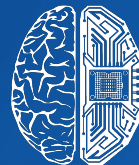




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Longevity Governance Index 2022

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Life expectancy is increasing all around the world. This increase was previously driven by reductions in infant mortality. The main factor of steady increase has been reductions in mortality at older ages. This has contributed to the ageing of the population and critical changes in age distribution, which can be described with old-age dependency ratio.

The major problem with merely increasing life expectancy is that it also increases morbidity. Many serious diseases have increased prevalence with age, including cancer, heart disease, stroke, respiratory disease, kidney disease, dementia, arthritis, and osteoporosis.

Consequently, it is unclear why countries are investing so much money in research focused on reducing death rates in the elderly if the consequence is advancing ageing, that can be described as the increase in disability years, plus pension and social and medical costs, in an unsustainable way.

Ageing is caused by many different processes; that is why **healthy Longevity goes far beyond demographic characteristics and medical research problems** on how to increase the length of life.

Introduction

Developed by Deep Knowledge Analytics Agency the new '**Longevity Governance Landscape 2022**' report provides a comprehensive overview of the Longevity Governance sector trends and developments.

This is done by briefly reviewing the key trends and policy developments in the Longevity sector. Further, the analytical report focuses on comparative analysis of Longevity progressiveness in 186 countries.

In the course of the study, the **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The index is a dynamic quantitative and qualitative benchmarking model constructed from 124 unique parameters that evaluate the current state of Longevity and related initiatives among analysed countries, find and determine strengths and weaknesses of the healthcare system in terms of the rising trend of Longevity. Essentially, the Index concept envisages six dimensions: **Demography, Ecology, Economy, Government Care, Health Status, and Society**.

All these aspects are explored with reference to legislative acts, policy papers, and academic literature on the topic.



**9.7
billion**



people are expected
by 2050 globally



**55% of all
population**



will be comprised of people
aged 65+ by 2034



**2 working-
age people**



are expected to provide
retirement support for every
older person 65+ by 2025



**100
countries**

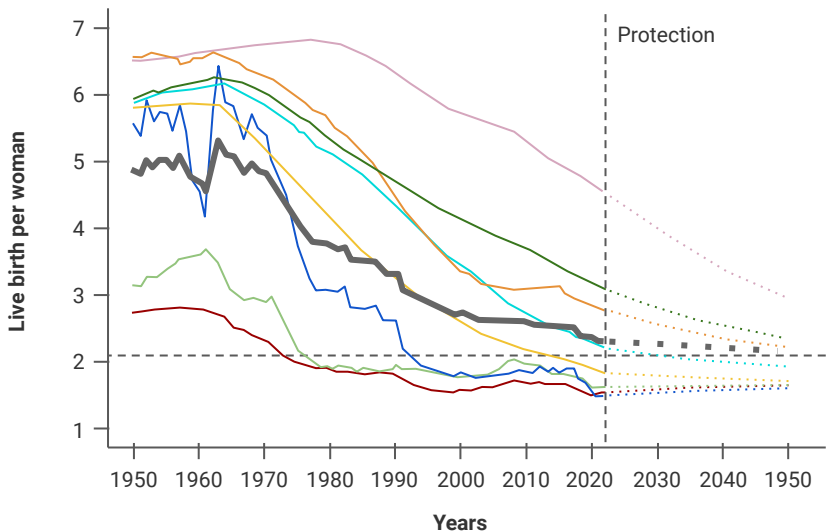


lack efficient healthcare
systems around the world

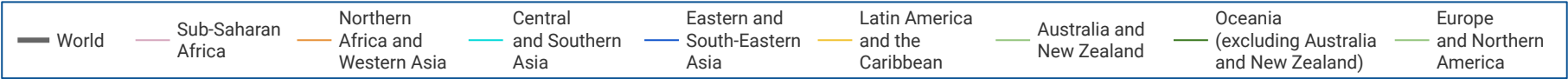
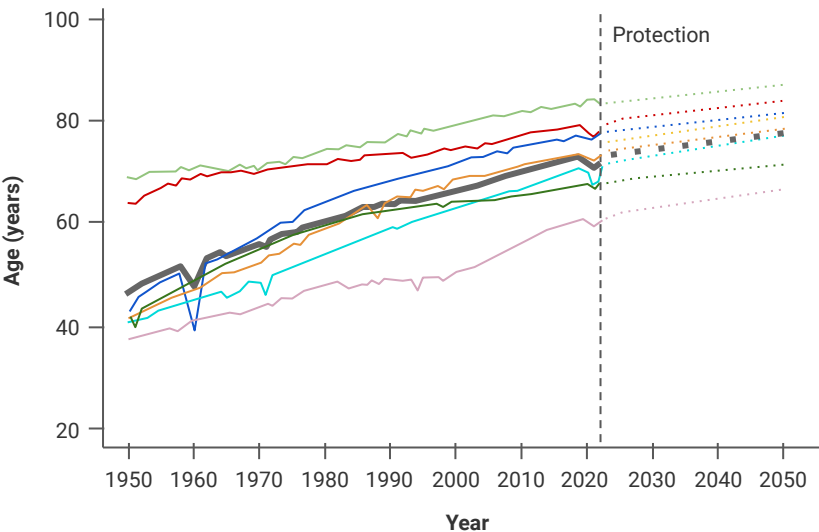
Trends in Fertility, Ageing, and Migration

The global population is expected to reach 9.7 billion in 2050 and 10.4 billion in 2100, according to the medium scenario, which assumes a decline of fertility for countries where large families are still prevalent.

Total fertility rate: estimates, 1950-2021, and scenario, 2022-2050

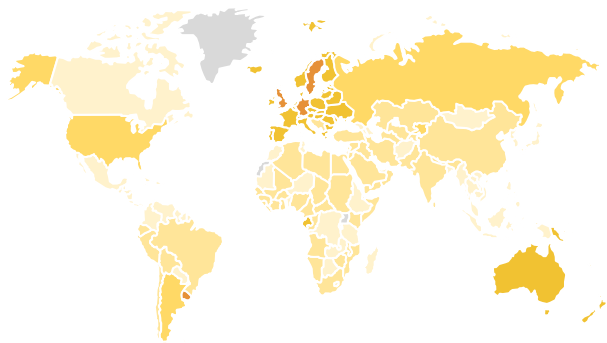


Life expectancy at birth: estimates, 1950-2021, and scenario, 2022-2050, by region

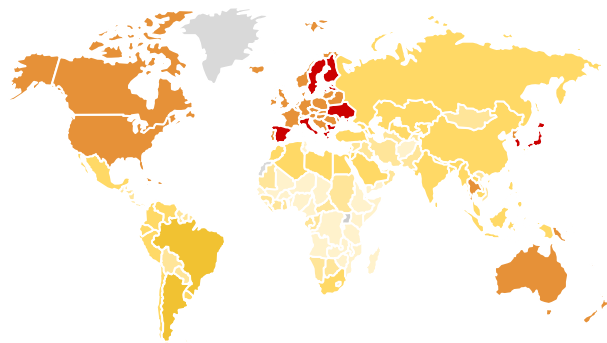


Ageing puts long-term fiscal sustainability at risk, exacerbates fiscal challenges from the COVID-19 crisis, and weighs on potential growth. At the same time, ageing will result in lower tax revenues because fewer people will be active in the labour market.

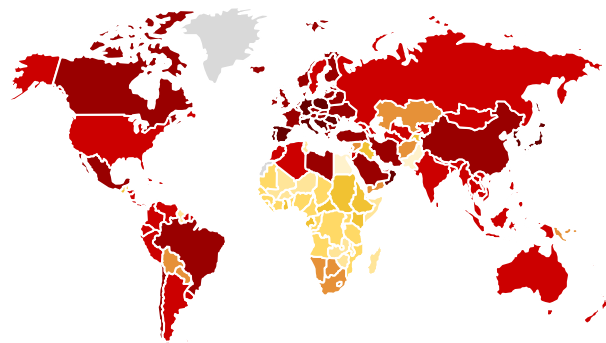
True Costs of Ageing



1950



2010



2060

Average Age



Gradually, the process of ageing will happen in all parts of the world.

Europe and Central Asia
is a harbinger of things
to come globally

While Europe and Japan are old at the moment, compared to the rest of the world, they are just ahead of the rest. Other countries are expected to age even faster during coming decades than European countries in previous years.

In 2020,
3.4 working-age
people supported
the retirement of
every person 65+

By 2025,
2 working-age
people are expected
to support for every
older person 65+

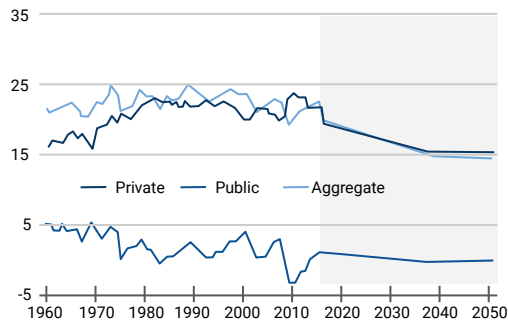
To mitigate the adverse impacts of ageing, it is key to **improve the sustainability of the pension system and the efficiency of public spending**, promote healthy ageing, extend working lives, and boost labour market participation.

Policies for Longevity

Future of Saving

By 2050, aggregate savings in advanced economies are projected to decline as governments spend more on pensions while an ageing population saves less (projected savings as percent of GDP).

Advanced Economies



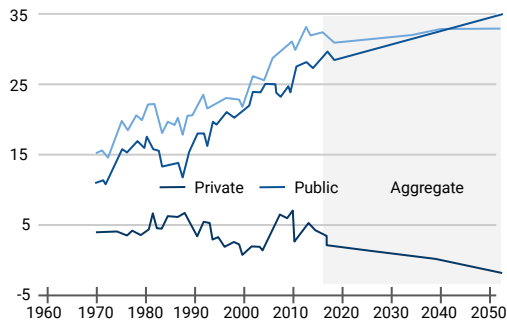
79 %

of employment growth in 2005-2018 was accounted to people over 55 years of age.

Projections on savings of an ageing population suggests promoting active policies in **higher labour force participation among older workers**, which will depend on :

- 1) the generosity and availability of pension plans,
- 2) health and support available to workers,
- 3) the industrial structure and types of jobs offered.

Emerging Market Economies and Low-Income Developing Countries



New models

Public policies play an important role in supporting efforts to provide adequate income in retirement while ensuring the sustainability of pension systems.

Important factors to consider:



71%

of deaths globally are from NCDs

As with past health improvements, public education aimed at changing people's behaviour when it comes to activity, diet, engagement, and purpose.

By 2034, it is estimated that people aged 65+ living alone will make up



55%

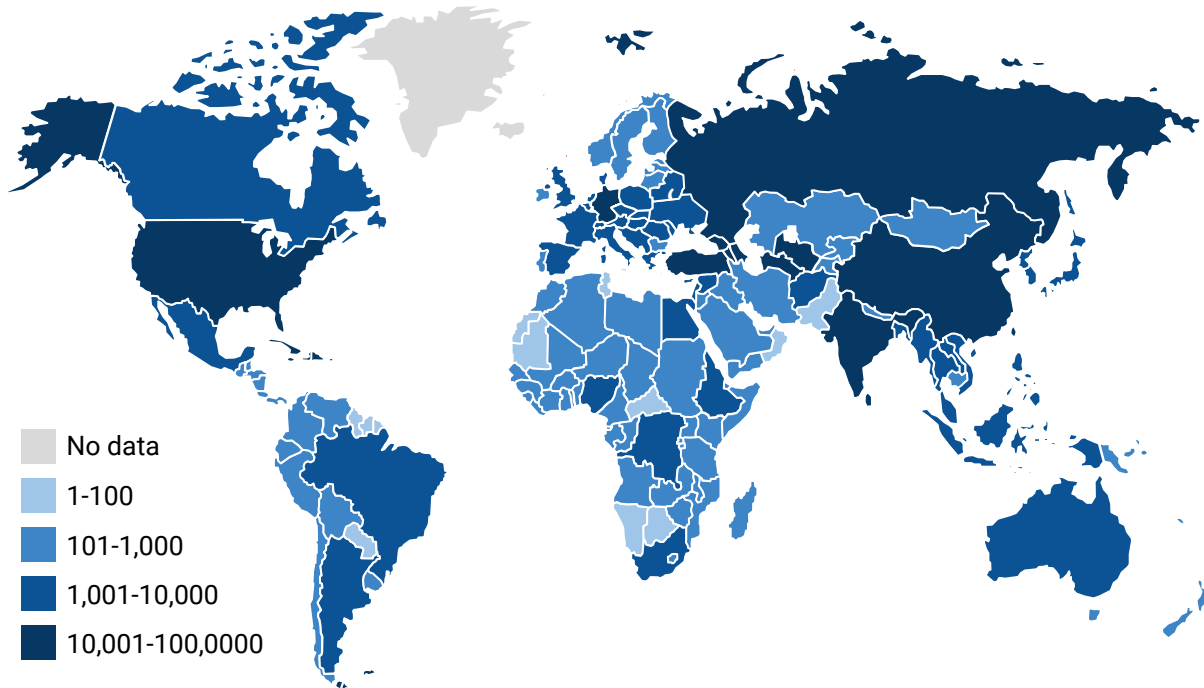
of all people living alone

As with past health improvements, public education aimed at changing people's behaviour when it comes to activity, diet, engagement, and purpose.

Elder Adult Health Affected by Climate Change

Understanding the changing climate and its impact on public health, especially that of older adults, becomes more important than ever. Older adults are identified as a vulnerable population category, experiencing excess morbidity and mortality associated with extreme weather, such as alarming heatwaves, widespread wildfires and violent hurricanes.

Annual heat-related mortality in the population 65+ (2014 to 2018), number of deaths.



Policymakers should adopt policies that will reduce carbon emissions and, thus, will improve public health and productivity:

- environment-friendly technologies and resources, such as renewable energy, should be used in the production process;
- healthcare expenditure on a national budget should be increased;
- clean drinking water and basic sanitation facilities must be ensured for all people.

Overview of Existing Longevity Policy Models: New Zealand

New Zealand has been a pioneer of the positive ageing policy, which was developed and introduced in that country back in 2001. In 2019, New Zealand adopted a new strategy for active Longevity: **'Better Later Life in 2019-2034'**, designed to create opportunities for all citizens of New Zealand to be valued as they age.

New Zealand Positive Ageing Strategy

Component of the Strategy	Goal
Income	Secure and adequate income for older people
Health	Equitable, timely, affordable, and accessible health services for older people
Housing	Affordable and appropriate housing options for older people
Transport	Affordable and accessible transport options for older people
Ageing in the community	Older people feel safe and secure and can age in the community
Cultural diversity	A range of culturally appropriate service allows choices for older people
Rural	Older people living in rural communities are not disadvantaged when accessing services
Attitudes	People of all ages have positive attitudes to ageing and older people
Employment	Elimination of ageism and the promotion of flexible work options
Opportunities	Increasing opportunities for personal growth and community participation

Key areas for action of the new 'Better Later Life in 2019-2034' Strategy



Achieving financial security and economic participation



Promoting healthy ageing and improving access to services



Creating diverse housing choices and options



Enhancing opportunities for participation and social connection



Making environments accessible

Overview of Existing Longevity Policy Models: Cambodia

The experience of Cambodia is especially interesting. From a demographic point of view, it is a relatively young country in Southeast Asia with the median age of the population standing at 25.6 years.

Vision

To continuously enhance and improve the quality of life of older persons in Cambodia with emphasis on ensuring them equal rights and opportunities.

Goals

To ensure that older persons are enabled to fully participate with freedom and dignity for as long as they wish to in family, community, economic, social, religious, and political activities

To ensure that younger persons are better equipped with knowledge that enables them to lead a more productive, healthy, active, and dignified life in old age.

Priority areas

- Ensuring financial security
- Health and well-being
- Living arrangements
- Enabling environment
- Older people's associations and active ageing
- Intergenerational relations
- Elder abuse and violence
- Preparing the younger generation

Some elements of active Longevity are also included into national policies on ageing of:



UA



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LV



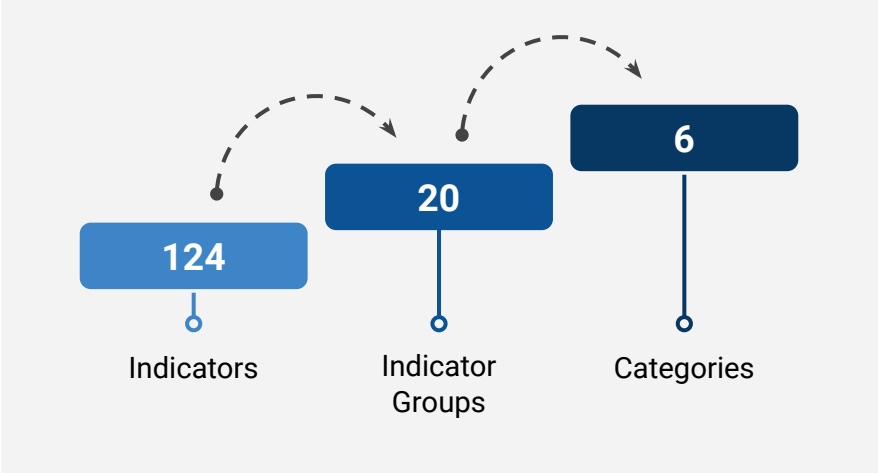
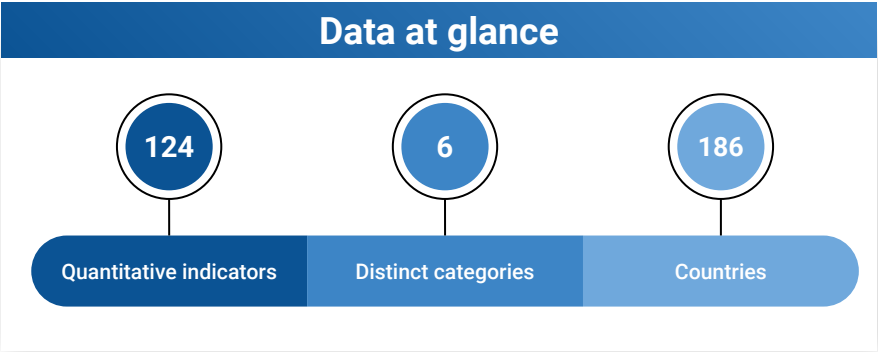
LT

and other countries
of Asia and the Pacific

Longevity Governance Index

Objectives and Methodology

Longevity Governance Index: Data at a Glance



180+
countries

ranked according to the level of development within the Longevity Industry



20
indicator groups

define Healthy Longevity across chosen countries



6
categories

Demography, Ecology, Economy, Government Care, Health Status, and Society



124
unique factors

grouped in six subgroups that measure development level within the Longevity Industry



100
countries

lack efficient healthcare systems around the world



20,000+
data points

collected in order to conduct the research

Longevity Governance Index: Objective and Methodology

The Longevity Governance Index was constructed, considering the issues of **Demography, Ecology, Economy, Government Care, Health Status, and Society** across 186 countries. The index is a dynamic quantitative and qualitative benchmarking model constructed from 124 unique factors that measure the drivers of development within the Longevity Industry across both developing and developed countries.

Essentially, Longevity Governance Index concept envisages six dimensions:

- **Demography** – illustrates the changing dynamics of structure of the population.
- **Ecology** – assesses a country's exposure to the impacts of a changing climate, sociological ,or biological hazards.
- **Economy** – measures resources available that can alleviate the impact of ageing.
- **Government Care** – measured by government activities and spendings regarding healthcare, as well as amount of laws, policies, and plans for Longevity initiatives.
- **Society** – evaluates development of human capital within the society.
- **Health Status** – determines the state of health of population with reference to life expectancy, well-being, and mental health indicators.

Applied Research and Analytics Methods

Descriptive
Analysis

Mixed Data
Research

SWOT
Analysis

Comparative
Analysis

Qualitative Data
Collection

Data
Filtering

Longevity Governance Index



Demography



Economy



Society



Ecology



Government
Care



Health
Status

Longevity Governance Index: Objectives and Methodology (1/4)

1

The dataset of features for more than 269 countries was collected from publicly available databases. Then, countries with missing data for more than half of the dataset was removed, summarising the final list of 186 countries.

2

Missing values were imputed using KNN ('k-nearest neighbours') method. The idea behind this method is to identify 'k' samples in the dataset that are similar or close in the space. Then these 'k' samples are used to estimate the value of the missing data points. Each sample's missing values are imputed using the mean value of the 'k'-neighbours found in the dataset.



3

Features are normalised then. The minimum value of that feature gets transformed into a 0, the maximum value gets transformed into a 1, and every other value gets transformed into a decimal between 0 and 1:

$$x = (x - \text{Min}(x)) / (\text{Max}(x) - \text{Min}(x))$$

4

After features are assorted into the groups for one of three dimensions (categories), the score of these dimensions are calculated by, first, summing up the weighted values of the features in the groups and, second, summing up the groups' values in the framework of each dimension. This score are multiplied by 100, so the maximum value is 100.

$$\text{Indicator group} = \sum \text{weighted individual feature}$$

$$\text{Dimension} = (\sum \text{weighted indicator subgroups}) \times 100$$

5

The Longevity Governance Index score is calculated with a multiplicative equation where each of the dimensions (category) is treated equally:

$$\text{Longevity Governance Index} = (\text{Demography})\% + (\text{Ecology})\% + (\text{Economy})\% + (\text{Government Care})\% + (\text{Health})\% + (\text{Society})\%$$

Longevity Governance Index: Objective and Methodology (2/4)

Longevity Governance Index								
Demography				Ecology			Society	
Population Dynamics	Population Ageing	Retirement	Pension System Index	Environment and Infrastructure	Temperature Conditions	Climate Change Resilience	Social Development	
Total Population	Population ages 0-14 (% of total population)	Age Watch Index	System Overall index value	People using safely managed sanitation services (% of population)	Dew Point, °C	CCPI - Climate Change Performance Index	Democracy Index	Global Gender Gap
Net Migration								
Population Growth Rate (%)	Population Over 65 (%)	Normal Retirement Age Women (old est)	Adequacy	People using safely managed drinking water services(% of urban population)	Relative Humidity	Average yearly temperature	Human Development Index, 2019	
Total Fertility Rate (per woman)	Age Dependency Ratio	Normal Retirement Age Men	Sustainability	Ambient Air Pollution, Concentration of Fine Particulate Matter PM2.5 (Ug/M3)	Sunshine	Climate related disasters frequency	Corruption Perceptions Index 2021	
Crude Birth Rate (per 1,000 people)								
Crude Death Rate (per 1,000 people)	Age Dependency Ratio, Old	Social Pension in US\$	Integrity	Ambient and Household Air Pollution Attributable Death Rate (per 100 ,000 Population)	Diurnal Temperature Variation, °C		Human Development Index Score, CAGR (6 years)	
Population Density, Number of People/km2		Benefit in PPP\$			Daily Mean Air Temperature, °C		Education Index	
Urban Population (% of total)		Number of WHO Age Friendly Cities and Communities						

Longevity Governance Index: Objective and Methodology (3/4)

Longevity Governance Index								
Economy				Government Care				
Economic Development	Public Finance	Economic Performance	GDP & Income CAGR	Healthcare System	Immunisation coverage	Healthcare Development Trend	Healthcare Policies	International Health Regulations Monitoring Framework
Inclusive Development Index	Ease of access to loans, 1-7 (best)	GDP per Capita (Current US\$)	GDP (per Capita), CAGR (6 years)	Current National Power Conflict Intensity	Physical exposure to epidemics	Country class by income group	Government Healthcare Policy	International Health Regulations
Global Competitiveness Index	GCI 4.0: Budget transparency	Adjusted savings: net national savings (% of GNI)	Adjusted Savings: Net National Savings (% of GNI), CAGR (6 years)	Current Subnational Conflict Intensity	COVID Related Cases per 100,000	GDP (current US\$)		
Venture capital availability	Financial services meeting business needs, 1-7 (best)	Net ODA Received (% of GNI)	Income Gini Coefficient, CAGR (6 years)	Current Highly Violent Conflict Intensity Score	COVID Related Fatalities per 100,000	GDP per capita, PPP (current international \$)		
Unemployment Rate, %	Financial Market Development	Income Gini Coefficient		Conflict Related Fatalities per 100,000		Unemployment, total (% of total labour force)		
	GCI 4.0: Pillar 9: Financial system							

Longevity Governance Index: Objective and Methodology (4/4)

Longevity Governance Index				
Health Status				
Life expectancy	Health and Wellness		Mental Health	
Both sexes HALE	Prevalence of HIV	Prevalence of Undernourishment	Mental Hospitals (per 100,000 Population)	Prevalence - Depressive disorders
Male HALE	Cigarette consumption	Prevalence of Insufficient physical activity among adults	Mental Health Units in General Hospitals (per 100,000 Population)	Prevalence - Anxiety disorders
Female HALE	Alcohol consumption		Mental Health Outpatient Facilities (per 100,000 Population)	DALYs - Mental Disorders
Both Sexes Life Expectancy	Incidence of tuberculosis per 100,000 per year		Deaths - Self-harm	
Male Life Expectancy	Prevalence of overweight		Prevalence - Mental disorders	
Female Life Expectancy				

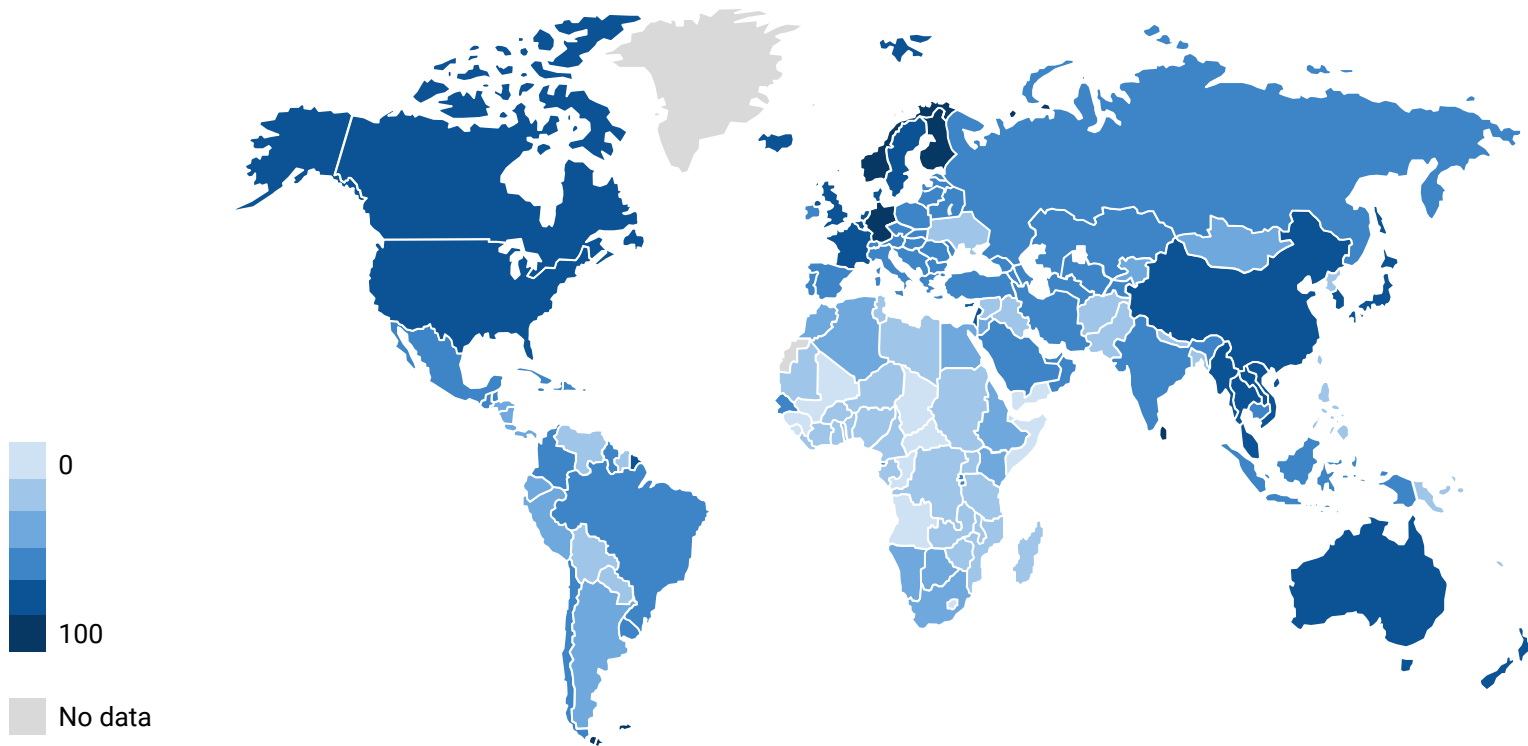


Longevity Governance Index

World Map and Rankings

Longevity Governance Index by Overall Score

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



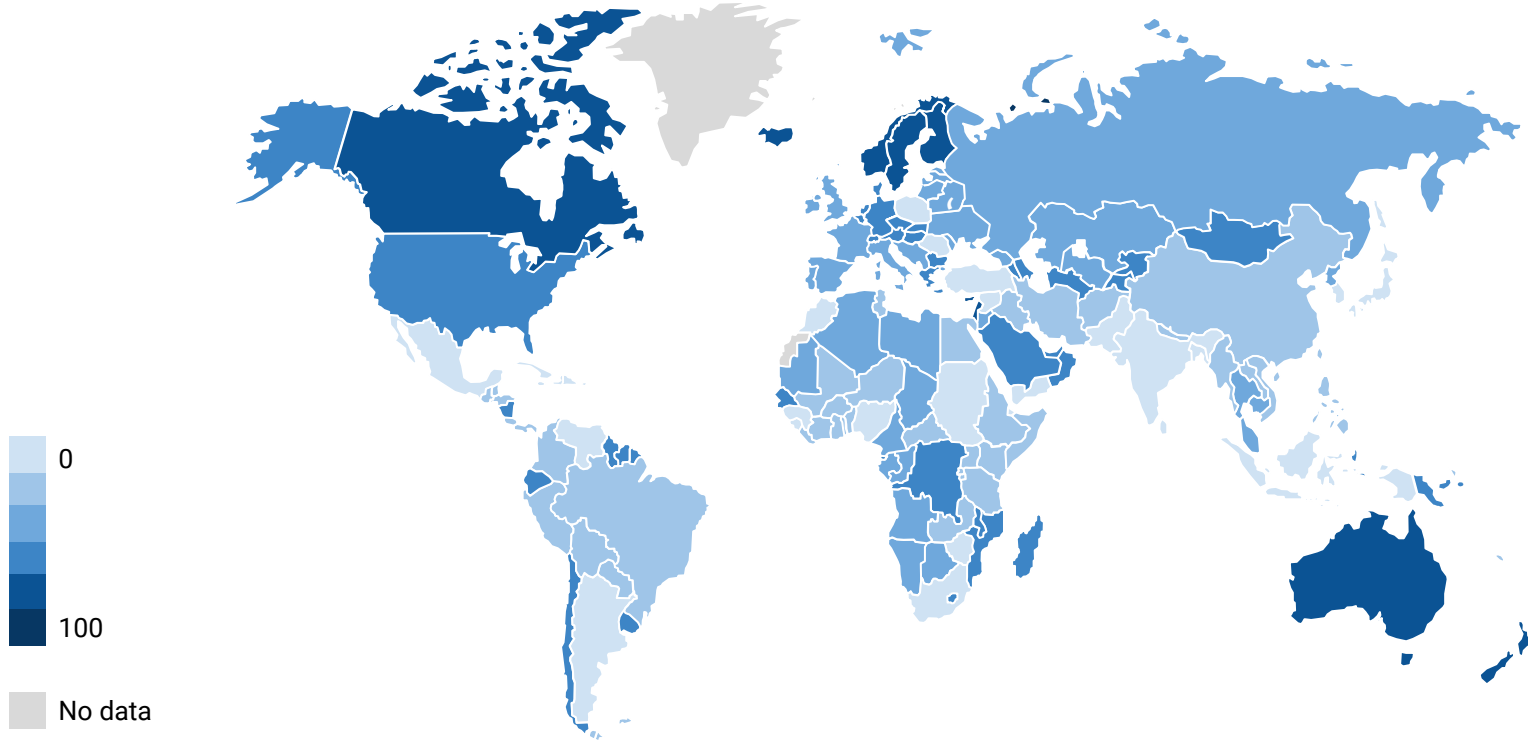
Longevity Governance Index: Overall Ranking - Top 50 Countries

Singapore	79.12
Denmark	78.38
Norway	78.10
Switzerland	76.89
Israel	76.27
Finland	76.19
Japan	75.28
Australia	75.01
Germany	74.99
Hong Kong	74.78
Sweden	74.58
Netherlands	74.54
Canada	74.09
United Kingdom	73.78
USA	72.57
Iceland	72.48
UAE	72.05
New Zealand	71.99
France	71.13
Belgium	70.80
Republic of Korea	70.77
Luxembourg	70.55
Ireland	70.13
Qatar	69.49
Spain	68.97

Czech Republic	68.63
Malta	68.57
Chile	68.52
Malaysia	68.32
Portugal	68.06
Estonia	67.91
Thailand	67.68
Slovenia	67.65
Austria	66.74
Lithuania	66.35
China	66.31
Bahrain	65.31
Kuwait	65.12
Italy	65.10
Slovakia	65.00
Oman	64.24
Panama	64.14
Poland	63.94
Uruguay	63.50
Belarus	63.16
Costa Rica	63.14
Azerbaijan	62.86
Hungary	62.58
Armenia	62.28
Colombia	61.98

Longevity Governance Index by Demography

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



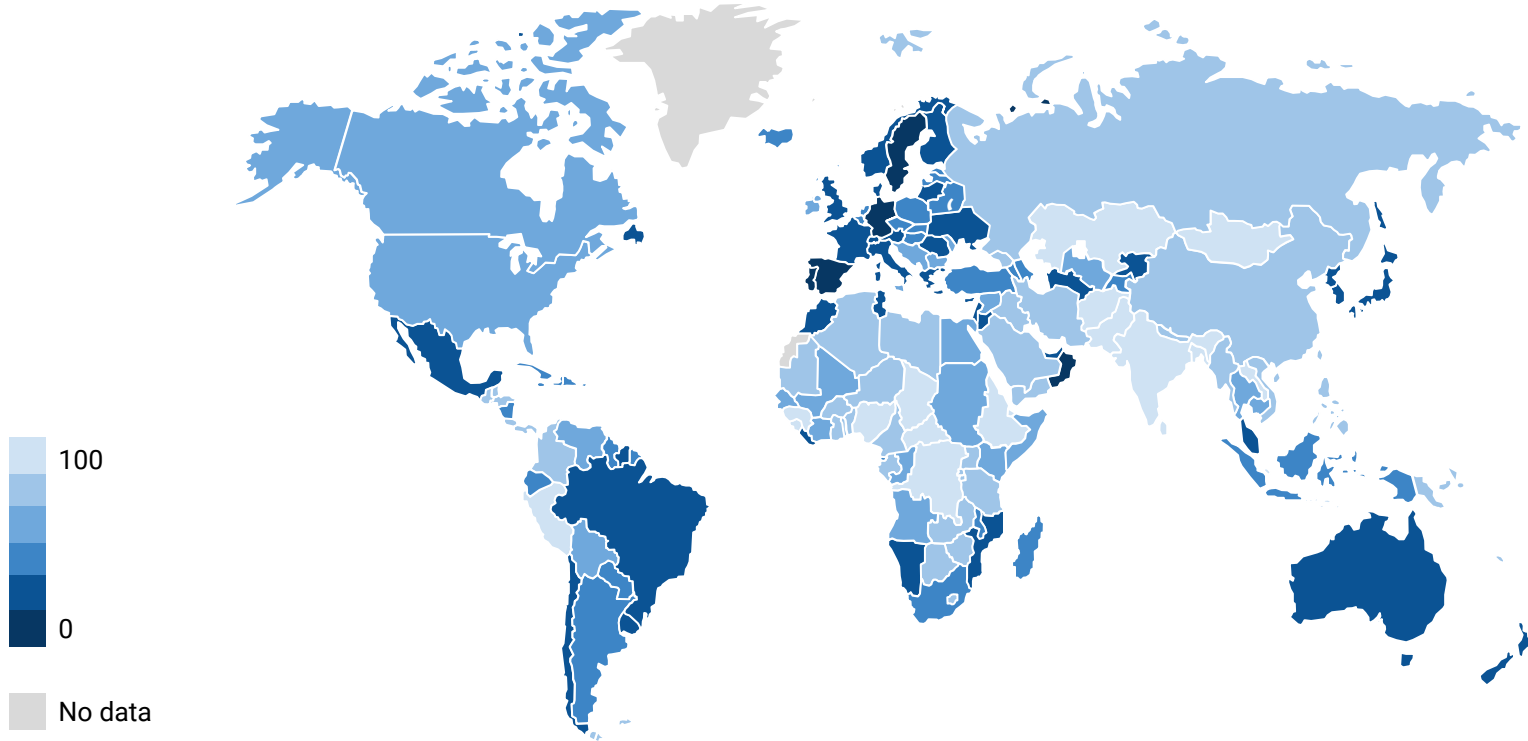
Longevity Governance Index: Demography Ranking - Top 50

Netherlands	78.12
Iceland	73.88
Denmark	73.05
Norway	69.35
Luxembourg	69.30
Australia	69.08
Israel	66.81
Finland	65.21
Sweden	65.09
Ireland	62.43
Switzerland	61.53
New Zealand	61.39
Canada	60.57
Singapore	59.89
Belgium	59.44
Germany	58.16
Chile	56.72
Seychelles	54.34
Qatar	54.33
USA	54.14
Bahrain	53.97
Kuwait	53.41
Cyprus	53.25
Oman	53.17
Czech Republic	53.16

United Kingdom	53.63
Brunei	53.10
Malta	52.59
Bahamas	52.43
Portugal	52.18
Equatorial Guinea	52.16
Libya	51.94
Gabon	51.81
Slovenia	51.74
Spain	51.65
Bhutan	51.48
France	51.42
Slovakia	51.39
Montenegro	51.14
Estonia	51.10
Sao Tome and Principe	50.94
Costa Rica	50.82
Mongolia	50.70
Botswana	50.63
Madagascar	50.60
Uruguay	50.43
Djibouti	50.41
Solomon Islands	50.40
UAE	50.31
Cape Verde	50.31

Longevity Governance Index by Ecology

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



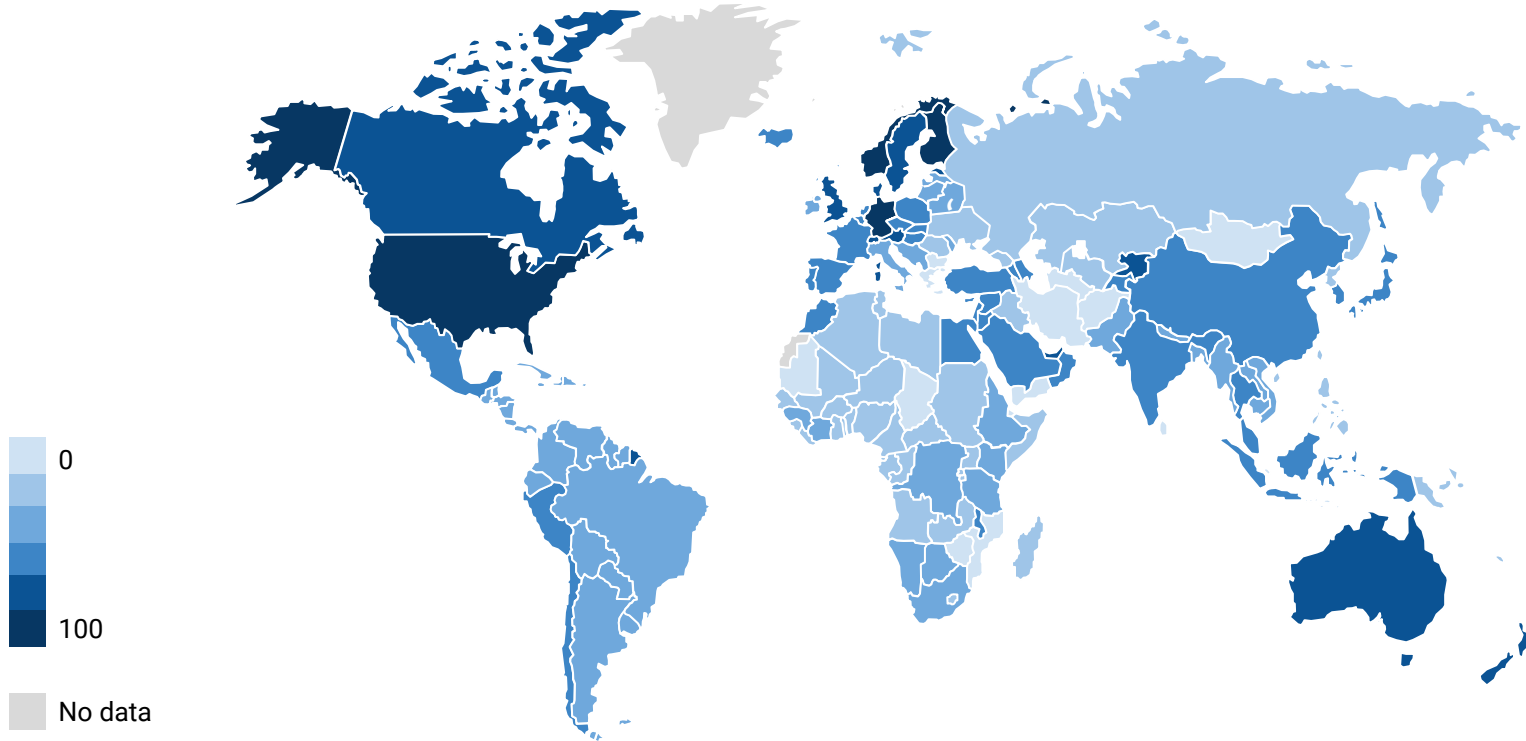
Longevity Governance Index: Ecology Ranking - Top 50

Singapore	82.86
Malta	82.03
Spain	81.96
UAE	81.88
Portugal	81.32
Denmark	81.24
Hong Kong	81.02
Israel	80.89
Greece	80.08
United Kingdom	79.44
Sweden	79.00
Germany	78.83
Oman	78.55
Bahamas	78.18
Cyprus	78.06
Switzerland	77.52
Maldives	77.43
Chile	77.34
Luxembourg	77.32
Italy	77.13
Australia	76.76
Lithuania	76.76
Japan	76.50
Sri Lanka	76.30
Kuwait	76.21

France	76.07
Austria	75.89
Turkmenistan	75.49
Netherlands	75.45
Jordan	75.13
Qatar	75.09
New Zealand	75.09
Dominican Republic	74.67
Finland	74.57
Brazil	74.53
Bahrain	74.32
Tunisia	74.26
Malaysia	74.21
Panama	73.92
Uruguay	73.78
Fiji	73.57
Kyrgyzstan	73.42
Namibia	73.41
Morocco	73.38
Ukraine	73.15
Romania	73.11
Estonia	73.09
Liberia	73.03
Norway	73.01
Republic of Korea	72.99

Longevity Governance Index by Economy

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



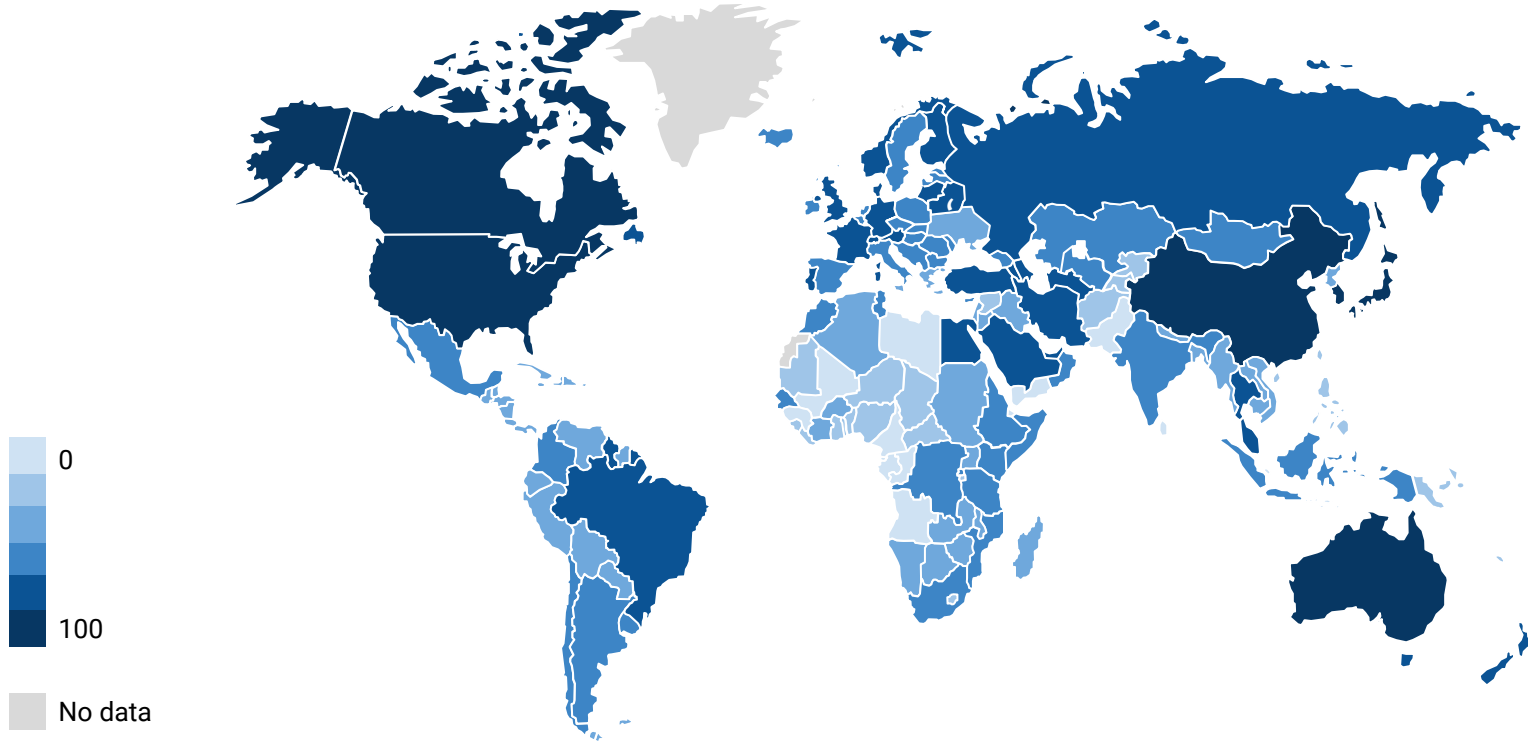
Longevity Governance Index: Economy Ranking - Top 50

Singapore	84.57
Switzerland	80.30
USA	80.01
Norway	79.45
Finland	78.97
Sweden	78.03
New Zealand	76.73
Luxembourg	76.39
Germany	76.35
Hong Kong	74.95
Netherlands	73.92
Israel	72.66
United Kingdom	72.57
Denmark	72.54
Australia	72.47
Canada	71.38
Qatar	71.26
UAE	70.73
Japan	70.18
Belgium	69.98
Austria	67.56
Malaysia	67.20
Iceland	66.84
Ireland	66.41
France	66.30

Estonia	66.23
Czech Republic	65.41
Republic of Korea	65.37
Thailand	64.32
Bahrain	63.36
China	63.02
Chile	62.74
Malta	61.45
Slovakia	61.26
India	60.64
Indonesia	60.51
Kuwait	59.82
Poland	59.50
Hungary	58.81
Lithuania	58.69
Panama	58.52
Spain	58.42
Slovenia	58.11
Guatemala	57.70
Oman	57.39
Azerbaijan	57.13
Peru	56.58
Mauritius	56.20
Mexico	55.87
Vietnam	55.81

Longevity Governance Index by Government Care

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



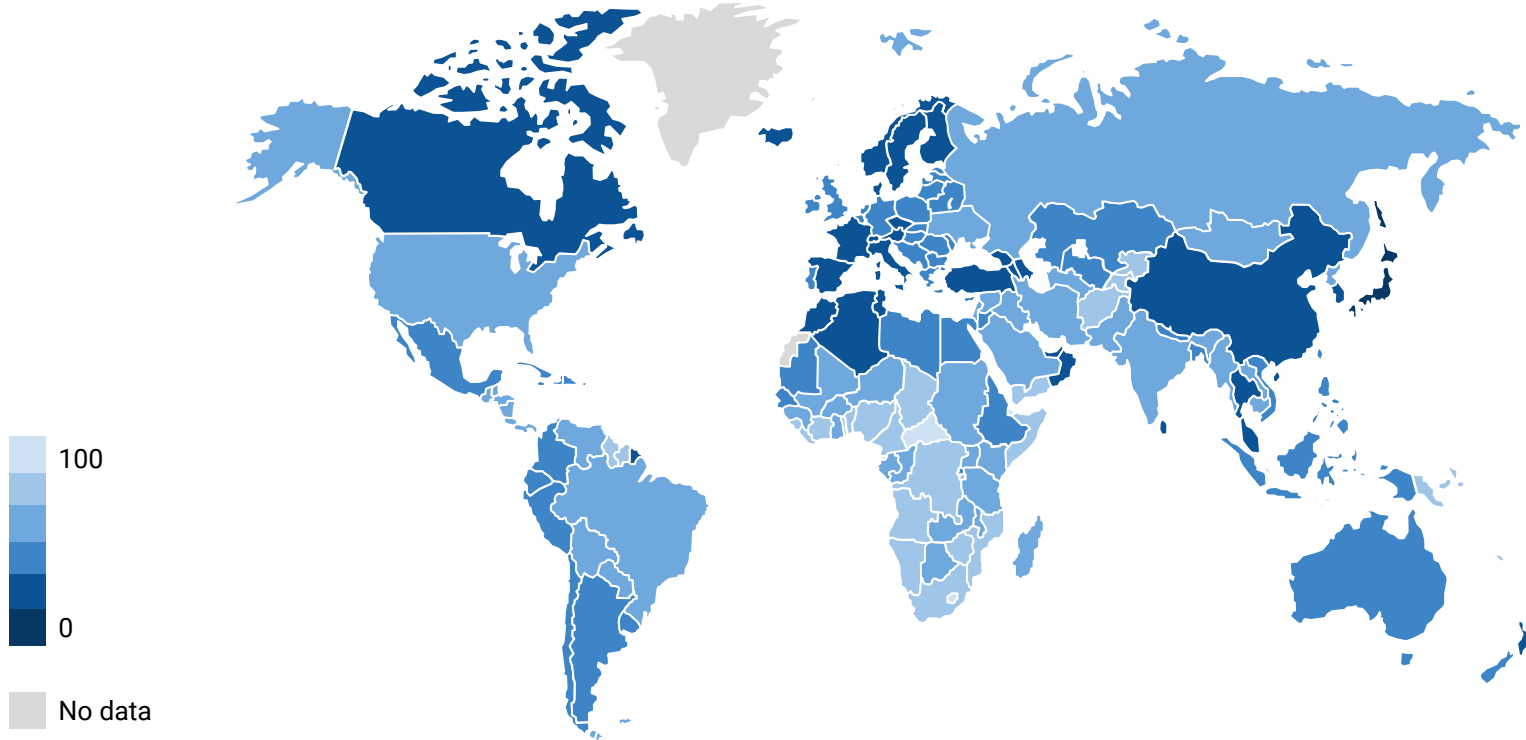
Longevity Governance Index: Government Care Ranking - Top 50

Denmark	85.84
UAE	85.50
Canada	84.98
USA	84.66
Norway	83.95
Japan	83.94
Singapore	83.27
Australia	83.04
United Kingdom	82.95
China	82.56
Israel	82.30
Republic of Korea	82.29
Switzerland	81.20
Germany	80.94
Thailand	80.34
Portugal	79.64
Belarus	79.53
France	79.49
Iran	78.57
Russia	78.27
Hong Kong	77.67
Saudi Arabia	77.34
Qatar	77.28
Finland	77.20
Lithuania	76.33

Malaysia	76.26
Brazil	76.04
Spain	75.21
Guyana	74.68
Turkey	74.52
Kuwait	74.28
Slovenia	74.26
Czech Republic	73.58
Belgium	73.45
Turkmenistan	73.33
Netherlands	72.98
Italy	72.69
Armenia	72.53
Azerbaijan	72.48
Chile	72.31
Egypt	72.16
Bahrain	72.15
El Salvador	72.04
India	71.69
Ireland	71.58
Morocco	71.49
Malta	71.23
Mexico	71.15
Oman	70.83
Kazakhstan	70.71

Longevity Governance Index by Health Status

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



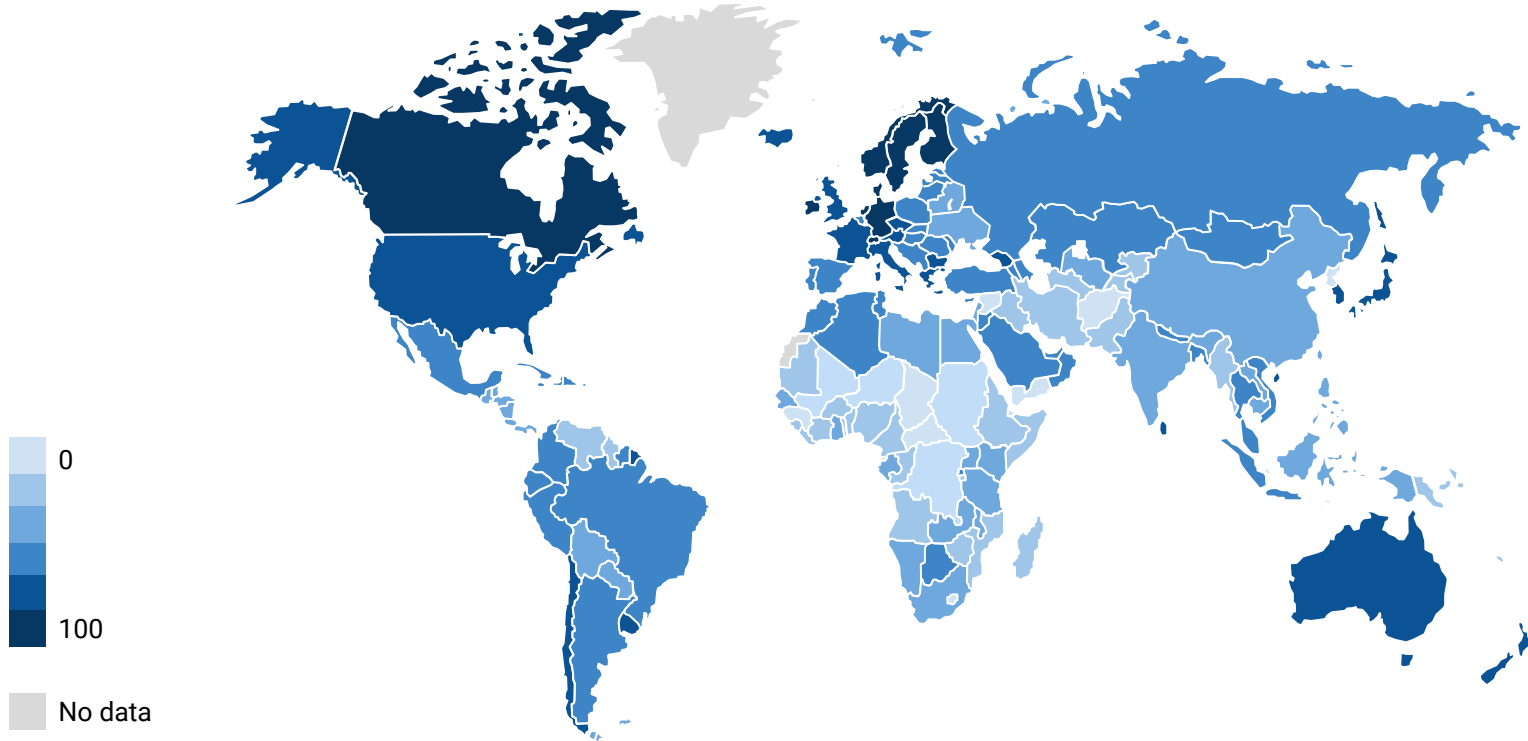
Longevity Governance Index: Health Status Ranking - Top 50

Japan	84.74
Hong Kong	79.67
Republic of Korea	77.25
Singapore	77.25
Iceland	76.43
Israel	75.26
Maldives	74.72
Denmark	74.30
Finland	73.77
Sweden	73.10
Italy	73.08
Norway	72.89
China	72.79
Slovenia	72.38
Sri Lanka	71.83
Albania	71.75
Switzerland	71.70
Luxembourg	71.64
Costa Rica	71.48
Estonia	71.46
Czech Republic	71.03
Canada	70.96
Malta	70.92
Netherlands	70.92
Spain	70.82

Panama	70.40
France	70.40
Belgium	70.29
Austria	70.24
Thailand	70.06
Croatia	69.88
Bosnia and Herzegovina	69.84
Seychelles	69.74
Colombia	69.66
Cyprus	69.59
Vietnam	69.47
Chile	69.02
Australia	68.94
Turkey	68.91
Germany	68.84
Brunei	68.79
Hungary	68.76
Poland	68.74
Ireland	68.63
Greece	68.49
United Kingdom	68.48
Armenia	68.47
Slovakia	68.44
Barbados	68.43
Peru	68.20

Longevity Governance Index by Society

The **Longevity Governance Index** was constructed to measure the Longevity Governance development across 186 chosen countries. The Index ranges from 0 to 100 where the value closer to 0 shows lack of Longevity Governance development in the country and the value closer to 100 shows a more secure state with public policy initiatives on Longevity present.



Longevity Governance Index: Society Ranking - Top 50

Norway	88.11
Finland	86.46
Switzerland	85.96
Sweden	85.65
New Zealand	85.64
Iceland	84.71
Germany	84.24
Denmark	84.07
Ireland	83.39
Netherlands	83.22
Luxembourg	82.13
Canada	81.84
United Kingdom	80.33
Austria	79.11
Australia	78.90
Japan	78.04
Estonia	76.96
USA	76.75
Singapore	76.75
France	76.69
Belgium	76.64
Hong Kong	75.65
Israel	75.64
Republic of Korea	75.27
Slovenia	74.54

Lithuania	73.75
Spain	73.59
Uruguay	72.26
Latvia	72.09
Czech Republic	72.09
Cyprus	72.01
Malta	71.60
Chile	71.58
Portugal	71.24
Italy	71.24
Poland	69.68
Greece	68.77
Costa Rica	68.72
Slovakia	68.46
Bahamas	68.23
Barbados	66.88
Brunei	66.51
Mauritius	66.43
UAE	66.16
Seychelles	65.70
Croatia	65.44
Hungary	64.65
Malaysia	64.55
Antigua and Barbuda	64.20
Botswana	63.65

Longevity Governance Index

Appendix

Longevity Governance Index Framework

Demography		
Indicator groups	Features	Description
Population Dynamics	Total Population	Based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are mid-year estimates.
	Net Migration	The net total of migrants during the period, that is, the total number of immigrants less the annual number of emigrants, including both citizens and noncitizens. Data are 5-year estimates.
	Population Growth Rate (%)	The annual average rate of change of population size for a given country, territory, or geographic area during a the specified period.
	Total Fertility Rate (per Woman)	A measure of the fertility of an imaginary woman who passes through her reproductive life subject to all the age-specific fertility rates for ages 15-49 that were recorded for a given population in a given year.
	Crude Birth Rate (per 1,000 People)	Indicates the number of live births per 1,000 mid-year population.
	Crude Death Rate (per 1,000 People)	The crude death rate is calculated as the number of deaths in a given period divided by the population exposed to risk of death in that period.
	Population Density	The number of people living in an area per square kilometre.
	Urban Population (% of Total)	Urban population refers to people living in urban areas as defined by national statistical offices.
Population ageing	Population ages 0-14 (% of total population)	Population between the ages 0 to 14 as a percentage of the total population. Population is based on the de facto definition of population.
	Population over 65 (%)	Population over the age 65 as a percentage of the total population.
	Age Dependency Ratio	The ratio of the number of people older than 64 relative to the number of people in the working-age population (15-64 years). Data are shown as the number of dependents per 100 working-age population.

Longevity Governance Index Framework

Demography		
Indicator groups	Features	Description
Population Ageing	Age Dependency Ratio, Old	The ratio of the number of people older than 64 relative to the number of people in the working-age population (15-64 years). Data are shown as the number of dependents per 100 working-age population.
Retirement	Age Watch Index	The Global AgeWatch Index ranks countries by how well their older populations are faring.
	Normal Retirement Age Women (old est)	The age when you can retire and draw full Social Security benefits, based on a full career after labour market for women.
	Normal Retirement Age Men	The age when you can retire and draw full Social Security benefits, based on a full career after labour market for men.
	Social pension in US\$	Stream of payments from state to an individual that starts when someone retires and continues in payment until death.
	Benefit in PPP\$	Shows how much the benefit is worth in US\$ PPP. It is calculated by dividing the amount of the benefit in local currency the the PPP\$ conversion rate (local currency, current prices).
Pension System Index	System Overall index value	The Mercer CFA Institute Global Pension Index uses three subindices: adequacy, sustainability, and integrity – to measure each retirement income system against more than 50 indicators.
	Adequacy	Subindex represents the benefits that are being provided together with some important system design features.
	Sustainability	Has a focus on the future and measures various indicators which will influence the likelihood that the current system is able to provide benefits in the future.
	Integrity	Subindex includes many legislative requirements that influence the overall governance and operations of the system that affect the level of confidence that citizens have in their system.

Longevity Governance Index Framework

Ecology

Indicator groups	Features	Description
Environment and Infrastructure	People using safely managed sanitation services (% of population)	The percentage of people using improved sanitation facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite.
	People using safely managed drinking water services, urban (% of urban population)	The percentage of population using an improved drinking water source.
	Ambient Air Pollution, Concentration of Fine Particulate Matter PM2.5 (Ug/M3)	Concentration of Fine Particulate matter PM2.5 measured in 3,000 cities (µg/m3)
	Ambient and Household Air Pollution Attributable Death Rate (per 100,000 Population)	Mortality rate attributed to ambient and household air pollution.
Temperature Conditions	Relative Humidity, %	Relative humidity (RH) is a measure of how much water vapour is in a water-air mixture compared to the maximum amount possible.
	Dew Point, °C	The dew point is the temperature to which air must be cooled to become saturated with water vapour, assuming constant air pressure and water content.
	Sunshine	Sunshine duration is usually expressed in hours per year, or in (average) hours per day.
	Diurnal Temperature Variation, °C	The variation between a high air temperature and a low temperature that occurs during the same day.
	Daily Mean Air Temperature, °C	The variation between a high air temperature and a low temperature that occurs during the same day.
Climate Change Resilience	Climate Change Performance Index (CCPI)	The CCPI aims to enhance transparency in international climate politics and it enables comparison of individual countries' climate protection efforts and progress.
	Average Yearly Temperature	Average yearly temperature is calculated by averaging the minimum and maximum daily temperatures in the country.
	Climate-related Disasters Frequency	The links between climate change and natural disasters are well documented in a wide variety of climate change literature.

Longevity Governance Index Framework

Society

Indicator groups	Features	Description
Social Development	Democracy Index	The index attempts to measure the state of democracy in 167 countries and territories, of which 166 are sovereign states and 164 are UN member states.
	Human Development Index, 2019	Summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalised indices for each of the three dimensions.
	Corruption Perceptions Index 2021	The 2021 CPI, published in January 2022, currently ranks 180 countries 'on a scale from 100 (very clean) to 0 (highly corrupt)' based on the situation between 1 May 2020 and 30 April 2021.
	Human Development Index Score, CAGR (6 years)	Compound Annual Growth Rate of the Human Development Index for 6 years.
	Education Index	Component of the Human Development Index
	Global Gender Gap	The Global Gender Gap Index examines the gap between men and women in four fundamental categories (subindexes) and 14 different indicators that compose them. The subindexes are Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment.

Economy

Economic Development	Inclusive Development Index	Annual assessment of 103 countries' economic performance that measures how countries perform on 11 dimensions of economic progress in addition to GDP.
	Global Competitiveness Index	Assesses the competitiveness landscape of 137 economies, providing unique insight into the drivers of their productivity and prosperity.
	Venture Capital Availability	Demonstrates how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = extremely difficult; 7 = extremely easy].
	Unemployment Rate, %	Unemployment refers to the share of the labour force that is without work but available for and seeking employment.

Longevity Governance Index Framework

Economy		
Indicator groups	Features	Description
Public Finance	Ease of access to loans, 1-7 (best)	Assesses how easy is it to obtain a bank loan with only a good business plan and no collateral.
	GCI 4.0: Budget transparency	This indicator assesses on a scale of 0 to 100 [most transparent] the extent to which governments publish data related to budget and spending.
	Financial services meeting business needs, 1-7 (best)	The annual average rate of change of population size, for a given country, territory, or geographic area, during a specified period.
	Financial Market Development	Assesses the level of financial market development.
	GCI 4.0: Pillar 9: Financial system	Financial system development indicator of the Global Competitiveness Index.
Economic Performance	GDP per Capita (Current US\$)	GDP per capita is gross domestic product divided by mid-year population.
	Adjusted Savings: Net National Savings (% of GNI)	Net national savings are equal to gross national savings less the value of consumption of fixed capital.
	Net ODA Received (% of GNI)	Net official development assistance (ODA) as a % of GNI
	Income Gini Coefficient	The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality.
GDP & Income CAGR	GDP (per Capita), CAGR (6 years)	Compound annual growth rate of GDP (per capita) for the last 6 years
	Adjusted Savings: Net National Savings (% of GNI), CAGR (6 years)	Compound annual growth rate of adjusted savings (Net National Savings (% of GNI) for the last 6 years
	Income Gini Coefficient, CAGR (6 years)	Compound annual growth rate of Income Gini Coefficient for the last 6 years (the latest data available depending on country)

Longevity Governance Index Framework

Government Care

Indicator groups	Features	Description
Healthcare System	HAQ (The Healthcare Access and Quality Index)	The Index is measured on a scale from 0 (worst) to 100 (best) based on death rates from 32 causes of death that could be avoided by timely and effective medical care (also known as 'amenable mortality').
	Current Health Expenditure per Capita (Current US\$)	Current expenditures on health per capita in current US dollars. Estimates of current health expenditures include healthcare goods and services consumed during each year.
	Current health expenditure (% of GDP)	Level of current health expenditure expressed as a percentage of GDP. Estimates of current health expenditures include healthcare goods and services consumed during each year. This indicator does not include capital health expenditures, such as buildings, machinery, IT, and stocks of vaccines for emergency or outbreaks.
	Domestic Private Health Expenditure (% of Current Health Expenditure)	Share of current health expenditures funded from domestic private sources. Domestic private sources include funds from households, corporations and nonprofit organisations. Such expenditures can be either prepaid to voluntary health insurance or paid directly to healthcare providers.
	Out-of-Pocket Expenditure (% of Current Health Expenditure)	Share of out-of-pocket payments of total current health expenditures. Out-of-pocket payments are spending on health directly out-of-pocket by households.
	Gross expenditure on R&D (GERD), % of GDP	Total domestic intramural expenditure on Research and Development activities (R&D)
	Risk of Catastrophic Expenditure for Surgical Care (% of People at Risk)	The proportion of population at risk of catastrophic expenditure when surgical care is required. Catastrophic expenditure is defined as direct out-of-pocket payments for surgical and anaesthesia care exceeding 10% of total income.
Immunisation Coverage	BCG Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received one dose of bacilli Calmette-Guérin/ Population aged under 12 months
	Diphtheria Tetanus Toxoid and Pertussis (DTP3) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received three doses of the combined diphtheria, tetanus toxoid, and pertussis vaccine/ Population aged under 12 months
	Hepatitis B (HepB3) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received three doses of hepatitis B vaccine/ Population aged under 12 months

Longevity Governance Index Framework

Government Care

Indicator groups	Features	Description
Immunisation Coverage	Hib (Hib3) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received three doses of Haemophilus influenzae type B vaccine/ Population aged under 12 months
	Measles-Containing-Vaccine First-Dose (MCV1) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received at least one dose of measles-containing vaccine/ Population aged under 12 months
	Measles-Containing-Vaccine Second-Dose (MCV2) Immunisation Coverage by the Recommended Age(%)	Number of people who have received the second dose of Measles-Containing-Vaccine/ Population (total number)
	Pneumococcal Conjugate Vaccines (PCV3) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received three doses of pneumococcal conjugate vaccine/ Population aged under 12 months
	Polio (Pol3) Immunisation Coverage among 1-Year-Olds (%)	Number of 1-year-olds who have received three doses of polio vaccine/ Population aged under 12 months
Healthcare Development Trend	Current Health Expenditure per Capita (Current US\$), CAGR (6 years)	The crude death rate is calculated as the number of deaths in a given period divided by the population exposed to risk of death in that period.
	Current Health Care Expenditure (as % of GDP), CAGR (6 years)	The number of people living in an area per square kilometre
	Domestic Private Health Expenditure (% of Current Health Expenditure), CAGR (6 years)	Urban population refers to people living in urban areas as defined by national statistical offices.
	Out-of-Pocket Expenditure (% of Current Health Expenditure), CAGR (6 years)	Population between the ages 0 to 14 as a percentage of the total population. Population is based on the de facto definition of population.
Healthcare Policies	Existence of healthcare policies on a variety of public health issues	Availability of healthcare policies on a variety of public health issues.
International Health Regulations (IHR) Monitoring Framework	Under the IHR (2005) all states parties are required to have or to develop minimum public health capacities to implement the IHR effectively.	Assesses the level of development of public health facilities to implement the IHR effectively.

Longevity Governance Index Framework

Health Status		
Indicator groups	Features	Description
Life Expectancy	Both Sexes HALE	Healthy life expectancies of both sexes
	Male HALE	Healthy life expectancy (male)
	Female HALE	Healthy life expectancy (female)
	Both Sexes Life Expectancy	Life expectancy of both sexes
	Male Life Expectancy	Male Life Expectancy
	Female Life Expectancy	Female Life Expectancy
Health and Wellness	Prevalence of HIV (%)	Population between the ages 0 to 14 as a percentage of the total population. Population is based on the de facto definition of population.
	Annual Cigarette Consumption per Capita	Population over the age 65 as a percentage of the total population.
	Alcohol Consumption per Capita (Litres of Pure Alcohol)	The ratio of the number of people older than 64 relative to the number of people in the working-age population (15-64 years). Data are shown as the number of dependents per 100 working-age population.
	Incidence of Tuberculosis (per 100,000 Population per year)	Amount of cases of tuberculosis per 100,000 population per year.
	Prevalence of Overweight among Adults, BMI ≥ 25 (Age-Standardized Estimate) (%)	Percent of defined population attaining less than 150 minutes of moderate-intensity physical activity per week, or less than 75 minutes of vigorous-intensity physical activity per week, or equivalent.
Mental Health	Mental Hospitals (per 100,000 Population)	Amount of mental hospitals (per 100,000 Population)
	Mental Health Units in General Hospitals (per 100,000 Population)	Amount of Mental Health Units in General Hospitals (per 100,000 Population)
	Mental Health Outpatient Facilities (per 100,000 Population)	Amount of Mental Health Outpatient Facilities (per 100,000 Population)
	Deaths - Self-harm	Share of death incidences caused by self-harm
	Prevalence - Mental disorders	Share of population with any mental health; this includes depression, anxiety, bipolar, eating disorders, etc.

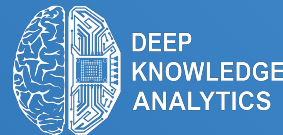
Longevity Governance Index Framework

Demography

Indicator groups	Features	Description
	Prevalence - Depressive disorders	Share of population suffering from depressive disorders
	Prevalence - Anxiety disorders	Share of population suffering from anxiety disorders
	DALYs - Mental disorders	The global disability-adjusted life-years attributed to mental disorders

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