NATIONAL LONGEVITY DEVELOPMENT PLANS: GLOBAL OVERVIEW 2019 (*First Edition*)

National Longevity Development Plans

Global Landscape Overview 2019: First Edition

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Executive Summary

Report Purpose and Scope

The present report delivers a comprehensive international overview of the projects, initiatives and efforts that different countries across the globe are making in order to combat the issues associated with ageing populations and to promote the extension and maintenance of their citizens' Healthy Longevity.

It offers comprehensive profiles of relevant initiatives in the UK, Israel, the Netherlands, Switzerland, Spain, Singapore, Hong Kong, South Korea, Japan, China, the USA and the European Union, and utilizes analytical metrics to compare the overall strength, focus, proactivity and relevance of their projects to the problems of an ageing population and the opportunity of Healthy Longevity.

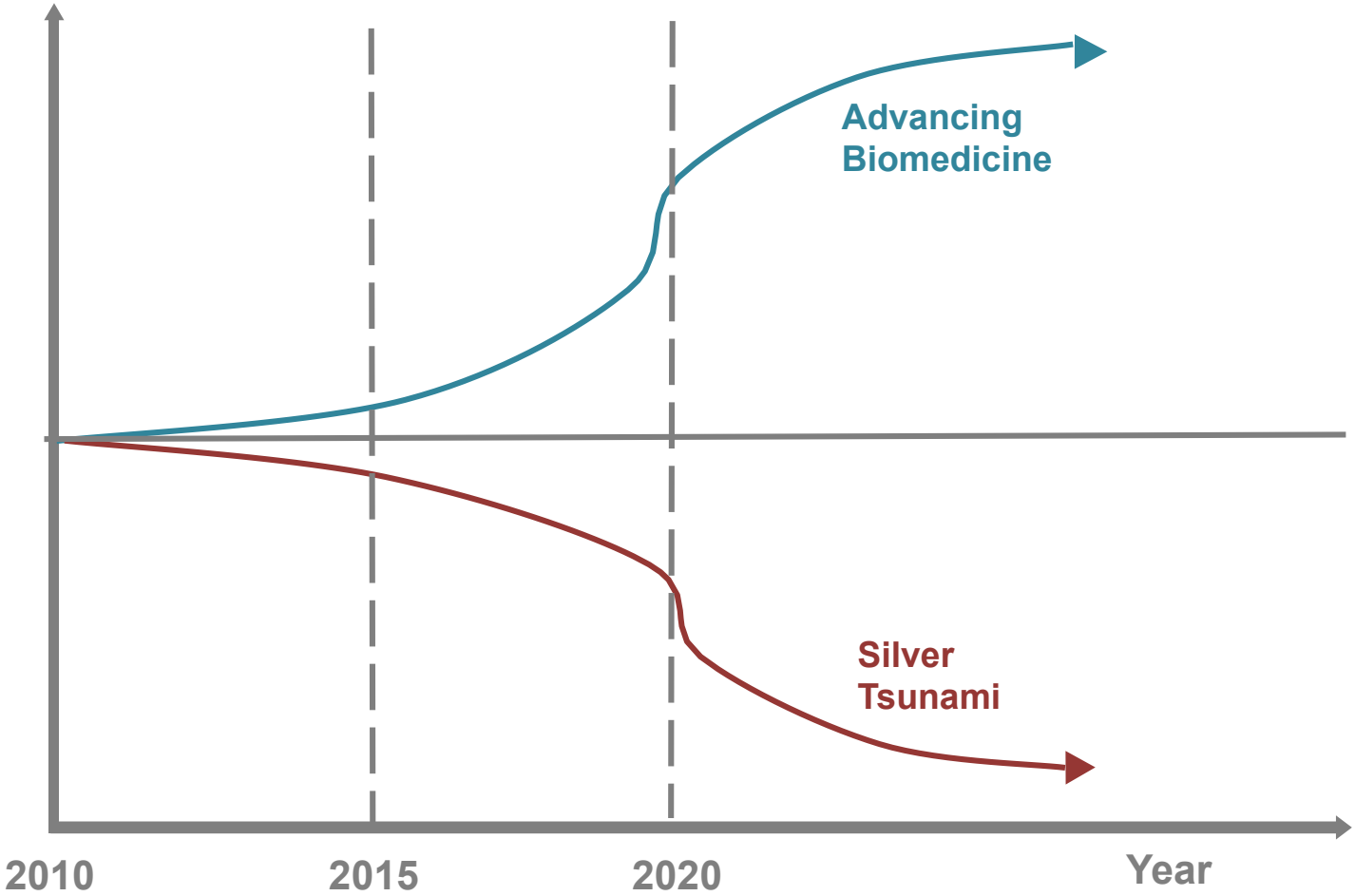
Notably, the report finds that the United Kingdom comes out in the #1 position according to this proprietary comparative analysis, validating the conclusion (highlighted in Aging Analytics Agency's previous UK-focused regional case studies) that the nation is in position to become a leader in Healthy Longevity, and to deliver tangible benefits to its citizens through the prioritization of Healthy Longevity as a key component of it's national strategic agenda, such as increases in its nationwide Health-Adjusted Life Expectancy (HALE) and a reduction in the economic burden posed by its ageing population.

The report also examines how the nation could most successfully build upon its existing efforts in this direction, such as its listing of the 'Ageing Population' as one of its four core Industrial Grand Challenges, and the allocation of £300 million to promote industry efforts focused on securing the nation's position as the world leader in Healthy Longevity. While this leadership potential was arguably apparent even prior to the production of this report, the novel analytical approaches used in assessing the strength of various nations' Longevity development initiatives validate this notion quantitatively for the first time.

Furthermore, the report identifies important next steps that the UK government can execute in order to translate its efforts into tangible deliverables like increased healthy life expectancy and a thriving Longevity financial industry.

Silver Tsunami

The present moment in history is marked by the looming collision of two opposed megatrends: advances in biomedicine with the potential to target the fundamental mechanisms of ageing at their source, with the potential to increase Healthy Longevity, and rapidly ageing population, also known as the “Silver Tsunami”, which threatens to pose massive economic burden through increased healthcare costs combined with a shrinking workforce.



Globally, the amount of over 65s is projected to almost double over the next 20 years, from around 600 million to more than one billion. This is fundamentally down to a simple combination of increasing life expectancy and decreasing fertility rates. Most reactions tend to be bleak - growing proportion of dependents rely on a shrinking working population.

This leads to slower growth, exorbital pension costs, and overall buckling of economy under the weight of growing social and health care demands. This global demographic shift is known colloquially as the ‘silver tsunami.’

Scope and Diversity of Government Initiatives

In recent years we have been seeing increasingly frequent references to the 'ageing society' in official government initiatives around the world. At every layer of government planning, ranging from ad hoc projects such as municipal plans to grand industrial strategies, the ageing society is cited as a challenge to be overcome.

Different governments offer a myriad of ad hoc solutions for adapting to the demographic crisis.

We have seen **Lifestyle and Fitness Programs** such as Japan's plans for an Ageless Society, whereby people aged 65 or older will not be automatically regarded as seniors but will be encouraged to stay healthy and work, remaining economically active.

We have seen **AgeTech** programs, such as the Singapore Government's initiatives focused on smart-homes to improve elderly quality of life and wellbeing, and increasing their digital literacy.

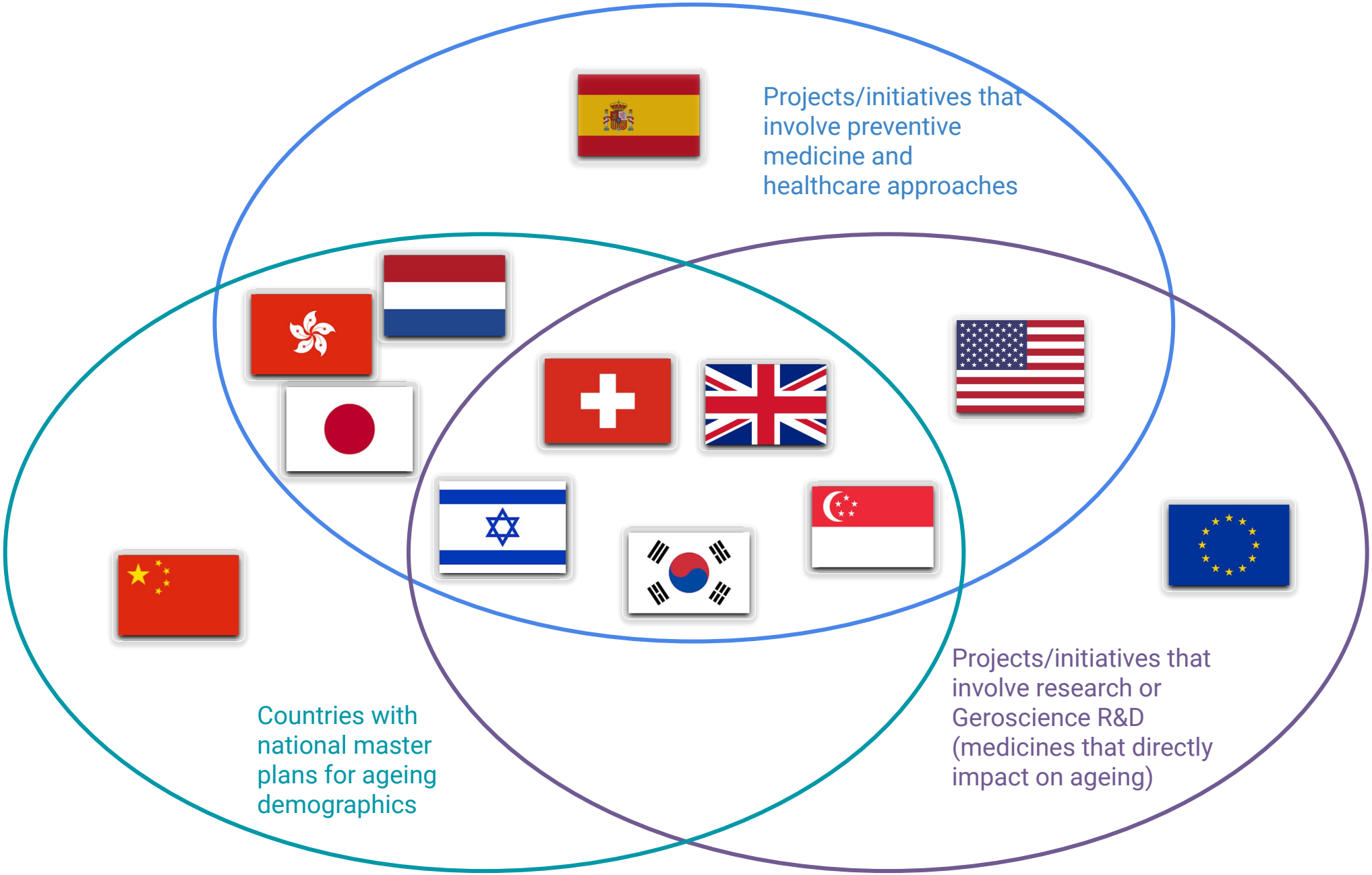
We have seen **residential master plans**, such as the Seoul metropolitan government's "2020 Master Plan for the Aged Society" embracing the vision of Seoul as "a city whose citizens enjoy healthy and active lives of up to 100 years" under the banner of an "age-friendly city".

We have seen initiatives for a **preventive medicine** approaches to ageing, such as the UK's genomic medicine service and Swiss Personalised Health Network.

We have seen initiatives for intervening even further upstream, in the biology of ageing itself, with **geroscience** initiatives such as the Netherlands' Deltaplan for Dementia and Switzerland's Masterplan for the Promotion of Biomedical Research, and BIRAX Ageing, the joint UK-Israeli geroscience research initiative.

We have even seen **financial innovations** such as the Swiss City of St Gallen's elderly bank, where retired volunteers "deposit" hours worked looking after elderly people (and in return can use any time saved up for their own care provision later in life).

Longevity Initiatives Classification Framework

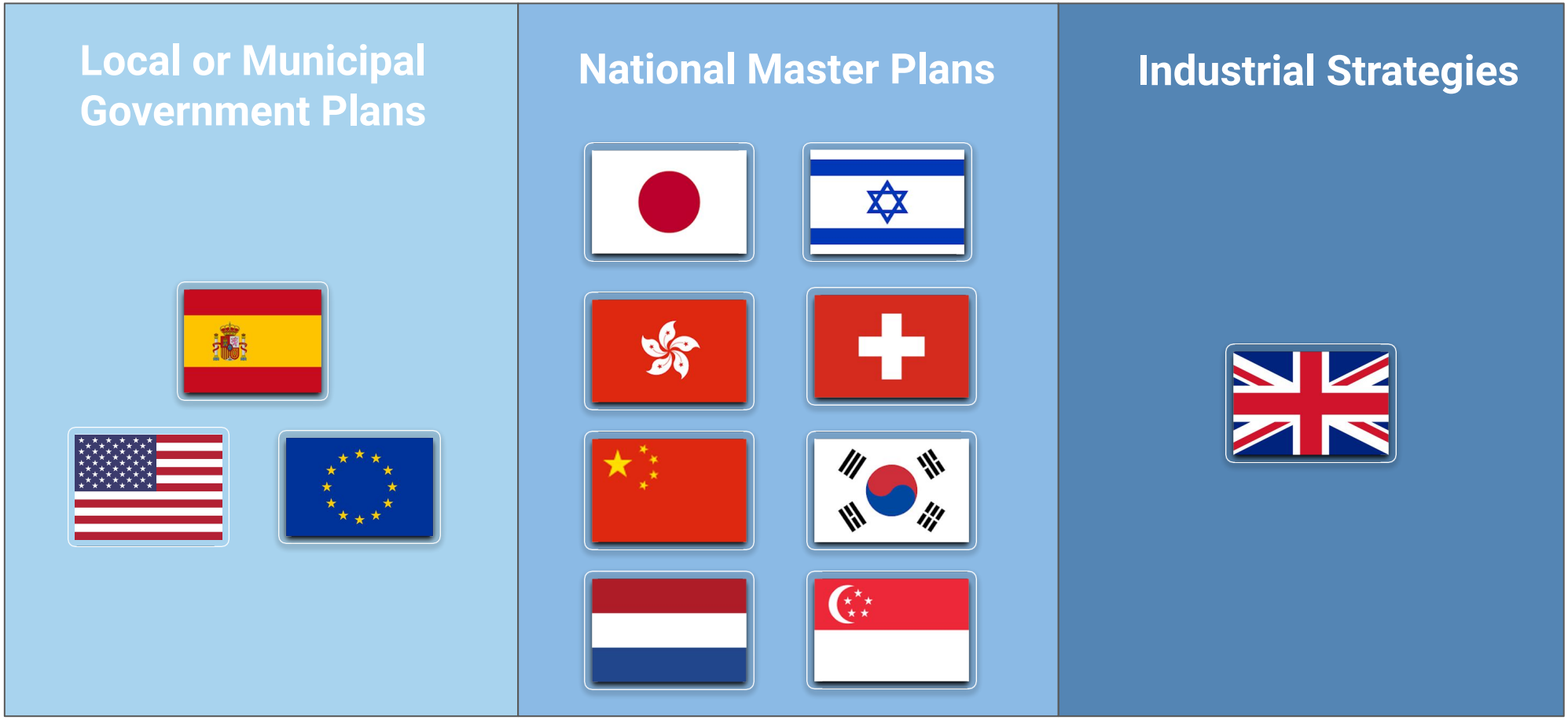


Ranking Countries on the Strength, Scope and Relevance of their Government Longevity-Related Projects and Initiatives

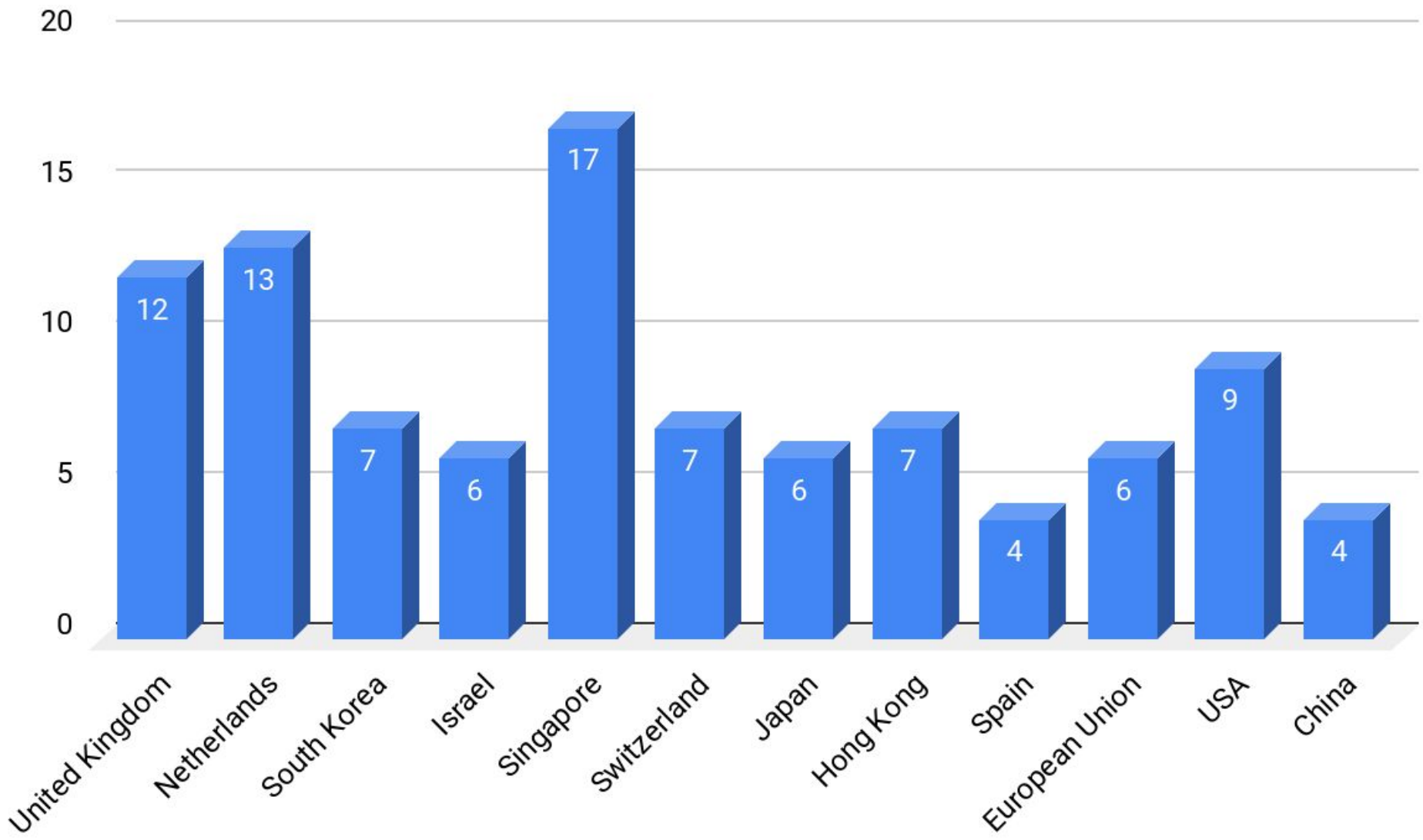
POSITION	COUNTRY	COUNTRY SCORE
1	United Kingdom	5.29
2	Netherlands	4.36
3	Singapore	4.15
4	South Korea	4.00
5	Israel	3.94
6	Switzerland	3.93
7	Hong Kong	3.41
8	Japan	3.10
9	USA	3.07
10	Spain	1.94
11	European Union	1.88
12	China	1.85

Scale and Scope of Government Longevity Development Plans

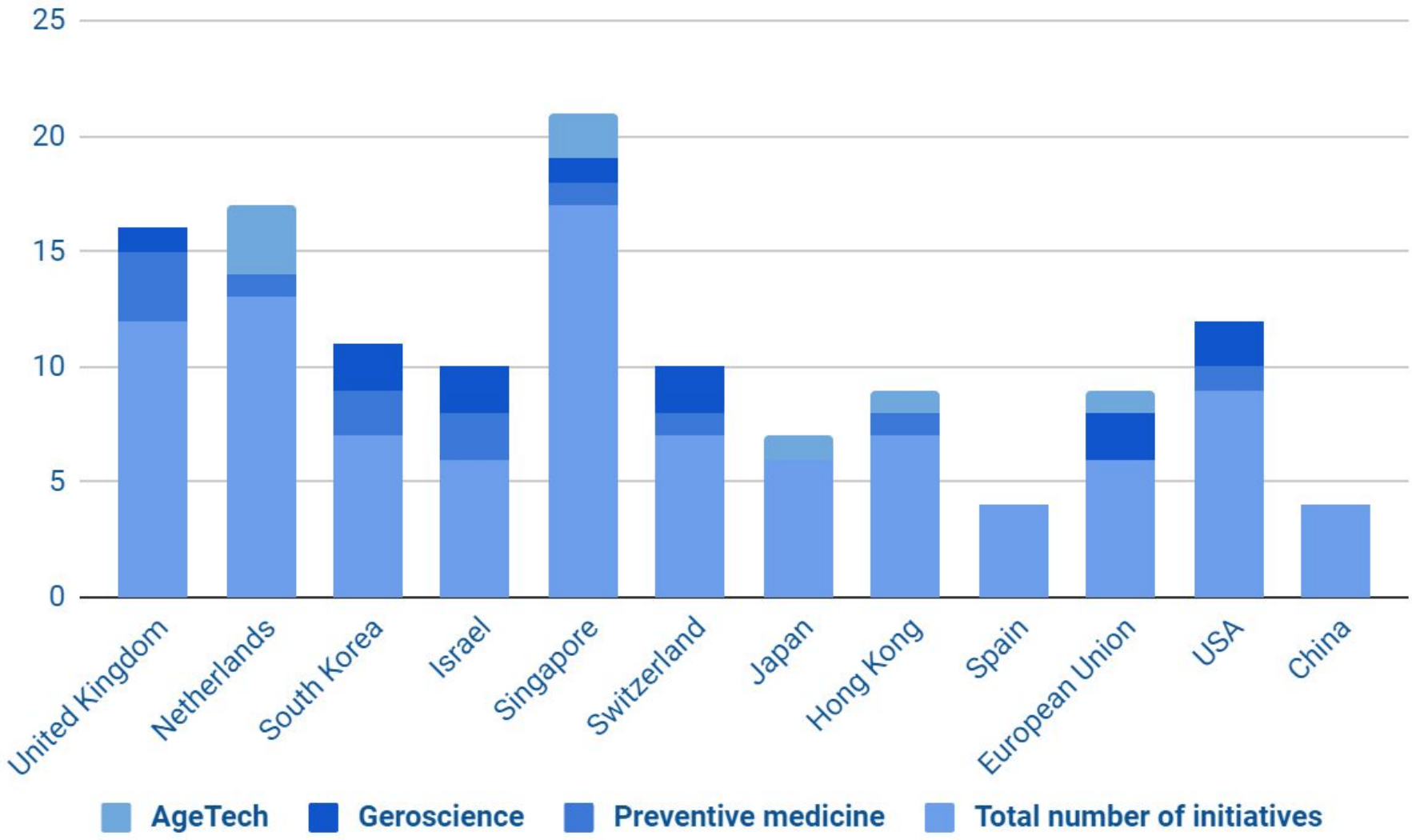
Some government programs are more integrated than others, some showing more leadership than others in the industrialization of longevity. In this respect, the examples in this document fall into 3 main categories: **independent or municipal programs,** one plan per project (ad hoc) or per city**, national or metropolitan master plans** which bring together multiple sectors of government, and **industrial strategies** which include the use of research and development in pursuit of future economic dividends of Longevity. The next step is the **Longevity Industry Strategy**.



Total Number of Government Led Longevity Initiatives



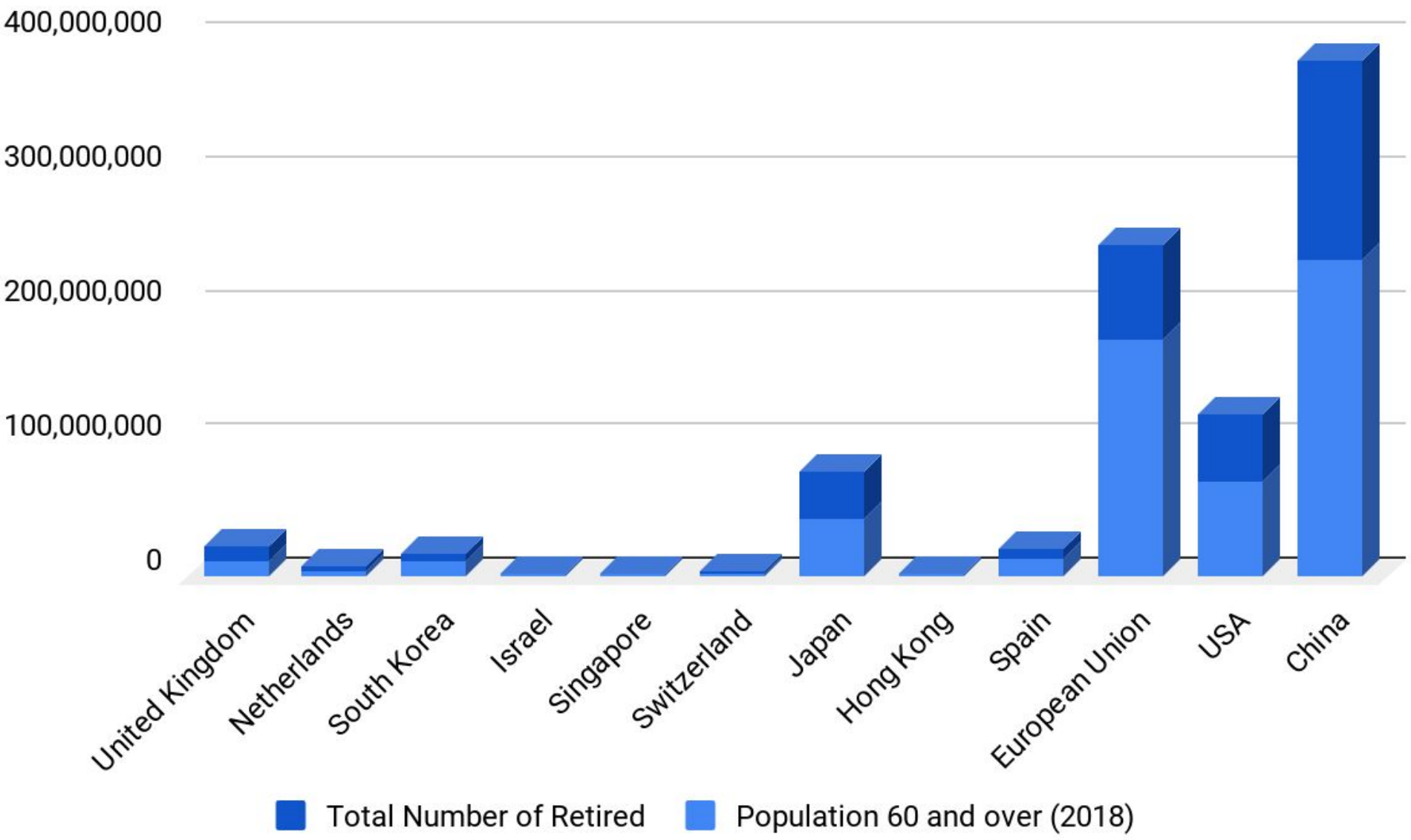
Specialized Government Led Longevity Initiatives



There are presented total number of the relevant initiatives in the UK, the Netherlands, South Korea, Israel, Singapore, Switzerland, Japan, Hong Kong, Spain, the European Union, the USA and China.

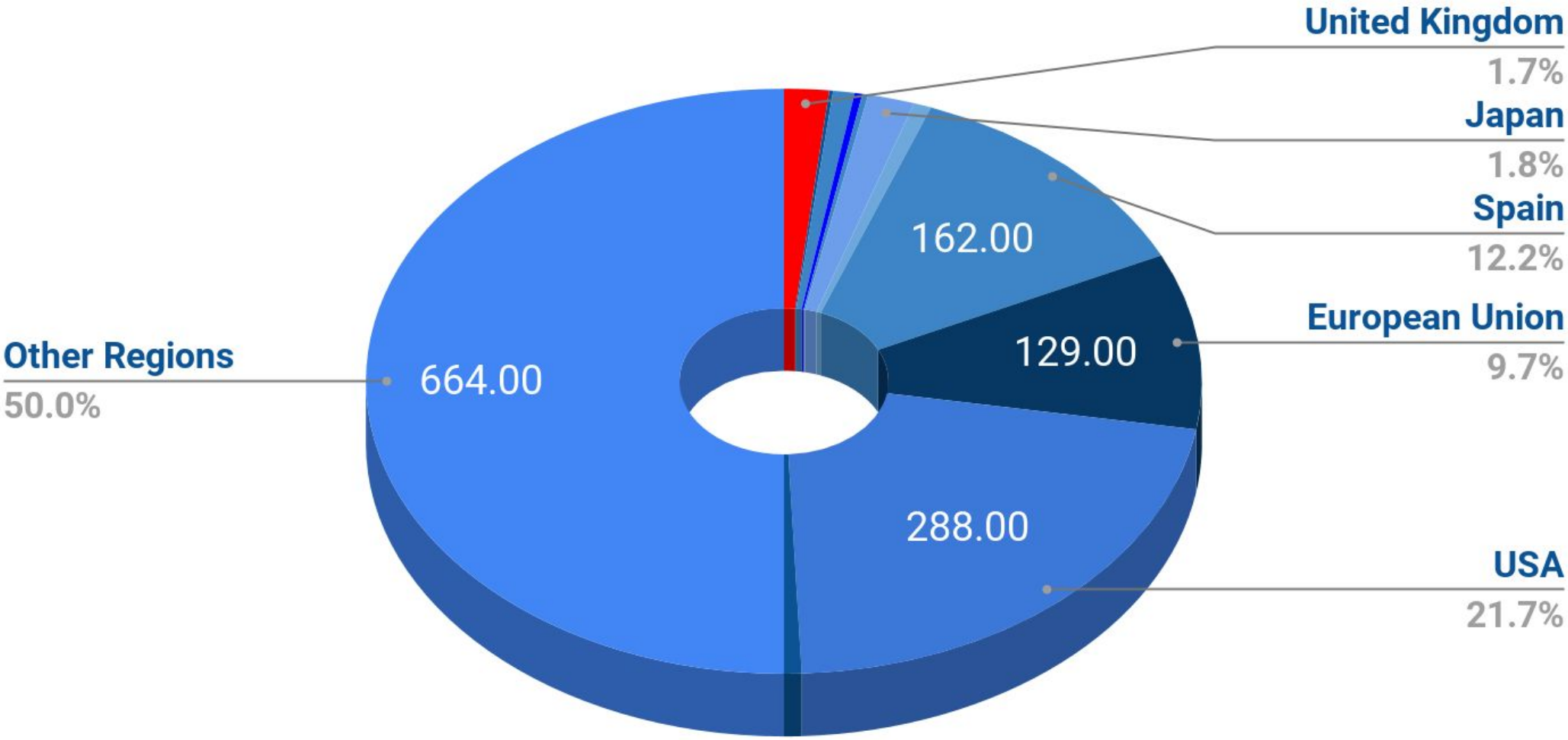
Population 60 and Over (2018) and Total Number of Retired

(millions)



Number of Age Friendly Cities and Communities

Total number - 847 age friendly cities



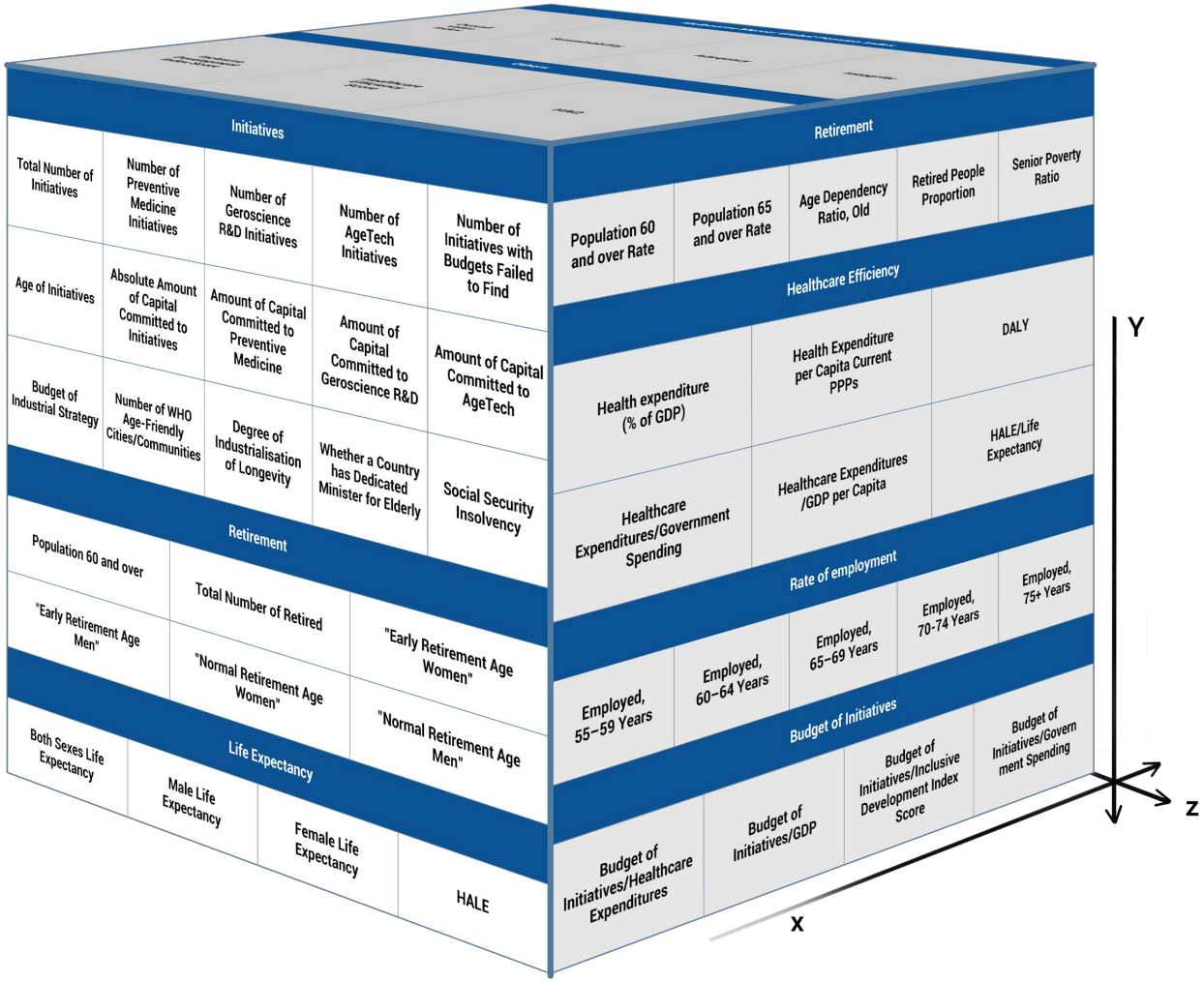
This diagram represents the countries with the biggest number of WHO Age-Friendly cities. The number of cities for the European Union does not include countries mentioned in this report.

We can see these diverse instances of government initiatives cropping up around the world in response to the looming tsunami. Each such initiative covered in this document involves at least one of the four key technological components which Aging Analytics Agency has identified in previous reports as comprising a Longevity Industry: **Geroscience Research and Development, Preventive Medicine, AgeTech,** and **Novel Financial Systems.**

Only through a dedicated, synergetic focus on all four of these domains at once can the global population be escorted to a longer and healthier life, and Healthy Longevity made into an asset. In other words, withstanding the global silver tsunami requires a coordinated strategy for advancing all four technological strands in synergy, with a heavy focus on novel financial reform to combat the economic burden of ageing population, and on furthering progress in advanced biomedicine to maximize Healthy Longevity. Unfortunately, no such nation-level Longevity development strategy exists. But we see the rudiments of it in the UK's existing initiatives, which lay a good foundation for the development of such a plan, having taken several crucial early steps:

- The UK has recognized an "ageing society" as one of its 4 core industrial grand challenges, and allocated £300 million to overcome this challenge, out of which goes £98 towards "Healthy Ageing Industrial Strategy Challenge Fund."
- This £98 million will drive the development of new products and services which will help people to live in their homes for longer, tackle loneliness, and increase independence and wellbeing.
- The UK has allocated £210 million towards "Data to early diagnosis and precision medicine programme."
- The Centers of Excellence in Genomic Science (CEGS) program, which aims to develop novel and innovative genomic research projects using the data sets and technologies developed by the Human Genome Project.
- Innovate UK's Digitalisation of Medicines Manufacturing Challenge Fund.
- In June 2018 Theresa May announced a commitment to harness AI to provide five more years of healthy independent lives by 2035.

Government Longevity Related Projects and Initiatives Analytical 3-Dimensional Framework



Overall, there are 6 levels of proprietary metrics which differ based on the nature of the parameters they consist of.

Indicators, their growth rates and their ratios are calculated separately and then integrated in the final metrics system.

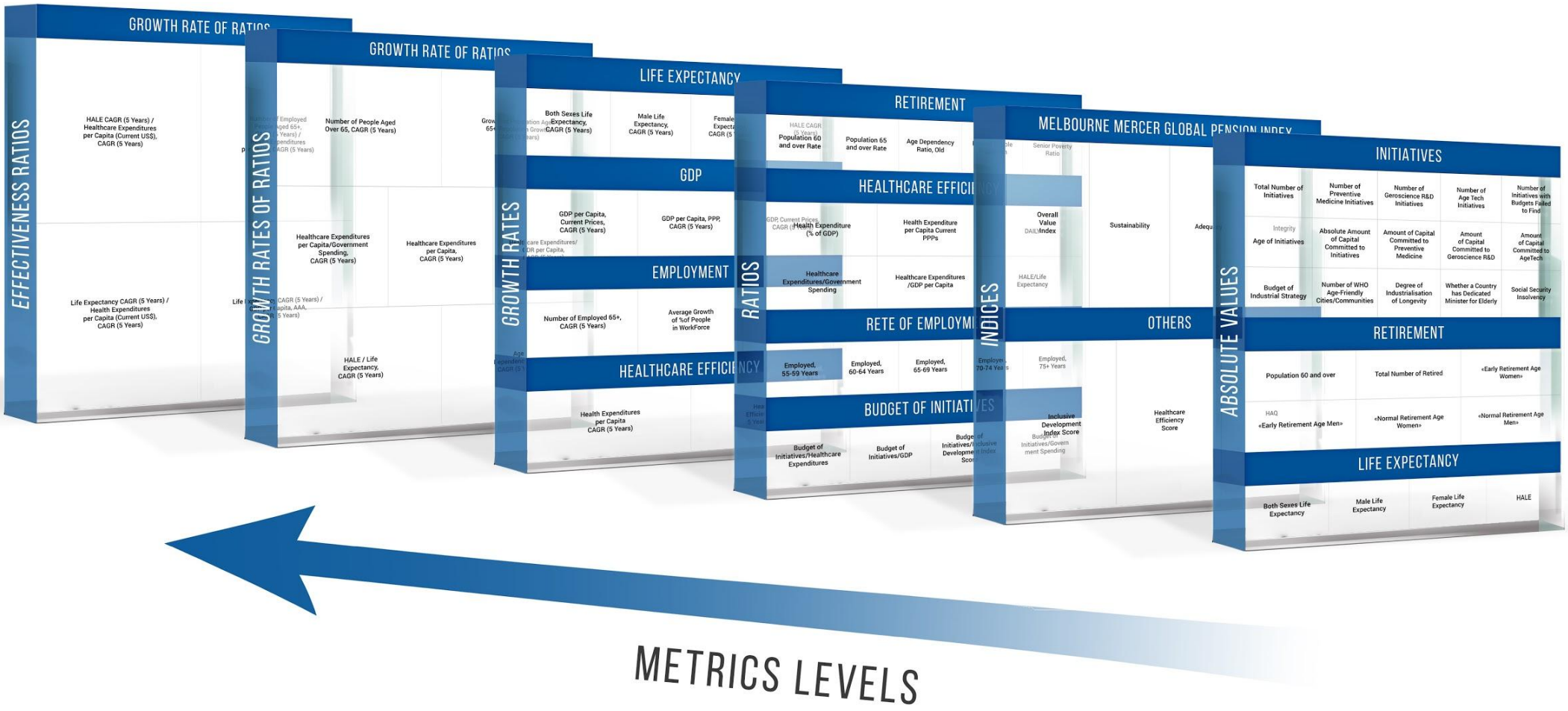
The whole of the metrics can also be subdivided into 2 categories based on the logic of the parameters, namely:

- Indicators of potential (or lack thereof);
- Indicators of actual success (or lack thereof).

Thus, the ranking system reflects both strengths and opportunities of different countries regarding the development of national longevity strategies. It can be applied for the evaluation of the current state of a country, as well as of its prospects.

Some metrics indicators are directly interconnected since the ratios are derived from single values which are parameters themselves.

Government Longevity Related Projects and Initiatives Analytical Framework



Reviewing these initiatives, we can see that The United Kingdom has already turned its attention to cross-sector collaboration, particularly between artificial intelligence and healthcare. There has also been a general recognition of the central role of technology, and financial technology in particular, in improving the lives of the elderly.

However, there is no explicit intention of directing these agendas toward improving Healthy Longevity as a metric in itself yet. If the UK Government wants to optimise its existing initiatives for solving the ageing population problem, it must create a veritable Industry of Healthy Longevity itself, which in turn requires:

- A greater focus on promoting biomedical innovations focused on extending Healthy Longevity, and on financial reform to neutralize economic risks posed by an ageing society.

- A greater focus on combining these technologies in order to meet strategic goals. For example, it is not clear how much the UK government knows about the impact of its own biomedical initiatives on the 'ageing society' grand challenge.

Existing efforts must be extended to create a framework for **changing the deficit model of the 'Ageing Society' to an asset model around 'Longevity'.** And to be bold with a national strategy to harness the 'Longevity Dividend' to benefit all people in the society. In other words, we need a fully integrated **Longevity National Development Plan.** This requires intelligent coordination, which, in the British political tradition, means a governing body equivalent to the UK's recently created Office for AI.

Development of a Blueprint and Framework for a Government-led National Longevity Development Strategy is one of the core aims of the recently established All-Party Parliamentary Group on Longevity and its secretariat company, Longevity International UK.

Government Longevity National Development Plans: Analytic Framework Metrics

The metrics used in this report's proprietary analysis are divided into 6 levels, according to their complexity and importance:

1st level – **absolute values** – primary values of analysed parameters, both economic and health-related;
2nd level – **indexes** – includes Inclusive Development Index (IDI), Healthcare Indexes and Melbourne Mercer Global Pension Index.
3rd level – **ratios** – includes ratios in 4 main categories: Retirement, Healthcare efficiency, Life Expectancy and Budget of initiatives;
4th level – **growth rate of the values**– calculated compound annual growth rates of five to six years for the used indexes;
5th level - **growth rate of ratios** - compound annual growth rates of Ageing Population, Healthy Life Expectancy and Healthcare Expenditures;
6th level - **effectiveness ratios** - ratios that use growth rates of parameters to analyse cost-effectiveness of expenditures on healthcare.

You can review this framework in a bigger scale by this link - [Aging Analytics Agency Approach and Methodology.]

AGING ANALYTICS AGENCY

Initiatives	Retirement	Life Expectancy	Melbourne Mercer Global Pension Index	Others	Retirement	Healthcare Efficiency	Rate of employment	Budget of Initiatives	Healthcare Efficiency	GDP	Employment	Life Expectancy	Growth Rate of Ratios	Effectiveness ratios
Total Number of Initiatives													Age Dependency Ratio, CAGR (5 Years)	
Number of Preventive Medicine Initiatives	Normal Retirement Age Men					HALE/Life Expectancy							HALE / Life Expectancy, CAGR (5 Years)	
Number of AgeTech Initiatives	Normal Retirement Age Women				Senior Poverty Ratio	DALY	Employed, 75+ Years						Healthcare Expenditure / GDP per Capita, CAGR (5 Years)	
Number of Initiatives with Closed Budgets	Early Retirement Age Men	HALE	Integrity		Retired People Proportion	Healthcare Expenditure /GDP per Capita	Employed, 70-74 Years	Budget of Initiatives/ Government Spending				HALE CAGR (5 Years)	Healthcare Expenditure per Capita, CAGR (5 Years)	Life Expectancy CAGR (5 Years)/GDP per Capita, AAA, CAGR (5 Years)
Degree of Industrialisation of Longevity	Early Retirement Age Women	Female Life Expectancy	Adequacy	HAQ	Age Dependency Ratio, Old	Healthcare Expenditure/Government Spending	Employed, 65–69 Years	Budget of Initiatives/GDP		GDP, Current Prices, CAGR (5 Years)	Rate of Population Aging (65+ Years)	Female Life Expectancy, CAGR (5 Years)	Healthcare Expenditure per Capita / Government Spending, CAGR (5 Years)	Life Expectancy CAGR (5 Years) / Health Expenditure per Capita (Current US$), CAGR (5 Years)
Age of Initiatives	Total Number of Retired	Male Life Expectancy	Sustainability	Inclusive Development Index Score	Population 65 and over Rate	Health Expenditure per Capita Current PPPs	Employed, 60–64 Years	Budget of Initiatives/ Inclusive Development Index Score	Healthcare Efficiency Score, 5 Years Growth	GDP per Capita, PPP, CAGR (5 Years)	Average Growth of % of People in Workforce	Male Life Expectancy, CAGR (5 Years)	Growth of Population Aged 65+ / Population Growth, CAGR (5 Years)	Employed People Aged 65+, CAGR (5 Years) / Health Expenditure per Capita, CAGR (5 Years)
Social Security Insolvency	Population 60 and Over	Both Sexes Life Expectancy	Overall Value Index	Healthcare Efficiency Score	Population 60 and over Rate	Health expenditure (% of GDP)	Employed, 55–59 Years	Budget of Initiatives/ Healthcare Expenditure	Health Expenditure per Capita, CAGR (5 Years)	GDP per Capita, Current Prices, CAGR (5 Years)	Number of Employed 65+, CAGR (5 Years)	Both Sexes Life Expectancy, CAGR (5 Years)	Number of People Aged Over 65, CAGR (5 Years)	HALE CAGR (5 Years) / Health Expenditure per Capita (Current US$), CAGR (5 Years)
Budget of Industrial Strategy														
Amount of Capital Committed to AgeTech														
Amount of Capital Committed to Geroscience R&D														
Absolute Amount of Capital Committed to Initiatives														
Amount of Capital Committed to Preventive Medicine														
Whether a Country has Dedicated Minister for Elderly														
Number of WHO Age-Friendly Cities/ Communities														
	1st Level		2nd Level		3rd Level				4th Level				5th Level	6th Level

Methodology for Ranking Countries Efforts on the Front of Government Longevity-Related Projects and Initiatives

To assess countries according to the number and relevance of their government-led longevity projects and initiatives, a sum of metrics parameters taking into account 75 metrics were used.

Metrics Values

Each metric`s absolute value is recalculated into the *relative score* within the range [0.0-1.0]. To be more specific, if a metric is numeric, the formula for *score* calculation is the absolute value of a country divided by the maximal absolute value among the countries. If a metric is qualitative (yes/no), a value “yes” equals to 1.0 and a value “no” equals to 0.0. The qualitative metric “Degree of government industrialization of longevity” has 3 values according to the industrialization of Longevity in a country: *Industrial Strategies* (equals to 1.0); *National or metropolitan master plans* (equals to 0.5); *Independent or municipal government programs* (equals to 0.0).

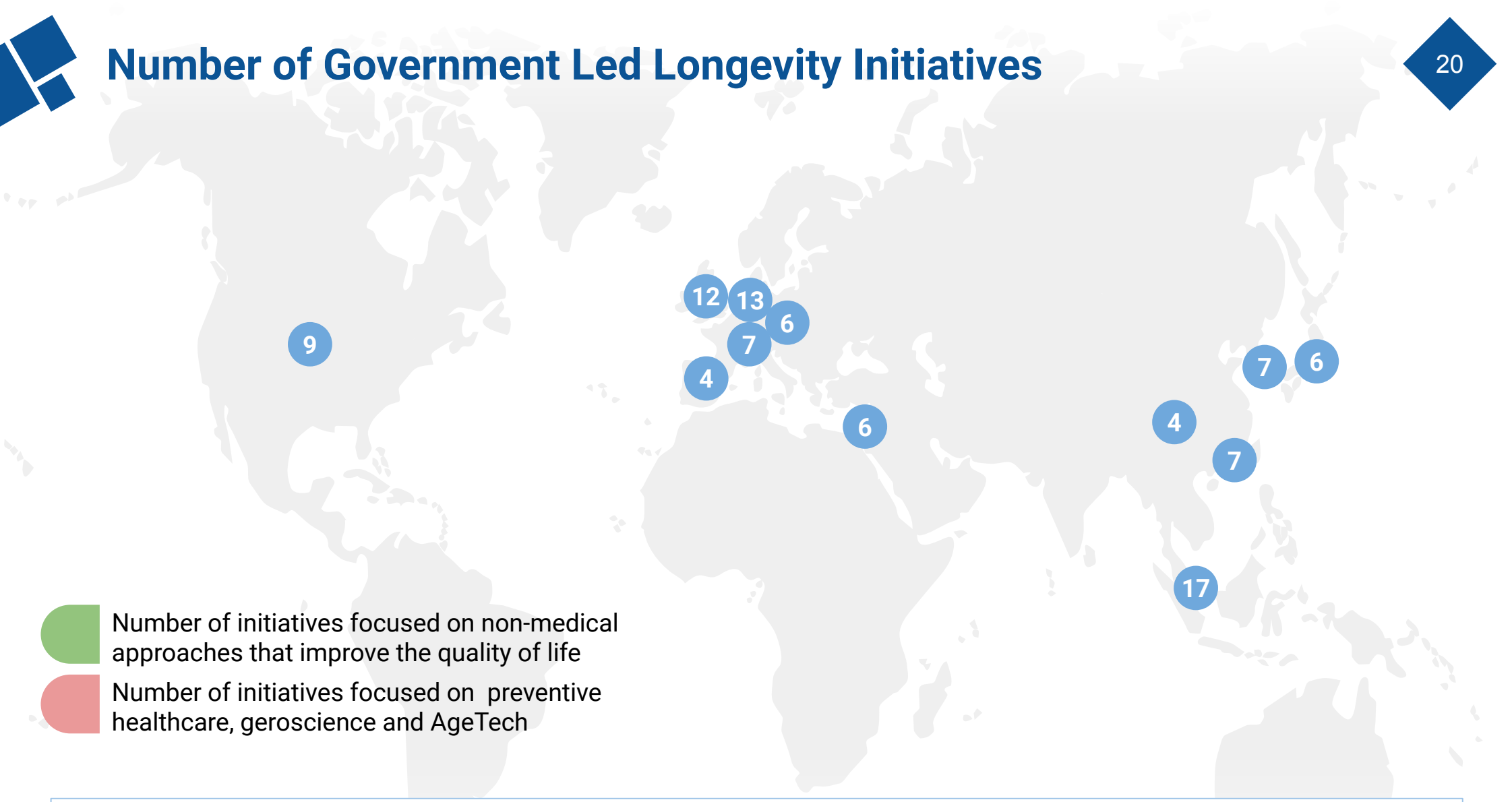
Weight Factors

To equalize each metric in terms of significance among others the *weight factors* are applied. Each *weight factor* is in the range from -1.0 to 1.0, where 1.0 - the most favorable metric, -1.0 - the most detrimental metric and 0,0 - not an important metric at all (if the factor is negative, the higher positive magnitude of *relative score*, the worse for a country's score). The *weighted score* of a country for a particular metric is *relative score* multiplied by an *weight factors*.

Final Score

Consequently, the countries were ranked according to the sum of their *weighted scores* of each metric. The higher the final score the more advanced a country in terms of government Longevity-related projects and initiatives.

Number of Government Led Longevity Initiatives



Number of initiatives focused on non-medical approaches that improve the quality of life

Number of initiatives focused on preventive healthcare, geroscience and AgeTech

8 4 UK	4 0 Spain	2 4 Israel	13 4 Singapore	5 2 Hong Kong	4 3 Switzerland
4 0 China	5 1 Japan	3 4 South Korea	9 4 Netherlands	6 3 USA	4 2 EU

Report Structure

The purpose of this report is to offer an overview of government initiatives from around the world which were enacted in recognition of the demographic challenge each country faces.

It is our hope that cataloging various government initiatives may offer the British government some idea of the building blocks available for the construction of what would become the world's first Longevity National Development Plan.

We also aim to demonstrate how far the UK is already ahead of the game in this regard, and is therefore, the cradle of the fourth industrial revolution.

The first chapter, **National Longevity Development Plans Global Landscape Overview 2019** identifies the broad categories of a government initiative to be considered: different orders of magnitude ranging from small municipal programs to national industrial strategies; and the different areas of intervention, from the financial to the biomedical.

These categories have been formulated with the aim of developing a methodology for evaluating various initiatives and ultimately ranking countries according to how close they come to executing actionable developments with a practical impact on ageing population. As such, our analysis also includes the final ranking of twelve countries according to the strength and relevancy of their Government-led ageing and Longevity-related projects and initiatives, as well as their likelihood of yodeling tangible deliverables like an increase in Healthy Longevity, and a decrease in the economic burden posed by ageing population.

This chapter also visualizes a number of data relevant to each country's current challenges and opportunities relating to Healthy Longevity and Ageing Population, ranging from healthcare expenditure and efficiency, gaps between their Health-Adjusted Life Expectancy (HALE) and standard life expectancy, projected dates of insolvency for state-funded pensions systems and social security systems, etc.

The All-Party Parliamentary Group on Longevity

All Party Parliamentary Group for Longevity

Preventive Medicine
Innovations in Healthcare
Problem of Ageing Population
Financial Reform for Pension System

www.parliament.uk

Longevity uk
www.longevityinternational.org

APPG for Longevity Officers

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Chair

Rt Hon Norman Lamb MP
Vice-Chair

Sir Peter Bottomley MP
Vice-Chair

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CEO & Co-Founder
Secretariat Director

Dmitry Kaminskiy

Head of International Cooperation Division

Executive Summary

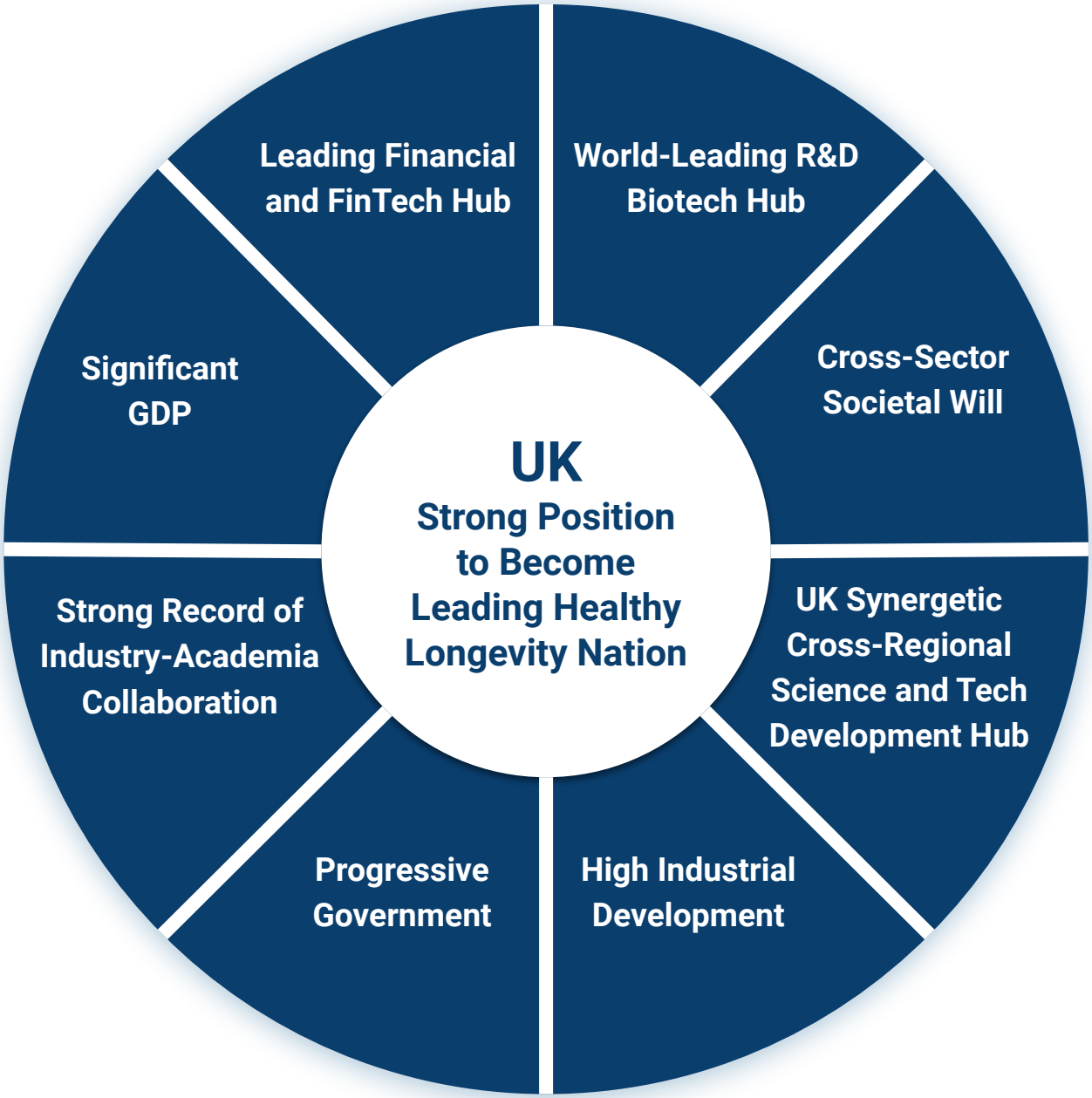
The subsequent chapters serve as an overview of government initiatives from various countries which are contending with the silver tsunami in their own way, ranging from:

- **Young parliamentary democracies** with limited histories of government programs such as Spain and the EU, which produce government initiatives for the elderly in abundance but show little concerted effort for bringing about comprehensive solutions for dealing with the demographic crisis, and instead produce a succession of short-term plans and ad hoc regulations in order to ameliorate the experience of their ageing societies.

- **Technocratic tiger economies** such as Singapore, Hong Kong and South Korea. These countries tend to resemble what this report series has defined as longevity-progressive countries : small technocratic countries with ageing populations, who are therefore galvanised to produce coordinated solutions. We can observe in these countries big quantity of ageing initiatives. However, the budgets of these initiatives is much smaller than the one of big countries. Also, these countries have begun implementing their initiatives comparatively recently - from 12 years in Singapore to 20 years in Hong Kong.

- **Strong and established parliamentary democracies** such as UK and Japan. These are the states that have been facing the challenge of longevity for some time already and already making an effort to see the dividend in longevity and overcome the demographic challenge. Moreover, they have already demonstrated the political will for developing bold industrial strategies. This combination of factors puts them a cut above the tiger economies. The main challenge for these countries currently is continuing to assure consistent policy in this area, as well as continuing to innovate.

UK in Leading Position to Become International Leader of Healthy Longevity



The UK is very well positioned to become a leader in Healthy Longevity, and was ranked #1 by this report's proprietary analysis for a number of reasons including its strong reputation as a BioTech R&D and FInancial Hub, a strong history of industry-academia partnerships focusing on scientific and technological synergies, and its commitment of 300 million pounds to its Ageing Population Industrial Strategy Grand Challenge. The nation has all necessary compounds in place to leverage and channel its existing strengths into an efficient government-led campaign to make the promotion of Healthy Longevity and financial reform to neutralize the economic burden of an Ageing Population a key priority of its national strategic agenda.

Conclusions

We can already see a broad spectrum of government initiatives from around the world focusing on ageing and Longevity. Some have a more biomedical focus, some a more digital focus. Some are national and some municipal. This all depends the economic and technological conditions and political traditions of each nation. But more importantly, some government initiatives are more integrated, comprehensive and long termist than others, with a varying degrees of emphasis on economic and industrial planning. **In this respect, some nations are closer than others to developing a fully integrated long term national development plan for longevity.**

Progress in this direction requires political will. And as the variety of British government initiatives listed here demonstrates, there is no shortage of political will to address the ageing population challenge in the UK. This is one factor that has resulted in the UK being ranked as #1 in terms of the strength and relevancy of its Government-led Longevity initiatives among the twelve regions profiled in this report.

However, while the UK has been shown to be a leader in this sphere, there are still important next steps that it can take in order to optimize the actionability of its ageing and Longevity-related development activities, and to maximize the chances of delivering tangible deliverables as a result, such as an increase in the nation's Healthy Longevity, and a reduction in the economic burden posed by its ageing population.

More specifically, it is the recommendation of this report that the UK Government work towards extending its existing efforts by developing a framework to change the deficit model of the 'Ageing Society' to an asset model around 'Longevity' and be bold with a national strategy to harness the 'Longevity Dividend' to benefit all people in society. In other words, the nation needs a fully integrated Longevity National Development Plan.

To this end, the development of a Blueprint and Framework for a Government-led National Longevity Development Strategy is one of the core aims of the recently established All-Party Parliamentary Group on Longevity and its secretariat company, Longevity International UK, for which Aging Analytics Agency is the main source of analytics.

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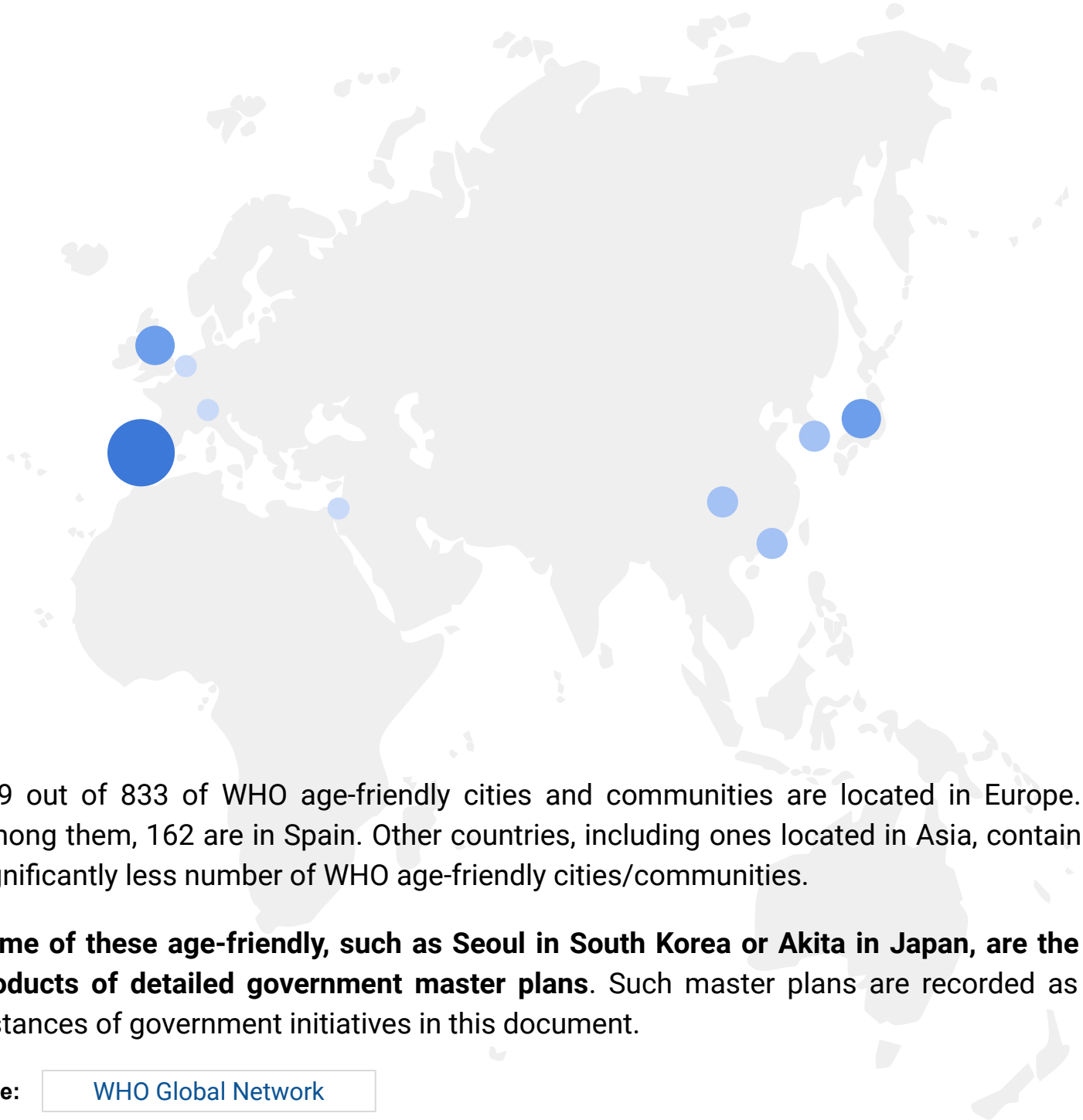
The subsequent chapters serve as a brochure of government initiatives from various countries which are contending with the silver tsunami in their own way, ranging from technocratic tiger economies such as Singapore and Hong Kong to large parliamentary democracies such as Spain and, of course, the UK.
A broad spectrum of foreign examples of government initiatives is shown here. Some have a more biomedical focus, some a more digital, some national and some municipal, depending the economic conditions and political traditions of each nation. But more importantly, some are more integrated\comprehensive than others, and all exhibit varying degrees of long-termism.
This is a result not of circumstance but of *political will*. And, as evidenced by the multitude of UK government initiatives listed here, there is no shortage of political will to address the ageing population challenge in the UK.

It is the recommendation of this document that this political will now be directed at developing a national development plan for longevity, and that this initiative lies with the All-Party Parliamentary Group on Longevity.

Age-Friendly Cities and Communities



162	Spain
24	Japan
23	UK
11	South Korea
9	China
9	Hong Kong
4	Israel
3	Switzerland
2	Netherlands

319 out of 833 of WHO age-friendly cities and communities are located in Europe. Among them, 162 are in Spain. Other countries, including ones located in Asia, contain significantly less number of WHO age-friendly cities/communities.

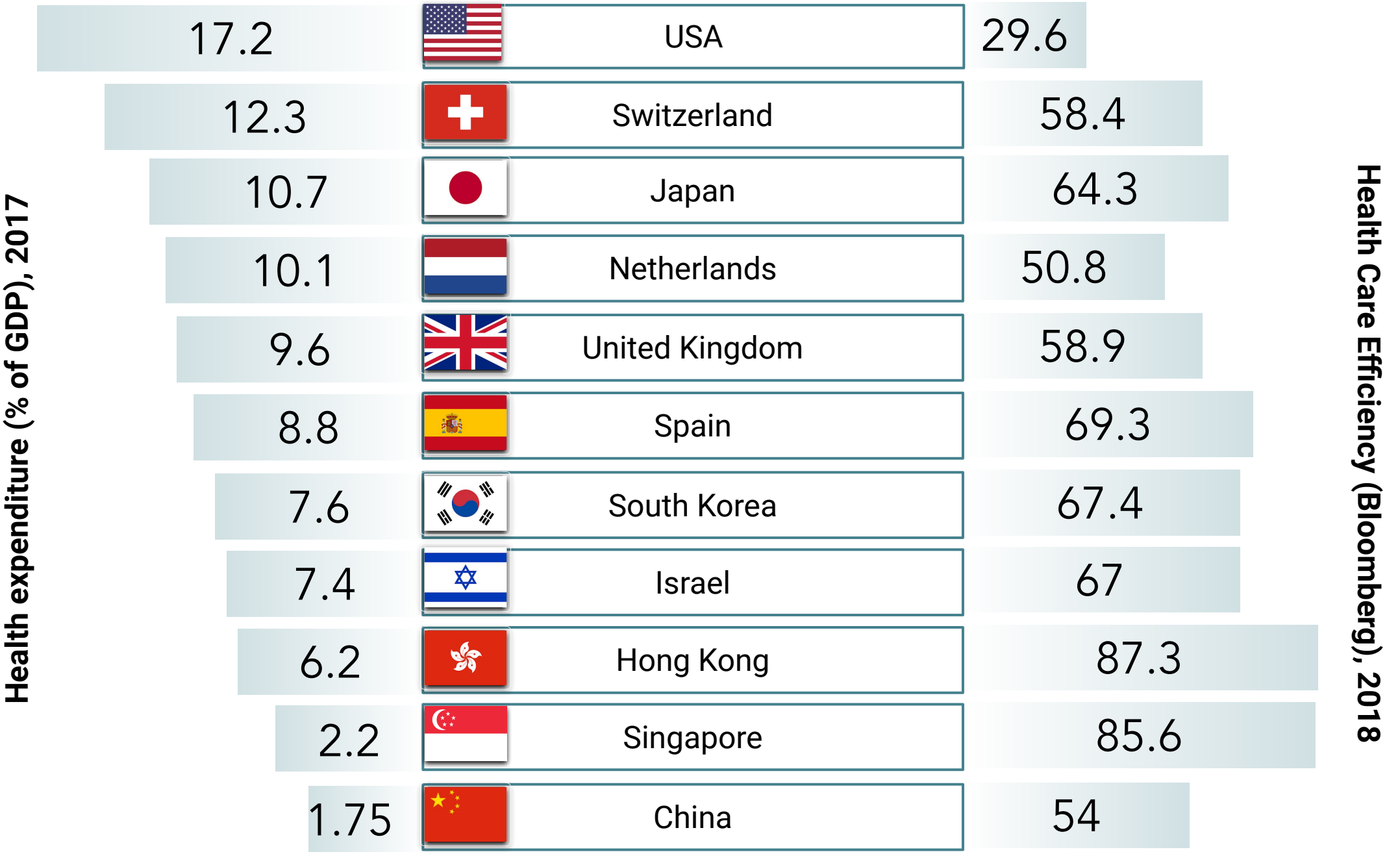
Some of these age-friendly, such as Seoul in South Korea or Akita in Japan, are the products of detailed government master plans. Such master plans are recorded as instances of government initiatives in this document.

Source: WHO Global Network

Life Expectancy and GDP per Capita

Sources: World Economic Outlook | Geoba.se - Life Expectancy

Health Expenditure and Health Care Efficiency Score



Sources: OECD.Stat - Health Status | Bloomberg Health Care Efficiency

Industrial Strategies, National Master Plans, Independent or Municipal Government Programs

BIRAX Ageing

Society 5.0

SEOUL METROPOLITAN GOVERNMENT

Seoul Metropolitan Government, South Korea ministry of Health and Welfare

CHARLS 中国健康与养老追踪调查 北京大学 PEKING UNIVERSITY

China Health and Retirement Longitudinal Study led by Peking University

Modern Aging Singapore NPTD Silver Infocomm

National Population and Talent Division, Modern ageing Incubator, Silver Infocomm Junctions

National Master Plans

INDUSTRIAL STRATEGY UK Research and Innovation Industrial Strategy Challenge Fund

UK Research and Innovation, UK Industrial Strategy, Industria; Strategy Challenge Fund

Industrial strategy

OAA OLDER AMERICANS ACT #BOLDAlzheimersAct AIM Affordable Care Act

Older Americans Act, The Building Our Largest Dementia, Affordable Care Act.

SPHN Swiss Personalized Health Network

Swiss Personalized Health Network

衛生署 Department of Health HKCSS 社聯 勞工處 Labour Department

Department of Health, Labour Department, The Hong Kong Council of Social Service

durango Ciudad amigable con las personas mayores

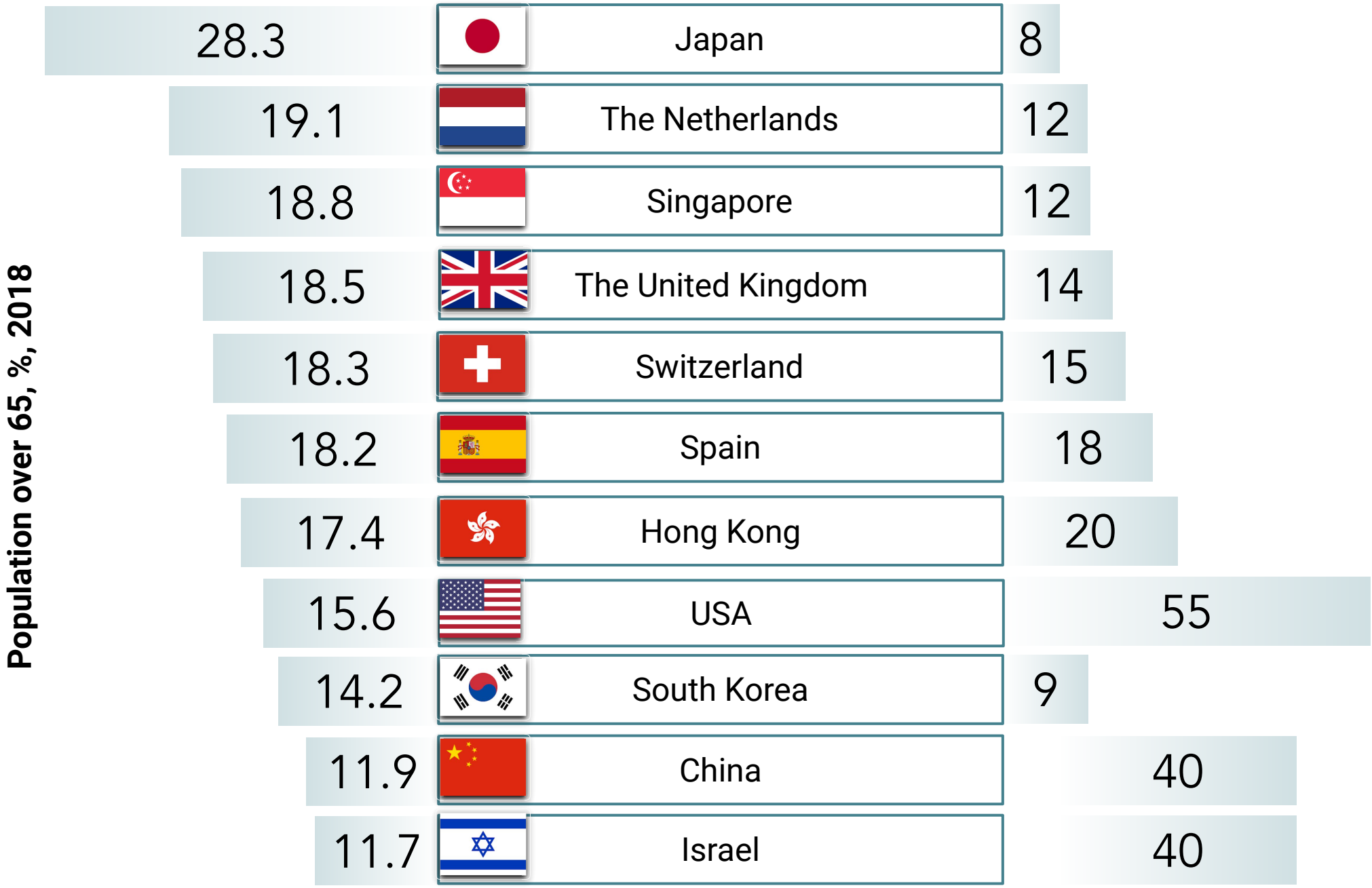
Durango, Age-Friendly City

CHRODIS Healthy Ageing Network Northern Netherlands Region of Knowledge and Development Deltaplan Dementie

Groningen Active Ageing Strategy, HANNN, Deltaplan for Dementia.

Independent or Municipal Government Programs

Ratio of Population over 65 vs. the Age of Relevant Initiatives



Source: National Bureaus of Statistics

Insolvency Predictions for Government-Funded Schemes

The financial condition of a few governments' retirement programs is shaky, with projected insolvency of some schemes. There is a sobering picture for the **U.S. Medicare and Social Security** programs are headed toward **insolvency** by 2026 and 2035 respectively. **Spain's Social Security Reserve Fund** had run out of money by 2018 which only added to concerns over Spain's financial situation. Increasing longevity, low-interest rates, and an unstable global economy are the reasons why South Korea's National Pension Service is expected to run dry by 2056. The China Academy of Social Sciences reported that **China's pension funds** could become **insolvent by 2035**, with a rapidly dwindling workforce unable to support the growing number of elderly people. The second pillar of **Switzerland's** pension system is under **severe pressure**, and pension schemes are projected to go down by 2025, with failed main reform proposal that was rejected in a public referendum.

To assess pension systems in other countries, the **Melbourne Mercer Global Pension Index 2018** was used. The Index shows that the **Netherlands** offer A-Grade world-class retirement income systems with good benefits - clearly demonstrating their **preparedness for tomorrow's ageing world.**

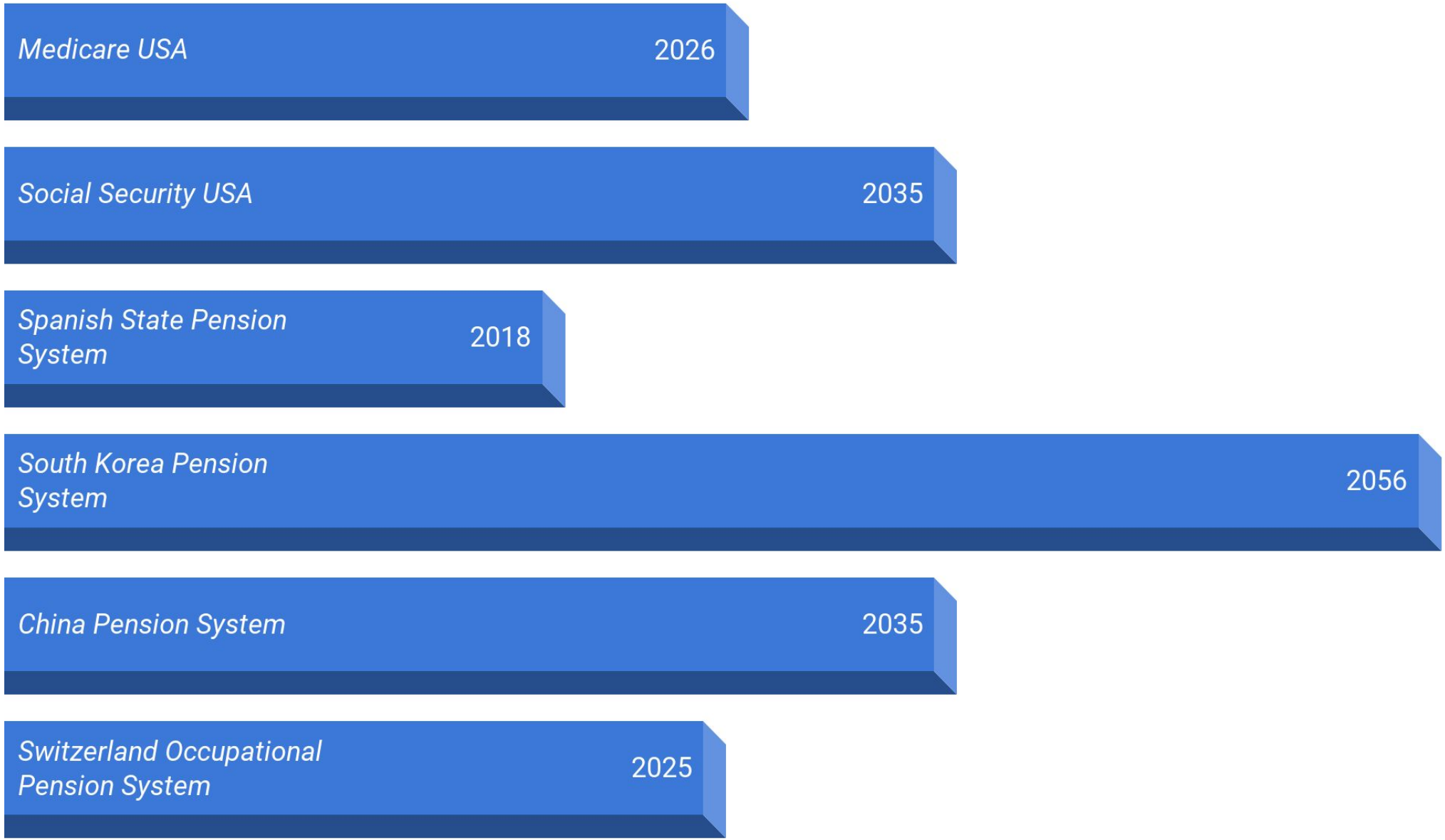
Source: Mercer Global Pension Index

Government-funded scheme	Country	Projected insolvency	Source
Medicare	USA	2026	bloomberg.com
Social Security	USA	2035	bloomberg.com
Spanish State Pension System	Spain	2018	mishtalk.com
South Korea Pension System	Korea	2056	thediplomat.com
China pension system	China	2035	reuters.com
Switzerland occupational pension system	Switz.	2025	ft.com

Melbourne Mercer Global Pension Index 2018

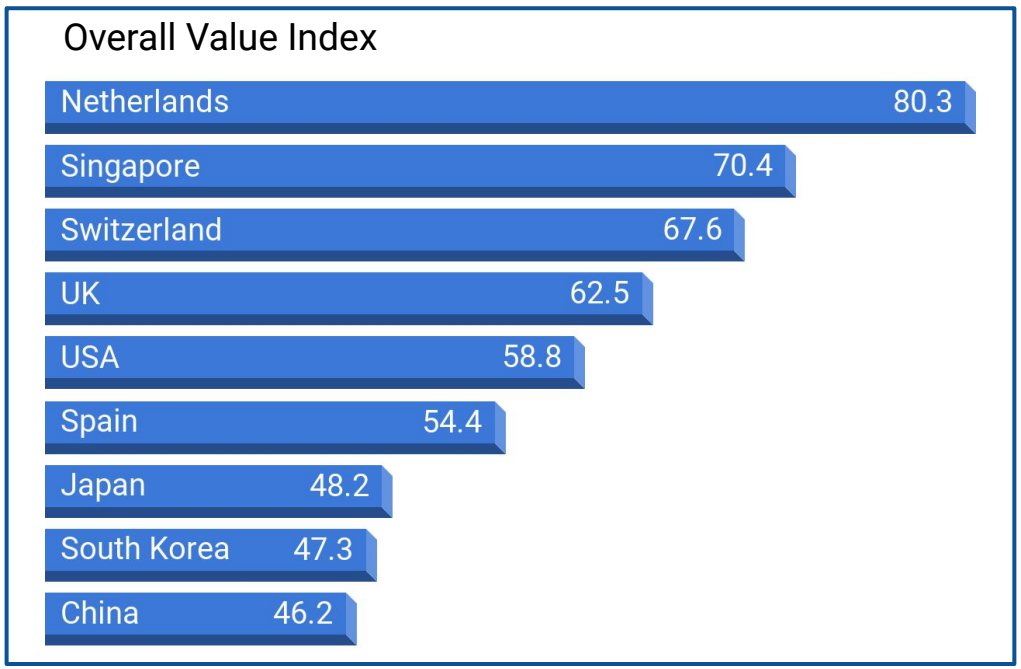
System	Overall Value Index	Sustainability	Adequacy	Integrity
Singapore	70.4	69.5	64.4	81.2
UK	62.5	53.4	57.8	82.9
Japan	48.2	32.4	54.1	60.7
South Korea	47.3	48.1	45.4	49.3
China	46.2	38	53.4	46
Spain	54.4	27.8	68.7	68.6
Switzerland	67.6	67.5	58	83.2
Netherlands	80.3	79.2	75.9	88.8
USA	58.8	57.4	59.1	60.2

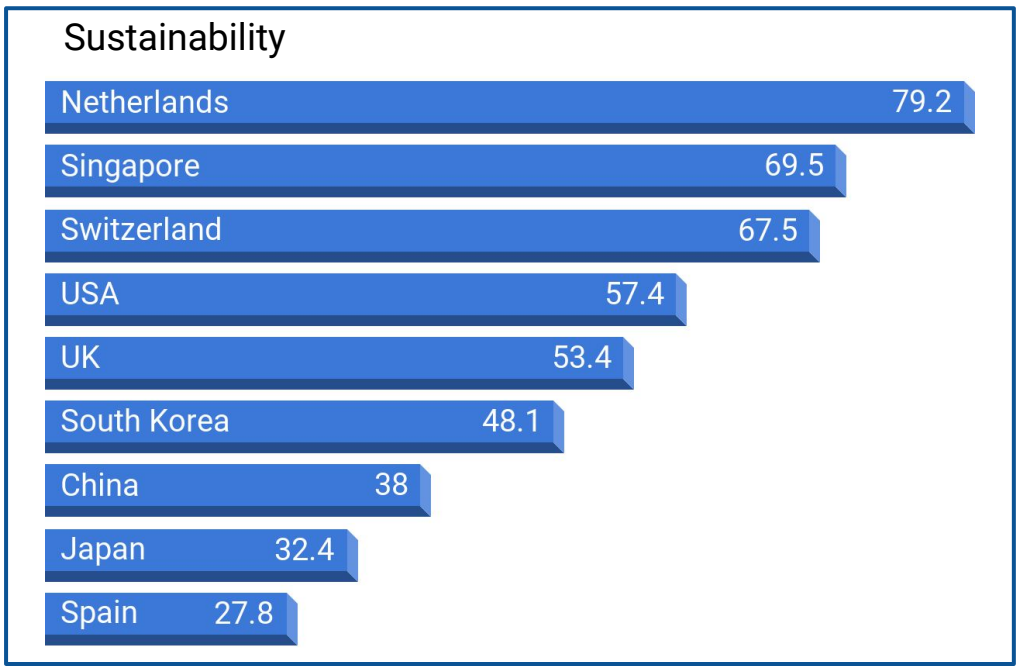
Insolvency Predictions for Government-Funded Schemes

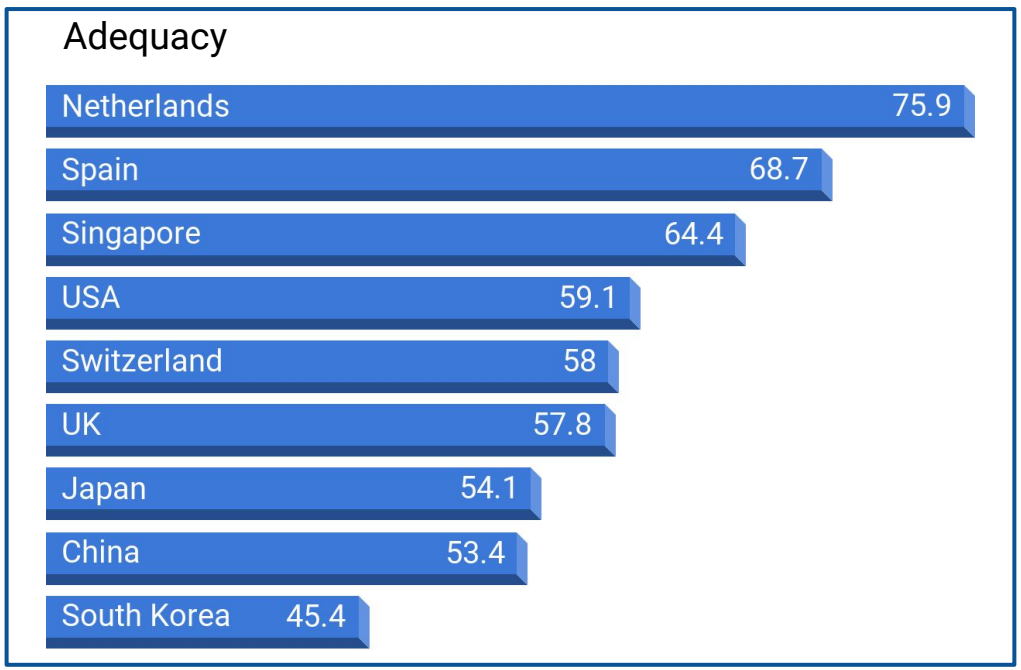


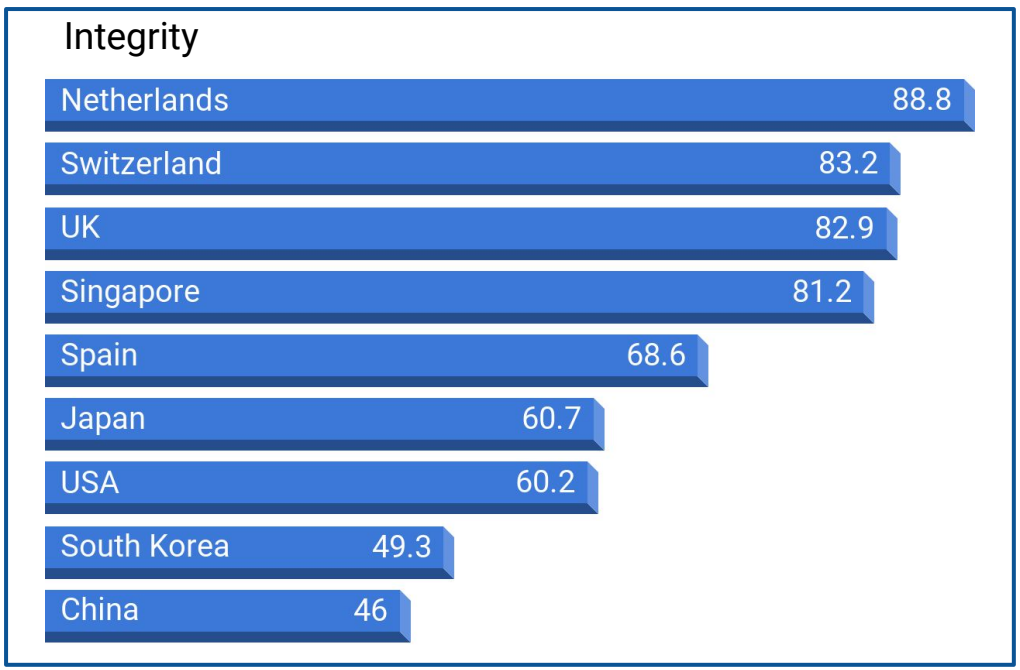
Sources: Bloomberg | MishTalk | Thediplomat | Reuters | Financial Times

Melbourne Mercer Global Pension Index 2018



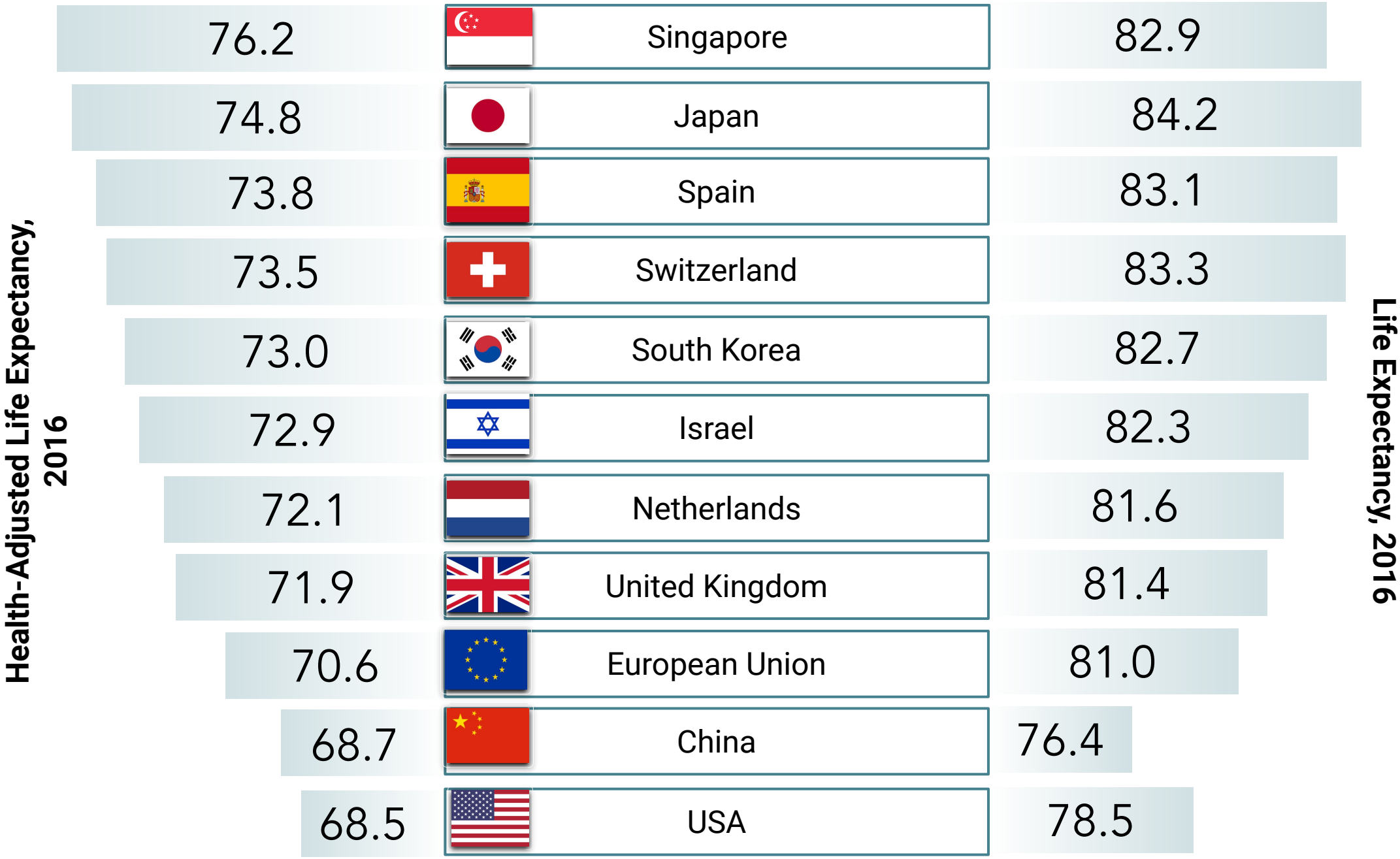






Source: Mercer Global Pension Index

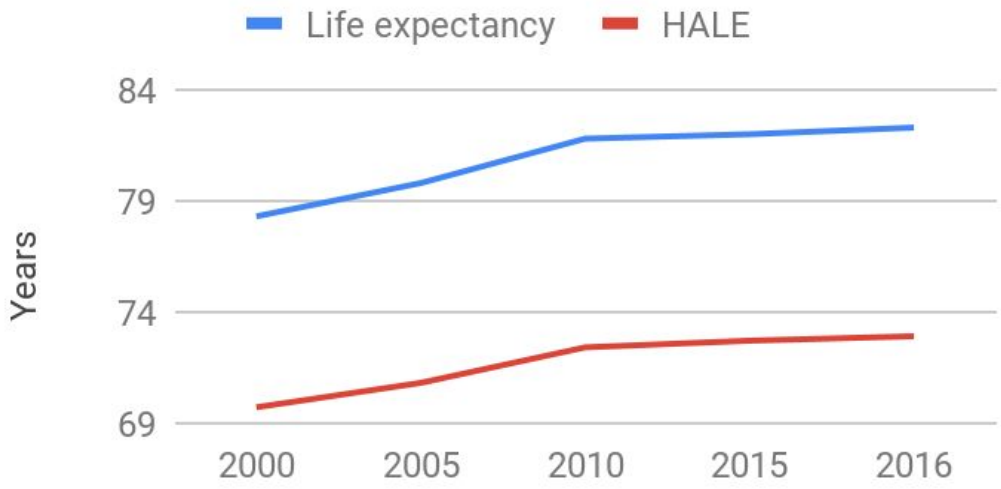
Health-Adjusted Life Expectancy vs. Life Expectancy



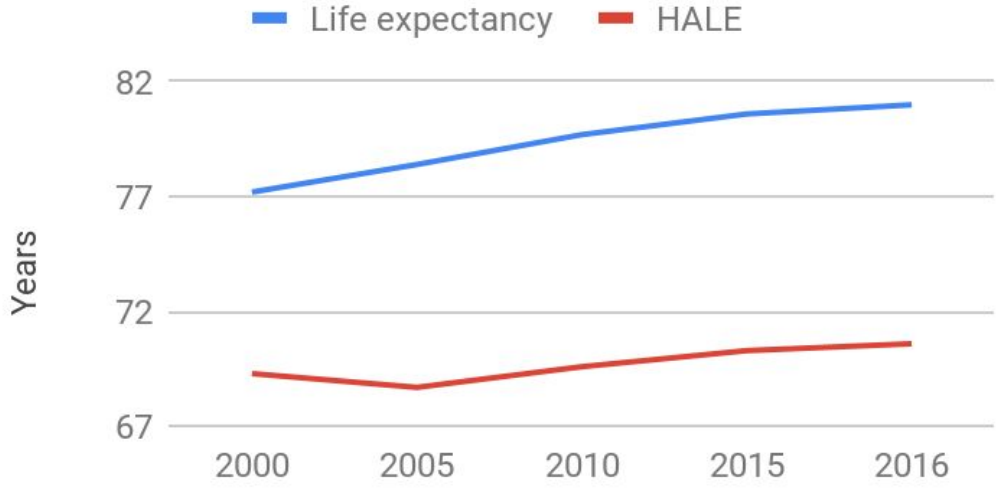
Source: GHO Life expectancy and HALE

Health-Adjusted Life Expectancy vs. Life Expectancy
Israel, EU, USA and China (2000-2016)

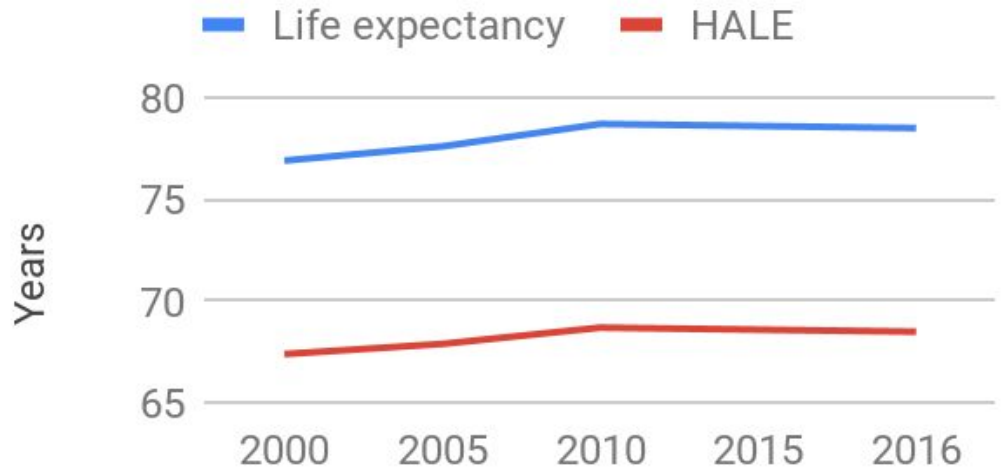
Israel



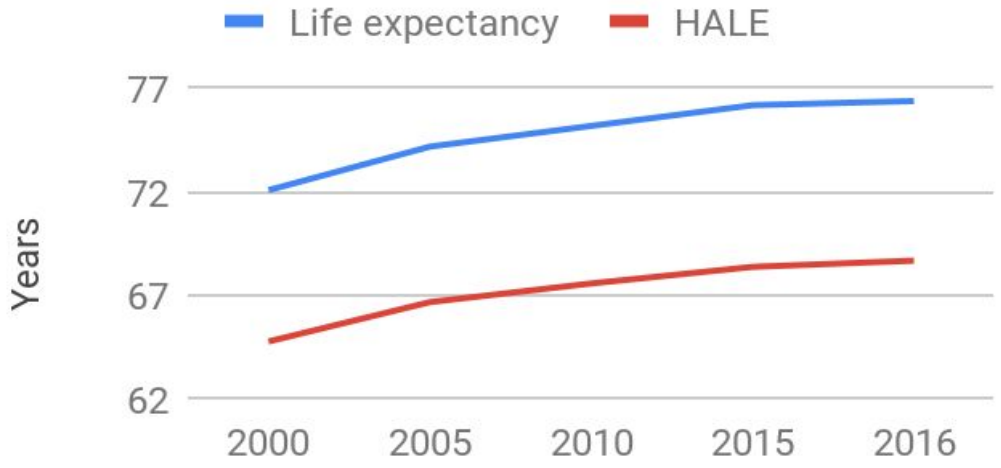
EU



USA



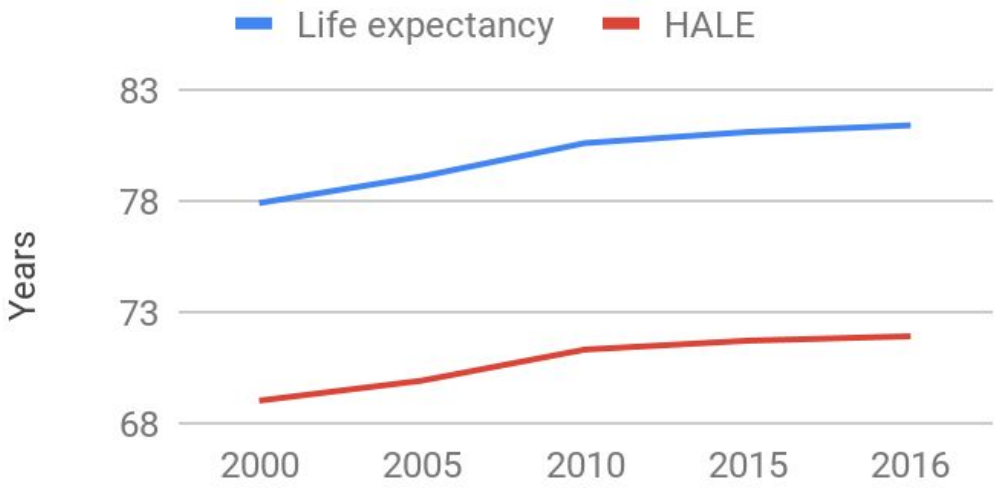
China



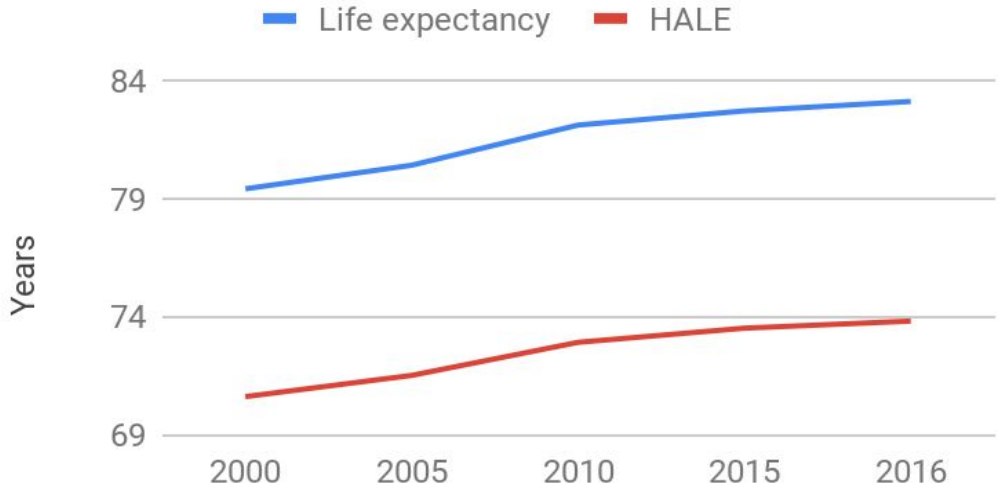
Sources: GHO Life expectancy and HALE | Life expectancy - WB Data

Health-Adjusted Life Expectancy vs. Life Expectancy
UK, Spain, Switzerland and Netherlands (2000-2016)

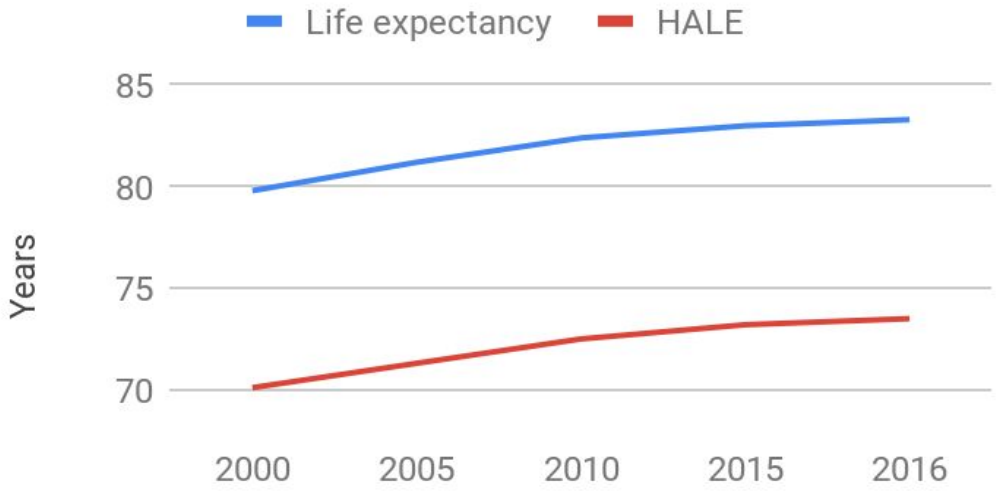
UK



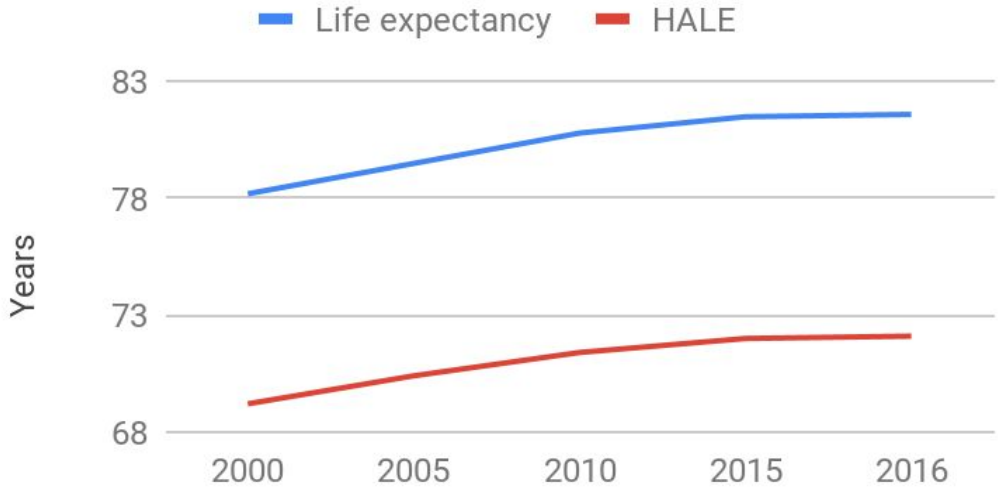
Spain



Switzerland



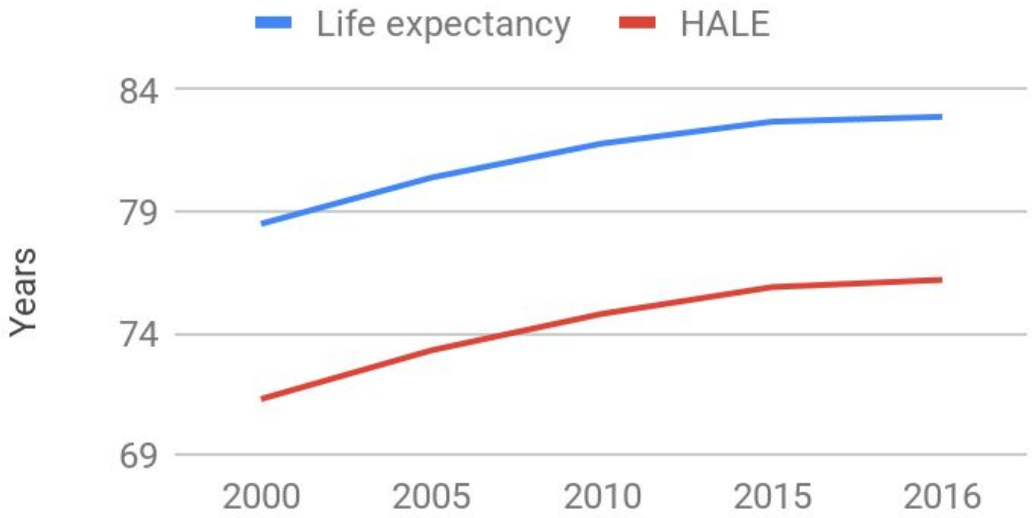
Netherlands



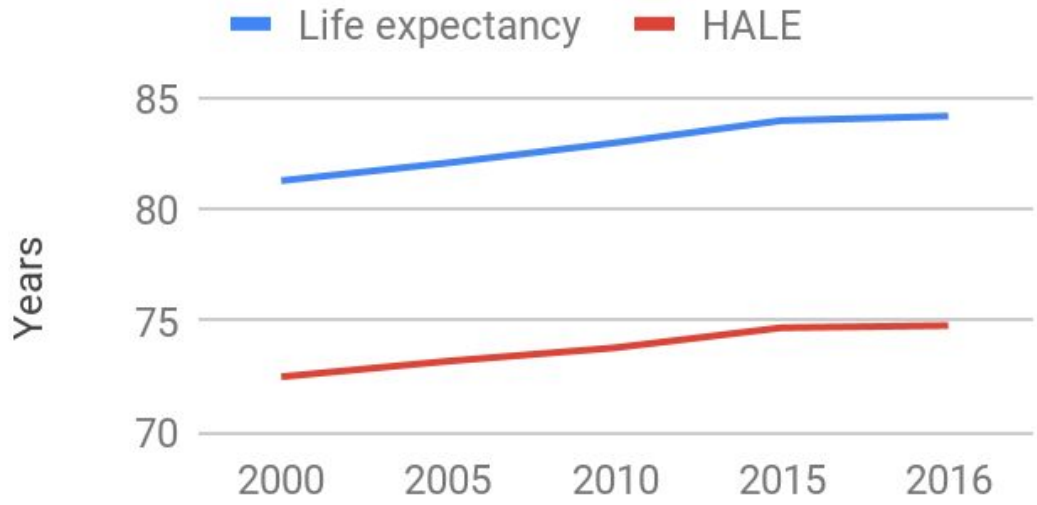
Source: GHO Life expectancy and HALE

Health-Adjusted Life Expectancy vs. Life Expectancy Singapore, Japan, and South Korea (2000-2016)

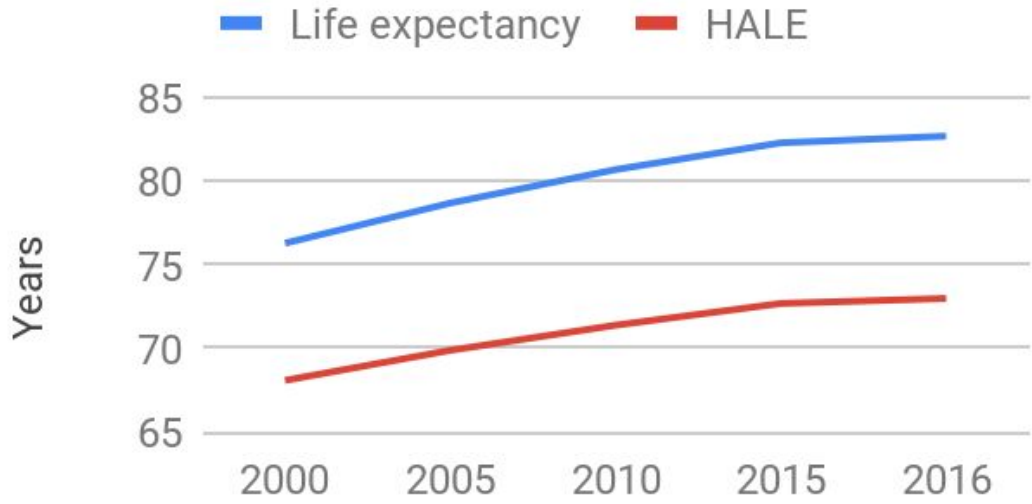
Singapore



Japan



South Korea



Source: GHO Life expectancy and HALE

Health-Adjusted Life Expectancy Countries Analysis

	HALE/life expectancy ratios 2016	HALE/life expectancy ratios 2000	HALE 2016, years	HALE 2000, years	CAGR HALE	CAGR HALE/Life expectancy ratio
Singapore	91.92%	89.02%	76.20	71.30	0.44%	0.08%
China	89.92%	90.83%	68.70	64.80	0.39%	0.00%
Japan	88.84%	89.18%	74.80	72.50	0.21%	-0.03%
Spain	88.81%	88.92%	73.80	70.60	0.30%	-0.01%
Israel	88.58%	89.02%	72.90	69.70	0.30%	-0.03%
Netherlands	88.36%	88.49%	72.10	69.20	0.27%	-0.01%
UK	88.33%	88.58%	71.90	69.00	0.27%	-0.02%
South Korea	88.27%	89.25%	73.00	68.10	0.46%	-0.07%
Switzerland	88.24%	87.84%	73.50	70.10	0.32%	0.03%
USA	87.26%	87.65%	68.50	67.40	0.11%	-0.03%
EU	87.16%	89.77%	70.60	69.30	0.12%	-0.20%

Source: GHO Life expectancy and HALE

Health-Adjusted Life Expectancy Countries Analysis

Asian countries are on top of all the rankings. Singapore is the leader in a number of key metrics, i.e. Singapore has the smallest gap between HALE and life expectancy both in 2000 and 2016, and the country has the biggest annual growth in this metric. Japan has lost the leading position in HALE ranking to Singapore, but it's South Korea that has gained the most position in HALE rankings and has the biggest HALE growth rate.

	Ranking HALE/life expectancy ratios 2016	Ranking HALE/life expectancy ratios 2000	HALE ranking 2016	HALE ranking 2000	CAGR HALE ranking	CAGR HALE/Life expectancy ratio ranking
Singapore	1	1	1	2	2	1
China	2	2	10	11	3	3
Japan	3	5	2	1	9	7
Spain	4	7	3	3	6	4
Israel	5	6	6	5	5	9
Netherlands	6	9	7	7	8	5
UK	7	8	8	8	7	6
South Korea	8	4	5	9	1	10
Switzerland	9	10	4	4	4	2
USA	10	11	11	11	11	8
EU	11	3	9	6	10	11

Source: GHO Life expectancy and HALE

Males and Females Life Expectancy in 2018

Males		Females
81.1	Japan	87.1
81.2	Switzerland	85.2
80.3	Spain	85.7
80.4	Hong Kong	85.5
80.8	Singapore	85
79.5	South Korea	85.6
80.3	Israel	84.2
80	Netherlands	83.2
79.7	United Kingdom	83.2
77	USA	81.9
75	European Union	82
75	China	77.9

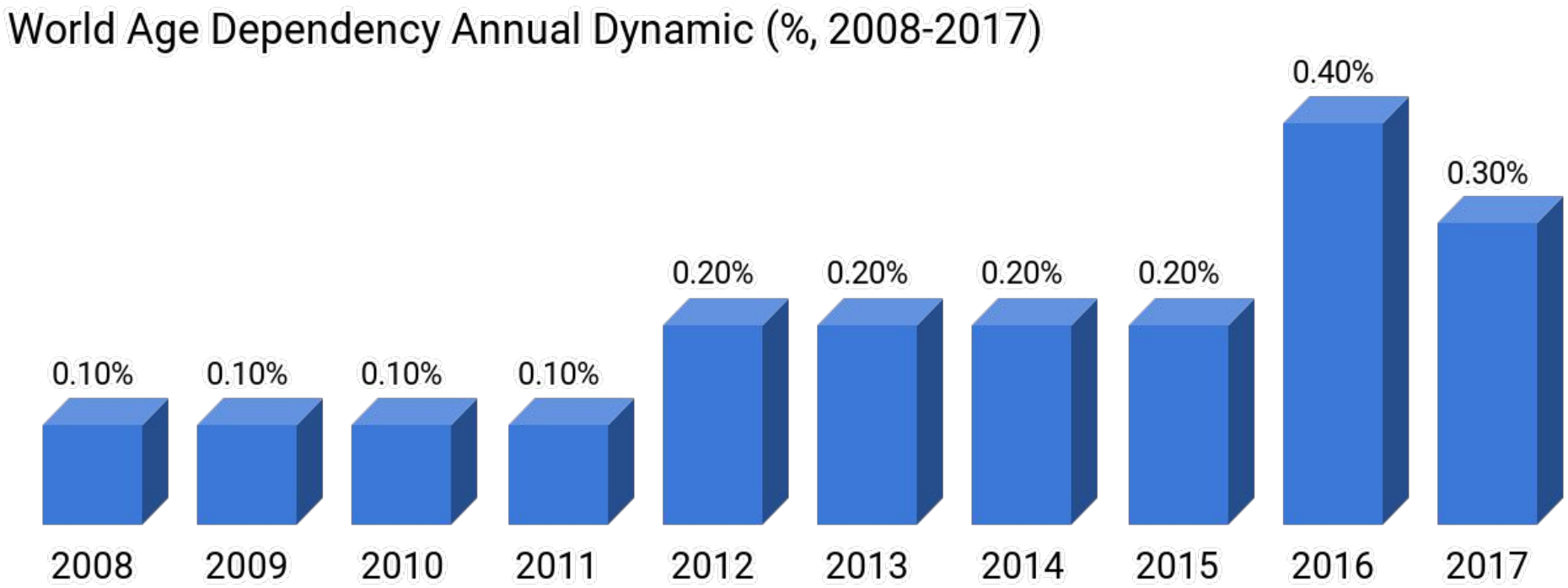
Source: World Life Expectancy

Age Dependency Annual Dynamic

The set of figures below shows an annual dynamic of age dependency throughout Israel, Singapore, the UK, Japan, South Korea, Hong Kong, China, Spain, Switzerland, the Netherlands, and the EU. This dynamic shows the growth of age dependency ratio in the current year, compared to the previous one. This allows to see the general tendency, which, we will see further, is positive in all countries.

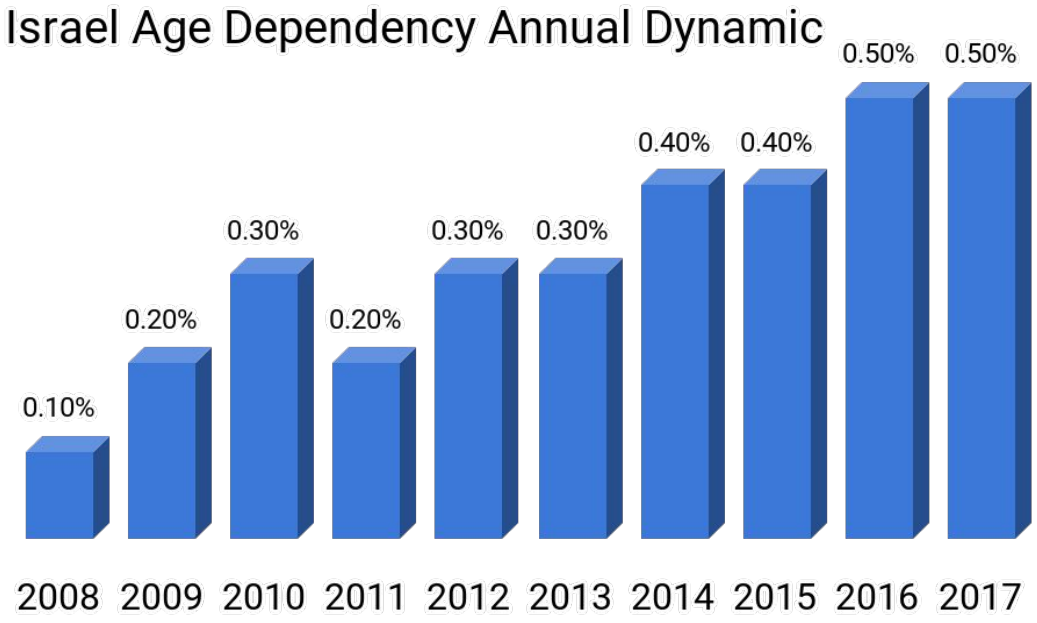
Right below, we see a general chart, that shows annual age dependency dynamic in the whole world, which allows us to compare the world trend with specific aforementioned countries' tendencies and to see, how these countries perform against the world background.

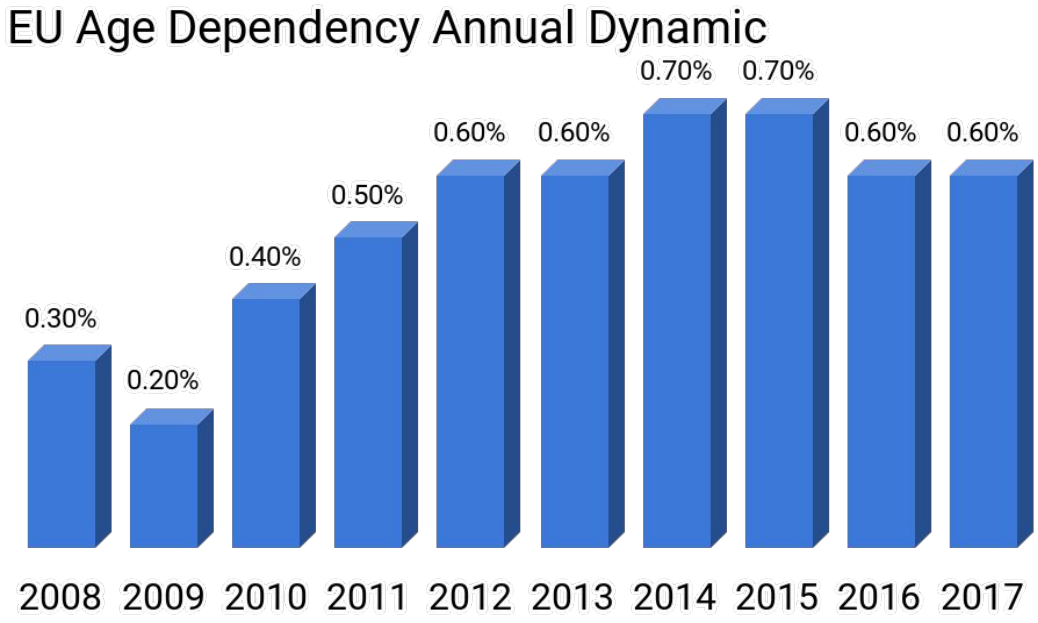
On the figure below we may see, that the trend is positive. There is a stable annual growth in age dependency throughout all researched period (2007-2017), with indicators of 0.10%-0.40%. The biggest indicator is 0,40%, which is seen in 2016. However, right in the next year, the growth slowed down a little - for 0.10% becomes 0.30%.

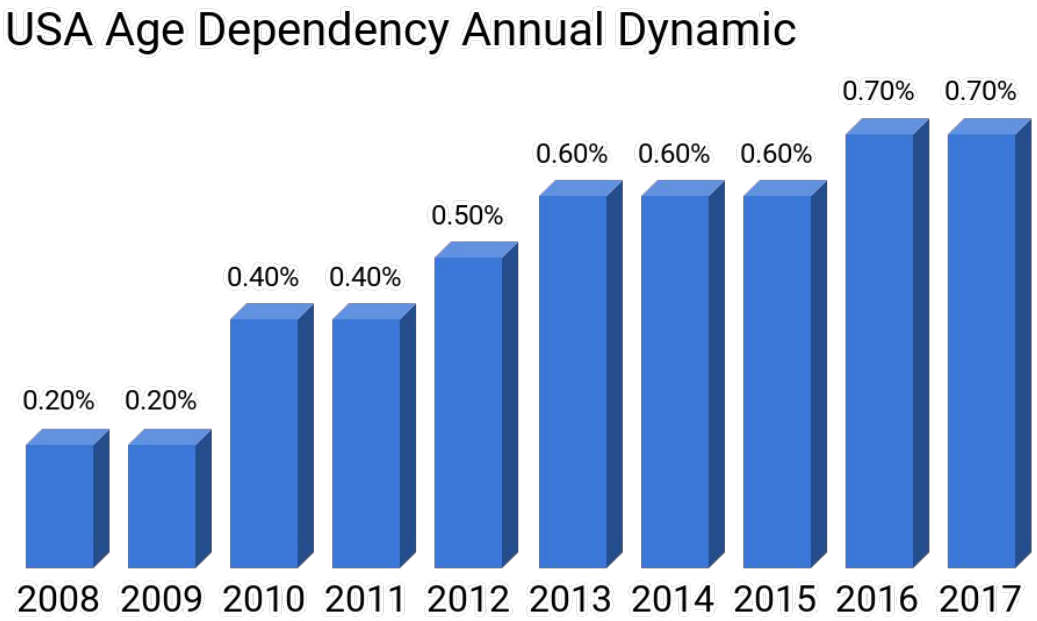


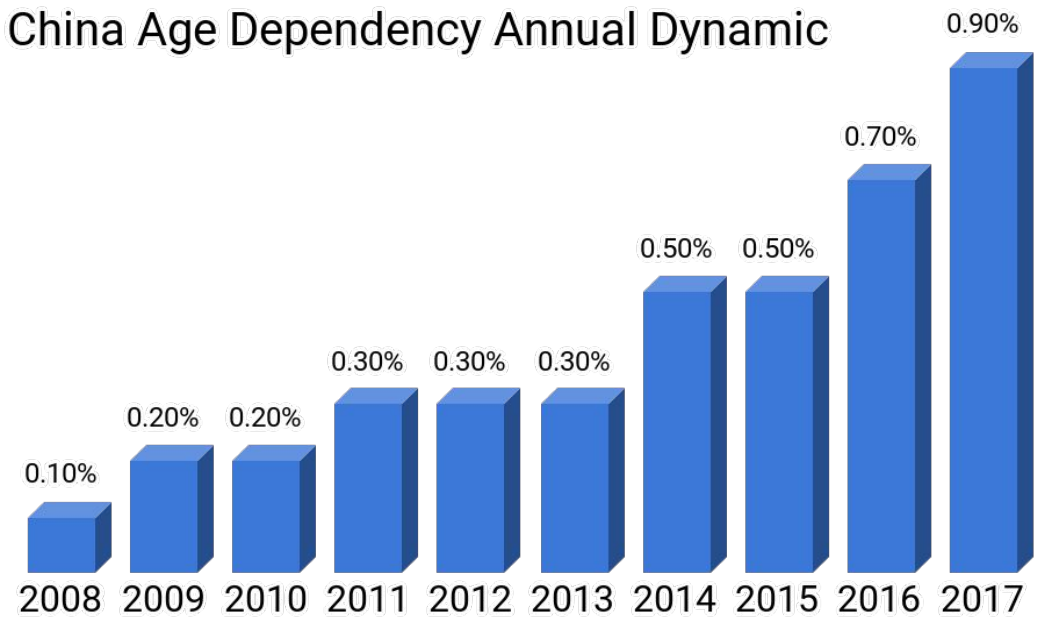
Source: World Bank Data

Israel, EU, USA and China
Age Dependency Annual Dynamic (%, 2008-2017)





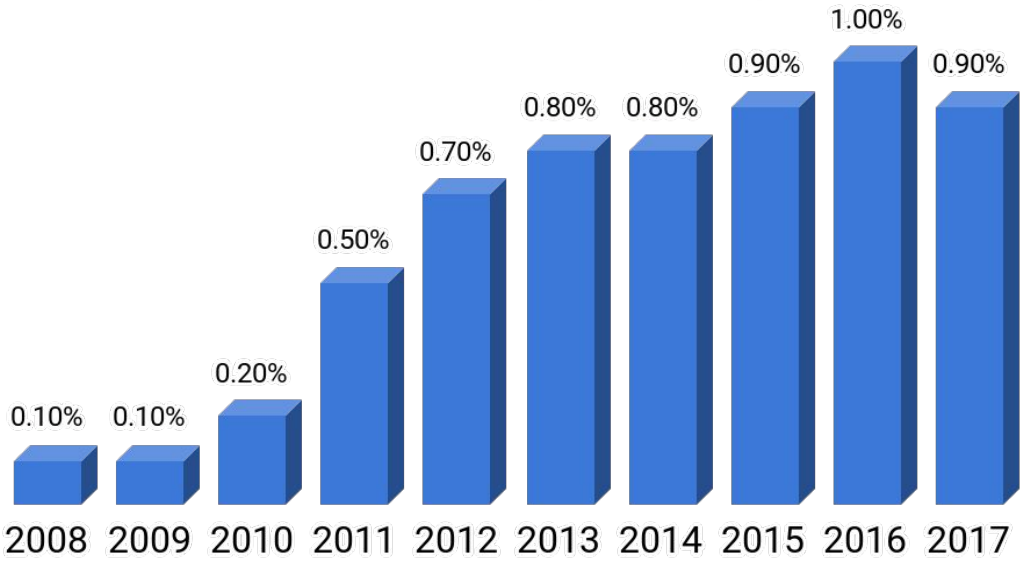




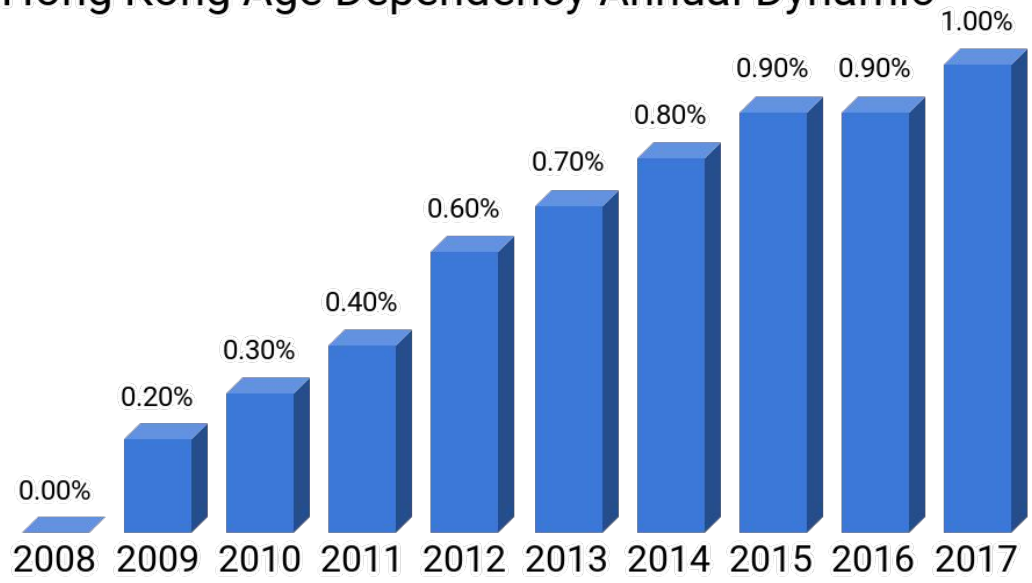
Source: World Bank Data

Singapore, Hong Kong, Japan, and South Korea Age Dependency Annual Dynamic (%, 2008-2017)

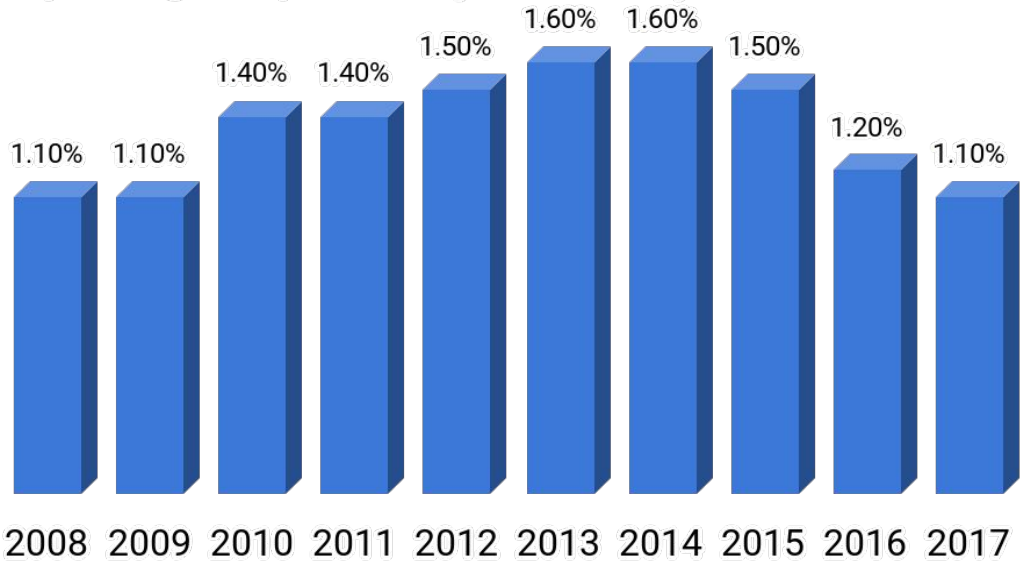
Singapore Age Dependency Annual Dynamic



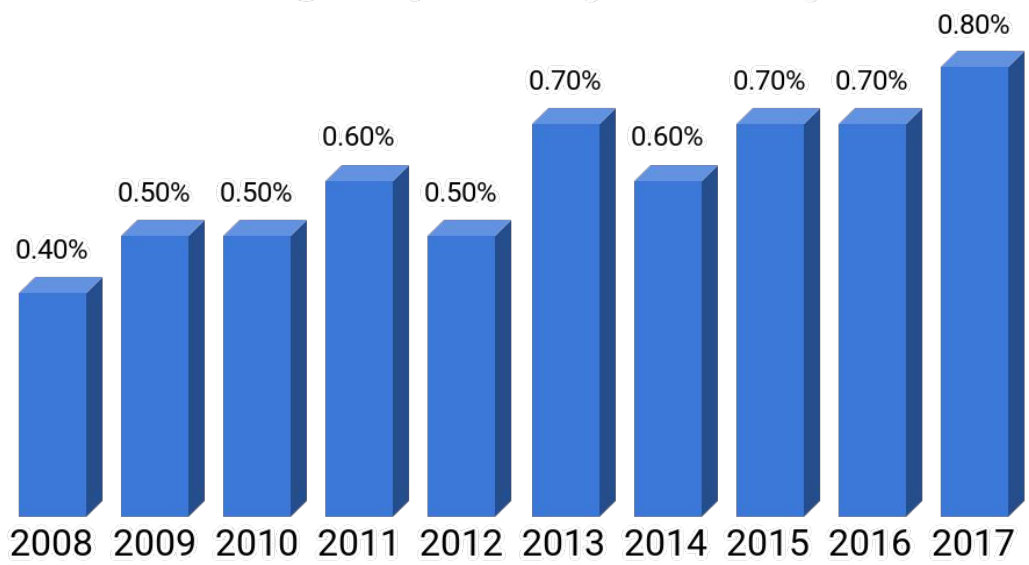
Hong Kong Age Dependency Annual Dynamic



Japan Age Dependency Annual Dynamic

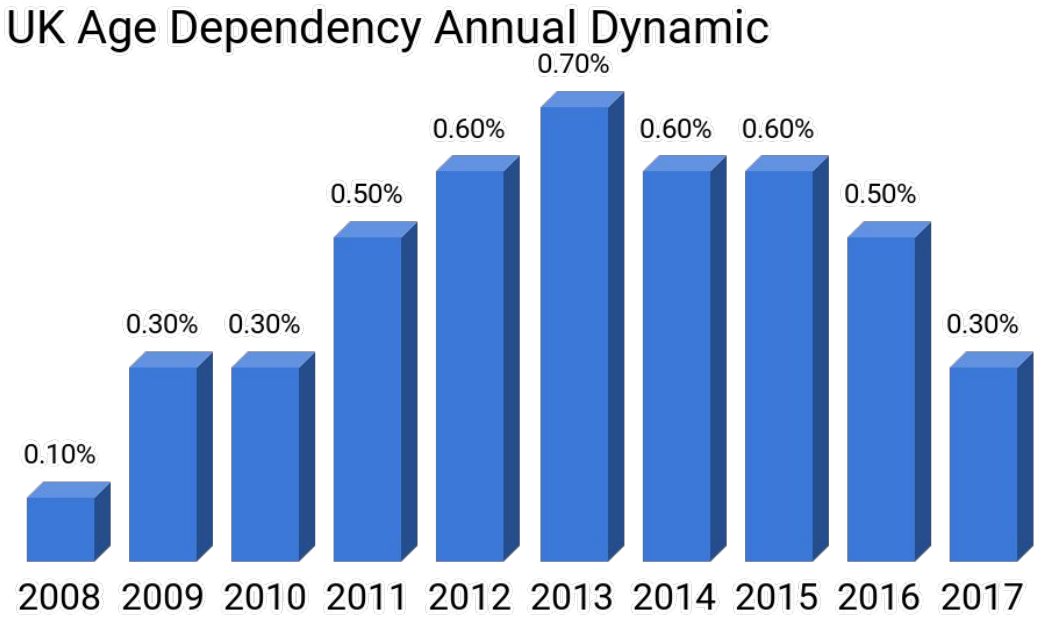


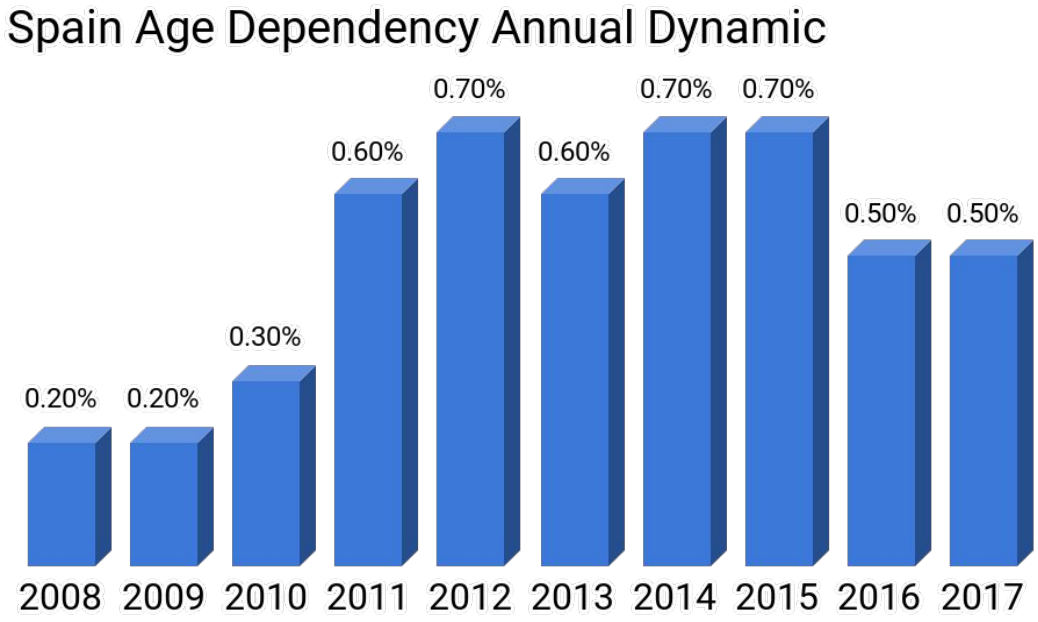
South Korea Age Dependency Annual Dynamic

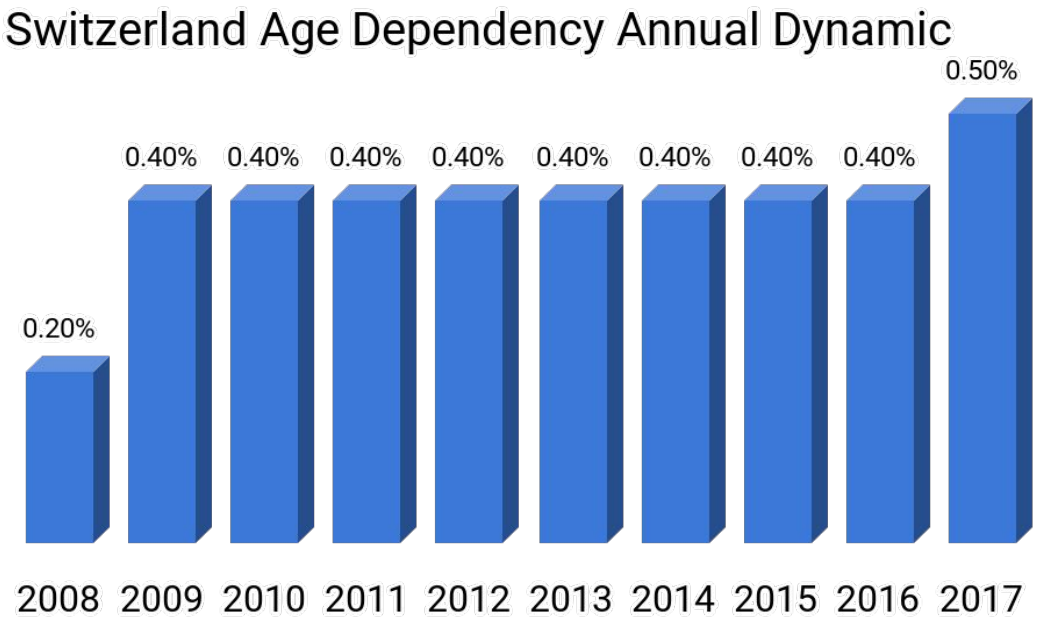


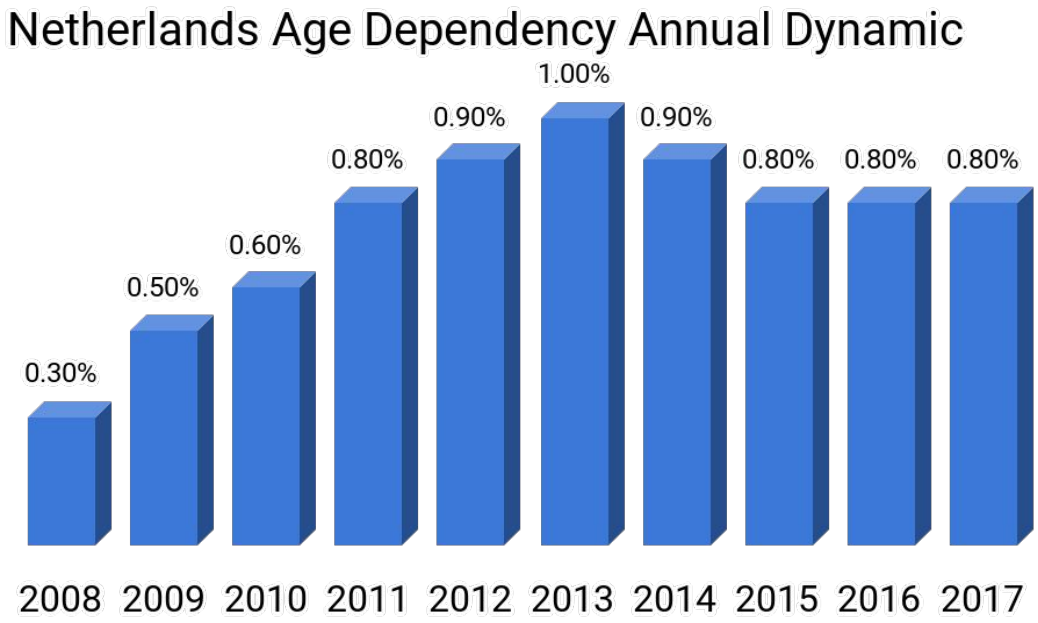
Source: World Bank Data

UK, Spain, Switzerland and Netherlands
Age Dependency Annual Dynamic (%, 2008-2017)









Source: World Bank Data

Age Dependency Ratio and Early Retirement Age

Source: Age dependency ratio - Data

United Kingdom

General metrics

Life Expectancy	Both sexes life expectancy (2019)	81 years
	Male life expectancy (2018)	79.7 years
	Female life expectancy (2018)	83.2 years
GDP	GDP per capita, current prices (2018)	42.31 thousand ($)
	GDP per capita, PPP (2018)	46.78 thousand ($)
	GDP, current prices (2018)	2,830 billion ($)
Population ageing	Rate of population ageing	2.2 (2007-2017)
	Aged over 65 (2018)	18.5%
	Age dependency ratio (2017)	29%
Healthcare Efficiency	Health expenditure (2017)	9.6% of GDP
	Health expenditure per capita (2017)	4.246 thousand ($)
	Healthcare efficiency score (2018)	58.9
Retirement	Total # retired	12,225,489
	Retired people proportion	19%
	Retirement age (Early/Normal)	65 years/68 years

Longevity Initiatives

- Age of relevant initiatives: **14 years**
- **23** of WHO age-friendly cities and communities
- £300 million **National Longevity Industrial Strategy**
- **8** initiatives focused on non-medical improvement of quality of life
- **3** initiatives focused on preventive medicine and healthcare approaches
- **1** initiative involves research or R&D of medicines that directly impact on ageing

United Kingdom Initiatives Level of Comprehensiveness

Longevity Industrial Strategy

Ageing Society Industrial Challenge

Digitalisation of Medicines Manufacturing Challenge Fund

National Master Plan on Ageing

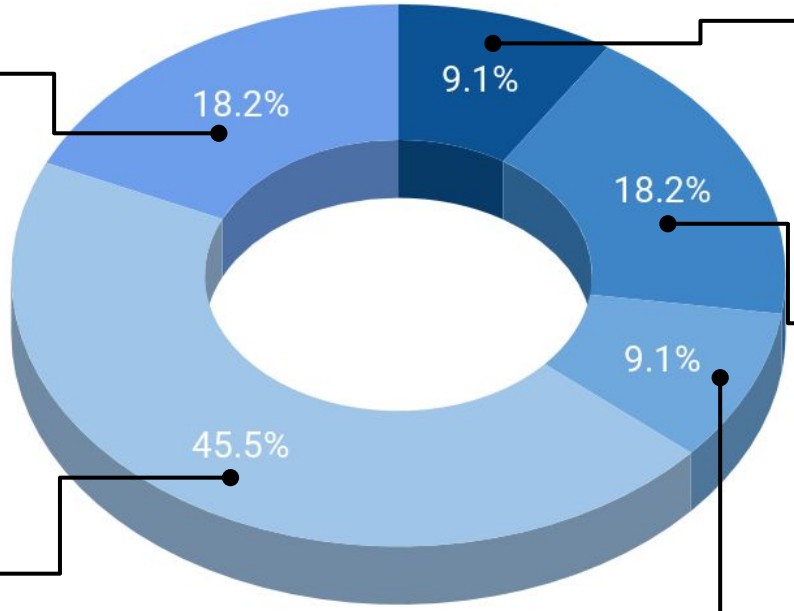
The Partnerships for Older People Project (POPPs) Programme

PSA Delivery Agreement 17: Tackle Poverty and Promote Greater Independence and Well-being in Later Life

National Service Framework for Long Term Conditions

Independent Living Strategy

National Loneliness Strategy



Non-Medical Initiatives

Ageing Well Programme

Preventive Medicine

"Healthy Ageing" Programme

Genomic Medicine Service

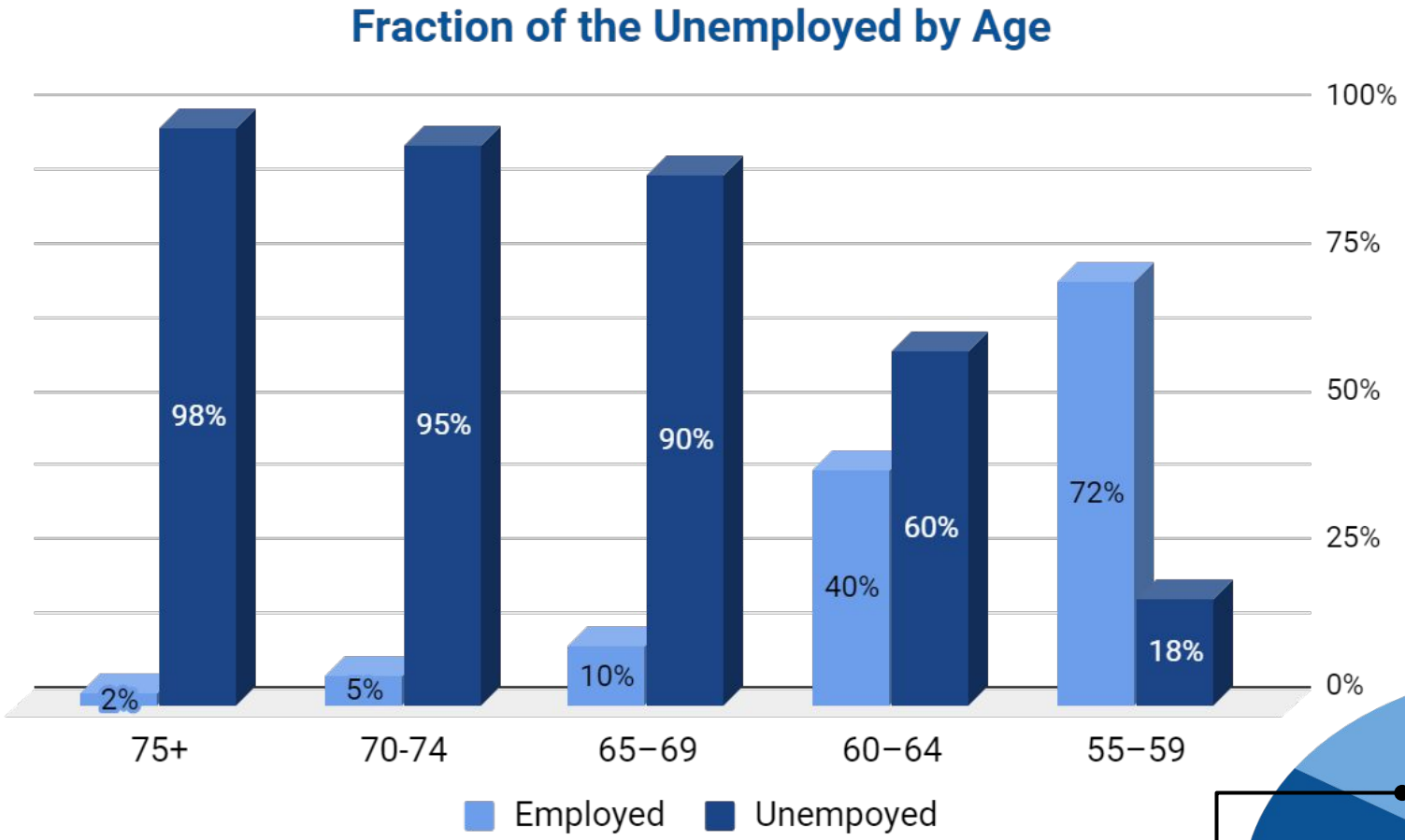
Geroscience R&D

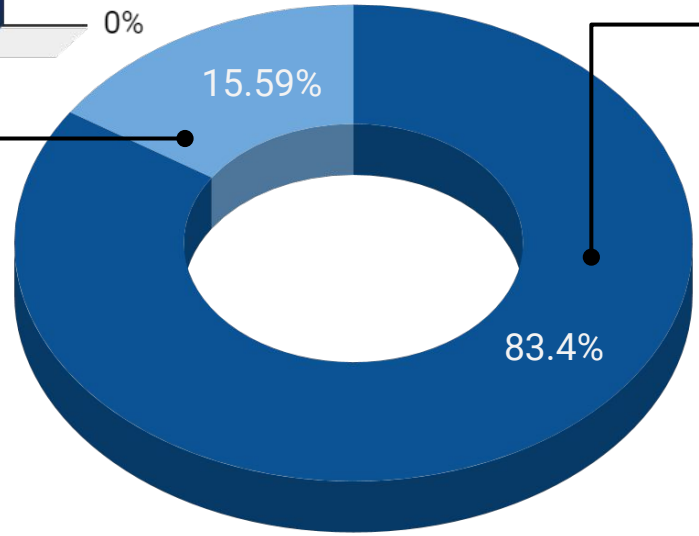
BIRAX Ageing

Underrepresented Initiatives

Healthy ageing: Lifestyle and Fitness Programs	AgeTech	Elderly Healthcare Vouchers	Financial Reform	Continuing Education

United Kingdom Age/Employment Range





Percent of people under 60

Percent of people over 60

Netherlands

General metrics

Life Expectancy	Both sexes life expectancy (2019)	81.6 years
	Male life expectancy (2018)	80.0 years
	Female life expectancy (2018)	83.2 years
GDP	GDP per capita, current prices (2018)	53.02 thousand ($)
	GDP per capita, PPP (2018)	58.25 thousand ($)
	GDP, current prices (2018)	914 billion ($)
Population Ageing	Rate of population ageing	4 (2007-2017)
	Aged over 65 (2018)	19.1%
	Age dependency ratio (2017)	29%
Healthcare Efficiency	Health expenditure (2017)	10.1% of GDP
	Health expenditure per capita (2017)	5.386 thousand ($)
	Healthcare efficiency score (2018)	50.8
Retirement	Total # retired	3 217 307
	Retired people proportion	19%
	Normal retirement age (Man/Woman)	67 years / 65 years
	Early retirement age (Man/Woman)	52 years / 52 years

Longevity Initiatives

- Age of relevant initiatives: **12 years**
- **National Master Plan on Ageing**
- **12** initiatives focused on non-medical improvement of quality of life
- **1** initiative focused on preventive medicine and healthcare approaches
- Dedicated minister for elderly

Netherlands Initiatives Level of Comprehensiveness

AgeTech

My Home Fits Program

Deltaplan for Dementia

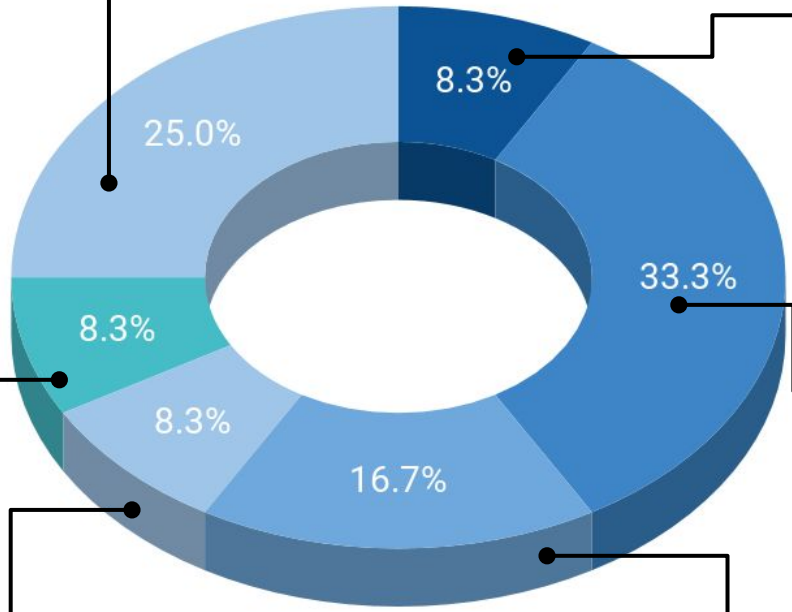
Dementia Villages Plan

Financial Reform

Increase in Pension AOW Age

National Master Plan on Ageing

Dutch National Care for the Elderly Programme



Healthy Ageing: Lifestyle and Fitness Programs

Groningen Active Ageing Strategy

Non-Medical Initiatives

HANNN - Healthy Ageing Network Northern Netherlands

Social Network for Older People (Perspective for 50 plus)

Pact for Elderly Care

Fighting loneliness among elderly

Elderly Healthcare Vouchers

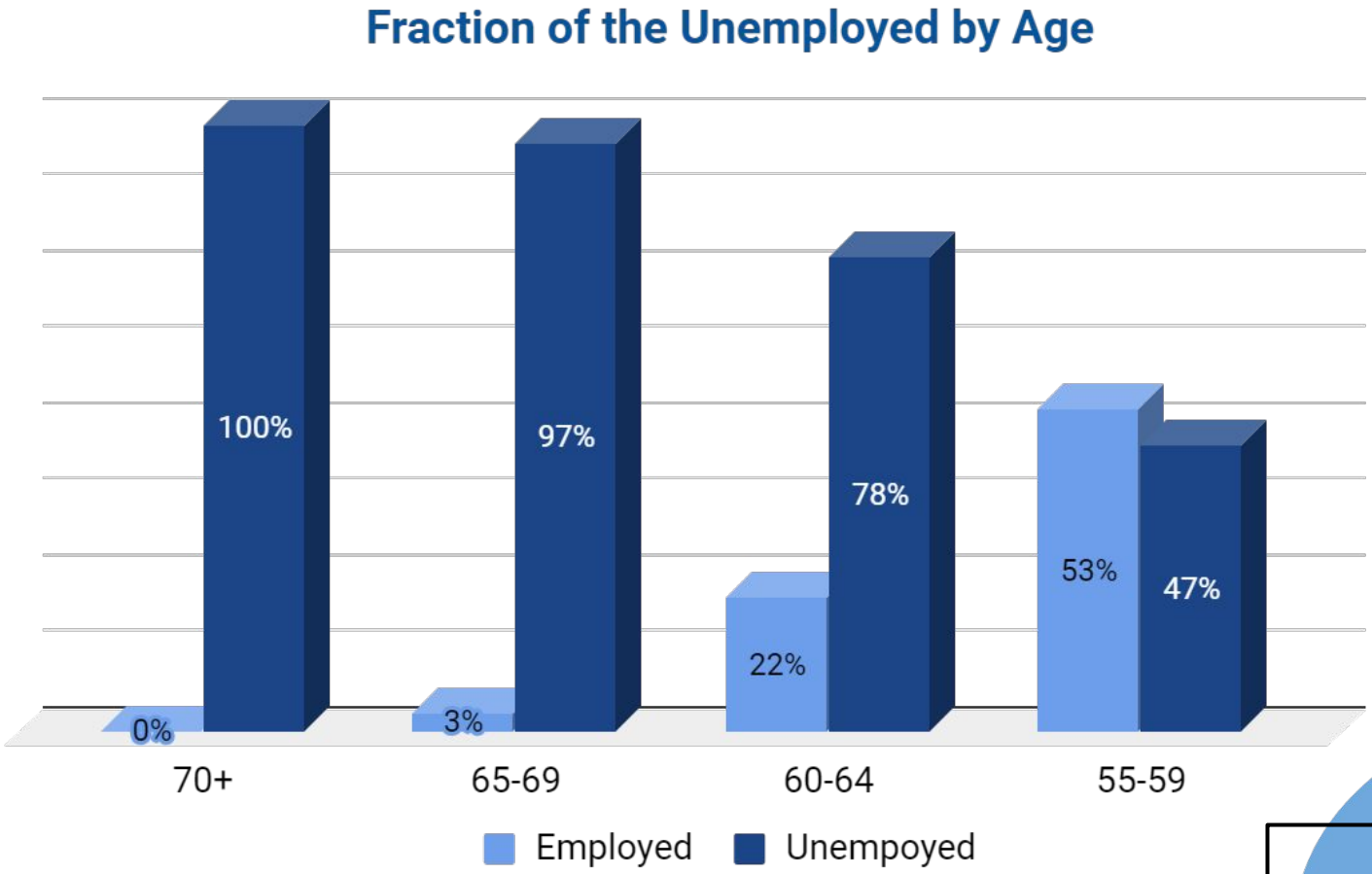
Dignity and Pride (D&P), Loving Care for Our Elderly

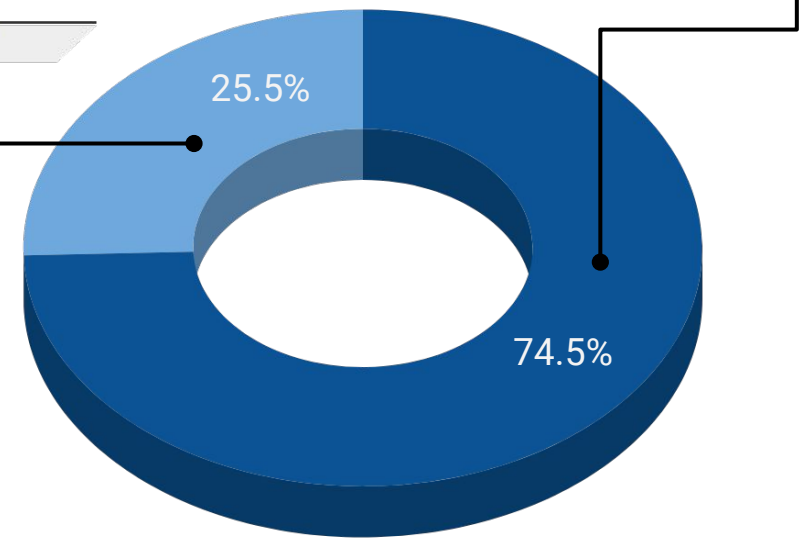
"Gilde Nederland"

Underrepresented Initiatives

Longevity Industrial Strategy	Continuing Education

Netherlands Age/Employment Range





South Korea

General metrics

Life Expectancy	Both sexes life expectancy (2019)	80.9 years
	Male life expectancy (2018)	79.5 years
	Female life expectancy (2018)	85.6 years
GDP	GDP per capita, current prices (2018)	31.94 thousand ($)
	GDP per capita, PPP (2018)	42.98 thousand ($)
	GDP, current prices (2018)	1 660 billion ($)
Population Ageing	Rate of population ageing	4.3 (2007-2017)
	Aged over 65 (2018)	14.2%
	Age dependency ratio (2017)	19%
Healthcare Efficiency	Health expenditure (2017)	7.6% of GDP
	Health expenditure per capita (2017)	2.897 thousand ($)
	Healthcare efficiency score (2018)	67.4
Retirement	Total # retired	7 161 073
	Retired people proportion	14%
	Normal retirement age (Man/Woman)	60 years/ 60 years
	Early retirement age (Man/Woman)	50 years/ 50 years

Longevity Initiatives

- Age of relevant initiatives: **9 years**
- **11** of WHO age-friendly cities and communities
- **3** initiatives focused on non-medical improvement of quality of life
- **2** initiatives focused on preventive medicine and healthcare approaches
- **2** initiatives involve research or R&D of medicines that directly impact on ageing

South Korea Initiatives Level of Comprehensiveness

Financial Reform

Korean Civil Service Pension Reform

National Master Plan on Ageing

"2020 Master Plan for the Aged Society"

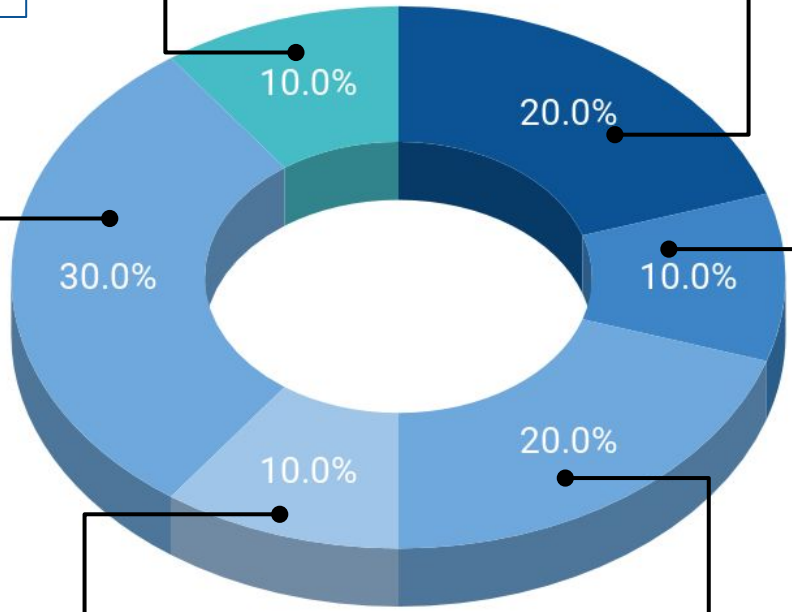
Urban Planning

Preventive Medicine

Reinforcement of Preventive Health Care

Allowing non-medical institutions to directly conduct genetic testing for disease prevention

Expansion of genetic testing coverage within health insurance for the selection of targeted therapy, etc.



Elderly Healthcare Vouchers

Foundation for Providing the Elderly With Services

Continuing Education

The Fourth National Lifelong Learning Promotion Plan (2018-2022)

Geroscience R&D

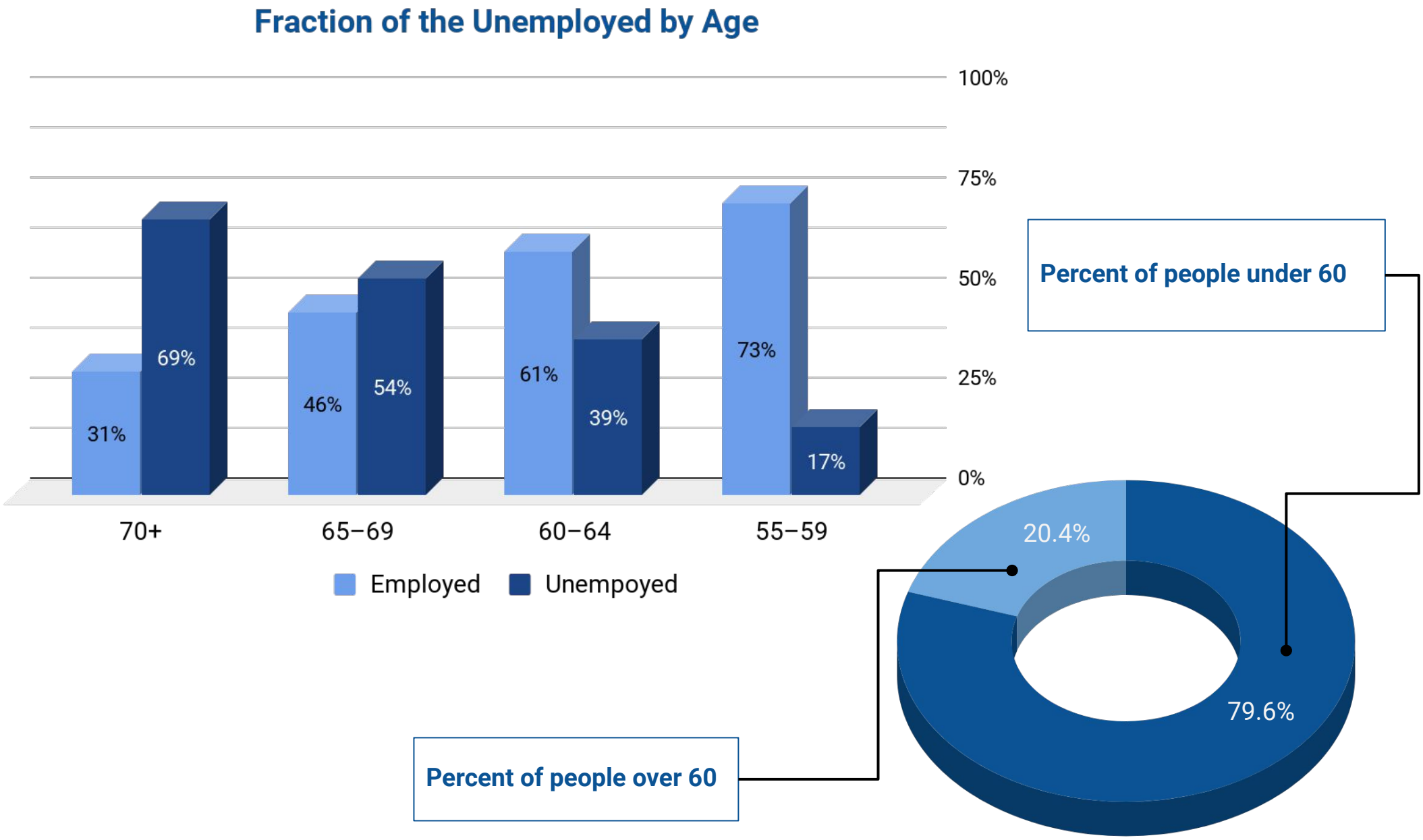
Establishment of National Stem Cell Bank

Post-genome Multi-ministry Gene Project

Underrepresented Initiatives

Healthy Ageing: Lifestyle and Fitness Programs	Non-Medical Initiatives	Longevity Industrial Strategy	AgeTech

South Korea Age/Employment Range



Israel

General metrics

Life Expectancy	Both sexes life expectancy (2019)	81.8 years
	Male life expectancy (2018)	80.3 years
	Female life expectancy (2018)	84.2 years
GDP	GDP per capita, current prices (2018)	42.14 thousand ($)
	GDP per capita, PPP (2018)	36.16 thousand ($)
	GDP, current prices (2018)	381.57 billion ($)
Population Ageing	Rate of population ageing	1.9 (2007-2017)
	Aged over 65 (2018)	11.7%
	Age dependency ratio (2017)	19%
Healthcare Efficiency	Health expenditure (2017)	7.4% of GDP
	Health expenditure per capita (2017)	2.834 thousand ($)
	Healthcare efficiency score (2018)	67.0
Retirement	Total # retired	1 022 251
	Retired people proportion	12%
	Normal retirement age (Man/Woman)	70 years/67 years
	Early retirement age (Man/Woman)	63.3 years/68.3 years

Longevity Initiatives

- Age of relevant initiatives: **30 years**
- **4** of WHO age-friendly cities and communities
- **2** initiatives focused on the non-medical improvement of quality of life
- **2** initiatives focused on preventive medicine and healthcare approaches
- **2** initiatives involve research or R&D of medicines that directly impact on ageing

Israel Initiatives Level of Comprehensiveness

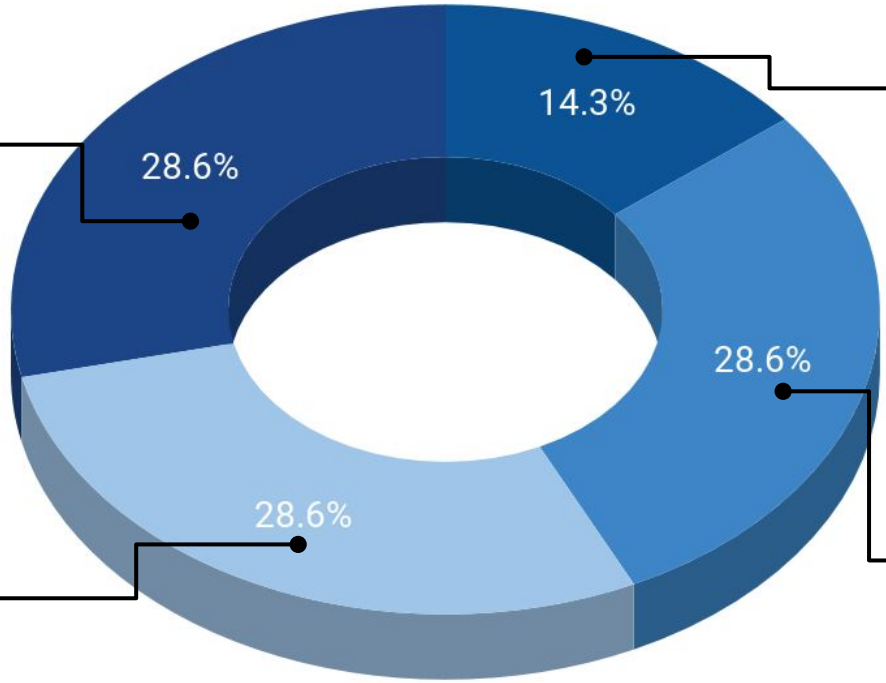
National Master Plan on Ageing

National Master Plan on Ageing

Establishing and Improving Public Health Systems

Non-Medical Initiatives

Increasing Education in the Field of Ageing



Preventive Medicine

Big Data Health Project

National Program for Addressing Alzheimer's Disease and Other Types of Dementia

Geroscience R&D

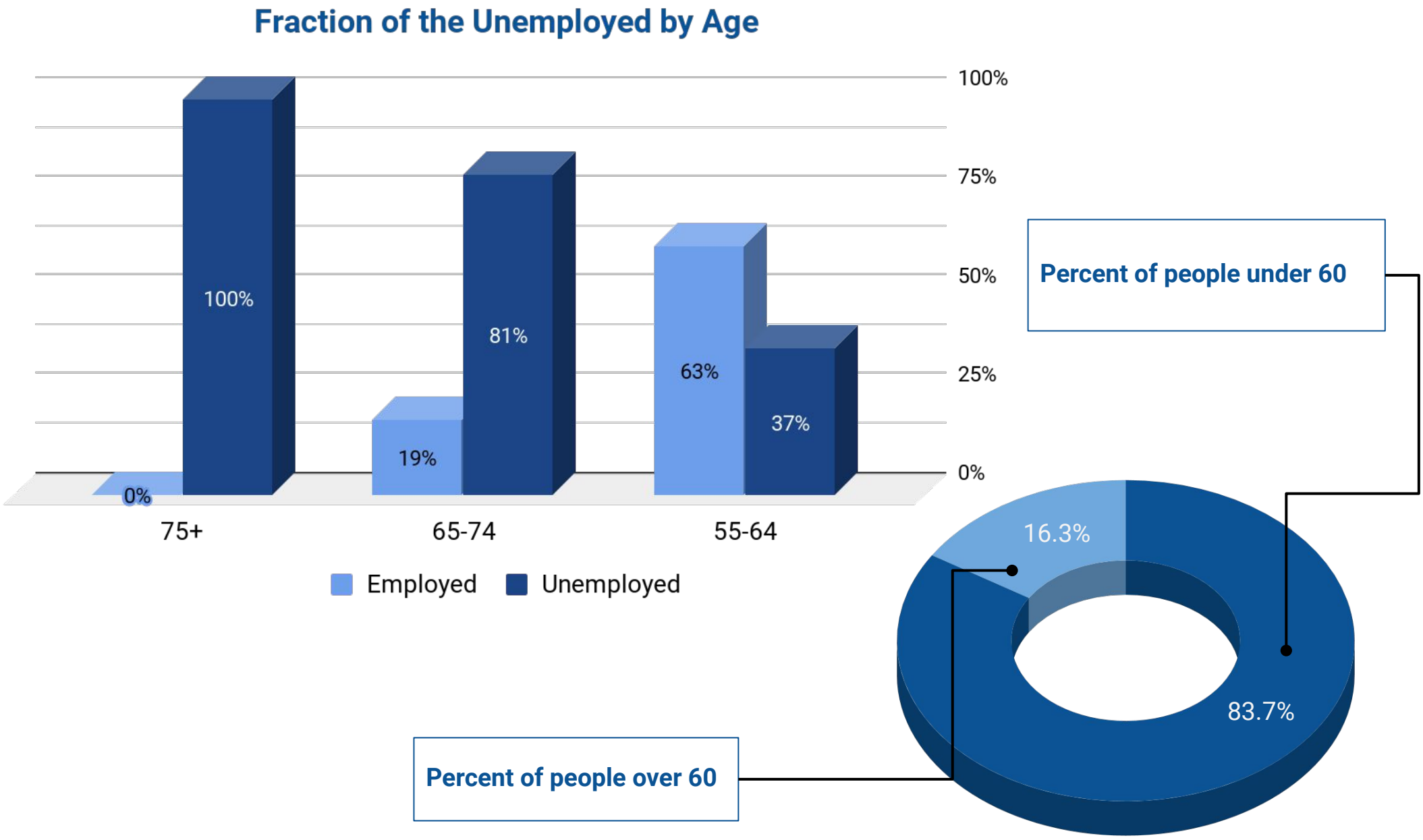
Increasing the R&D Budget

BIRAX Ageing

Underrepresented Initiatives

Healthy Ageing: Lifestyle and Fitness Programs	AgeTech	Longevity Industrial Strategy	Elderly Healthcare Vouchers	Financial Reform	Continuing Education

Israel Age/Employment Range



Singapore

General metrics

Life Expectancy	Both sexes life expectancy (2019)	85.7 years
	Male life expectancy (2018)	80.8 years
	Female life expectancy (2018)	86.1 years
GDP	GDP per capita, current prices (2018)	65.63 thousand ($)
	GDP per capita, PPP (2018)	103.72 thousand ($)
	GDP, current prices (2018)	372.81 billion ($)
Population Ageing	Rate of population ageing	6 (2007-2017)
	Aged over 65 (2018)	18.8%
	Age dependency ratio (2017)	18%
Healthcare Efficiency	Health expenditure (2017)	2.2% of GDP
	Health expenditure per capita (2017)	1.948 thousand ($)
	Healthcare efficiency score (2018)	85.6
Retirement	Total # retired	725 193
	Retired people proportion	13%
	Normal retirement age (Man/Woman)	65 years / 65 years
	Early retirement age (Man/Woman)	62 years / 62 years

Longevity Initiatives

- Age of relevant initiatives: **12 years**
- **15** initiatives focused on non-medical improvement of quality of life
- **1** initiative focused on preventive medicine and healthcare approaches
- **1** initiative involves research or R&D of medicines that directly impact on ageing

Singapore Initiatives Level of Comprehensiveness

Non-Medical Initiatives

Senior Citizen Concession Card

National Innovation Challenge on Active and Confident Ageing Research

National Master Plan on Ageing

Action Plan for Successful Ageing

Continuing Education

Media Development Authority Striving to Improve Elderly Digital Literacy

National Population and Talent Division's SkillsFuture Program

Re-employment of Older Workers Guidance

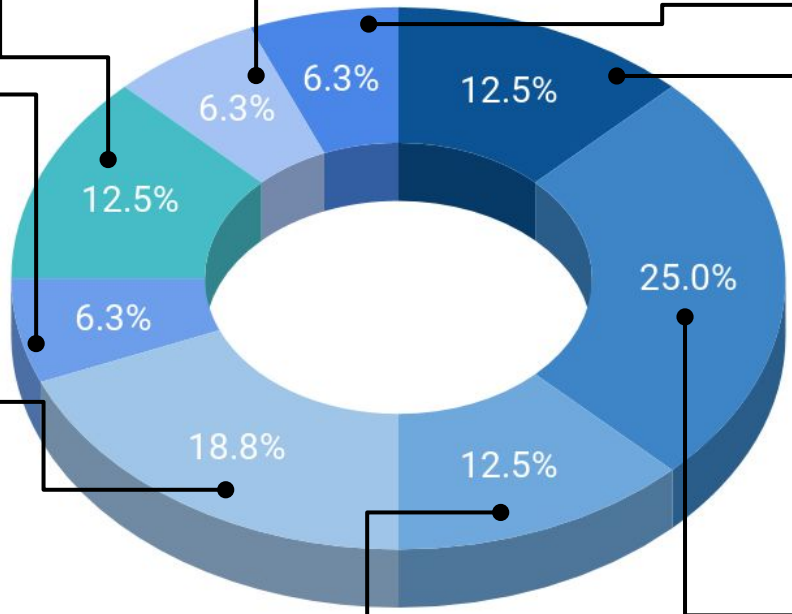
Financial Reform

Lease Buyback Scheme (LBS)

Medisave

Geroscience R&D

Singapore Parkinson's Disease Translational Clinical Programme



Preventive Medicine

"Advancing Precision Medicine for Cardiovascular Disease and Diabetes in Asian Populations" programe

AgeTech

SHINESeniors Program

Licensing Experimentation and Adaptation Programme

Elderly Healthcare Vouchers

ComCare Long Term Assistance (also known as Public Assistance)

Enhancement for Active Seniors (EASE)

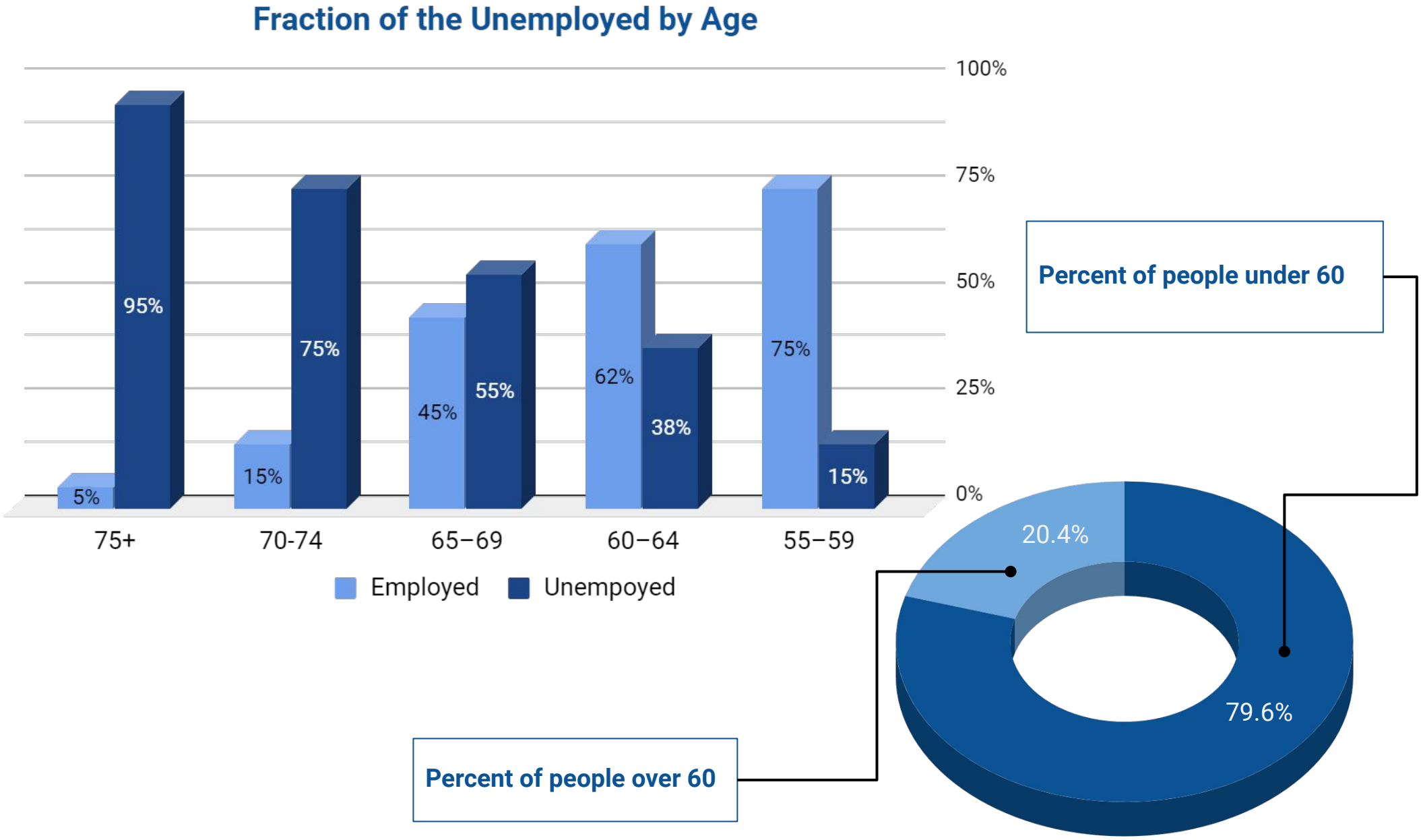
Pioneer Generation Package

Silver Support Scheme

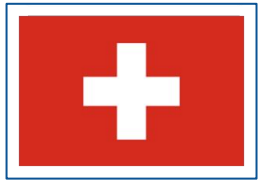
Underrepresented Initiatives

Longevity Industrial Strategy	Healthy Ageing: Lifestyle and Fitness Programs

Singapore Age/Employment Range



Switzerland



General metrics

Life Expectancy	Both sexes life expectancy (2019)	81.8 years
	Male life expectancy (2018)	81.2 years
	Female life expectancy (2018)	85.2 years
GDP	GDP per capita, current prices (2018)	82.41 thousand ($)
	GDP per capita, PPP (2018)	65.71 thousand ($)
	GDP, current prices (2018)	707.54 billion ($)
Population Ageing	Rate of population ageing	1.9 (2007-2017)
	Aged over 65 (2018)	18.34%
	Age dependency ratio (2017)	28%
Healthcare Efficiency	Health expenditure (2017)	12.3% of GDP
	Health expenditure per capita (2017)	8.009 thousand ($)
	Healthcare efficiency score (2018)	58.4
Retirement	Total # retired	1 560 790
	Retired people proportion	18%
	Normal retirement age (Man/Woman)	65 years/ 64 years
	Early retirement age (Man/Woman)	63 years/ 61 years

Longevity Initiatives

- Age of relevant initiatives: **15 years**
- **3** of WHO age-friendly cities and communities
- **4** initiatives focused on non-medical improvement of quality of life
- **1** initiative focused on preventive medicine and healthcare approaches
- **2** initiatives involve research or R&D of medicines that directly impact on ageing

Switzerland Initiatives Level of Comprehensiveness

Healthy Ageing: Lifestyle and Fitness Programs

The VIA Project

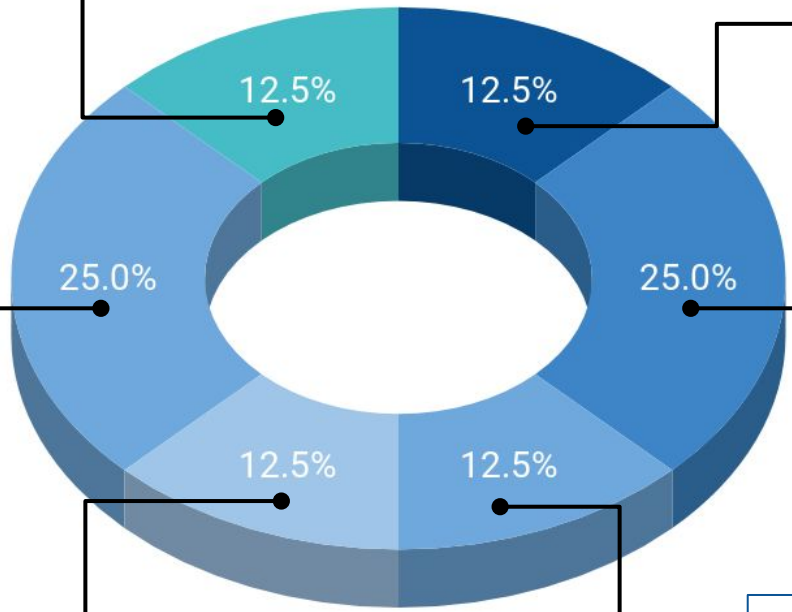
Financial Reform

Zeitvorsorge St. Gallen Banking Scheme

"Retirement 2020"

National Master Plan on Ageing

Policy for the Elderly - "Senior+" Project



Non-Medical Initiatives

Roadmap 2016–2021 for developing the next generation of clinical researchers

Geroscience R&D

Masterplan for the Promotion of Biomedical Research

National Platform for Palliative Care Strategy

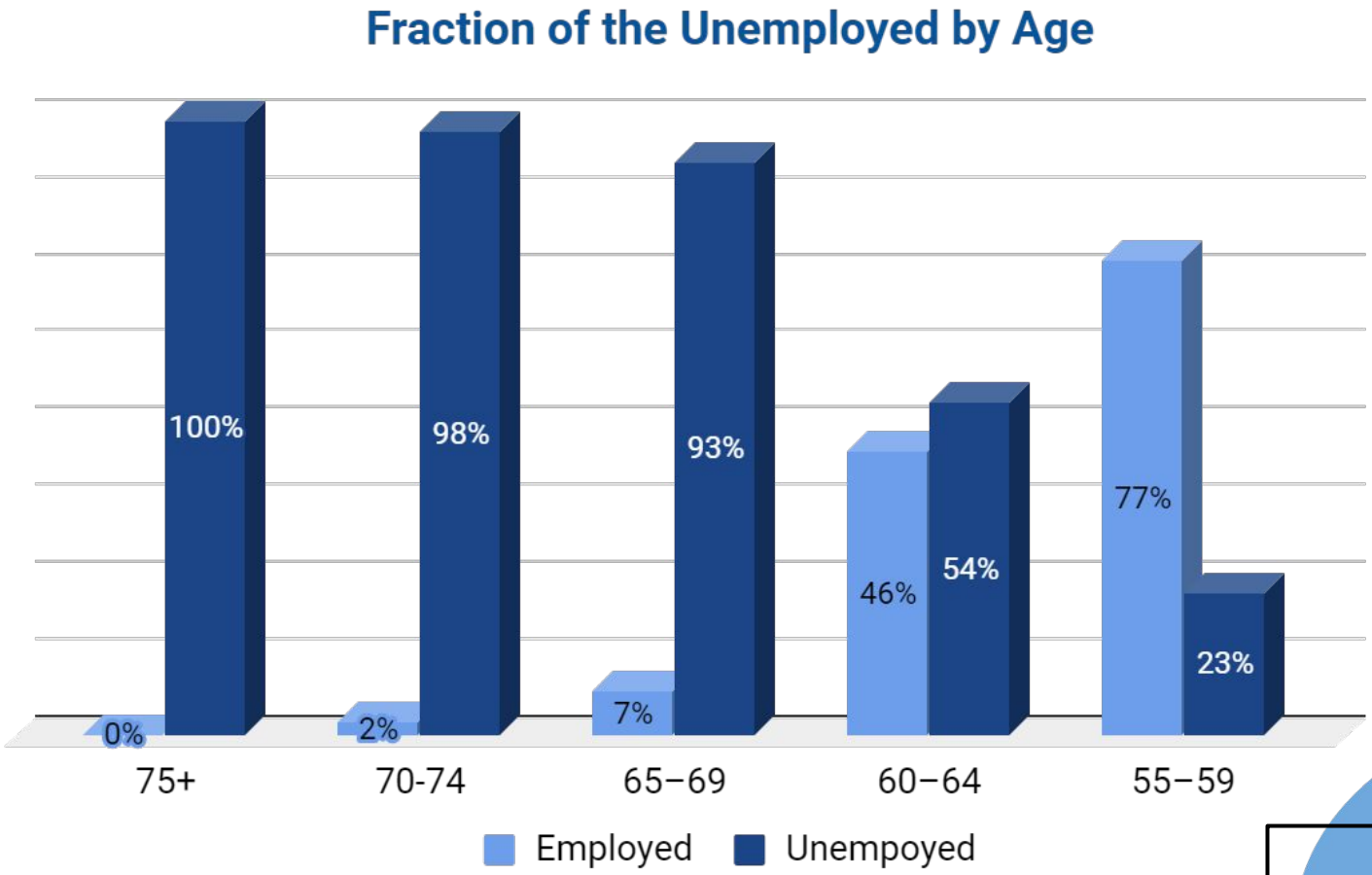
Preventive Medicine

Swiss Personalized Health Network (SPHN)

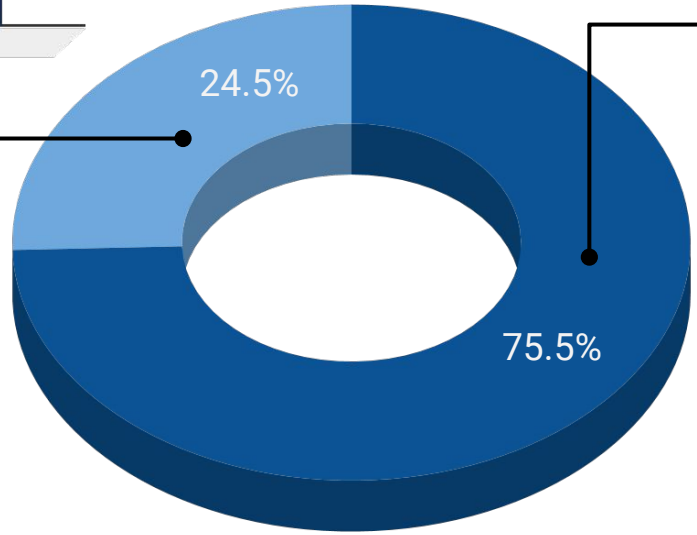
Underrepresented Initiatives

AgeTech	Elderly Healthcare Vouchers	Longevity Industrial Strategy	Continuing Education

Switzerland Age/Employment Range

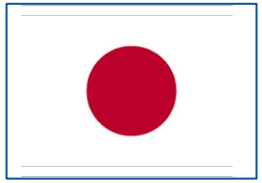


Percent of people under 60



Percent of people over 60

Japan



General metrics

Life Expectancy	Both sexes life expectancy (2019)	85.8 years
	Male life expectancy (2018)	81.1 years
	Female life expectancy (2018)	87.1 years
GDP	GDP per capita, current prices (2018)	41.02 thousand ($)
	GDP per capita, PPP (2018)	45.56 thousand ($)
	GDP, current prices (2018)	5 180 billion ($)
Population Ageing	Rate of population ageing	6.2 (2007-2017)
	Aged over 65 (2018)	28.3%
	Age dependency ratio (2017)	45%
Healthcare Efficiency	Health expenditure (2017)	10.7% of GDP
	Health expenditure per capita (2017)	4.717 thousand ($)
	Healthcare efficiency score (2018)	64.3
Retirement	Total # retired	34 293 754
	Retired people proportion	27%
	Normal retirement age (Man/Woman)	65 years / 65 years
	Early retirement age (Man/Woman)	60 years / 60 years

Longevity Initiatives

- Age of relevant initiatives: **8 years**
- **24** of WHO age-friendly cities and communities
- **6** initiatives focused on non-medical improvement of quality of life

Japan Initiatives Level of Comprehensiveness

Healthy Ageing: Lifestyle and Fitness Programs

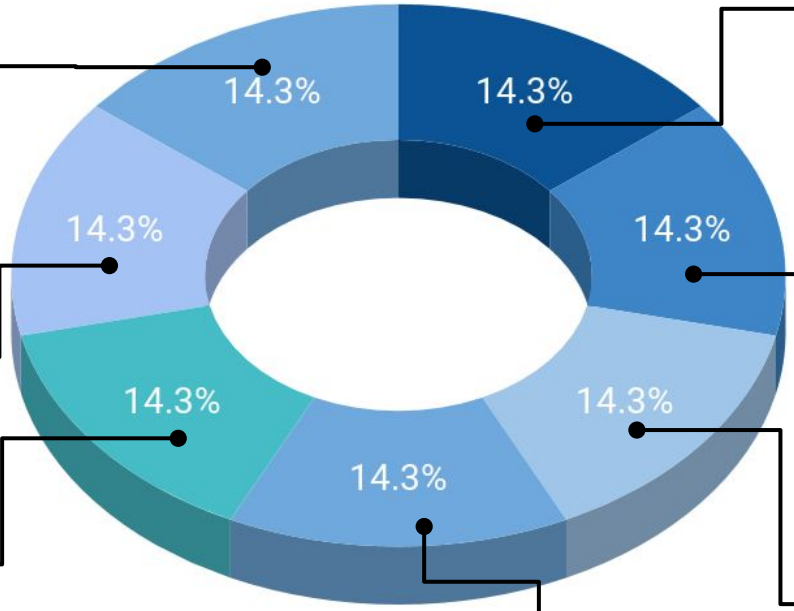
Kakaritsuke physicians

Non-Medical Initiatives

Well Ageing Society Summit

National Master Plan on Ageing

Urban Planning
Society 5.0



Elderly Healthcare Vouchers

Subsidized Medicine

Financial Reform

Retirement Age Increment

Continuing Education

Senior Citizens' Continuing Education Program

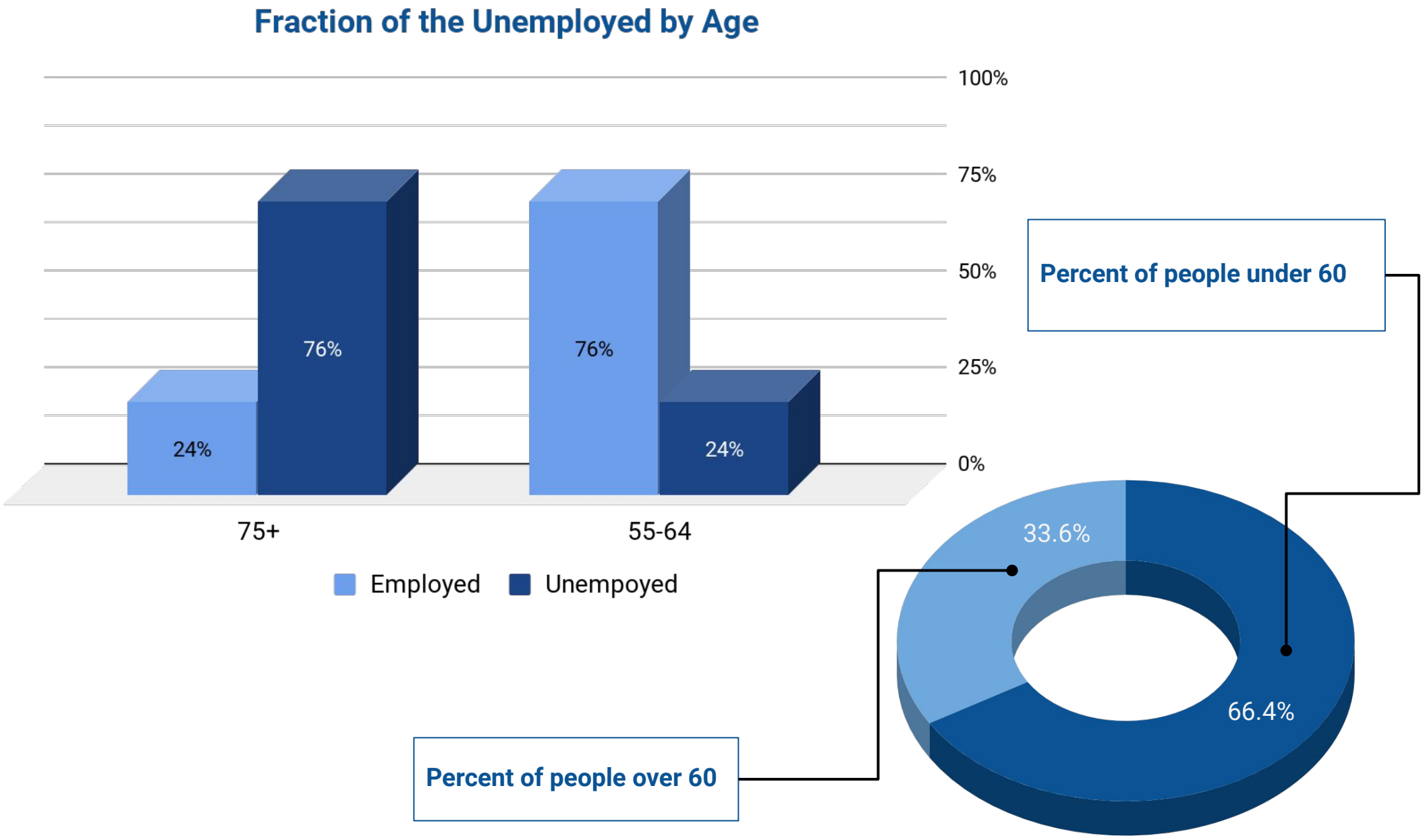
AgeTech

METI Scheme for Elder Care Robots

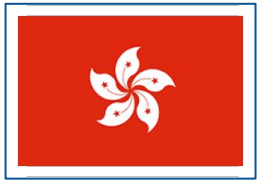
Underrepresented Initiatives

Preventive Medicine	Geroscience R&D	Longevity Industrial Strategy

Japan Age/Employment Range



Hong Kong



General metrics

Life Expectancy	Both sexes life expectancy (2019)	82.7 years
	Male life expectancy (2018)	80.4 years
	Female life expectancy (2018)	85.53 years
GDP	GDP per capita, current prices (2018)	50.54 thousand ($)
	GDP per capita, PPP (2018)	66.52 thousand ($)
	GDP, current prices (2018)	381.72 billion ($)
Population Ageing	Rate of population ageing	3.8 (2007-2017)
	Aged over 65 (2018)	17.4%
	Age dependency ratio (2017)	23%
Healthcare Efficiency	Health expenditure (2017)	6.2% of GDP
	Health expenditure per capita (2017)	3.670 thousand ($)
	Healthcare efficiency score (2018)	87.3
Retirement	Total # retired	1 205 056
	Retired people proportion	16%
	Normal retirement age (Man/Woman)	65 years/ 65 years
	Early retirement age (Man/Woman)	65 years/ 65 years

Longevity Initiatives

- Age of relevant initiatives: **20 years**
- **9** of WHO age-friendly cities and communities
- **6** initiatives focused on non-medical improvement of quality of life
- **1** initiative focused on preventive medicine and healthcare approaches

Hong Kong Initiatives Level of Comprehensiveness

Preventive Medicine

Proposal for Healthcare Reform by HK Health Secretary

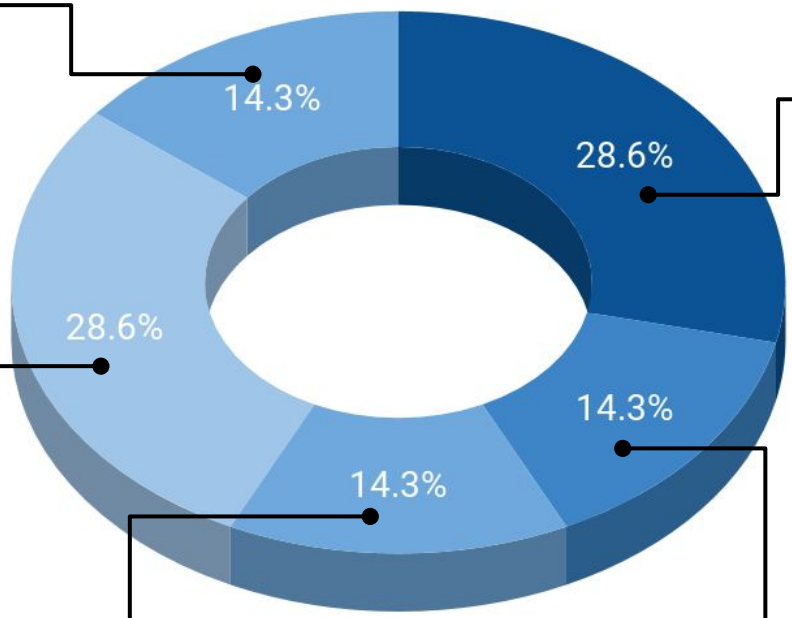
National Master Plan on Ageing

Elderly Services Programme Plan

Active Living Facilities

Elderly Healthcare Vouchers

Vouchers for Private Health Services



Healthy Ageing: Lifestyle and Fitness Programs

Visiting Health Teams

Healthy Ageing Campaign/Promoting Health

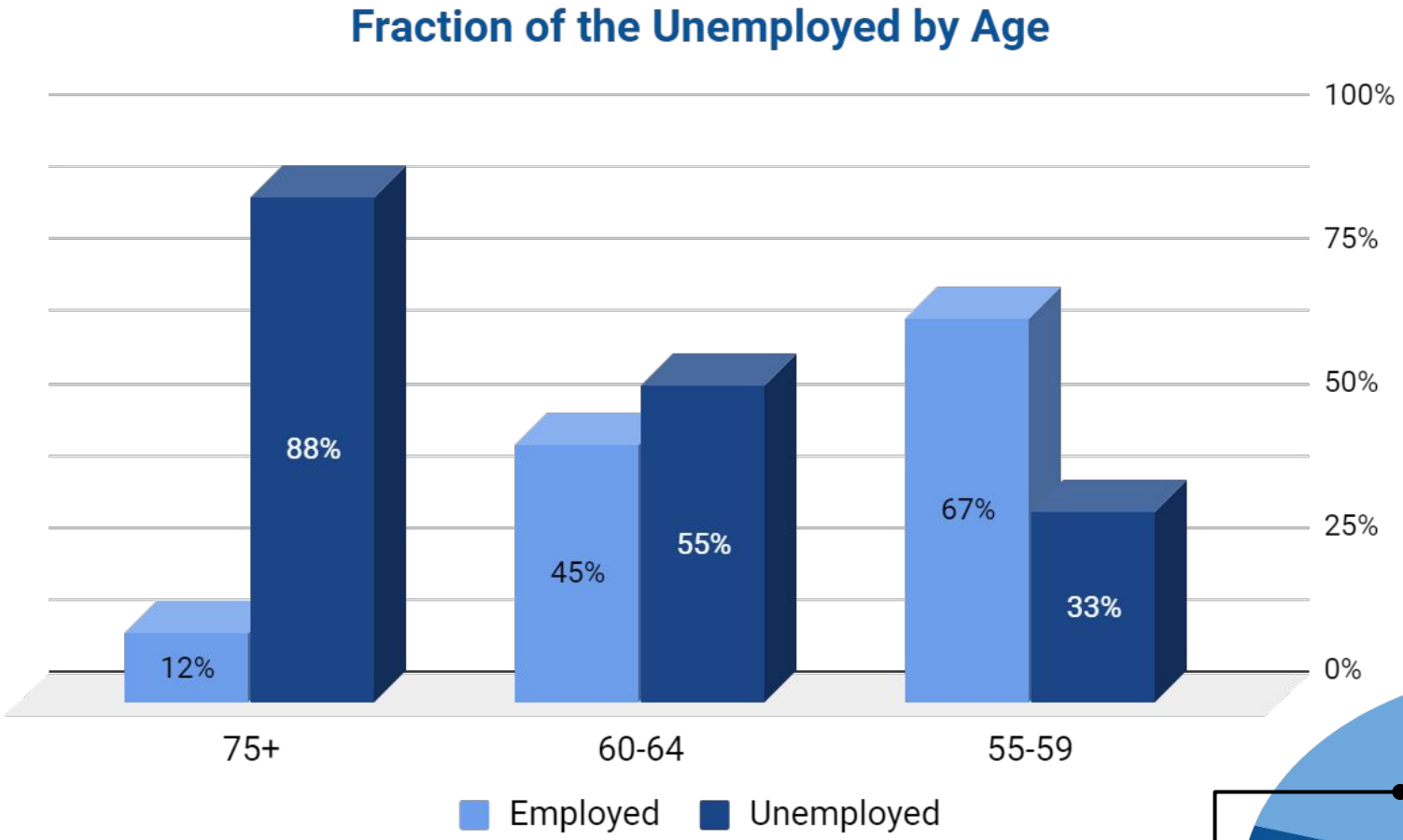
Financial Reform

Subsidizing the Training of Healthcare Workers

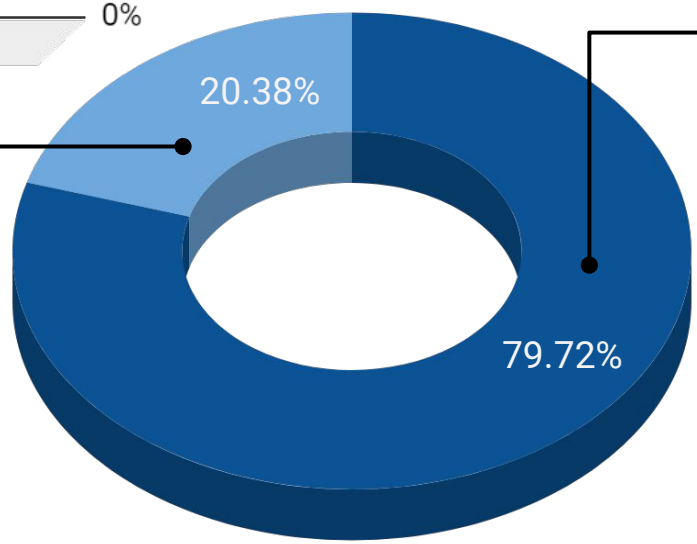
Underrepresented Initiatives

Non-Medical Initiatives	Geroscience R&D	Longevity Industrial Strategy	AgeTech	Continuing Education

Hong Kong Age/Employment Range



Percent of people under 60



Percent of people over 60

Spain

General metrics

Life Expectancy	Both sexes life expectancy (2019)	81.9 years
	Male life expectancy (2018)	80.3 years
	Female life expectancy (2018)	85.7 years
GDP	GDP per capita, current prices (2018)	30.63 thousand ($)
	GDP per capita, PPP (2018)	41.54 thousand ($)
	GDP, current prices (2018)	1 430 billion ($)
Population Ageing	Rate of population ageing	2.5 (2007-2017)
	Aged over 65 (2018)	18.15%
	Age dependency ratio (2017)	30%
Healthcare Efficiency	Health expenditure (2017)	8.8% of GDP
	Health expenditure per capita (2017)	3.371 thousand ($)
	Healthcare efficiency score (2018)	69.3
Retirement	Total # retired	9 051 928
	Retired people proportion	19%
	Normal retirement age (Man/Woman)	65 years / 65 years
	Early retirement age (Man/Woman)	60 years / 60 years

Longevity Initiatives

- Age of relevant initiatives: **18 years**
- **162** of WHO age-friendly cities and communities
- **4** initiatives focused on non-medical improvement of quality of life

Spain Initiatives Level of Comprehensiveness

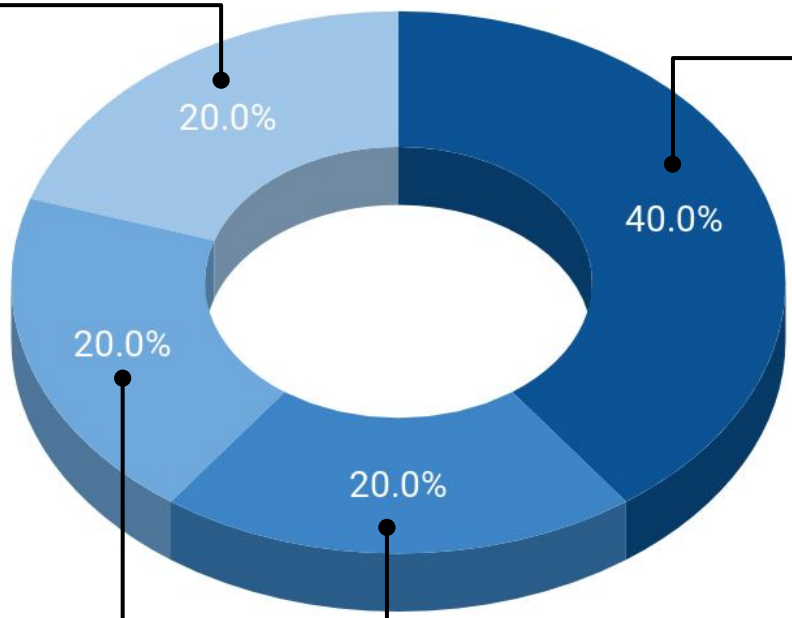
Non-Medical Initiatives

Living Centers

Healthy Ageing: Lifestyle and Fitness Programs

Chronic Disease Framework

eZaintza



Elderly Healthcare Vouchers

Junta 65 Card

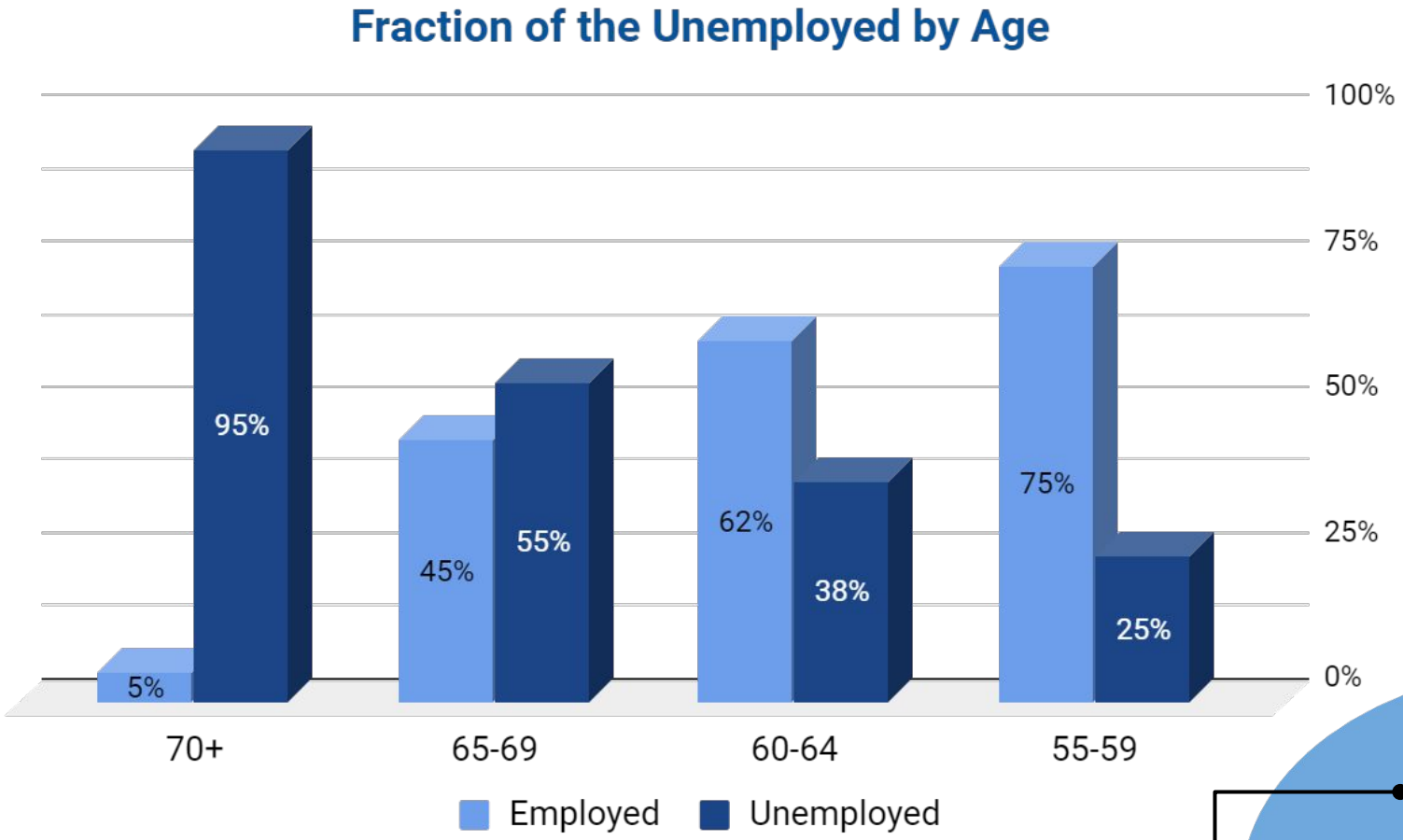
Financial Reform

Retirement Age Increment

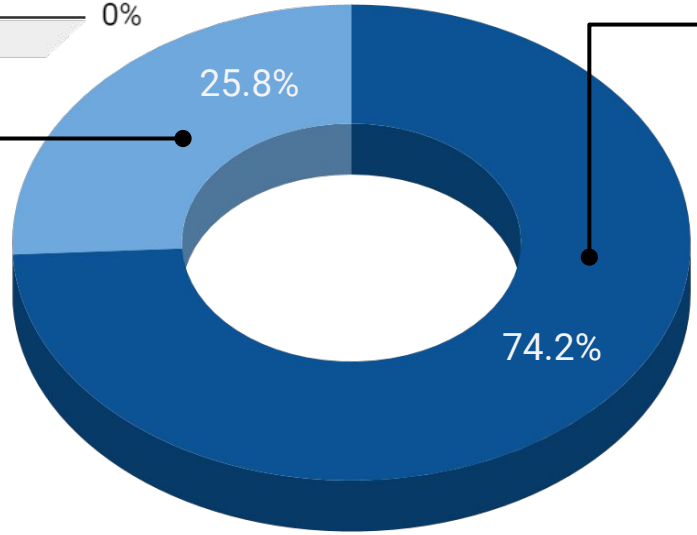
Underrepresented Initiatives

Preventive Medicine	Geroscience R&D	Longevity Industrial Strategy	AgeTech	National Master Plan on Ageing	Continuing Education

Spain Age/Employment Range



Percent of people under 60



Percent of people over 60

European Union

General metrics

Life Expectancy	Both sexes life expectancy (2019)	78.5 years
	Male life expectancy (2018)	75 years
	Female life expectancy (2018)	82 years
GDP	GDP per capita, current prices (2018)	36.54 thousand ($)
	GDP per capita, PPP (2018)	44.47 thousand ($)
	GDP, current prices (2018)	18 710.0 billion ($)
Population Ageing	Rate of population ageing	2.4 (2007-2017)
	Aged over 65 (2018)	19.0%
	Age dependency ratio (2017)	30%
Healthcare Efficiency	Health expenditure (2017)	7.0% of GDP
	Health expenditure per capita (2017)	3.927 thousand ($)
Retirement	Total # retired	69 960 901
	Retired people proportion	20%

Longevity Initiatives

- **319** of WHO age-friendly cities and communities
- **Master Plan on Ageing**
- **4** initiatives focused on non-medical improvement of quality of life
- **2** initiatives involve research or R&D of medicines that directly impact on ageing

European Union Initiatives Level of Comprehensiveness

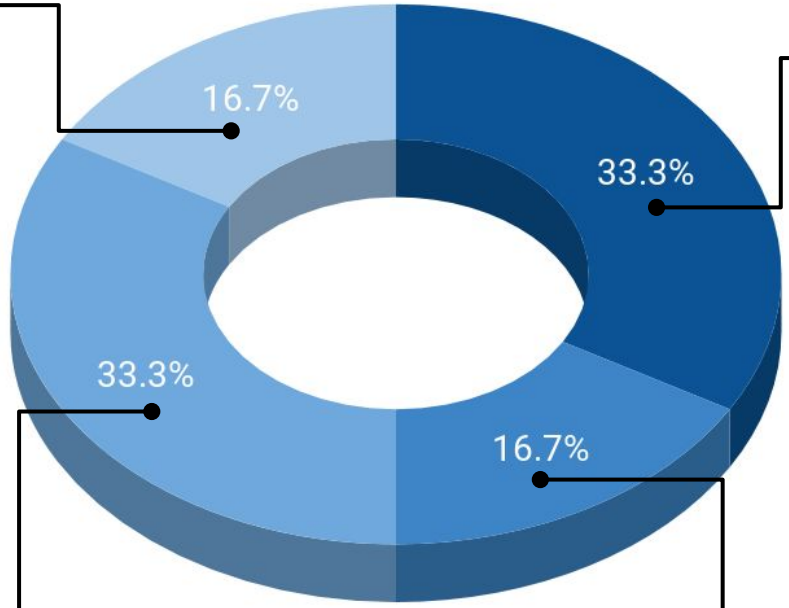
AgeTech

ActiveAge

Geroscience R&D

FP7

PRECIOUS



Healthy Ageing: Lifestyle and Fitness Programs

Scaling Up Strategy

eZaintza

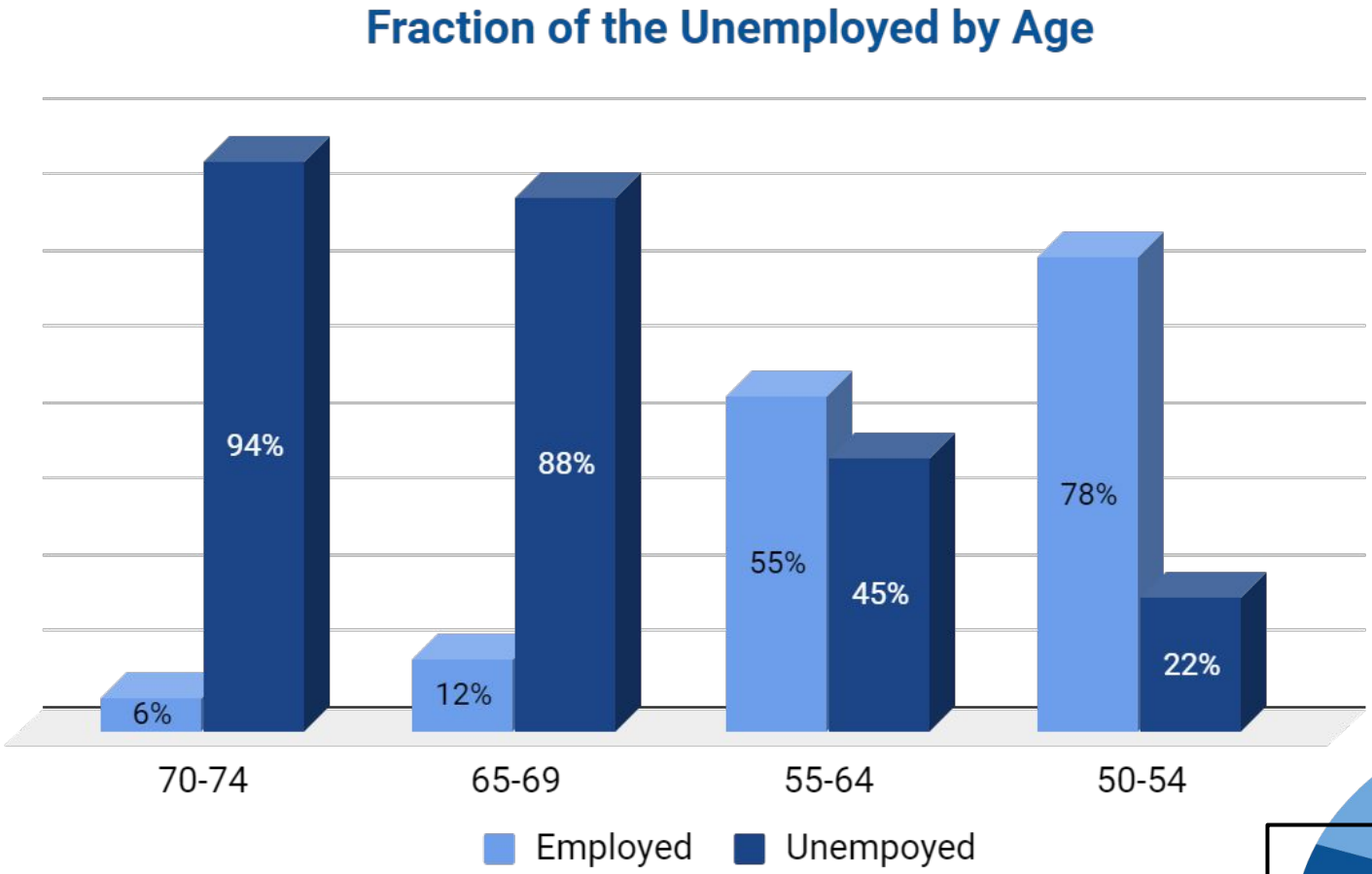
Ageing Population Master Plan

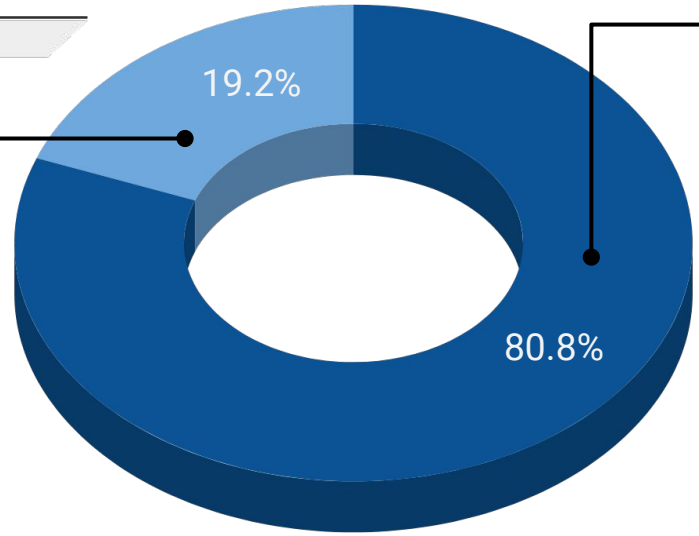
D4 AG

Underrepresented Initiatives

Preventive Medicine	Healthy Ageing: Lifestyle and Fitness Programs	Longevity Industrial Strategy	Elderly Healthcare Vouchers	Non-Medical Initiatives	Continuing Education

EU Age/Employment Range





Percent of people under 60

Percent of people over 60

USA

General metrics

Life Expectancy	Both sexes life expectancy (2019)	79.4 years
	Male life expectancy (2018)	77.0 years
	Female life expectancy (2018)	81.9 years
GDP	GDP per capita, current prices (2018)	64.77 thousand ($)
	GDP per capita, PPP (2018)	64.77 thousand ($)
	GDP, current prices (2018)	21 340 billion ($)
Population Ageing	Rate of population ageing	3 (2007-2017)
	Aged over 65 (2018)	15.6%
	Age dependency ratio (2017)	23%
Healthcare Efficiency	Health expenditure (2017)	17.2% of GDP
	Health expenditure per capita (2017)	10209.4 thousand ($)
	Healthcare efficiency score (2018)	29.6
Retirement	Total # retired	50 204 174
	Retired people proportion	15%
	Normal retirement age (Man/Woman)	66 years/66 years
	Early retirement age (Man/Woman)	62 years/62 years

Longevity Initiatives

- Age of relevant initiatives: **55 years**
- **288** of WHO age-friendly cities and communities
- **Master Plans** on states level
- **6** initiatives focused on non-medical improvement of quality of life
- **1** initiative focused on preventive medicine and healthcare approaches
- **2** initiatives involve research or R&D of medicines that directly impact on ageing

USA Initiatives Level of Comprehensiveness

Financial Reform

ACL Strategic Plan

National Master Plan on Ageing

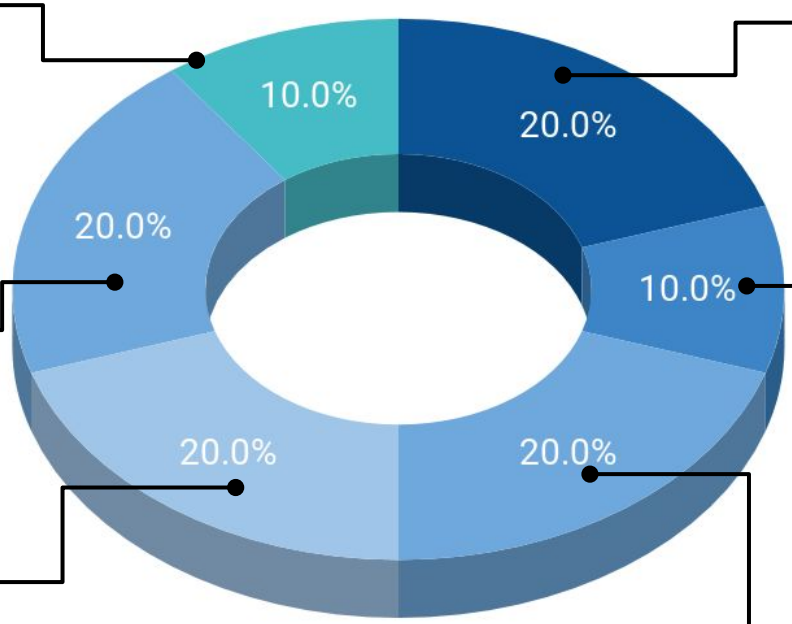
State Plan on Ageing

CIAIP

Elderly Healthcare Vouchers

Medicaid

Affordable Care Act



Healthy Ageing: Lifestyle and Fitness Programs

Healthy Ageing Program

GO4Life

Non-medical Initiatives

Feeding America

Geroscience R&D

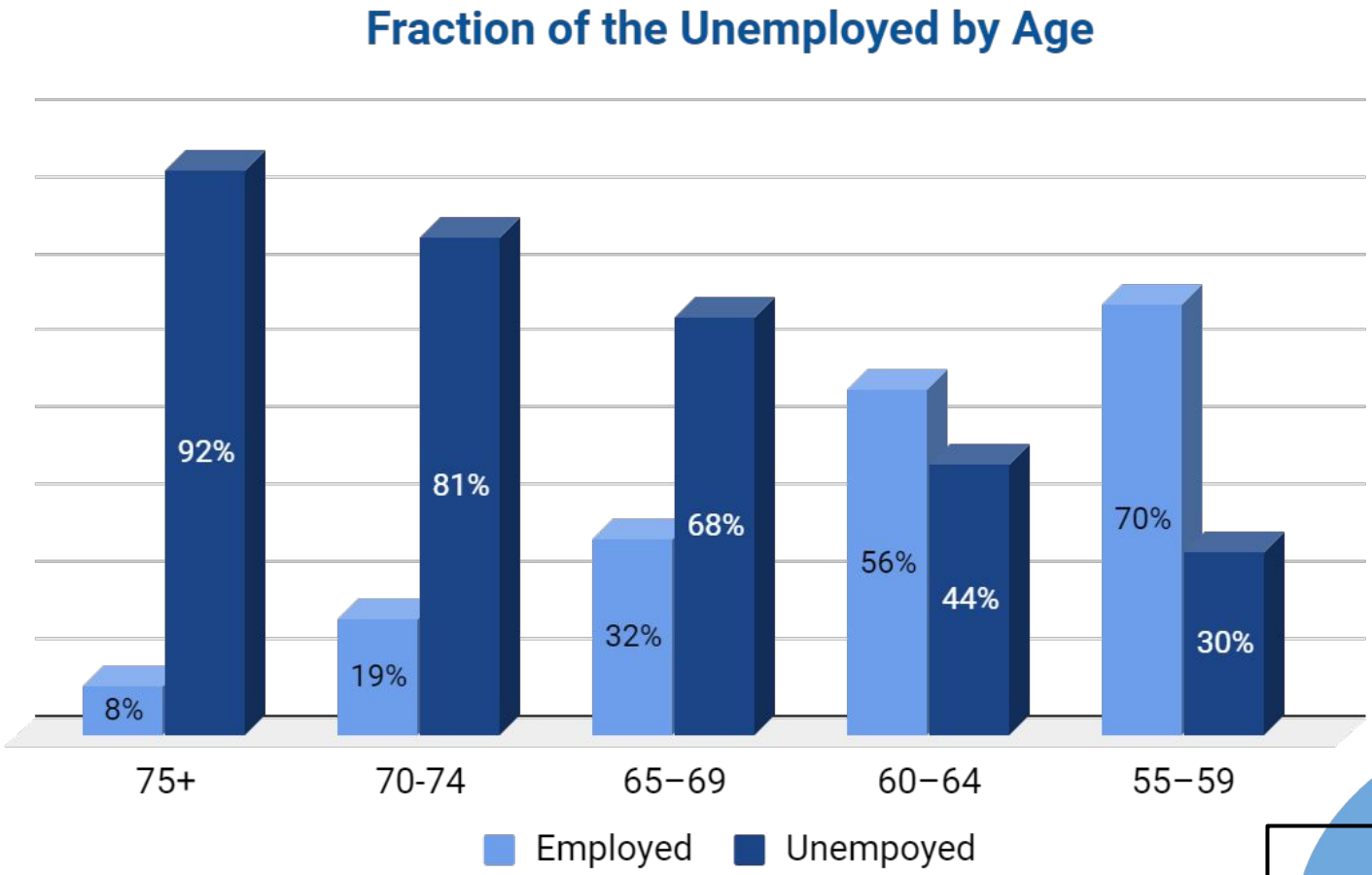
Building Our Largest Dementia (BOLD) Infrastructure for Alzheimer's Act

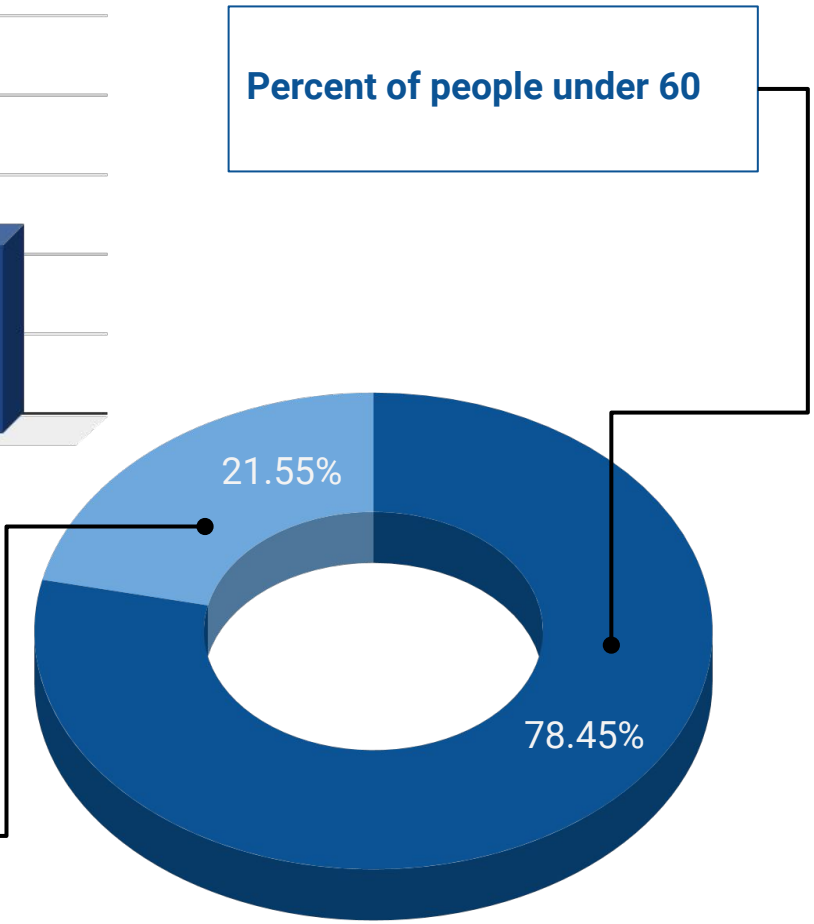
NIH National Institute on Ageing: Ageing Well in the 21st Century

Underrepresented Initiatives

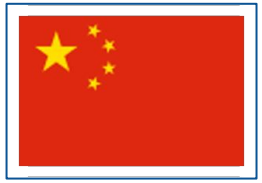
Preventive Medicine	AgeTech	Longevity Industrial Strategy	Continuing Education

USA Age/Employment Range





China



General metrics

Life Expectancy	Both sexes life expectancy (2019)	75.9 years
	Male life expectancy (2018)	75 years
	Female life expectancy (2018)	77.9 years
GDP	GDP per capita, current prices (2018)	10.15 thousand ($)
	GDP per capita, PPP (2018)	19.52 thousand ($)
	GDP, current prices (2018)	14 220 billion ($)
Population Ageing	Rate of population ageing	3.3 (2007-2017)
	Aged over 65 (2018)	11.9%
	Age dependency ratio (2017)	15%
Healthcare Efficiency	Health expenditure (2017)	1.75% of GDP
	Health expenditure per capita (2017)	1.071 thousand ($)
	Healthcare efficiency score (2018)	54
Retirement	Total # retired	147 532 179
	Retired people proportion	11%
	Normal retirement age (Man/Woman)	65 years / 65 years
	Early retirement age (Man/Woman)	60 years / 55 years

Longevity Initiatives

- Age of relevant initiatives: **40 years**
- **9** of WHO age-friendly cities and communities
- **4** initiatives focused on non-medical improvement of quality of life

China Initiatives Level of Comprehensiveness

National Master Plan on Ageing

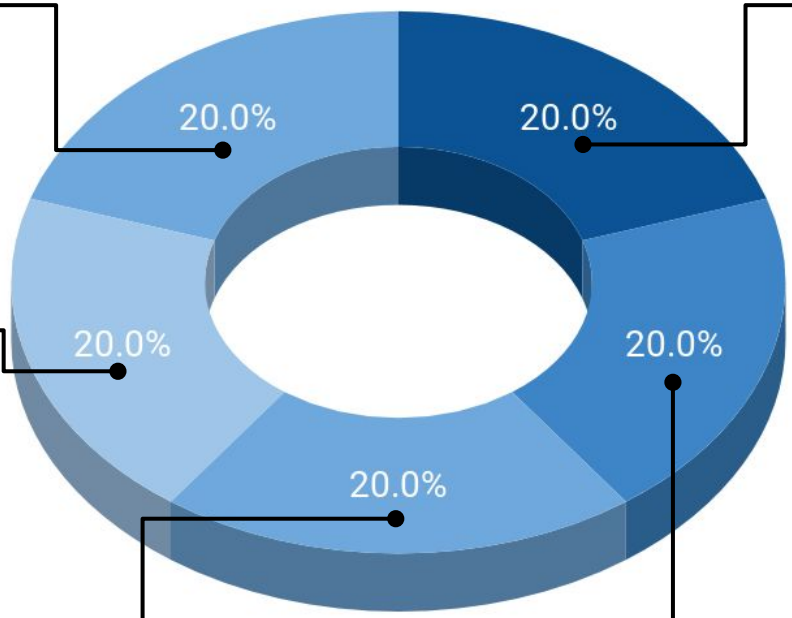
5 year Plan

Healthy Ageing: Lifestyle and Fitness Programs

Promoting Healthy Lifestyle

Non-Medical Initiatives

China Health and Retirement Longevity Study



Continuing Education

"Continuing Elderly Education"

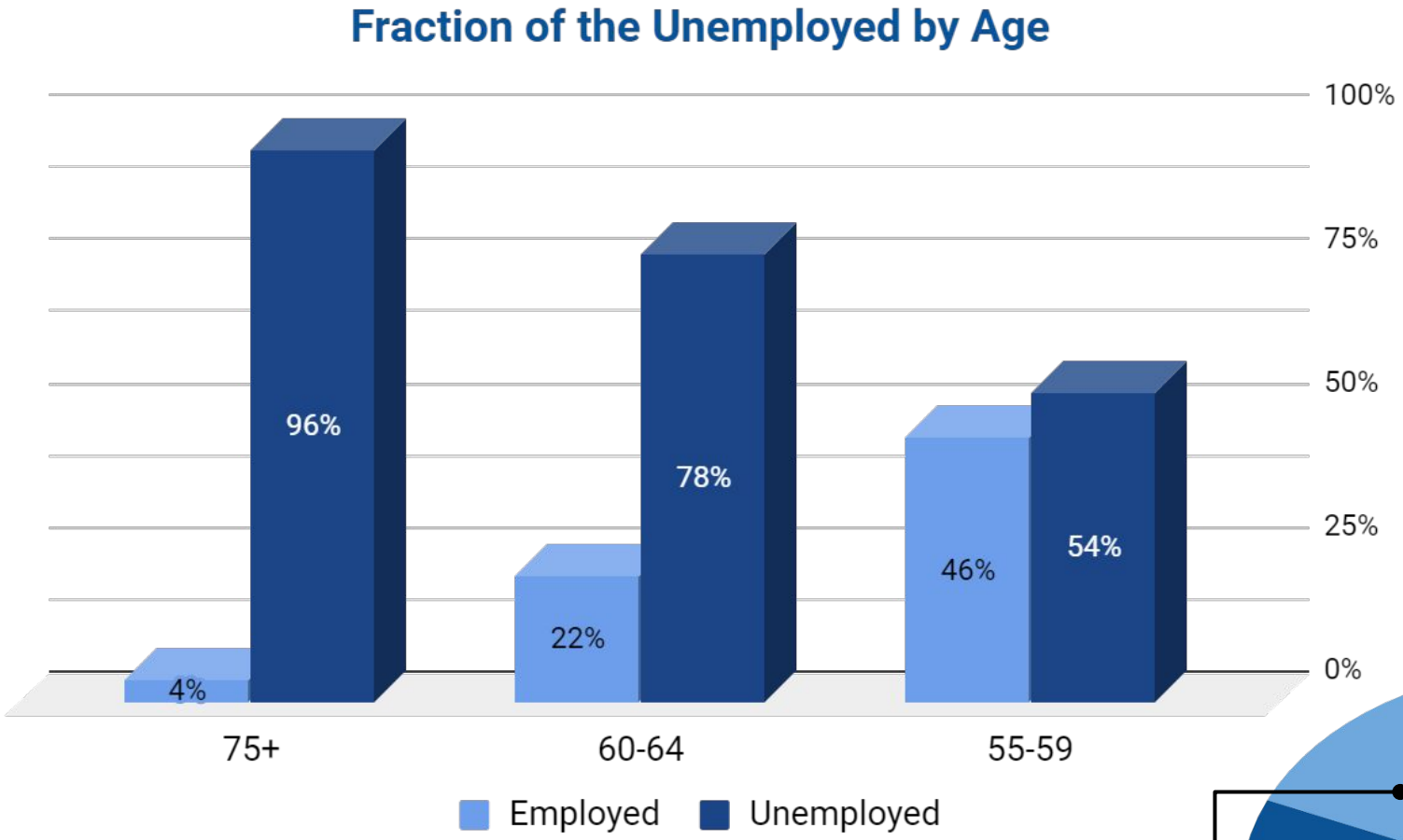
Financial Reform

Retirement System Reform

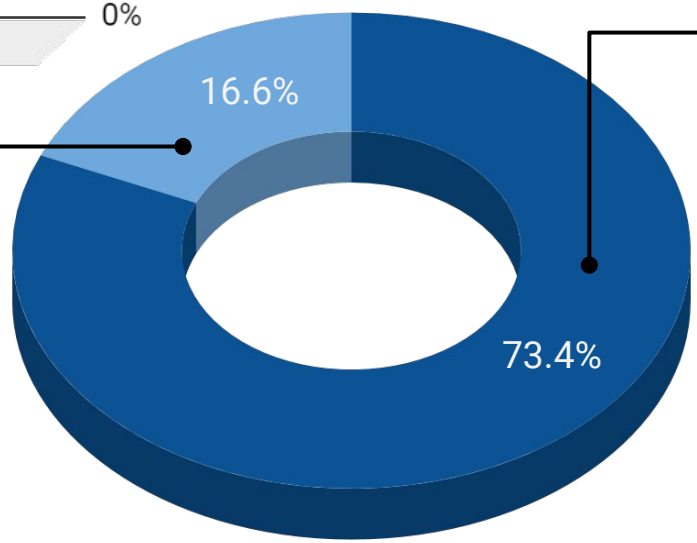
Underrepresented Initiatives

Preventive Medicine	Geroscience R&D	AgeTech	Elderly Healthcare Vouchers	Longevity Industrial Strategy

China Age/Employment Range



Percent of people under 60



Percent of people over 60

Analytical and Methodological Issues Faced During the Production of this Report: Gaps in Global and Regional Data

World Health Organization (WHO)

There are substantial gaps in relevant data on quantitative measures of Healthy Longevity like Health-Adjusted Life Expectancy (HALE) from leading sources of data such as the World Health Organization (WHO). The **most recent** HALE data from the WHO is from **2016**, with large gaps of missing for certain years (e.g., being limited to the years 2000, 2005, 2010, 2015 and 2016).

Lack of HALE estimation for some countries

Another major problem is a lack of HALE estimation for some countries entirely, and the lack of regional sources that could have provided this data. For example, Hong Kong has a complete absence of this data. Considering that the country has one of the biggest life expectancies and one one of the most advanced healthcare systems in the world, this is particularly unfortunate. As a consequence, Hong Kong was not able to be featured in our HALE analyses and our ranking of countries by order of their Healthy Longevity.

Budget Data

The third major implication is a reluctance for certain countries to disclose the budget data related to their Longevity projects and initiatives, or to disclose that data in an easily accessible way. This complicated our efforts to include comprehensive budget data in our proprietary analytics.

Q3 2019: Longevity Development Plans Global Landscape Overview Second Edition, and New Cross-Sector Longevity in UK Special Case Study

National Longevity Development Plans Global Landscape Overview **Second Edition**

- A greater number of countries in its analysis.
- A wider variety of metrics (including a precise formulation for sub-metrics, metric categorization and metric weighting).
- Detailed project and initiative budget data analysis.
- Upgraded overall breadth and depth of the proprietary analysis for ranking the strength, relevance and proactiveness of Government Longevity initiatives.

Longevity in UK Cross-Sector Comparative Analysis Special Case Study

- Enhanced comparative analysis of the UK Longevity sphere across many domains including Government initiatives, Longevity industry developments, science, academia, etc.
- Advanced analysis to determine precisely how the UK is positioned within the broader global Longevity sphere across many relevant sectors and domains.

AGING ANALYTICS AGENCY

Link to the Report: https://www.aginganalytics.com/longevity-development-plans

E-mail: info@aginganalytics.com | **Website: www.aginganalytics.com**