Lithuania, however, those have much lower expenditures. Countries that located in the lower right part of the chart are mostly East European countries and countries with a warm climate.

Life Expectancy and Ageing Population



The right graph shows the top countries by **Life expectancy**, the left one shows the top countries by **Age over 65, % of the total population**. **Life expectancy** is increasing all around the world. Since around the 1950s, the main factor of steady increase has been reductions in mortality at older ages. This has contributed to the aging of the population and critical changes in age distribution. Aging population contributes to high life expectancy and an increase in the gap between life expectancy and HALE. The major problem with merely increasing life expectancy is that it also increases morbidity because people live long enough to get more age-related disease, disability, dementia, and other dysfunctions.

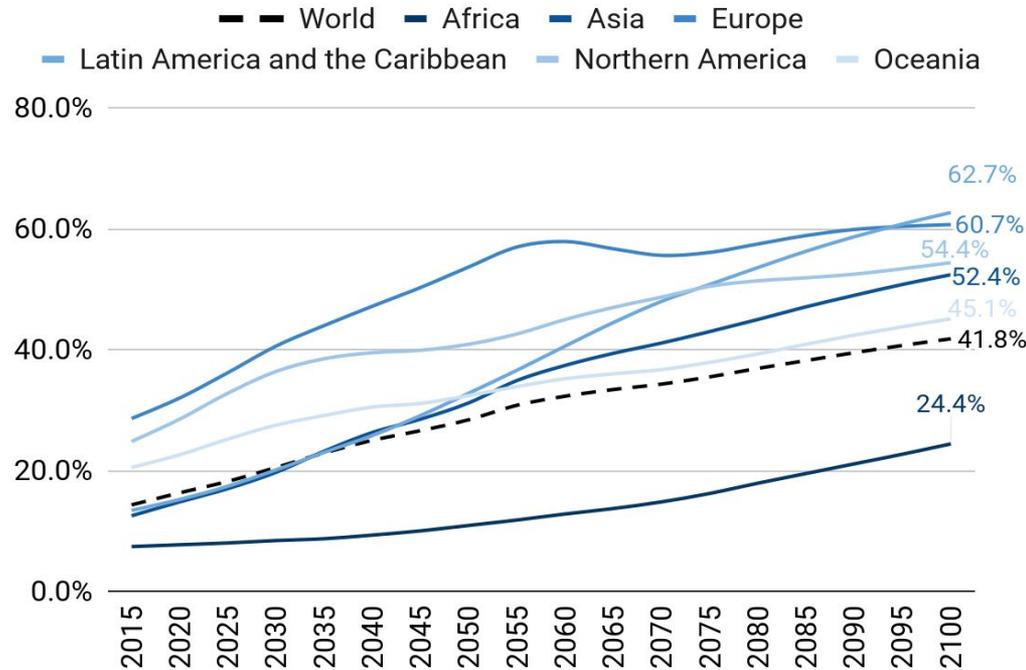
Demographic situation by regions, 2020



Age distribution in different regions reveals **two common trends** that shape priorities in the longevity policy. **Countries of Europe, East Asia, and North America have mostly aging populations**, as middle-aged people are the majority. Those are on the **3rd stage of Demographic Transition**. **The rest of the regions experience 2nd stage of Demographic Transition** with a fall in death rates and an increase in population. However, sooner or later all countries faced the problem of population aging.

Old-Age Dependency Ratio

Projection of Old-Age Dependency Ratio



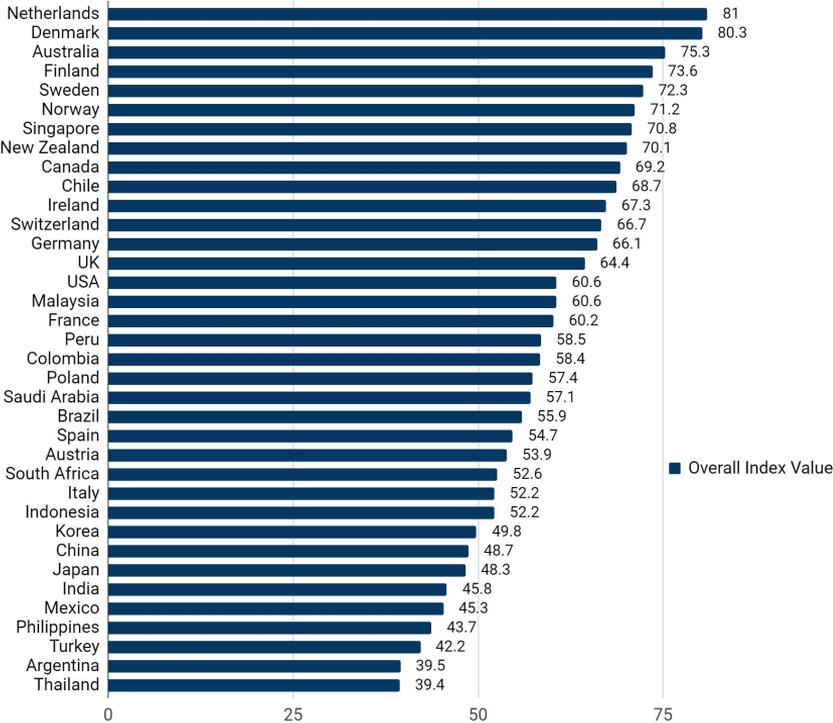
Source: Aging Analytics Agency, [UNISTAD](#)

Globally, in 2019, **for every 100 persons of working age, there were 53 persons who were younger or older**. In developed economies, old-age dependency is high - and increasing. While the total dependency ratio of developing and developed economies was similarly high, but the underlying structure was entirely different.

Developing economies showed a comparatively **high share of child dependency**, as reflected by the triangular shape of the age pyramid, whereas in **developed economies dependency concerns mainly older persons**. As a result of population aging, in 2050, developed economies are projected to have a higher overall dependency ratio than Africa.

Melbourne Mercer Global Pension Index

The Melbourne Mercer Global Pension Index



Source: The Melbourne Mercer Global Pension Index

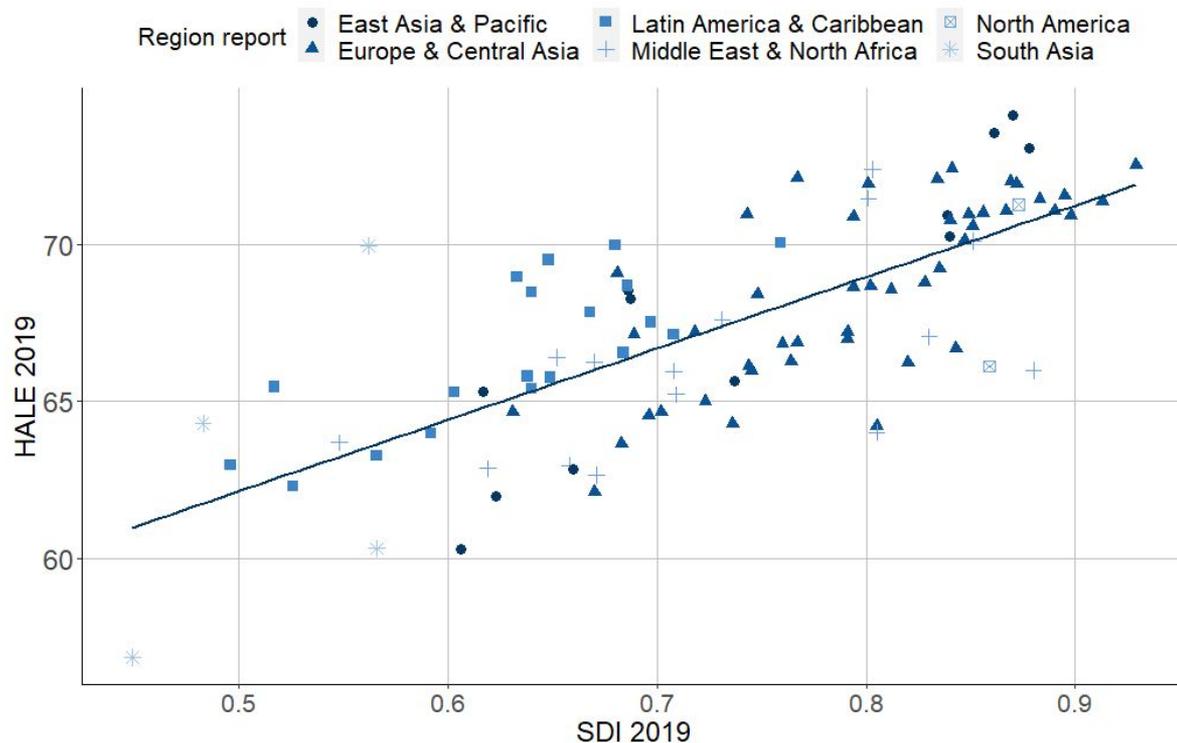
The provision of financial security in retirement is critical for both individuals and societies as most countries are now grappling with the social, economic, and financial effects of aging populations.

The major causes of demographic shift toward aging population are declining birth rates and increasing longevity. But it is not only the aging populations that represent challenges for pension systems around the world. **The current economic environment with historically low-interest rates** in many countries and reduced financial returns **are placing additional financial pressures** on existing retirement income systems.

The overall index value for each system represents the **weighted average of the three sub-indices**: the adequacy sub-index, the sustainability sub-index, and the integrity sub-index. By this estimation, first-class and robust retirement income systems that deliver good benefits with a high level of integrity are only in the Netherlands and Denmark (index value >80). All other systems are needed major or minor improvements.

HALE and Social Development Index (SDI)

HALE vs SDI, 2019

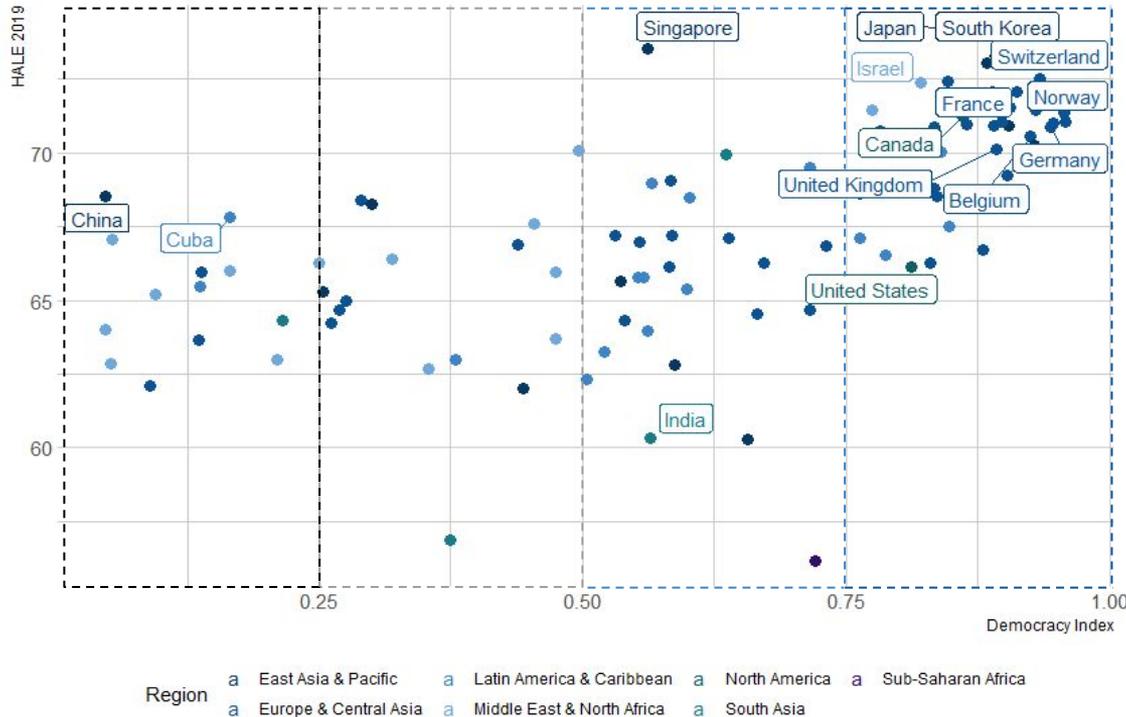


Expressed on a scale of 0 to 1, **SDI** is a composite **average** of the rankings of **the incomes per capita, average years of schooling** among people aged 15 years or older, **and the total fertility rate** of all areas in the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD).

The proportion of life spent in relative health increases linearly with increasing SDI, a relative compression of morbidity, which supports continued efforts to elevate personal income, improve education, and limit fertility. (Kassebaum et al. 2016). The highest SDI is in Switzerland - around 0.93 and the corresponding HALE is 72.5 years. On the other hand, the lowest SDI is in Pakistan with HALE around 57 years.

HALE and Liberal Democracy

HALE vs Democracy Index, 2019



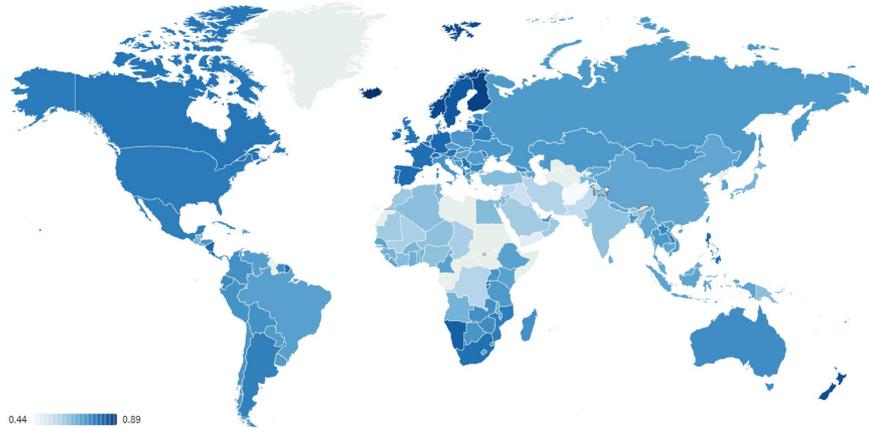
The chart left shows the cross-country **correlation between** an aggregate measure of health – **HALE** – and an aggregate rule of democracy, **the Democracy Index**. The countries with a value of Index from 0 to 0.25 is Hard Autocratic regimes (black rectangular), from 0.25 to 0.5 - Moderate Autocracies, from 0.5 to 0.75 - Deficient Democracies, from 0.75 to 1 - Working Democracies.

The studies show a strong **(conditional) correlation between life expectancy and democracy**. This relationship is robust to controlling for the initial level of human capital as well as political histories. **The data also suggest that health policy interventions are superior in democracies.** (Besley and Kudamatsu 2006).

Source: Institute of Political Science and Sociology Julius-Maximilians-Universität Würzburg

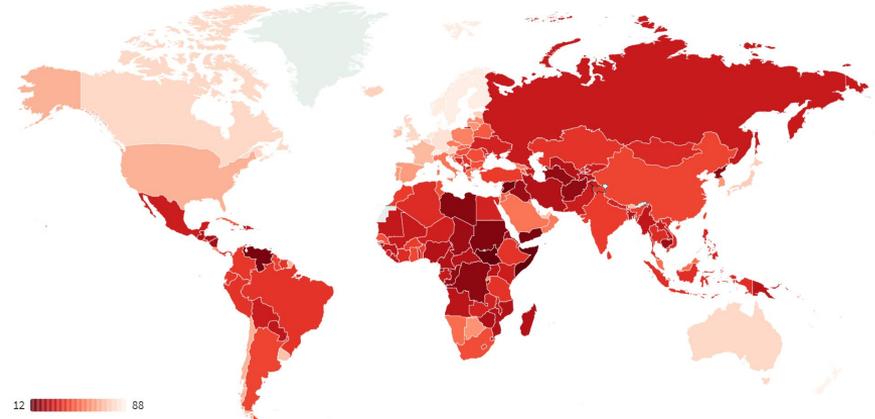
Strength of Institutions and Inclusiveness

Global Gender Gap Index, 2020



Source: World Economic Forum

Corruption Perceptions Index, 2020



Source: Transparency International

Multiple studies reveal **a positive relationship between effective socio-economic institutions and life expectancy**. In contrast, life expectancy does not affect the economic performance of a country substantially (Acemoglu, Daron, and Simon Johnson, 2007). The maps illustrate some aspects of inclusiveness and the development of social institutions. **The Global Gender Gap score** is a numeric estimate of gender-based gaps among Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. Geographically, **the global top 10 continues to be dominated by Nordic countries**, with —Iceland, Norway, Finland, and Sweden— in the top five. These countries are also among the top countries by HALE. Generally, countries with higher institutional development experience not only higher standards of living, but also higher HALE. Thus, **countries with a high Corruption Perception Index and where corruption is uncommon (pale red) mostly coincide with countries with high HALE**.

Key Takeaways

- Nowadays, such complex indicators as life expectancy and health-adjusted life expectancy go beyond the traditional measures of the demographic potential of a country.
- The prevalence of NCDs is considered to be a “slow-motion disaster” and a rising challenge for life expectancy and health-adjusted life expectancy dynamics.
- All risk factors of NCDs lie in non-health sectors, requiring collaboration across all of government and all of society to combat them.
- Healthy Longevity progressiveness is about the public-private balance in the health care system.
- Low socioeconomic inequality and reduced disparity in health outcomes should be key goals in Healthy Longevity plans and healthcare policies.
- Healthcare policies should be focused on care delivery to improve healthcare outcomes and provide higher efficiency of healthcare expenditure.
- A focus on national-level health status and its temporal trajectory is critical.
- Corruption in healthcare is a barrier to improvements in care delivery and indirectly affects the slowdown of both life expectancy and health-adjusted life expectancy growth.
- There is an evident linkage between the level of income and health status: wealthier nation healthier population.
- The utilisation of Artificial Intelligence opportunities in preventive medicine to minimise costs and improve the accessibility of healthcare services.
- The polluted environment and unfavorable climate conditions threaten the average life span and health-adjusted life expectancy.

Longevity Governance Big Data Analytics Dashboard

Market Intelligence

Longevity Governance Market Intelligence

- Full Analysis
- Interactive Mindmaps
- SWOT Analysis
- Dynamic Charts

Full Big Data Analysis

Introduction & Big Data Comparative Analysis Framework

Longevity Progressiveness Ranking of 50 Regions

Major Factors Determining Healthy Longevity

Big Data Comparative Analysis Healthy Longevity in 50 Regions

Current Trends in Life Expectancy and Healthy Longevity

Conclusions and Practical Recommendations

View More

Dashboard Parameters

DATA POINTS	PARAMETERS	REGIONS
11984	240	50
LAYERS OF FRAMEWORK	DYNAMIC CHARTS	SWOT ANALYSIS PROFILES
6	100	50

SWOT Analysis



View More

Longevity Governance Market Intelligence

- Pre-Subscribe for Beta
- COVID-19 Dashboard
- 3D Visualization

Search Engine

Longevity Governance Search Engine

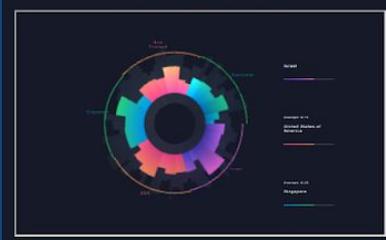
- Benchmarking Charts
- Major Trends
- Practical Recommendations
- Big Data Framework

National Healthy Longevity Interactive MindMaps

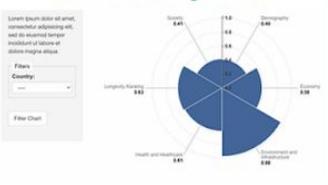


View More

Longevity Progressiveness 3D Visualization



Longevity Progressiveness Benchmarking Charts



View More

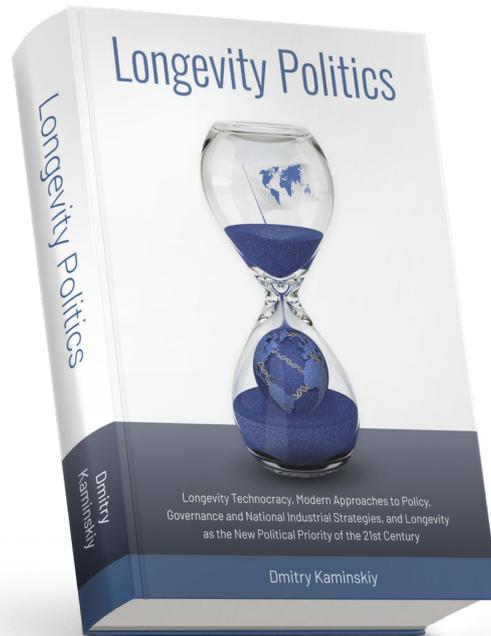
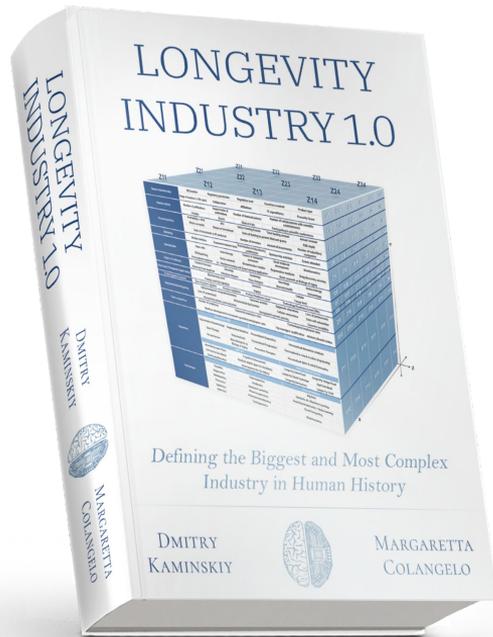
Longevity Governance Search Engine

- Health-Adjusted Life Expectancy (HALE) Gap and Life Expectancy
- Health-Adjusted Life Expectancy (HALE) Benchmarking

Visit Dashboard: <https://www.aginganalytics.com/longevity/governance-dashboard>

Aging Analytics Agency

37



2010-2020: Evolution of the Longevity Industry from Zero to 1.0

- *The Industrialization of Longevity*
- *The Current State of Longevity Science, Business, Finance, and Practical Applications*
- *Longevity Becomes National Priority Item for the Strategic Agenda of Progressive Governments*
- *Transforming the Challenge and Deficit of Aging into the Opportunity and Asset of Longevity*
- *Defining and De-Risking: Hype vs. Reality*

2021-2030: The Rise of Longevity Politics, and the Solidification of Longevity as the New Political Priority of the 21st Century

- *The Rise of Longevity Technocracies as Global Competitors in the Creation of Full-Scope Longevity Industry Ecosystems and the Optimization of National Healthy Longevity*
- *Modern Approaches for Formulating and Executing National Longevity Industrial Strategies*
- *The Set of Factors That Will Make Citizens Demand the Delivery of Additional Health-Adjusted Life Expectancy (HALE) and Quality-Adjusted Life Years (QALY) From Their Governments and Politicians as a Basic Resource and Human Right*

Aging Analytics Agency: Value Proposition

Aging Analytics Agency is the only specialized analytics agency in the world that focuses exclusively on the emerging Longevity Industry. They are recognized internationally as the premier analytics agency for advanced data analysis, industry reports and next-generation infographics on the topics of Aging and Longevity.

Aging Analytics Agency is focusing on three key activities:

Providing Commercial Services

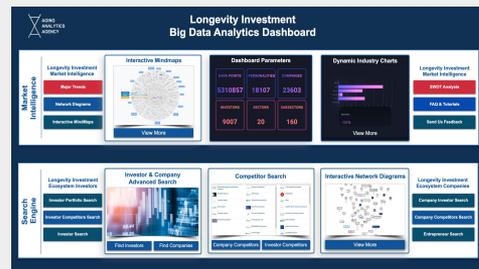
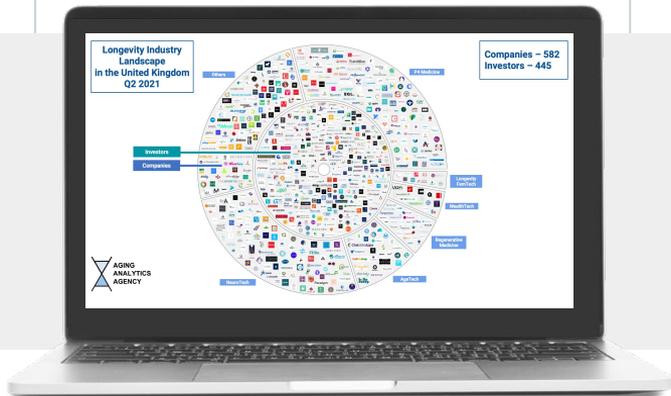
Conducting customised case studies, research and analytics for internal (organizational) use, tailored to the precise needs of specific clients.

Preparing Open Access Reports

Producing regular open access and proprietary analytical case studies on the emerging topics and trends in the Longevity Industry.

Building Big Data Analytics Platforms

Offering customised analysis using specialised interactive industry and technology databases, IT-platforms and Big Data Analytics Dashboards.



Website: www.aginganalytics.com



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