Longevity Financial Industry
Framework

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Glossary

AgeTech: broadly refers to all IT and digital technologies that help to maintain a greater functionality into older age and improve quality of life using nonmedical means.
Artificial Intelligence (AI): an assortment of computer technologies that enable machines to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. It allows the machine to sense, comprehend, act, and learn.
Big Data: extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.
Biological age: age that considers not only the time elapsed but also a number of different biological and physiological developmental factors, such as genetics, lifestyle, nutrition, and comorbidities.
Biomarker: a characteristic that is objectively measured and evaluated as an indicator of some biological state, condition, or process. Biomarkers are used in many scientific fields and commercial activities and are subjected to several dissimilar classifications that follow different criteria. But the World Health Organization (WHO) defined a biomarker as “any substance, structure, or process that can be measured in the body or its products and influence or predict the incidence of outcome or disease.” The US National Cancer Institute (NCI) defines it more specifically as "a biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease."
Biomarker of Aging: A biomarker can be classified as a “biomarker of aging” depending on how it is sourced. The current approach to biomarkers is to take them from people at various stages of a disease’s known progress, which in practice means sourcing them from hospital patients. Isolating biomarkers of aging, however, means collecting data that mark the difference between disease-free people only, e.g., between people of all ages who have no traces of any officially recognized diseases.
Biomarkers of Human Longevity, or **Biomarkers of Longevity**: a biomarker that essentially shows a change with chronological age, identifies individuals based on their familial propensity for longevity, and associates with known health parameters and morbidity and/or mortality in prospective studies.
BioTech (biotechnology): the use of biology to develop new products, methods, and organisms intended to improve human health and society.
Chronological age: the amount of time that has passed from a person’s birth to the current date.
DeepTech (deep technology): a system of cumulative highly advanced AI-powered data-science technologies which have a fundamental focus on pioneering new solutions that solve society’s biggest issues, including chronic diseases, clean energy, and food production. DeepTech is the effective use of tangible engineering innovation in

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the pursuit of groundbreaking scientific discoveries to solve real-world problems. It is a term for technologies not focused on end-user services, and includes Artificial Intelligence, robotics, blockchain, advanced material science, photonics and electronics, BioTech, and quantum computing.

Death Valley, or **Valley of Death**: a growth gap phenomenon, a feared phase in the start-up life cycle, typically occurring after the company launches a product but has not yet seen any revenue.

Disability Adjusted Life Years (DALY): a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability, or early death.

FinTech: "Financial technology" refers to new technologies competing with traditional financial methods in the delivery of financial services.

Health as the New Wealth: the increasing recognition of Healthy Longevity, defined by metrics such as HALE, an asset class in itself and the most valuable form of wealth conceivable.

Health-Adjusted Life Expectancy (HALE): a measure of the remaining time that a person of a certain age is expected to live in a healthy state, free from age-related disease and disability.

Healthspan: period of life free from age-related disease and dysfunction.

HealthTech: application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve life quality.

Healthy Longevity: the duration of life in good health, not afflicted by diseases or frailty.

High-networth individuals (HNWIs): refers to a financial industry classification denoting an individual with liquid assets above a certain figure. People who fall into this category generally have at least $1 million in liquid financial assets.

Longevity Industry: emerged as the response of the global industry to the challenge of global demographic aging in the form of an industry consisting of six distinct segments: Longevity Science, Longevity Medicine, AgeTech, Longevity Finance, Longevity Governance, and Longevity Ethics.

Longevity Liquidity Gap: in the financial world refers to a mismatch in the supply or demand for a security or maturity dates of securities. A liquidity gap can also occur when a company does not have enough cash on hand to meet operational needs.

Longevity Risk: the risk inherent in the calculations major institutions use to estimate the number of retirees and the rate of mortality.

Machine Learning (ML): algorithms that allow computers to learn to complete tasks from examples, without being explicitly programmed.

Quality-Adjusted Life Expectancy (QALE): another recent approach to estimating health expectancy that uses a continuous ratio scale variable to measure morbidity.

RegTech: a class of software applications for managing regulatory compliance

Silver Tsunami: a metaphor used to describe a trend of global demographic aging.

Technology Readiness Level (TRL): a method for estimating the maturity of technologies during the acquisition phase of a program.

Wealthspan: duration of financial stability across a lifecycle.

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WealthTech: a subsector of FinTech focused on delivering wealth management services digitally. It includes a new generation of financial technology companies that create digital solutions to transform the investment and asset management.

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Introduction

Attempting to create the most reliable forecasting system possible is a challenge of ever-multiplying complexity in the Longevity Industry. The industry's increasing multidimensionality, intersectionality, and technological fusion of the industry presents even greater challenges to forecasting than those posed by its megacomplexity. The Longevity Industry is one of the DeepTech industries closest to industrial and its eventual financial commoditization.

The Longevity Industry will indeed be commoditized in much the same way as metals, gold, and oil were in the 19th century. The Chicago Board of Trade and the London Metal Exchange offered a marketplace with secondary financial products such as indices, futures, and derivatives. Similarly, IT and Tech 1.0 were commoditized from the mid-1980s with the development of the Nasdaq index and related financial instruments. The advances being made in DeepTech innovation will also result in Longevity-related goods and services becoming commoditized and widely available to the average consumer. These will promote longer, healthier life spans through advances in personalized and participatory medicine.

Therefore, its industrial and financial commoditization will serve as proof of concept for doing the same with other industries.

Longevity is the "elephant in the room" in our economy and society. For instance, underestimating life expectancy by just one year can increase a pension fund's liabilities by 5%. Based on total pension assets in Canada's pension plans, for example, this roughly amounts to $50 billion.

It would be an understatement, therefore, to say that forecasting plays a vital role in the growth of the Longevity Industry.

That is why the analytical team of Deep Knowledge Group have created **the Longevity Financial Industry Framework** as a powerful system of tools for investors and other players to make the most informed, up-to-date strategic decisions that amplify further industrial growth and enable individuals to reap Longevity dividends.

It should be noted, however, that over the past 100 years, the citizens of the 7th Continent, represented by 1 billion people over 60 years of age, have been largely excluded by the financial industry. As increasing numbers of high-networth individuals (HNWIs) and regular middle-class people age into this bracket, they begin to recognize Health as the New Wealth. The time has come for banks to offer fully integrated, AI-empowered, data science-driven AgeTech, WealthTech, and HealthTech solutions to

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create an ecosystem and infrastructure to secure the stability, sustainability, and future of the Silver Generation and to empower, enhance, and extend their clients' Healthspans and Wealthspans in equal measure.

The "7th Continent" of 1 Billion People in Retirement

As the global spending power of this demographic was estimated at €13.6 at the end of 2021, Longevity banks and novel FinTech services will attract people aged 60+ who expect to live to 100+ years and who have unprecedented demand for technologies able to optimize their Wealthspans in step with increasing Healthspans. In the next few years, age-friendly FinTech companies and Longevity banks will develop new financial products designed for clients who are planning to live extra-long lives and wish to remain highly functioning and financially stable throughout.

Increased global Longevity will thus be transformed from a threat into an opportunity, and future conservative investors will be able to provide unlimited liquidity to the Longevity Industry, turning aging from a source of economic loss or stagnation into a source of economic growth.

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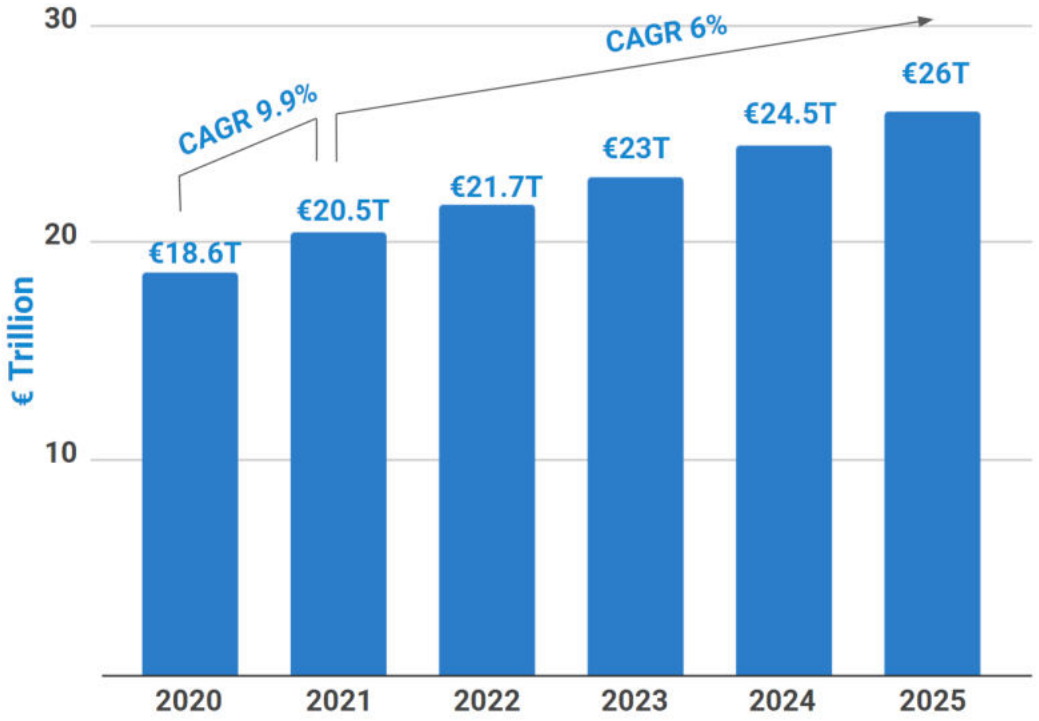
Global Financial Services Market Volume Forecast



Source: Longevity Finance Dashboard

While most practical outcomes in Healthy Human Longevity will be driven by Longevity Medicine, effective synergy among the segments in this report is required to advance a positive trajectory of the Longevity Financial Industry to greater levels. Each segment of the Framework establishes the state of the Longevity Financial Industry in relation to *entities exposed to Longevity Risk, existing Longevity-oriented entities*, and *concepts* that introduce novel financial solutions in light of the Longevity Financial Framework and industry thereof.

Financial services innovators have an opportunity to enhance the financial lives of a billion people by designing new solutions, adapting existing products, effectively de-risking the problem of an aging population, and converting it into a source of growth and untapped market potential.

Progressive financial corporations are already onboarding the topic of Longevity in significant ways. In 2018, UBS bank surveyed HNWIs and found that 50% planned to live past the age of 100 years. It stands to reason that such clients will require specially designed financial products and a far longer horizon of financial planning. Consequently, increasing numbers of financial corporations are retuning their business models to neutralize the challenge of an Aging Population and leverage the growth potential and opportunity of Longevity.

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A “Health as the New Wealth” paradigm is gaining traction among HNWIs and the global investment community, and we are about to see the ascendance of regions that promote both individual and institutional migration and relocation on the basis of prioritizing both health and wealth simultaneously.

Deep innovations at the level of financial instruments, institutions, and markets will be required to de-risk Longevity and bridge that gap.

The Framework, presented below, dissects the instruments, institutions, and markets capable of reducing those risks.

Longevity Financial Industry Framework

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Longevity Finance Segmentation

Longevity Finance Segmentation describes the segmentation of Longevity Finance as an industrial model: *established Longevity-oriented entities*, *entities exposed to Longevity Risk,* and *concepts*.

Segment 1, *Entities Exposed to Longevity Risk,* covers entities which are under pressure from the Silver Tsunami and have to understand the full scope of Longevity Risk issues affecting their business models: pension funds, insurance companies, asset management firms, and banks are explained in the context of Longevity Finance.

Meanwhile, **Segment 2,** *Established Longevity-Oriented Entities,* covers established Longevity Finance entities that aim to provide wealth and health-accelerating services: InsurTech, Longevity FinTech and Asset Management, and Longevity WealthTech.

Lastly, **Segment 3,** *Concepts,* features the Longevity FinTech 2.0 entities that will evolve in the next several years from MVPs into Longevity FinTech 2.0 well-known companies when advances in AI, InsurTech, LegalTech, RegTech, and Human Biomarkers of Aging collide into a single integrated technology.

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Segment 1:

Established Entities Exposed to Longevity Risk

Segment 1: Established Entities Exposed to Longevity Risk

Introduction

Longevity Risk refers to the risk of the members of a pension plan or policy holders of certain annuities and life policies living longer than expected. With life spans lengthening due to improved medical care, scientific breakthroughs in disease control and prevention, healthier lifestyles, etc., some pension funds, insurers, and reinsurers find their exposure to Longevity Risk increasing.

Therefore, the risk of paying out on pensions and annuities for longer than anticipated is growing. The amount of Longevity Risk held by pension plans and funds worldwide is increasing as life expectancies lengthen. As a result, it is widely assumed that, at some point, the capital markets will be required as a destination for Longevity Risk to be transferred to as reinsurers become too concentrated and need somewhere to lay off this risk as well. As such, the Life Market and the Longevity Risk Transfer Market are new global capital markets that are developing, with the conversion of "Longevity pools" as the first major asset class of the 21st century more than a mere potential. Because of that, the Longevity Insurance and InsurTech Industry is currently developing based on traditional financial entities, especially **pension funds, life insurance, reinsurance companies**, **banks,** and other **asset management firms,** which are highly exposed to Longevity Risk.

Longevity Risk transpires because of imprecise forecasts of the level of mortality rate and the numbers of retirees. Moreover, new regulation requirements amplify the importance of managing Longevity Risk. A directive in the European Union law, Solvency II requires that insurance companies measure and evaluate Longevity Risk and, as a consequence, increase the capital level required for Longevity Risk.

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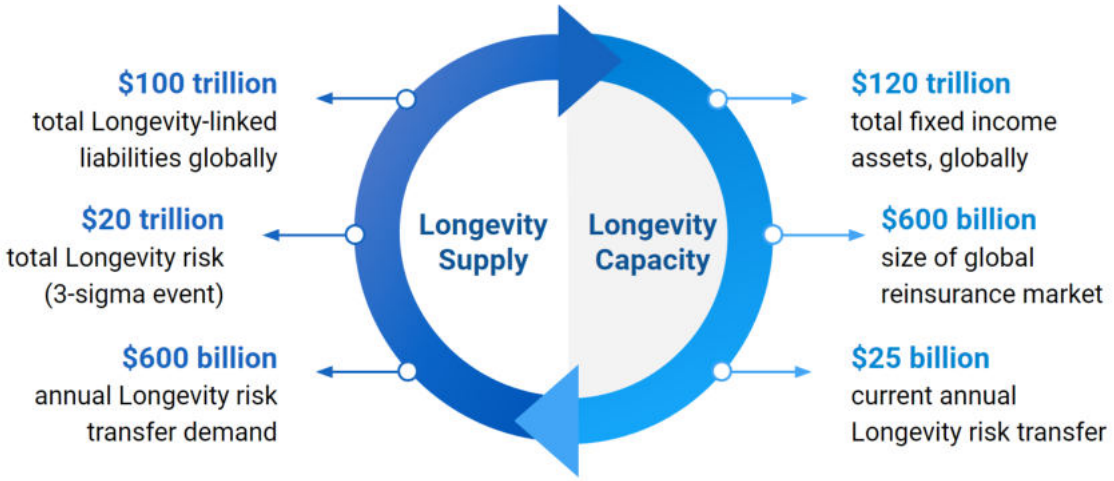
Longevity Risk Market Size



These entities, which are described below, are under pressure from the Silver Tsunami and are faced with a wide range of Longevity Risk issues, from the measurement of risk for pricing, reserving, and setting aside capital to the management of risk through de-risking, reinsurance, and capital markets solutions, such as Longevity-derived financial instruments. Although the Longevity Risk Transfer Market has a large number of economical agents, the main ones mentioned above take on roles as hedgers, speculators, and arbitrageurs.

Pension Funds

Pension funds are financial intermediaries that provide social insurance by giving retirement income to insured individuals. Frequently, they also offer disability and death payments. Pension plans are crucial pillars of retirement income for households around the world. They also play a role in financial markets as institutional investors.

While pension plans vary widely from country to country, there are two primary types: defined benefit and defined contribution. Defined-benefit pensions are the most common. After retirement, employees receive monthly benefits based on their last few years' average salaries. The formula includes years of service. Employers and employees contribute to benefits. In contrast, a defined contribution plan is one in which the policyholder makes a regular contribution (also known as a "premium") to the plan, but the value of the policyholder's pension wealth is based on how well the pension funds' assets have performed.

Pension funds are incentivized to transfer Longevity Risk off their books, especially since this risk exposure is potentially the largest among other entities. For small pension

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funds, the case for Longevity Risk transfer may be strong as they tend to have a more extensive risk exposure due to undiversified idiosyncratic Longevity Risk.

Insurance Companies

Insurance companies are financial intermediaries that offer direct insurance or reinsurance services, thereby providing financial protection against future risks. In exchange for a fee, or "premium," the insurer agrees in an insurance policy to compensate the policyholder for losses caused by a predefined event.

In the case of life insurance policies, the event is usually the death of the insured or deterioration in health. Life insurance policies are frequently purchased to save money for extended periods and sometimes for retirement.

The liabilities of life insurance companies are also highly-exposed to Longevity Risk while their assets, typically equities, bonds, and real estate, are not. Large insurance corporations hold a large amount of Longevity Risk, and many of them, such as Towers Watson and Swiss Re, already practice the risk transfer to global reinsurers large enough to absorb the risk, using it as an offsetting hedge for their mortality risk portfolios, but in some cases, the risk is transferred to the capital markets, too. The most widespread method of Longevity Risk transfer is Longevity reinsurance, which is closely followed by the rapidly expanding market for Longevity swaps.

Asset Management Firms

A corporation that invests a centralized pool of money on behalf of its customers is known as an asset management company (AMC). The funds are then invested in a variety of different asset classes through a variety of different investment vehicles. A variety of investment vehicles, such as hedge funds, mutual funds, and private equity funds, are all examples of AMCs.

Many asset management firms, especially hedge funds, are interested in acquiring exposure to Longevity Risk since it has a low correlation with classic market risk factors: inflation risk, liquidity risk, or currency risk. AMCs, besides others, act as arbitrageurs and speculators in the global financial ecosystem. They seek to profit from any pricing anomalies in Longevity derivatives. The precise and correct pricing of Longevity derivatives is a potential prospect for AMCs to make a profit. Kortis Capital Ltd, for example, made the first successful attempt to transfer Longevity Risks to the capital markets in the form of a catastrophe bond type structure on behalf of cedent Swiss Re in 2010. The active involvement of arbitrageurs and speculators is beneficial for the

Longevity market liquidity and is, in fact, essential to the success of traded futures and options markets.

An increase in Longevity is good news for the asset management industry as the longer people live and work, the more they save, and more they will need the services of asset managers. The extension of QALY and HALE means more profit for the margin investment groups than now, at least in theory.

Asset Management Firms Opportunities

Source: Aging Analytics Agency

This fact leads to a strategic question for the asset management industry: Should fund managers concentrate on building up their retail operations, catering for the growing number of wealthy individuals, at the expense of their institutional business? For some groups, the answer is "yes."

Considering the later age investment limitations, it is likely that an increasing number of people looking to live a long healthy life will seek out investment opportunities long before retirement. As a result, **institutional asset management is highly likely to benefit from Aging Population and the extension of Longevity**. People who work and live longer create more wealth and are likely to use asset management services to take care of their private pension funds.

Banks

The general definition of "bank" refers to a financial institution authorized to accept deposits and provide credits. These institutions may also give economic assistance such as capital management, foreign exchange, safe deposit, billing and payments, etc.

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Banks play a vital and central role in most modern economies by providing essential services to consumers and businesses.

Banks can be interested in Longevity Risk to assist financial institutions exposed to Longevity Risk, as well as in holding a significant portion of the risk when providing pension plans, reverse mortgages, or Longevity-linked annuities to their clients. Lastly, banks are the financial institutions that are deeply involved and interested in macro-financial stability, which is also under the pressure of the Silver Tsunami.

As life expectancies rise, pension and life insurance providers hold more Longevity Risk. It is commonly believed that the capital markets will, at some time, be necessary as a destination for the transfer of Longevity Risk as reinsurers grow too concentrated and require a place to release this risk. For example, banks and AMCs can profit from using Longevity instruments to predict demographic trends of population aging and profit from aging in the following way: Pension plan provider receives compensation for extra payments due to worse realized mortality rates and pays the insurer when realized mortality rates are better than expected. A bank uses swaps or other Longevity-linked security to propose both sides better hedge of payments risk and profit on risk premiums and commissions.

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Segment 2:

Established Longevity-Oriented Entities

Segment 2: Established Longevity-Oriented Entities

Introduction

Humankind actively seeks to maximise its fleeting duration on Earth, and living a long healthy life is a natural desire. It also raises challenges regarding how individuals and financial institutions manage wealth, and on the other hand the current and future speed of expanding of lifetime expectancy is a new type of risk, so-called longevity risk.

Financial services innovators have an opportunity to enhance the financial lives of a billion people by designing new solutions, adapting existing products, effectively de-risking the problem of Aging Population, and converting it into a source of growth and untapped market potential. Age-friendly Banks and novel FinTech, InsurTech and WealthTech services including Longevity-Enhanced Annuities (QLACs), Healthy Lifestyle Bonuses Biological Age Based Insurance, Robo-Retirement and many others from the Framework attract people of 60+ who expect to live to 100 years and beyond, who recognize Health as the New Wealth, and who have unprecedented demand for technologies able to optimize their Wealthspans in step with increasing Healthspans.

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Longevity Insurance and InsurTech

Outline of Sections

- Longevity InsurTech Industry Framework
- Longevity InsurTech Market Overview
- Synergistic Effect of Longevity Industry and Healthcare InsurTech
- Life Insurance Sector of Longevity InsurTech
- Health Insurance Sector of Longevity InsurTech
- Longevity-Enhanced Annuities (QLACs and Others)
- Property and Casualty Insurance Sector of Longevity InsurTech
- AI-Driven Actuarial Models & Premium Calculation for InsurTech Subsector Overview
- General Commercial Insurance
- Longevity and Pension Risk Transfer Subsector Overview
- Takeaways

Introduction

With the emergence of Longevity Risk, focus is now shifting toward how the insurance industry adjusts, for example by adapting traditional financial products and services such as Longevity Insurance and InsurTech.

But financial services innovators have an opportunity to enhance the financial lives of a billion people by designing new solutions, adapting existing products, effectively de-risking the problem of Aging Population, and converting it into a source of growth and untapped market potential. Companies from FinTech, InsurTech, and WealthTech sectors of the Longevity Finance Industry will attract people of 60+ who expect to live to 100 years and beyond, who recognize Health as the New Wealth, and who have unprecedented demand for technologies able to optimize their Wealthspans in step with increasing Healthspans. This segment covers the established entities that aim to provide wealth and health-accelerating services belonging to the Longevity Finance Industry.

Longevity insurance covers the wide range of products and services associated with the risks of an aging population. Life insurance companies have relatively flat exposure to Longevity Risk, with annuity portfolios offsetting insurance policies. Hence, the market has overall negative exposure to Longevity improvements. Reinsurers neither have the capacity nor are willing to accept such a large risk. Capital markets, with their depth, capacity, and experience in risk hedging, have the potential to hedge Longevity Risk effectively.

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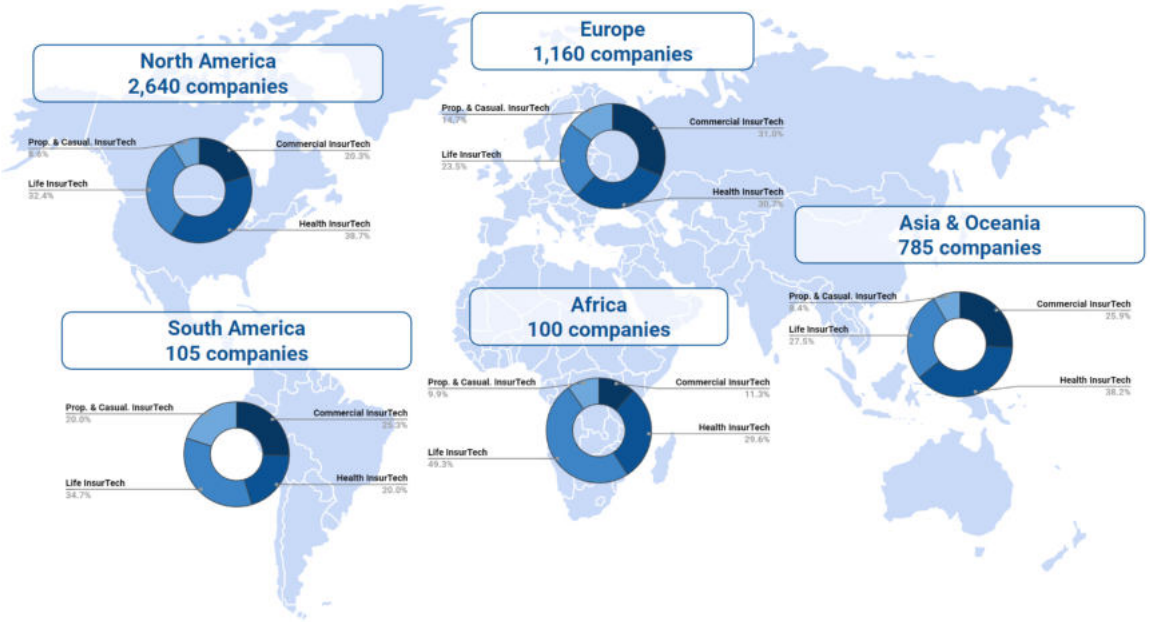
Longevity InsurTech Industry Framework

Longevity Risk is explicitly incorporated on a portfolio level of a life insurance company issuing participating contracts and being subject to default risk.

InsurTech Companies Geographical Distribution



Macroeconomic Trends of Healthcare Insurance Industry

Insurance remains a growing industry even in the period of global economic slowdown: increased risk awareness will continue to support demand for life and health protection

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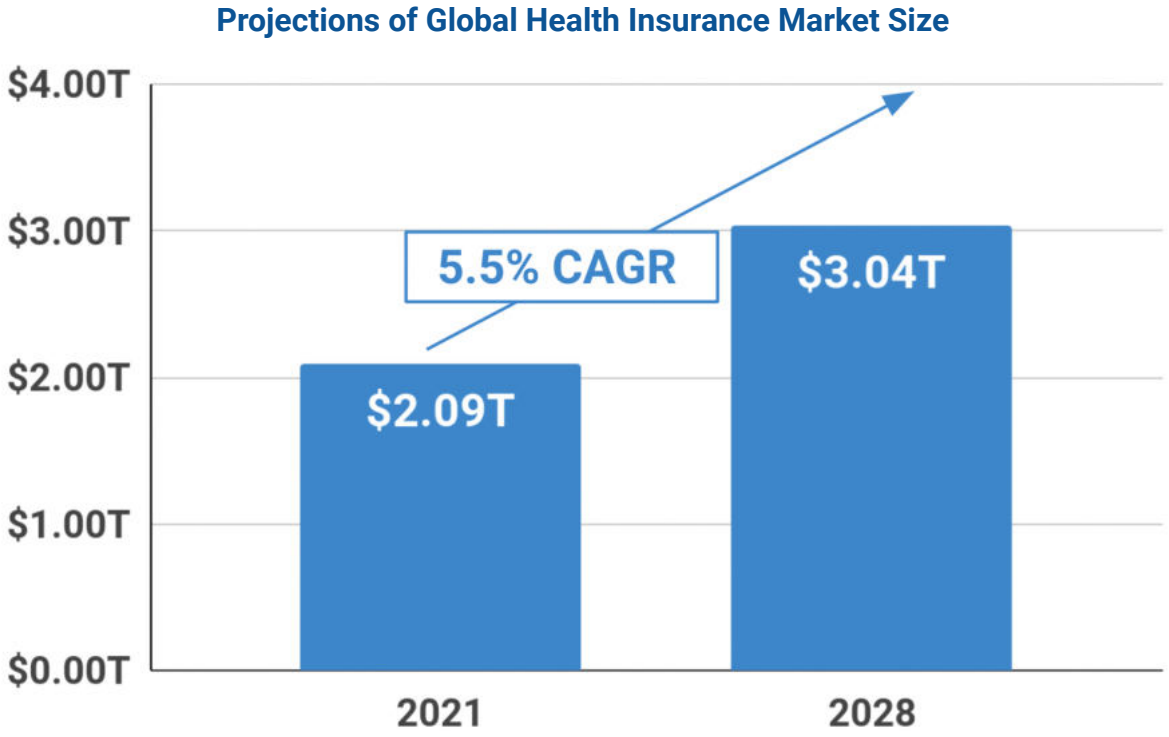
products.



However, during this period, insurers can face more intense competition. Most probably, price will not suffice to attract customers but should be paired with convenient and personal digital experiences. Additionally, insurers will have to seek options to optimize costs and revenue streams.

Investment Trends in Healthcare InsurTech

Globally, InsurTech companies in 2021 raised $14.1 billion across 633 deals. This represents a 105% YoY increase in terms of deal value that is more than the previous two years combined.

HealthCare InsurTech sector has received $3.9 billion investments in 2021 — an increase of about 81% from 2020 and roughly 27% of the 2021 total.

Growth of investments appears to be strongest for firms with leading-edge capabilities in AI, Big Data, application programming interfaces, and digitalization across the value chain. InsurTech investors can succeed by screening for solutions that address the technology and commercial challenges facing the insurance industry.

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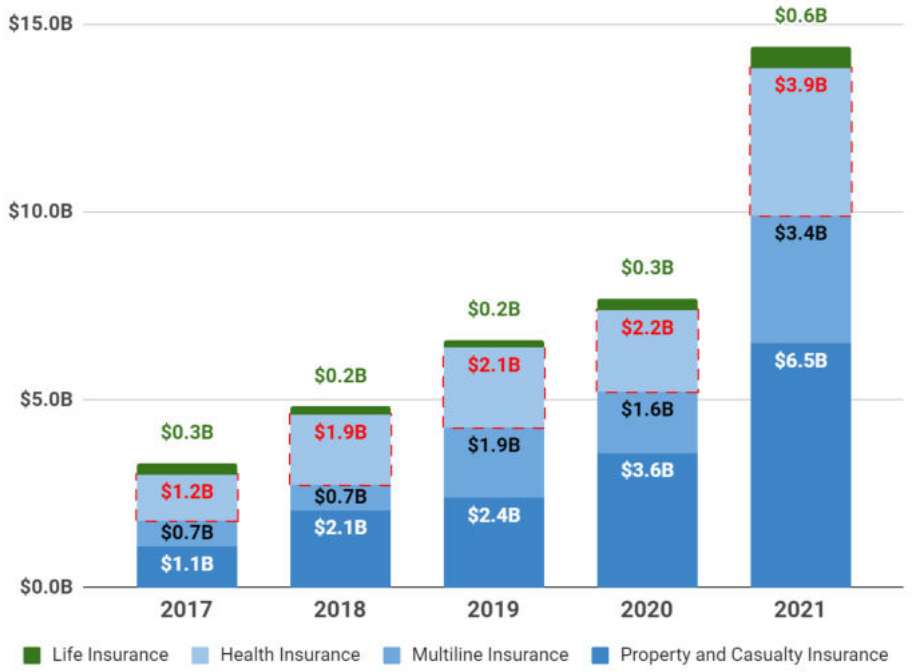
Global Investments in InsurTech Companies by Sector

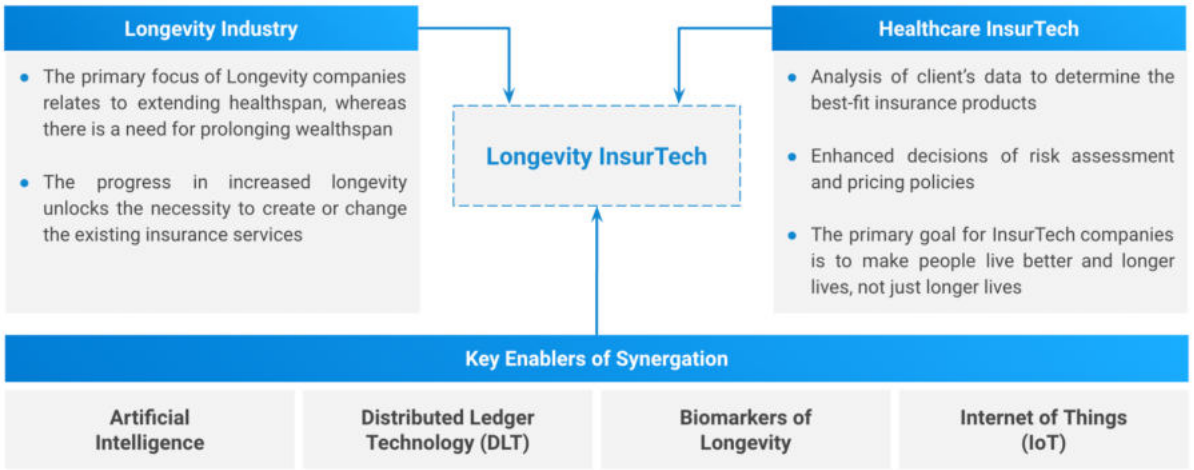


Source: [Boston Consulting Group FinTech Control Tower]

Synergistic Effect of Longevity Industry and Healthcare InsurTech

There is a growing focus on how the insurance industry needs to adapt in order to adjust to an increasingly long-lived population. Bundling well-being initiatives between Longevity and insurance companies has a great potential to resolve the possible challenges in a more holistic manner.

Synergistic Effect of Longevity Industry and Healthcare InsurTech



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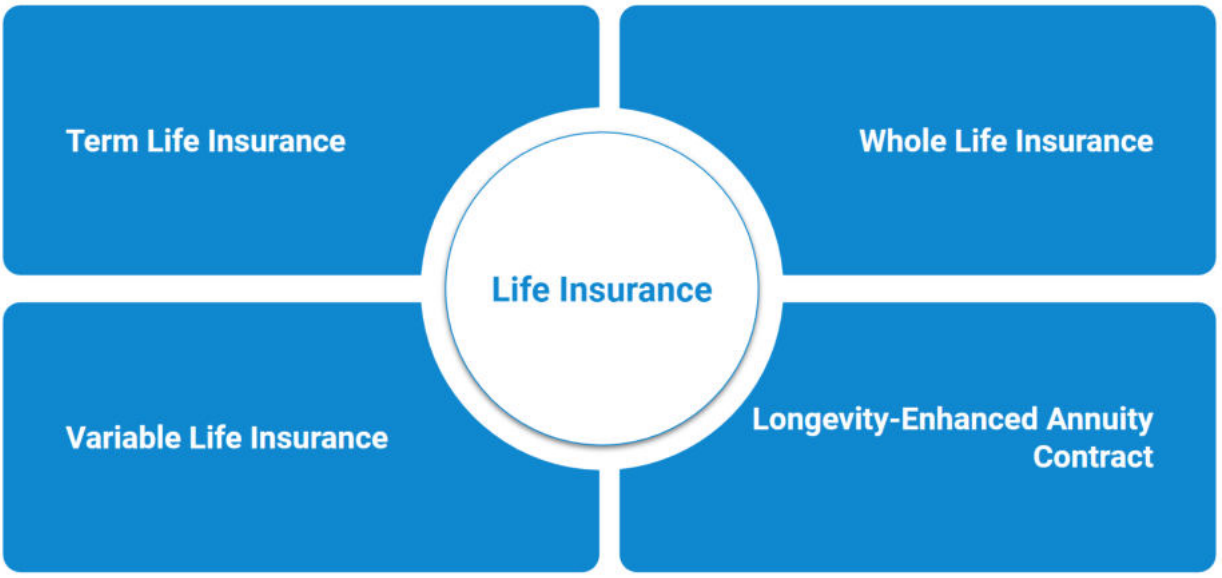
Life Insurance

There are various life insurance policies to choose from. Having a variety of life insurance policies from which to select is a great luxury. Still, it also requires research and thought to decide which policies are best for retirees.

Life Insurance Framework



Life insurance is one of the most challenging and expensive insurance types. Invasive health tests and questioning, with higher rates based on prior ailments and even the customer's residence, have expanded the protection gap in the last 2 years.

Digital insurers design products that can be acquired in minutes with a few clicks and customized by the user.

Market Trends: Life Insurance

Longevity-Enhanced Annuities
This variation on a standard annuity takes into account the health issues of a customer and provides an annuity reflecting their individual life expectancy. An underwritten annuity offers higher regular income to applicants who are not in good health or who in all likelihood have a lower life expectancy calculated using the standard annuity tables and mortality indices.

These products are for people over 70 who are already in need of medical care and have a shorter life expectancy than other people their age. Compared with a regular single

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premium, immediate annuities pay a higher amount of monthly income because of this shorter life expectancy. Costs vary by age and medical condition, but someone might get up to 50% higher monthly payment than a healthy person.

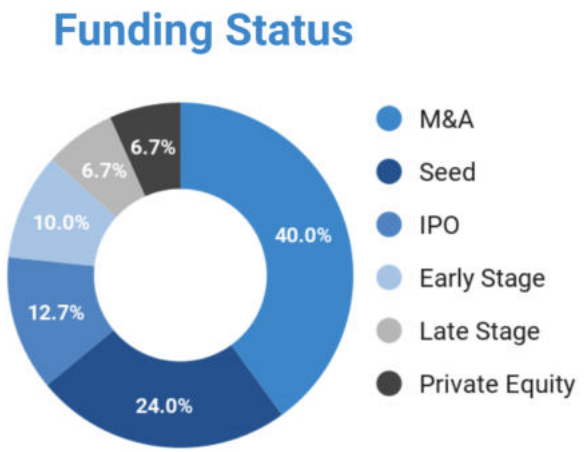
The enhanced annuities are predominantly associated with the following benefits:

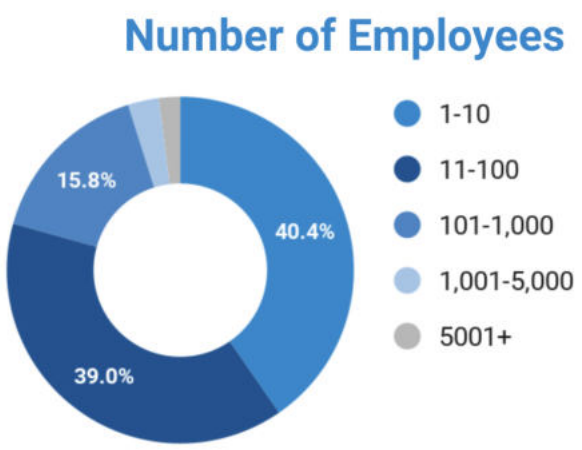
- High enhancement and optimal rates
- Opportunity of lasting income for consumers who have not purchased a standard annuity
- Fair Longevity solution for older people with medical history

Life Insurance Subsectors

The M&A category is in the lead by funding status. Next are Seed and IPO categories. The Early Stage, Late Stage, and Private Equity complete the list.

In terms of the number of employees, most companies have 1-10 employees (40.4%); 39% of companies have 11-100 employees; 15.8% have 101-1,000 employees, and the smallest number of companies have 1,000-5,000+ employees.





2021 has witnessed a record high of private funding in Life Insurance reaching $4.9 billion over 49 investment deals. Data were collected for 1,093 companies.

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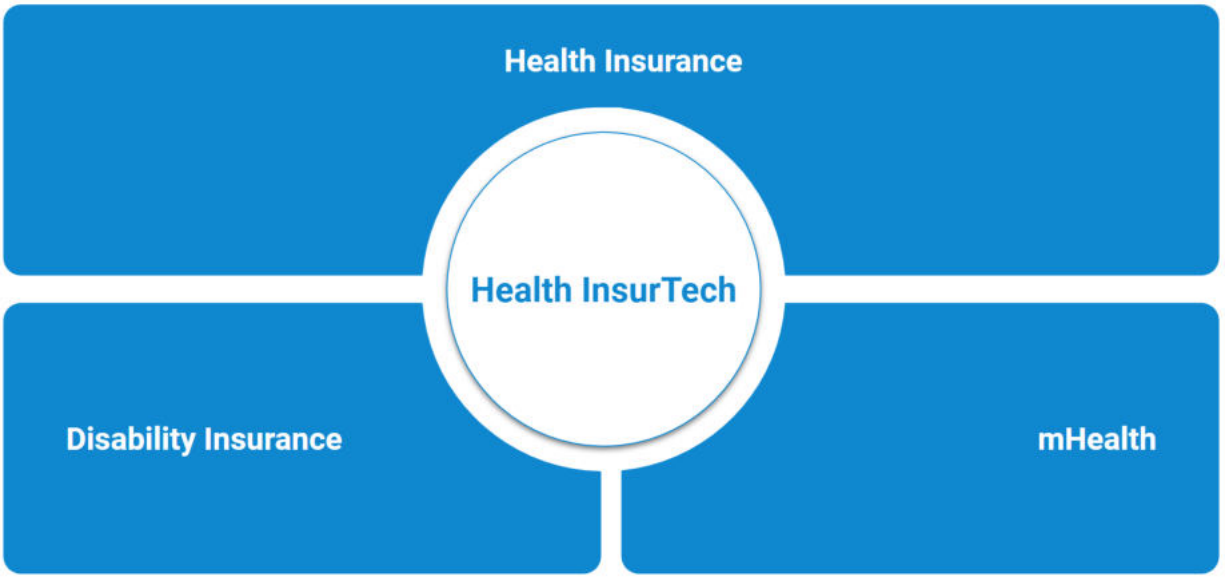
Health InsurTech

Health insurance has made massive progress in the last 2 years. The pandemic has made people more mindful of life's uncertainties and their lack of health-related disaster preparedness.

Health InsurTech Framework



It has changed how people understand health insurance, helping them realize the importance of adequate coverage to address escalating medical costs. The requirement for seamless service and flexible coverage pushes insurance companies to develop innovative service models and cutting-edge products.

Market Trends: Health InsurTech

Increasing Mental-Health-Focused Services

COVID-19 has sparked more debates about mental health as part of complete therapy. In acknowledgment of the increased demand for mental health services, insurers now cover professional advice, access to meditation apps, and other methods to deal with mental trauma.

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Conclusion
New health insurance solutions meet client demands and offer a personalized customer experience. Rising middle-class knowledge of healthcare and retirement planning would support the rise of the health InsurTech sector.

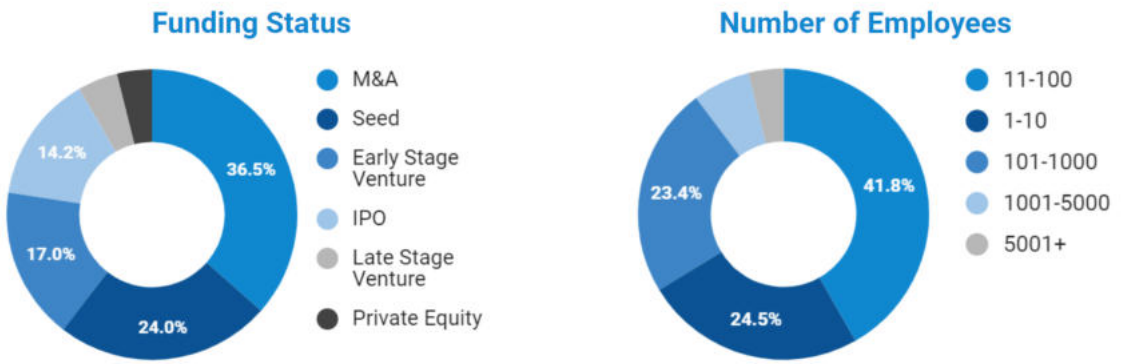
Virtual Delivery
Value chain actors are building a modern infrastructure for optimal patient interaction as virtual healthcare delivery becomes more critical. Real-time patient data improves health outcomes and medical management. Preventive care should be prioritized for whole-patient care.

Data interoperability and cloud migration are required for virtual healthcare delivery and seamless care. Healthcare providers and insurers are researching cost-effective methods to handle, preserve, and use patient data.

Health InsurTech Subsectors

The M&A category is in the lead by funding status. Next are Seed and Early Stage Venture categories. The IPO, Late Stage Venture, and Private Equity complete the list.
In terms of the number of employees, most companies have 11-100+ employees (41.8%); 24.5% of companies have 1-10 employees; 23.4% have 101-1,000 employees, and the smallest number of companies have 1,001-5,000+ employees.

Health InsurTech Market



2022 has witnessed a decrease in private funding of companies engaged in Health InsurTech, reaching $1.6 billion compared to $4 billion in 2021. Data were collected for 1,371 private companies.

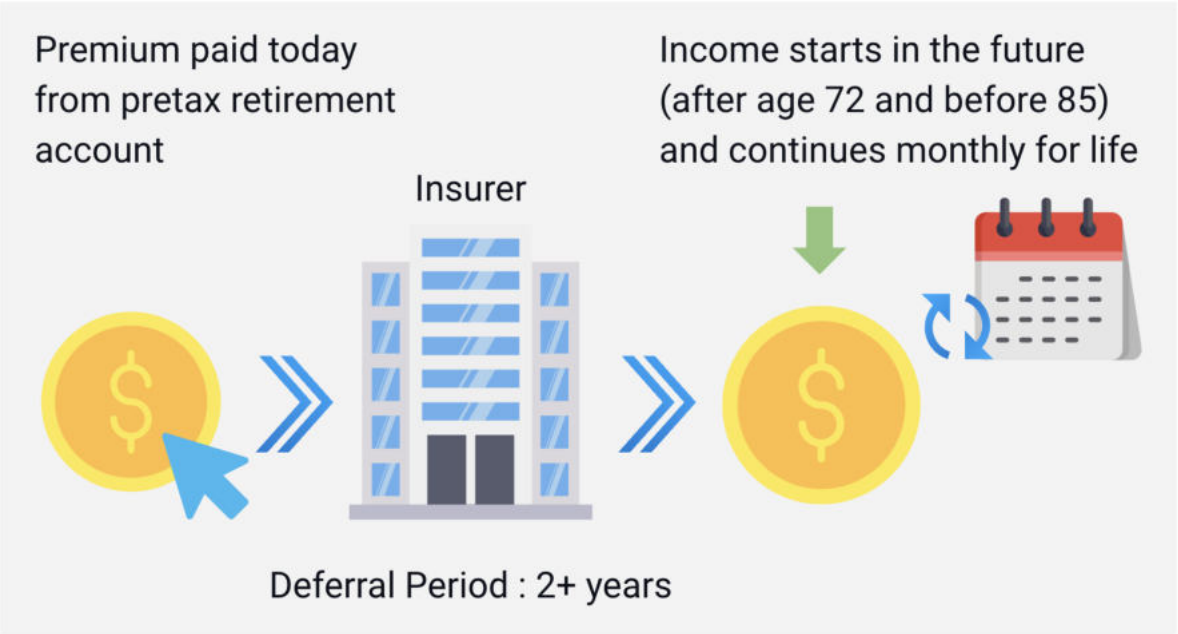
ISBN: 0978-1-915559-99-9

Qualified Longevity Annuity Contract

Another way to hedge individual Longevity Risk is a Qualified Longevity Annuity Contract. However, so far this instrument is used only on the US wealth-management market. A **qualified Longevity annuity contract (QLAC)** helps a retiree not to run out of their **individual retirement account (IRA)** when they hope to live much longer than an average American, which is 77.5 years. QLAC guarantees fixed monthly payoffs after the 85th anniversary and until death.

For example, with $130,000 of his or her IRA balance, he can buy a QLAC that pays him a guaranteed $5,500 per month, starting at age 85 and continuing for the rest of his or her life.

QLAC Work Scheme



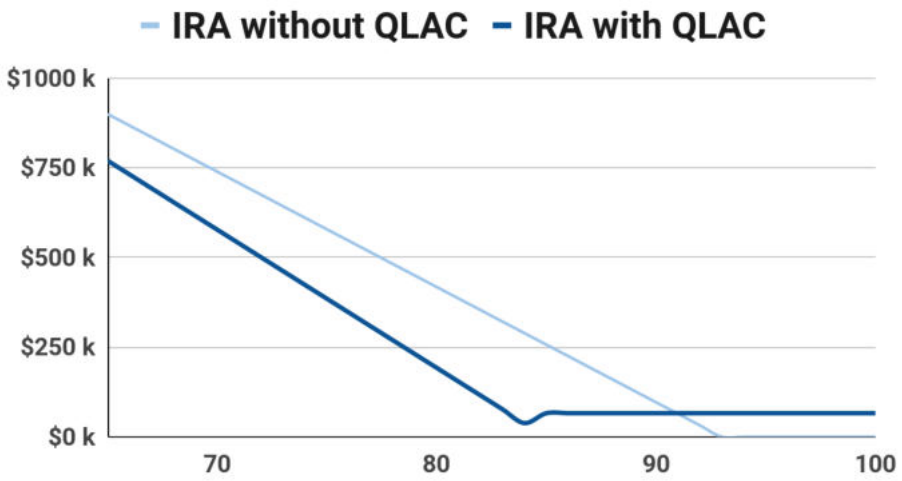
Main Mechanics:

- **QLAC is an income annuity.** An income annuity is a contractual agreement between client and an insurance company. In exchange for a lump-sum premium, the insurance company promises to give you a steady, guaranteed paycheck for life.
- **QLAC is a deferred income annuity.** A Longevity annuity begins payments at a future date, typically 2-40 years after the premium is paid. The longer you delay starting to receive payments, the greater the size of the payments they'll be able to offer you.

ISBN: 0978-1-915559-99-9

- A QLAC is purchased with savings from your **qualified retirement account.** As a qualified annuity, the money used to make the purchase comes from 401(k), Traditional IRA, or other qualified plan. The annuity maintains the special tax-deferred treatment meaning that QLAC buyer does not incur any penalties or pays any taxes until income payments begin.

IRA Comparison with and without QLAC

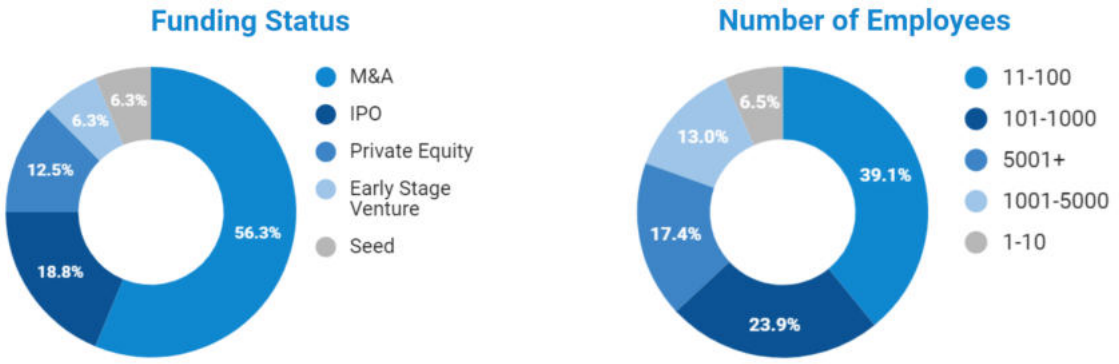


Longevity-Enhanced Annuities (QLACs and Others) Subsector

The M&A category is in the lead by funding status. Next are IPO and Private Equity categories. The Early Stage Venture and Seed complete the list.

In terms of the number of employees, most companies have 11-100 employees (39.1%); 23.9% of companies have 101-1,000 employees; 17.4% have 5,000+ employees, and the smallest number of companies have 1-10 employees.

Qualified Longevity Annuity Contract Market



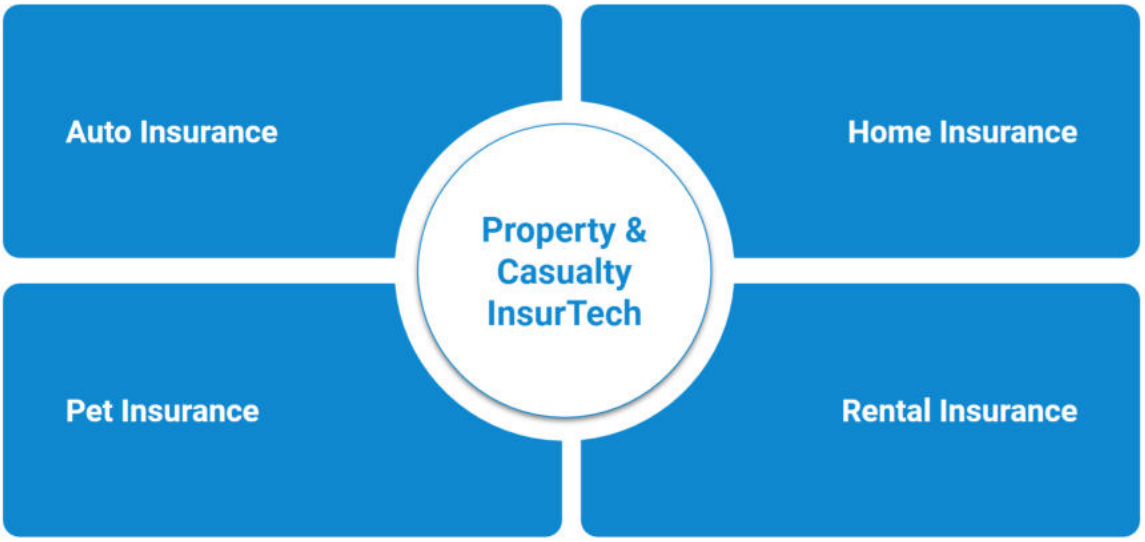
ISBN: 0978-1-915559-99-9

2022 has witnessed a record high of private funding of investment dynamics in Longevity-enhanced annuities $250 million over one investment deal. Data were collected for 48 companies.

Property and Casualty InsurTech

Property and casualty (P&C) insurance protects you and your property. These InsurTech firms employ innovative technology to protect your house and automobile. Casualty insurance protects you if you are judged legally accountable for an accident that injures someone or damages their property. Property and casualty insurance are usually combined. Landlord insurance protects landlords against risks linked with rental properties. It typically consists of buildings and contents insurance, but it can also contain landlord-specific coverages, such as property owners' liability, loss of rent, and tenant default insurance.

Property & Casualty InsurTech Framework



Market Trends: Property and Casualty InsurTech

Property and Casualty InsurTech move to as-a-service providers

The insurance executives are selecting cloud service providers and formulating cloud migration strategies. Some 55% of companies have already started transitioning key platforms to platform-as-a-service and infrastructure-as-a-service providers over the next 2 years.

ISBN: 0978-1-915559-99-9

Macro trends Impact

Changing social demographics, climate change, and technology/digital acceleration are top macro developments in P&C insurance this year. A shortage of IT skills is limiting digitalization while climatic factors like decarbonization affect regulation. The P&C companies focus on IT acquisition and retention, digitalization and data to generate new digital services, and sustainability measures.

The Personalization of Services

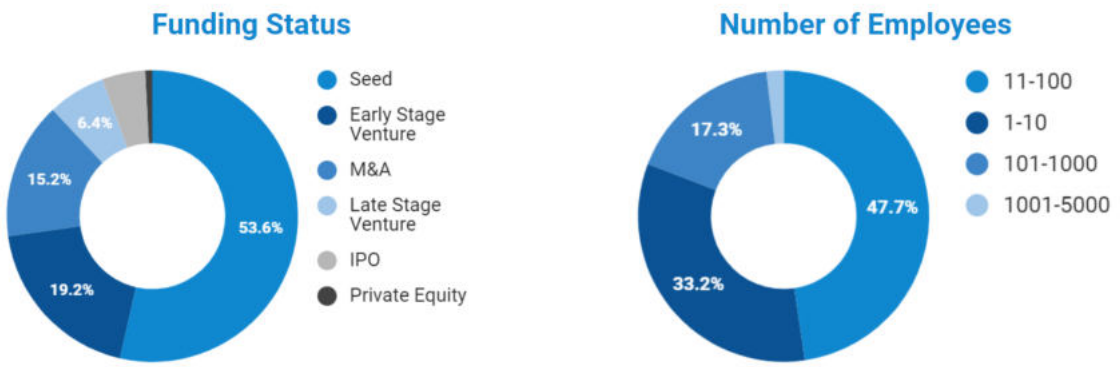
The P&C InsurTech industry focuses more closely on customer needs, provides differentiated products and services, expands insurance coverage, further enriches the insurance service experience, and enables the risk protection function of insurance.

Property and Casualty InsurTech Subsectors

The Seed category is in the lead by funding status. Next are Early Stage Venture and M&A categories. The Late Stage Venture, IPO, and Private Equity complete the list.

In terms of the number of employees, most companies have 11-100 employees (47.7%); 32.2% of companies have 1-10 employees; 17.3% have 101-1,000 employees, and the smallest number of companies have 1,000-5,000 employees.

Property and Casualty InsurTech Market



2022 has witnessed a decrease in private funding of companies engaged in P&C InsurTech, reaching $1.1 billion, compared to $1.9 billion in 2021. Data were collected for 413 private companies.

ISBN: 0978-1-915559-99-9

AI-Driven Actuarial Models and Premium Calculation for InsurTech

The insurance industry has been experiencing a technology revolution over the past decade. Emerging capabilities such as telematics, AI, wearables, and claims automation have become more prevalent as insurers have doubled down on using technology for optimization of both cost and processes. Nowadays, the insurance industry is embracing AI solutions for reaching higher performance through improving underwriting, customer experience, and internal processes.

Big Data may improve risk assessment. An insurance business may use Big Data and predictive modeling to count prospective customer difficulties and put them in a proper risk class before making a final choice.

Reasons of Growing AI Use in Insurance

Reasons of Growing AI Use in Insurance
Explosion of data from connected devices
The need for enhanced approaches to risks underwriting
Growing demand for personalised insurance products
Wider presence of open-source and data ecosystems

Big Data Trends of Longevity InsurTech

Big Data Analytics from Wearables

John Hancock, one of the oldest and largest North American life insurers, exclusively provides interactive plans based on app and device data since August 2022. Big Data in medical coverage raises data security, protection, and morality challenges.

ISBN: 0978-1-915559-99-9

AI-automating underrating
The AI algorithms may automate manual underrating operations, making them more efficient and decreasing claims and administration expenses. This allows enterprises to provide reduced rates to clients and compete in the market.

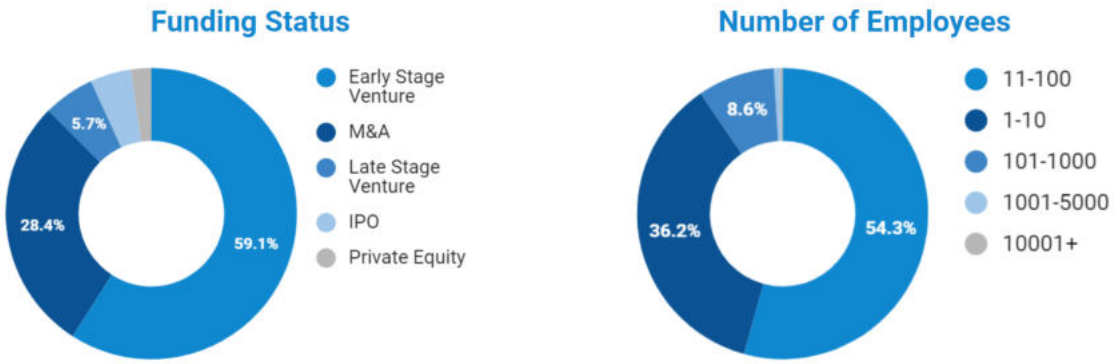
Personalization and pricing
Everyone likes exceptional service. Companies have embraced personalization. Both unstructured and structured data analysis helps firms satisfy client demands. Big Data-based life insurance may be tailored by considering a customer's medical history and activity tracker habits. The data may be used to determine a client- and company-friendly pricing strategy.

AI-Driven Actuarial Models and Premium Calculation Subsector

The Early Stage Venture category is in the lead by funding status. Next are M&A and Late Stage Venture categories. The IPO and Private Equity complete the list.

In terms of the number of employees, most companies have 11-100 employees (54.3%); 36.2% of companies have 1-10 employees; 8.6% have 101-1,000 employees, and the smallest number of companies have 1,000-5,000+ employees.

AI-Driven Actuarial Models and Premium Calculation Market



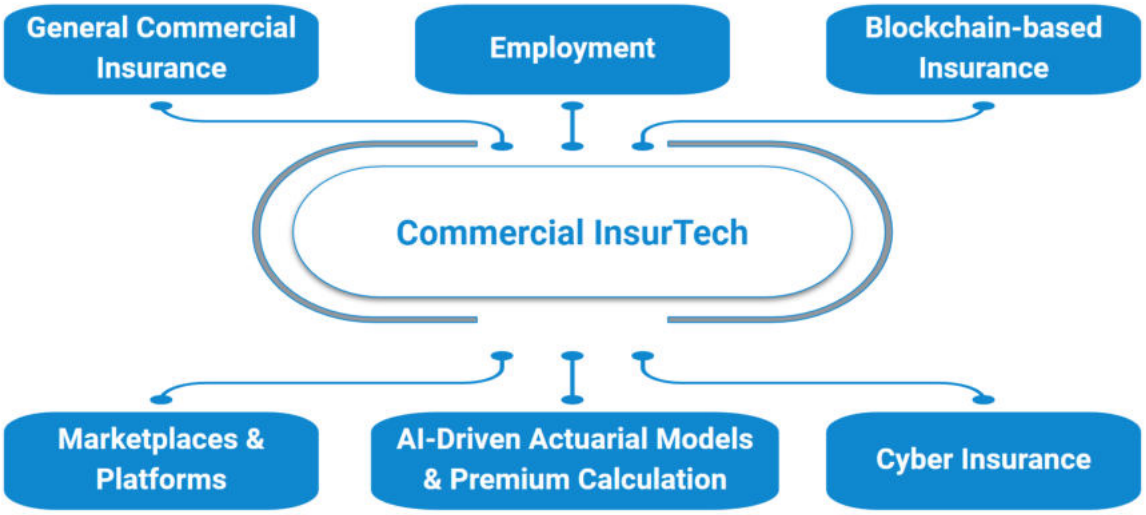
2022 has witnessed a decrease in private funding of companies engaged in AI-driven actuarial models and premium calculation, reaching $487.2 million, compared to $1.2 billion in 2021. Data were collected for 322 private companies.

ISBN: 0978-1-915559-99-9

General Commercial InsurTech

The General Commercial InsurTech sector combines the multiple advanced technologies used to protect against the most common risks of running a business, like general liability insurance policies and cyber InsurTechs, as well as Blockchain-powered solutions, AI-driven actuarial modeling, etc. Insurance marketplaces and platforms are also key pillars of the Longevity InsurTech ecosystem.

Commercial InsurTech Framework



Market Trends: General Commercial InsurTech

Insurance meets blockchain

The insurance industry is beginning to understand the importance that blockchain technology has evolved and will leverage over the insurance sector due to its security and immutability features. Blockchain claims to be the central repository of truth, allowing insurers to automate various portions of underwriting because the data in the blockchain are trustworthy and come from verified sources.

The rising demand for cyber insurance

Cyber insurance demand is outpacing supply. Healthcare, services, retail, manufacturing, and government institutions, including education and financial services providers, need proper risk coverage. The insurance industry prioritizes clear language, adequate security, and risk transparency. For example, the ransomware industry reached a new height in 2022 and is attracting an increasing number of cyber criminals. According to Chainalysis, extortionists collected an average of $148,000 per successful operation, up from $88,000 in 2017.

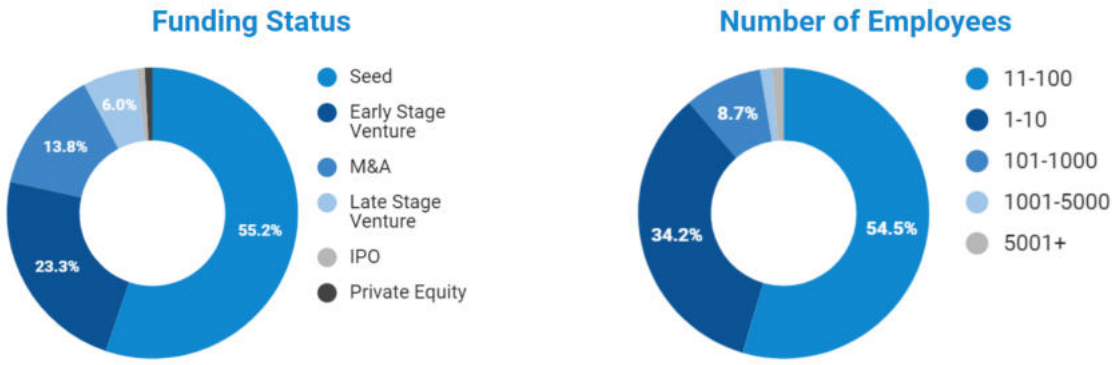
ISBN: 0978-1-915559-99-9

InsurTech-focused platforms
The current business model of venture capital funds does not support investments in InsurTech start-ups in a most efficient manner. The rising wave of InvestTech and InsurTech platforms and marketplaces offers multiple modern technological and organizational solutions to optimize investors relations, technology analysis, intellectual property trading, etc.

General Commercial Insurance Subsectors

The Seed category is in the lead by funding status. Next are Early Stage Venture and M&A categories. The Late Stage Venture, IPO, and Private Equity complete the list.

General Commercial Insurance Market



In terms of the number of employees, most companies have 11-100 employees (54.5%); 34.2% of companies have 1-10 employees; 8.7% have 101-1,000 employees, and the smallest number of companies have 1,001-5,000+ employees.

2022 has witnessed a decrease in private funding of companies engaged in the General Commercial Insurance sector, reaching $411.8 million compared to $805.1 million in 2021. Data were collected for 249 private companies.

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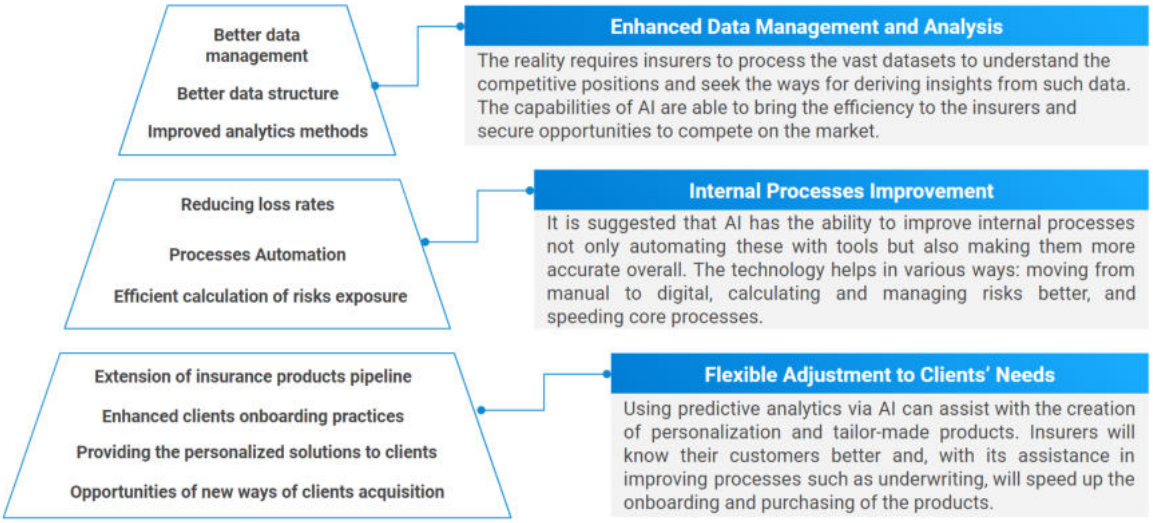
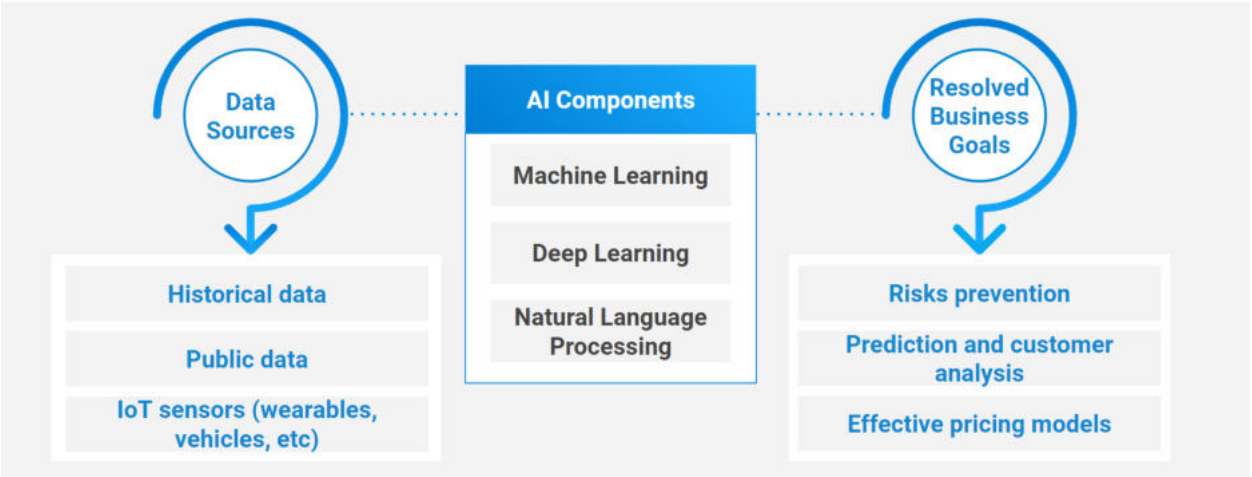
Value-Creation Opportunities of AI in InsurTech



AI Capabilities to Solve the Needs of Insurance Companies

Artificial Intelligence is gaining traction within the insurance industry, and this time as more than just a fraud detection tool. It is completely revolutionizing how insurance companies create new personalized products with AI helping to find the best match for client's needs.

AI Capabilities to Solve the Needs of Insurance Companies



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AI Application Along the Insurance Value Chain

	Product development	Underwriting and risk-rating	Claims management
Text analytics and NLP	Scan and structure existing policies and product descriptions to develop future products faster and more efficiently	Scan for ambiguities and rate risks in insurance applications based on claims to detect fraud faster	Generate structured data sets based on claims reports to process claims faster
Recommendation engine	Analyze customer buying behavior based on sales data following product recommendations to improve offerings	Suggest risk categories for customers based on previous claims and events to prevent human errors	Recommend template for incoming claims based on historical similar claim reports to process claims more effectively
Conversational service solutions	Use feedback data based on customer conversations with virtual service agent to improve future products	Use a chatbot to lead risk related conversations based on natural language database to obtain specific facts from customers	Provide chatbot interface for claims reporting based on natural language base and historical claims data in order to improve efficiency
Speech recognition	Identify customer pain points with products through speech analytics of feedback to improve future products	Detect fraud based on voice analysis of customer calls in order to improve security measures	Automatic text production of speech claims including emotions and behavior based on phone calls in order to improve efficiency

Longevity and Pension Risk Transfer

Longevity Risks arrive due to inaccurate predictions of the level of mortality rate and numbers of retirees. Another reason why managing Longevity Risks has become more important for the entities is new regulation requirements, such as the EU directive Solvency II which requires that insurance companies measure and evaluate Longevity Risk and, as a result, increase the capital level required for Longevity Risk.

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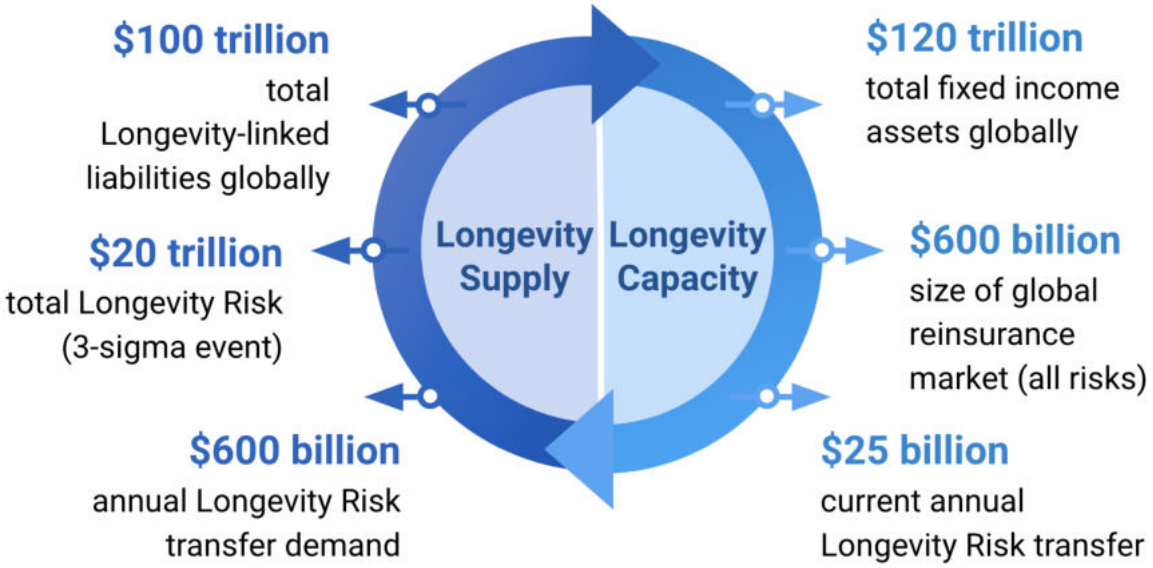
Longevity Risk Market Size



Market Trends: Longevity and Pension Risk Transfer

For institutions, specifically pension funds, insurance and reinsurance companies provide risk transfer mechanisms. In this sense, risk transfer is a risk management method whereby risk is transferred to a third party. In short, it makes one party take hold of the liabilities of another party. Purchasing insurance is a typical example of transferring risk from an individual or entity to an insurance company.

Across the world, an enormous amount of Longevity-linked liabilities are found in public and private pension and annuity markets. The degree of Longevity Risk dwarfs the capacity of traditional providers, and it is essential that capital markets investors must get involved.

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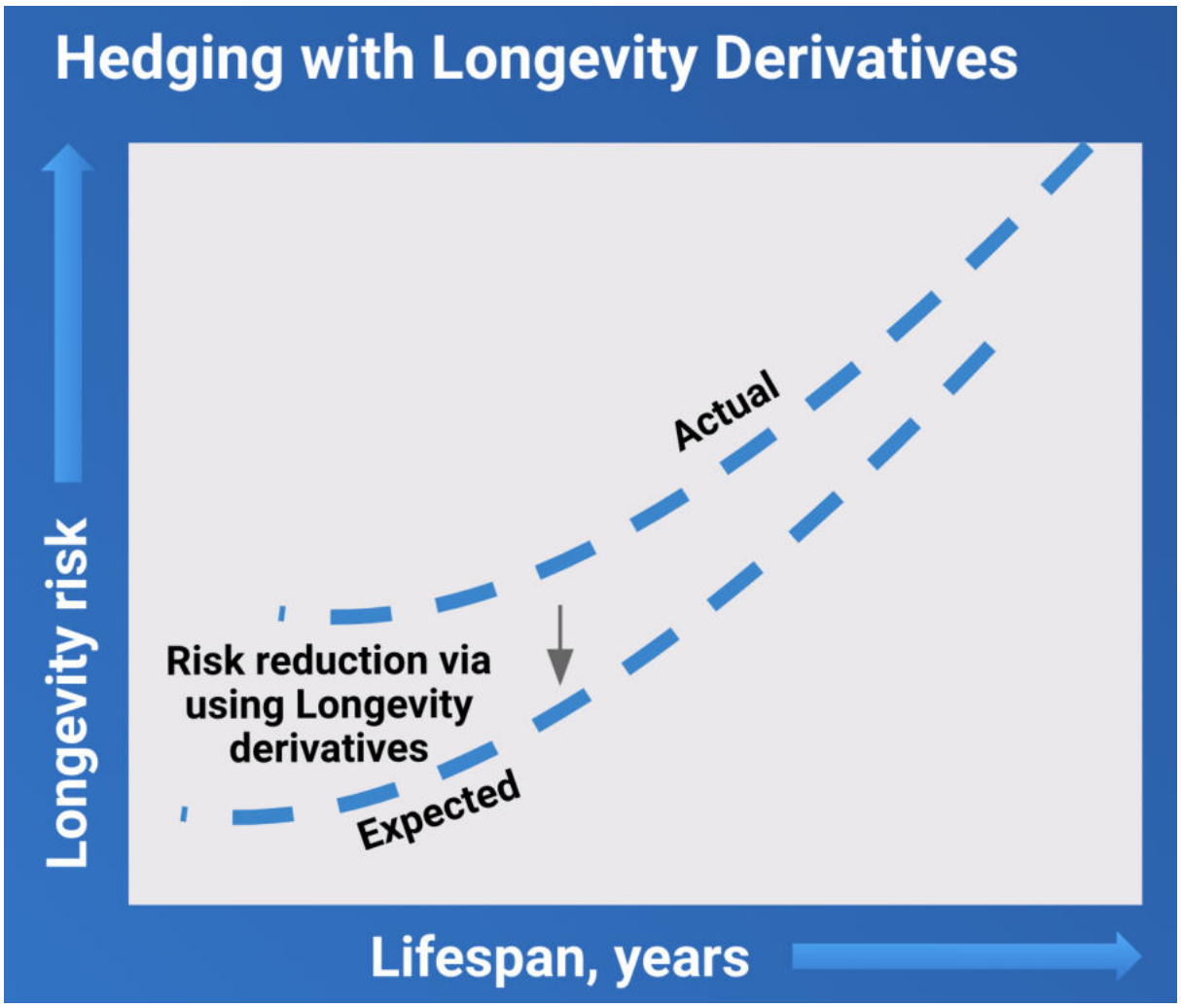

Longevity and Pension Risk Transfer Subsector

The IPO category is in the lead by funding status. Next are M&A and Early stage venture categories. The Early Stage Venture and Private Equity complete the list.

In terms of the number of employees, most companies have 5,001+ employees (60%); 20% of companies have 1,001-5,000 employees; 10% have 1-10 employees, and the smallest number of companies have 1-10 or 11-100 employees.

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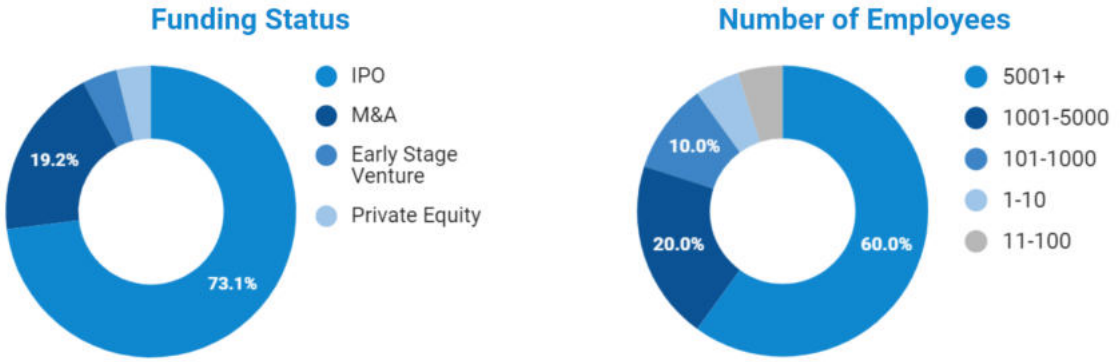
Longevity Risk Market



2022 has witnessed the record high of private funding of Longevity and Pension Risk Transfer reaching $2.3 billion over two investment deals. Data were collected for 40 companies.

Longevity Risk Market

During the upcoming years, the Longevity Risk will bring the challenges that require taking steps toward mitigating the adverse outcomes for the financial industry.

Each boomer has not “produced” enough children to replace themselves. This leads to a decline in the number of taxpaying workers. It takes about 25 years to add a new taxpayer.

The decline in economic prosperity is caused by excessive debt and declining income growth due to productivity increases.

Back in 1966, each employee in the USA shouldered $555 worth of social benefits. Today, each employee has to support more than $18,000 worth of benefits. By 2025, each married couple in the USA will pay social security retirement benefits for one retiree and their own family’s expenses.

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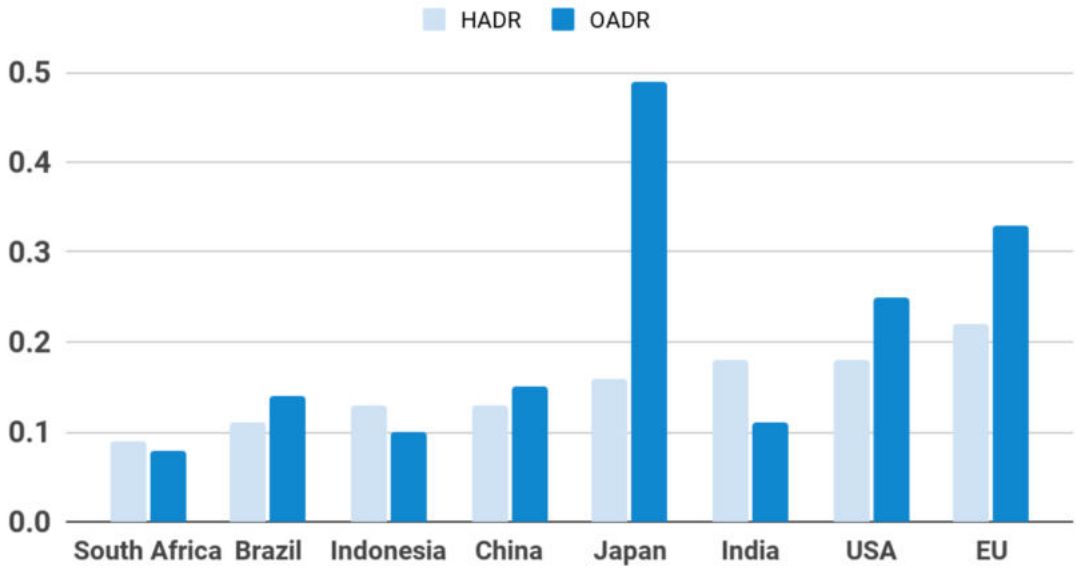
Old-Age Dependency Ratio (OADR) and Health-Adjusted Dependency Ratio (HADR) for Selected Countries



HADR is a new measure of aging burden based on the aging-related health of the adult population, compared to the widely used earlier OADR. The comparison of the values of both metrics gives a more clear understanding of how the particular countries overcome the negative consequences of aging population and Longevity Risk.

Fortunately, a more developed global value chain is already emerging for transferring Longevity Risk from traditional holders of such risk — public and private pension funds — to a broader set of risk takers, including the capital markets.

At the inception of this value chain are the public and private retirement systems that are presently responsible for meeting the vast majority of retirement obligations. Public and private pension plan sponsors are not compensated for holding Longevity Risk and, in some cases, are not particularly well suited to manage it either.

Therefore, they are increasingly taking advantage of opportunities to shift liabilities off their balance sheets using a variety of transactions, called pension buy-ins, pension buy-outs, and Longevity swaps (collectively, “pension risk transfer contracts”).

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Longevity Risk Market Players

Fund / Sponsor	Provider(s)	Solution	Size	Date
Lloyds Banking Group pension schemes	Scottish Widows / SCOR	Longevity swap and reinsurance	£5.5B	Feb 2022
NN Life	Reinsurance Group of America	Longevity reinsurance	€4.0B	Dec 2021
Phoenix Group	Metlife	Longevity reinsurance covering UK pension liabilities	$2.4B	Dec 2021
Unnamed UK pension	Zurich / Metlife	Longevity swap and reinsurance	$3.5B	Dec 2021
Aegon	Reinsurance Group of America	Longevity reinsurance	€7.0B	Dec 2021
Athora Netherlands	Reinsurance Group of America	Longevity reinsurance	€3.3B	Sep 2021
ICL Group Pension Plan (Fujitsu)	Swiss Re	Longevity swap and reinsurance	£3.7B	May 2021
Unknown UK pension	Prudential Financial, Inc. and Zurich	Longevity swap and reinsurance	£6.0B	Mar 2021
Athora Netherlands	Canada Life Re	Longevity reinsurance	€4.7B	Mar 2021
AXA UK Pension Scheme	Hannover Re	Longevity swap	£3.0B	Mar 2021

InsurTech Industry

While the InsurTech sector is currently the leading example of financial companies onboarding the practical application of Biomarkers of Longevity, it is just the start of a much larger trend that will involve the financial industry incorporating the use of Biomarkers of Human Longevity.

The most recent trend shaping the InsurTech Industry is the measurement and analysis of epigenetic biomarkers. The epigenetic clock measures biological aging in a unique way. Studies have shown that individuals who have faster epigenetic clocks are aging faster biologically and, subsequently, are at greater risk for all-cause mortality. Epigenetic measurements also provide insights into how and why we age, making them an important new tool in Longevity research.

Biomarkers possess an immense potential to bring greater efficiency into the insurance industry. The market is set to witness the emergence of new solutions in the upcoming future.

Many financial services and products can be optimized using biomarkers and, in particular, Biomarkers of Human Longevity. Such approaches show great value for a whole variety of entities, both governmental and privately held, providing optimized hedging solutions.

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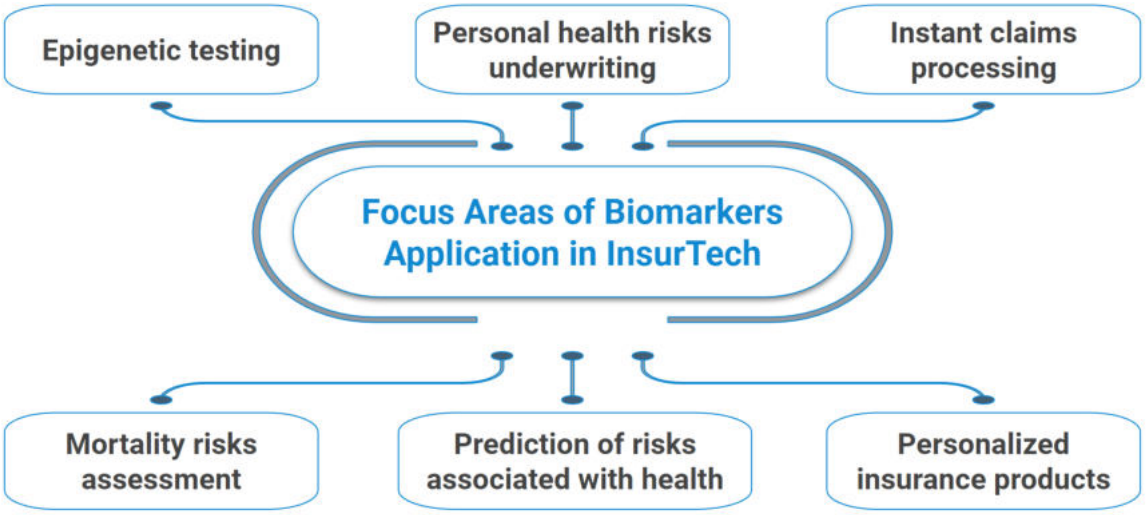
Focus Areas of Biomarkers Application in InsurTech



Takeaways

- **Longevity and Health InsurTech** experienced exponential growth over the last few years both in terms of securing record amounts of private funding and the number of exits. InsurTechs are poised to be a game changer for customers willing to live longer and secured life and insurance companies aiming to find effective solutions to mitigate the adverse effects of Longevity Risks. Longevity InsurTech will continue to evolve partially due to the outcomes of the COVID-19 pandemic and the wider application of frontier technologies (e.g., AI, Machine Learning, and Big Data) able to revolutionize the existing approaches across the insurance industry.

- **Commercial InsurTech remains** primed for significant growth in the next few years, the market is expected to be "ripe for partnerships." InsurTech companies in commercial insurance, like in other segments, were once intent on competing directly with incumbent insurance companies, but today's players are often focused on partnerships. Insurers who once felt threatened by InsurTech companies are now willing to invest in and ally with firms that can help them deliver innovative insurance products to the market quickly and efficiently.

- **Life InsurTech** is embracing the advanced technologies to deliver the customized solutions to clients, on the one hand, and to improve the risk underwriting approaches of insurance companies, on the other. As the cycle of maturation of the InsurTech sector continues, underequipped insurers will either lose market share or adapt high-cost point solutions to access and manage new channels. This will result in great industry development as fewer technical contenders drop out of the race or embrace new business practices. Life InsurTech will bring to

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market “wrapped” products that adjust coverage based on the evolving needs of customers.

- **Property and Casualty InsurTech** must respond to economic conditions and evolving customer preferences by transforming operations and embracing new ways of working. To adapt, retail and commercial insurers must rethink their value propositions and improve the customer journey by offering more personalized products and reinventing distribution; operate efficiently to minimize costs and maximize margins; form new partnership ecosystems; and adopt digitalization, including AI, smart operations, and advanced analytics.

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Longevity FinTech and Asset Management

Outline of Sections

Introduction

Advancing Longevity Finance requires the preparation of governments, regulators, corporates, and other players from the financial sector for the opportunities of the aging trend, while fostering the financial well-being of their aging customers through novel FinTech innovations and solutions, which includes traditional financial products and services such as age-friendly banks, age-friendly neobanks, Longevity credit unions, etc.

Longevity FinTech can be defined as an industry, which focuses on these financial solutions that in one way or another are tied to people's health. The best way to describe it is by drawing some examples: A healthy lifestyle bonuses company is a part of the Longevity FinTech, as well as age-friendly banks (e.g., banks with a special focus on retirement planning, financial products tied to Longevity, etc.), pension funds, etc.

If the company provides financial solutions that are related to health, Longevity, retirement, etc., a given financial entity can be considered to be a part of the Longevity FinTech Industry. The same can be formulated (in a more narrow way via understanding the risks) if a financial entity is exposed to the Longevity Risk – the entity belongs to the Longevity FinTech.

This section reviews trends, funding activity, and risk assessment for a variety of Longevity FinTech subsectors.

ISBN: 0978-1-915559-99-9

Longevity FinTech and Asset Management Framework

Age-friendly Banks

The growing global population of older people pushes even the most conservative financial institutions, such as banks, to make their products more "age-friendly," with specialized services and safeguards for people over 60.

Longevity Credit Unions

As a not-for-profit, member-owned cooperative, Longevity Credit Union's main goal is to deliver affordable, convenient, and professional financial services, primarily loans for its retiree members.

Age-Friendly Neobanks

Neobanks are disrupting the traditional banking system by leveraging technology and artificial intelligence (AI) to offer personalized services to elderly customers.

Healthy Lifestyle Bonuses

This type of services will allow users to aggregate data from different mobile health apps or wearables. Users achieving proposed healthy lifestyle goals will be rewarded with crypto tokens, fiat money or other bonuses.

Providers of Reverse Mortgage

A reverse mortgage (Equity Release) is a type of loan (mostly at rates starting at less than 3.5% per year) that is used by homeowners at least 62 years old who have considerable equity in their homes.

State Pension Funds

The State Pension is a regular payment people can get from the government once people reach the State Pension age. To qualify, people must have paid National Insurance contributions during working life.

Corporate Pension Funds

Corporate pension are benefits that provide income during retirement on the basis of how long the employee has been employed by the company, as well as their salary history.

Longevity Finance Overview

Age-friendly banks account for the largest segment among companies engaged in Longevity Finance. Age-friendly banks, along with providers of reverse mortgages, are gaining the larger adoption over the last years, judging from the rapid growth of the number of new market entrants and the amount of investments allocated to these sectors. The Longevity Financial Industry sees the lasting trend of increasing demand for tech solutions aimed to supplement and improve the services provided by larger financial institutions.

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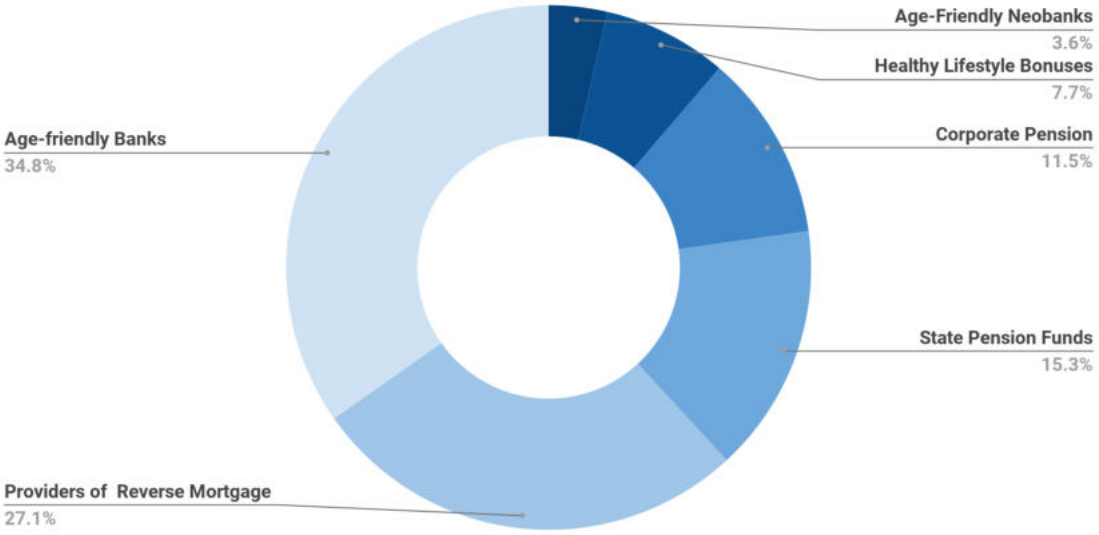
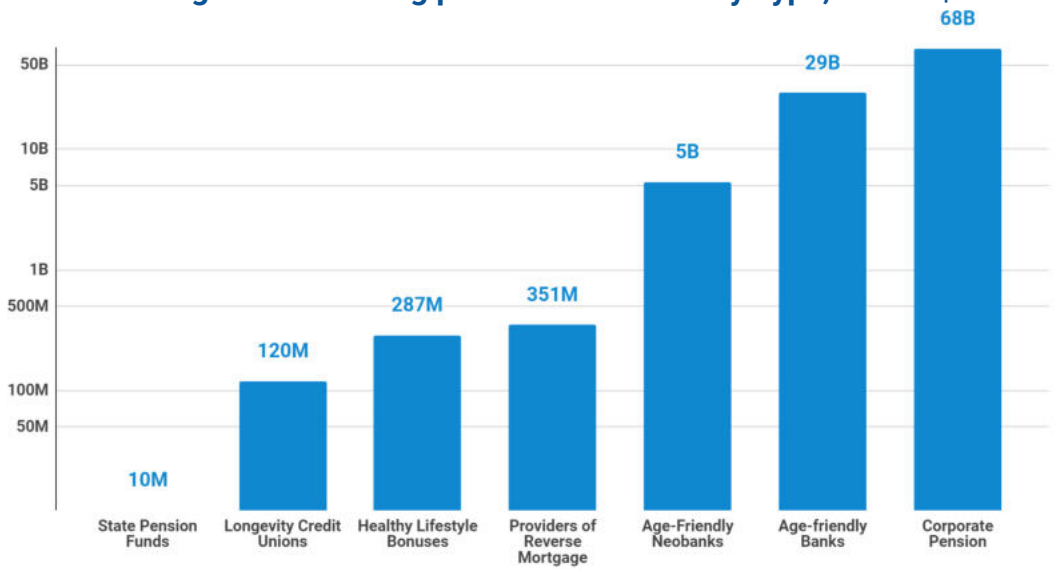
Companies Distribution by Segments



Corporate pensions are much more common in public than in the private sector. At the same time, this category of Longevity financial institutions has the highest total funding per entity. Taking into account that currently age-friendly banks are mostly conventional banks with expanded functionality for senior clients, this category of Longevity financial institutions has second funding per entity because banks have larger capital adequacy requirements among other financial institutions.

Average Total Funding per One Institution by Type, Billion $



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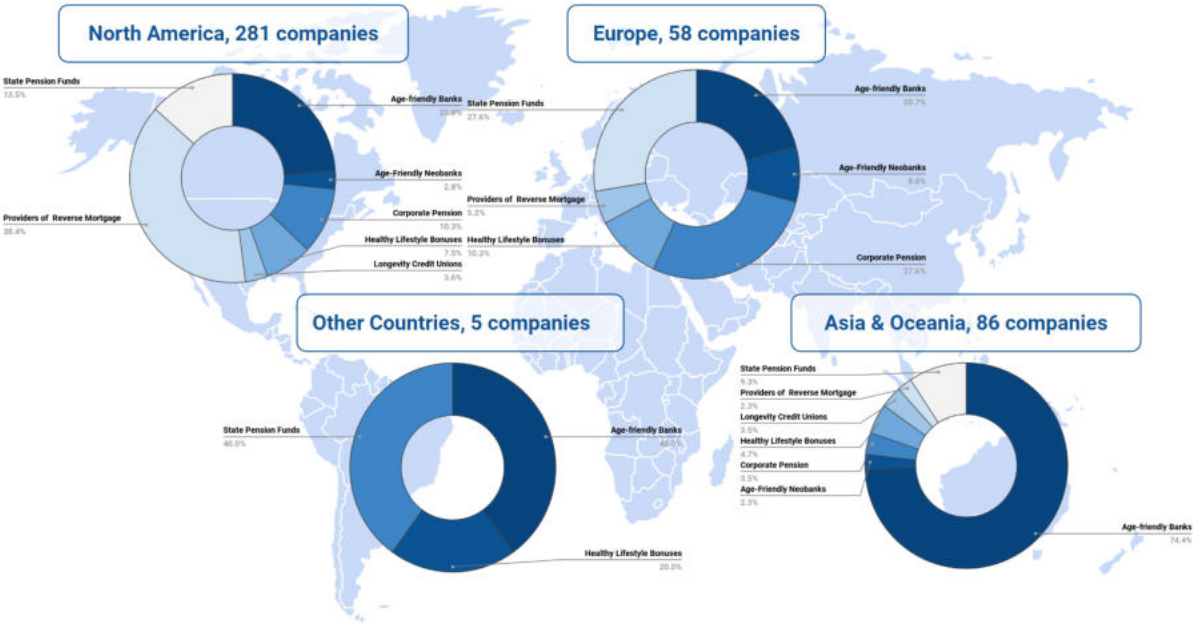
Funding Dynamics of Longevity Finance

	2015	2016	2017	2018	2019	2020	2021	2022
Age-Friendly Banks	$804.0M	$1,484.1M	$3,805.8M	$2,592.4M	$2,791.3M	$2,287.8M	$3,388.6M	$9,937.1M
Age-Friendly Neobanks	$1,216.5M	$82.2M	$505.0M	$37.1M	$792.7M	$217.1M	$1,148.1M	$939.8M
Corporate Pension Funds	-	$2.9M	$31.7M	$17.8M	$2,409.2M	$12,200.4M	$13,481.0M	$9,108.0M
Credit Union	$0.0M	-	$13.5M	-	$26.5M	$0.1M	$80.0M	-
Healthy Lifestyle Bonuses	$1.6M	$56.1M	$8.6M	$37.0M	$17.8M	$11.0M	$50.7M	$37.8M
Reverse Mortgage	$17.7M	$9.6M	$8.1M	$47.4M	$14.0M	$47.4M	$50.3M	$153.8M
State Pension Funds	-	-	-	-	$2.3M	-	-	$8.2M

Longevity Finance Geographical Distribution



Age-Friendly Banks

As AgeTech and WealthTech subsectors converge, the financial sector is expected to witness the rise of age-friendly banks, a new form of organization aimed at making banking easier for those over 60. Financial institutions have a responsibility and a

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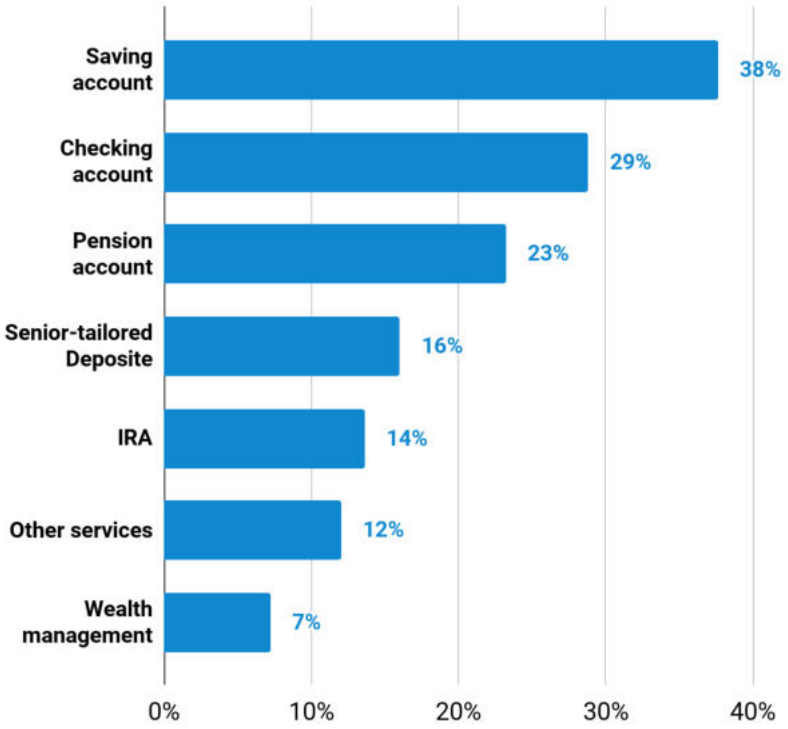
distinct opportunity to better serve the older adult population, which is their largest customer base.

The worldwide growing population of older people is pushing even the most conservative financial institutions to examine how to make their products more "age-friendly." Banks that are age-friendly provide effective and specialized financial products, services, and safeguards for people over the age of 60.

The proportion of older people in the population is growing, which means there are fewer and fewer working-age people.

Services of Age-Friendly Banks



Service analysis of 150 banks, closest to age-friendly ones, shows different services offered to older customers, from specific accounts to wealth management. Some 36% of banks have more than one age-friendly product.

The most popular services for senior citizens among the banks are saving and checking accounts provided by 72% of banks. In addition, 36% of banks target retirees by introducing pension and retirement plans and accounts (in the US market, IRAs) while almost a third of banks diversify their product to be active in both sections. Only 12% of samples offer customers other financial services like advising, personal assistance, additional protections, and classes to clients.

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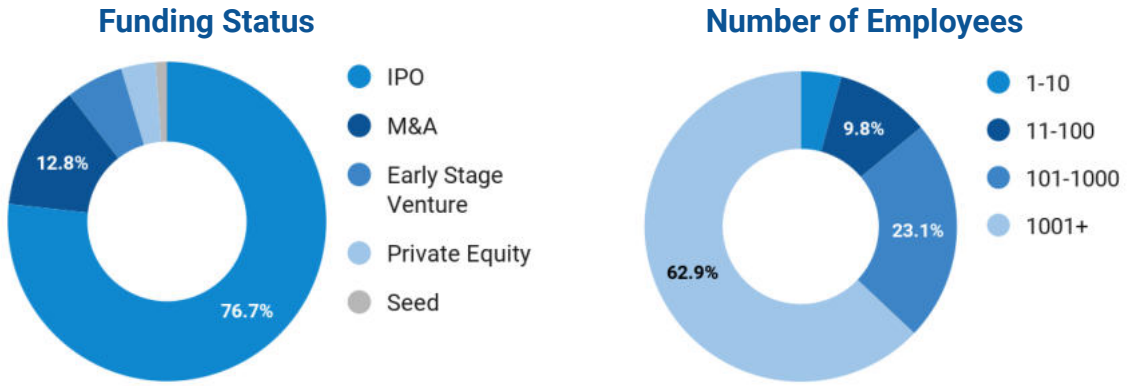
Age-Friendly Banks Subsector

The IPO category is in the lead by funding status. Next are M&A and Early Stage venture categories. The Private Equity and Seed categories complete the list.

In terms of the number of employees, most companies have 1,001+ employees (62.9%); 23.1% of companies have 101-1,000 employees; 9.8% have 11-100 employees, and the smallest number of companies have 1-10 employees.

Age-Friendly Banks Analytical Overview



2022 has witnessed the record high of private funding of age-friendly banks reaching $9.6 billion over 19 investment deals. Data were collected for 145 companies.

Age-Friendly Neobanks

Banks and financial institutions should prioritize creating novel solutions and products for the increasing number of older people as they have increased life expectancies, which makes them more viable to financially absorb more risk than elderly people of previous generations. So, there should be new thinking about investment plans and other products designed for this new generation of elderly citizens in this new era.

The FinTech innovations can be the answer to decumulation of wealth as well. Banks should pay attention to single elderly people who tend to live alone without descendants. These types of people need different kinds of loans that are specifically designed for retired people, such as reverse mortgages. These products can provide people the support they need for long-term, secure living.

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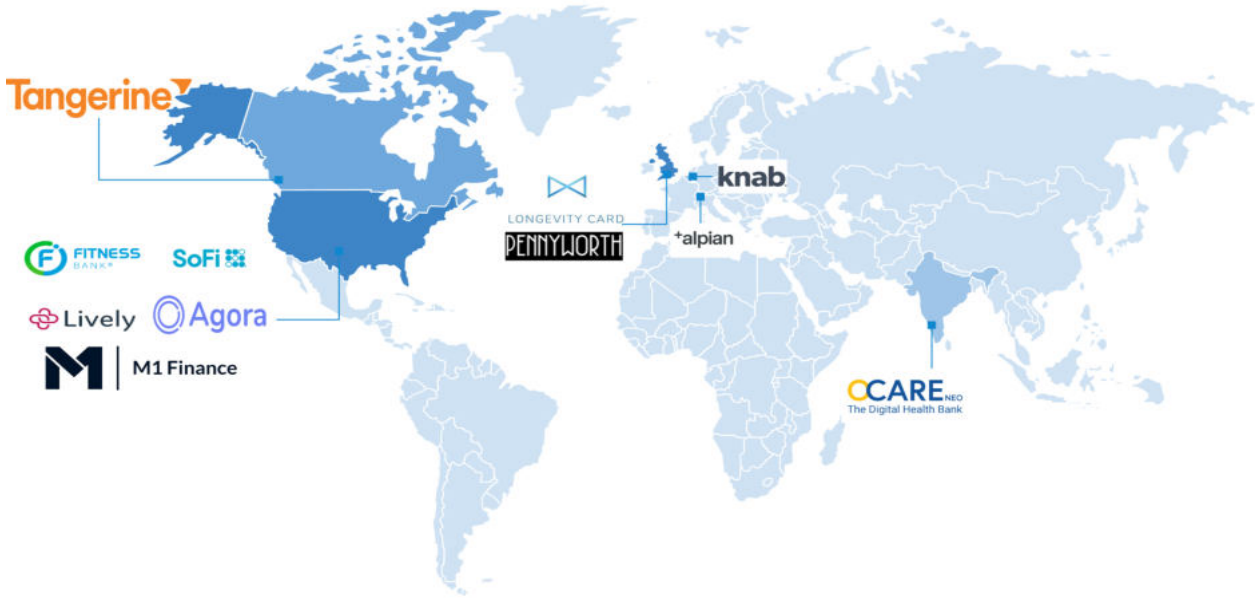
Major Age-Friendly Banks



The USA has five age-friendly neobanks (FitnessBank, Lively, SoFi, Agora, and M1 Finance) among 11 banks, so it is the most active country in this field. The second place is shared by the UK – with two banks (Longevity Card and Pennyworth) – and Canada, India, Switzerland, and Netherlands, each having one age-friendly neobank (Tangerine, Ocare, Alpian, and Knab, respectively).

Main Components of Age-Friendly Banking

1. Protecting older adults from financial abuse and fraud;
2. Customizing financial products and services to older adults' needs;
3. Expanding affordable financial management;
4. Guaranteeing access to critical income supports;
5. Facilitating aging in the community;
6. Improving the accessibility of banking for those with restricted mobility or living alone in remote areas.

The Late Stage Venture category is in the lead by funding status. Next are IPO, Early Stage Venture, and M&A categories. Seed completes the list.

By the number of employees, most companies have 1,000+ employees (28.4%) while 21.4% of companies have 1-10 employees.

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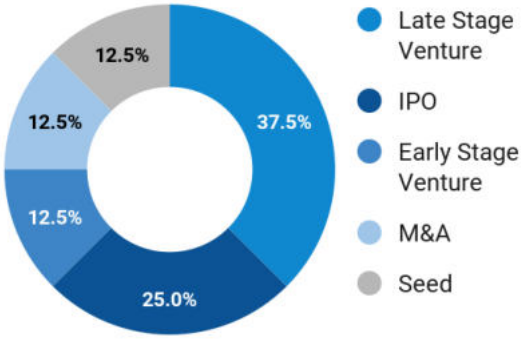
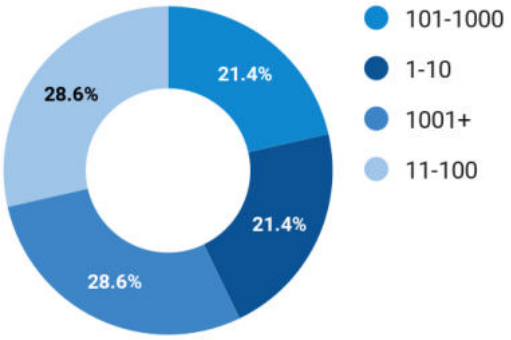
Age-Friendly Neobanks Analytical Overview

Funding Status



Number of Employees



2021 has witnessed the record high of private funding of age-friendly neobanks reaching $1.1 billion over 10 investment deals. In 2022, five investment deals were worth $189.8 million of total funding. Data were collected for 11 private neobanks, having at least one disclosed funding round during 2016-2022.

Age-Friendly Neobanks vs. Traditional Banks

Neobanks are disrupting the traditional banking system by leveraging technology and AI to offer a range of personalized services to customers. On the other hand, traditional banks follow an omnichannel approach, i.e., having both physical (through branches and ATMs) and digital banking presence to offer a multitude of products and services. The age-friendly banking report by InvestTech Advanced Solutions assembled information about key industry trends of 150 age-friendly banks, including 15 neobanks.

Neobanks	Traditional Banks
Neobanks are digital banks without any physical branches, developed for the growing masses of tech-savvy customers that prefer to manage their money using mobile apps or other digital media	Traditional banks have physical branches and actual people at the counters
Absence of expenses related to the maintenance of the bank's branch network	Additional costs for customer service in offices and branches
High speed, simplicity, and comfort	Length of making changes and taking decisions, and administration (bureaucracy)
Neobanks offer higher rate for savings and checking accounts	Traditional banks offer lower rate for savings and checking accounts compared to

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	neobanks
Neobanks work without reference to the office business hours. So, they are available 24/7 all year round. For a neobank, your location does not matter	Traditional banks also keep up to date. Many of them provide mobile solutions with a variety of options. However, they may not be available everywhere.

Longevity Credit Unions

Credit unions are a type of financial cooperative that provide traditional banking services. Ranging in size from small, volunteer-only operations to large entities with thousands of participants, credit unions can be formed by large corporations, organizations, and other entities for their employees and members.

Longevity credit unions are likely to play a pivotal role in the Longevity space as there is a growing demand from the actively aging population for financial services, namely sources of financing life expenses.

Market Trends: Longevity Credit Unions

Longevity credit unions are known for their excellent community service. When a member goes into a credit union branch, they can generally expect to get personal attention and a commitment to getting their needs met. In addition, your membership to a credit union is good for life, even if you leave the organization or community served by the credit union.

Age-friendly financial institutions are predominantly engaged in:

- Consumer education
- Age-friendly design
- Age-friendly products
- ATMs in safe places
- Improved methods of stopping scams, fraud and financial abuse
- Customer service-personalized call centers

The Late Stage Venture and Seed categories are equal by funding status. By the number of employees, most companies have 101-1,001 employees (50%); 33.7% of companies have 11-100 employees, and 8.3% have 1,000+, and 1-10 employees.

The net worth ratio shows the efficiency of the capital of the members of the unions because all the returns from using credit lines bring income to those members who have not yet used credit assistance. For example, a year of minimum membership fees

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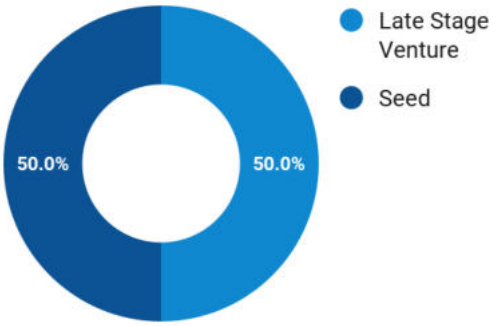
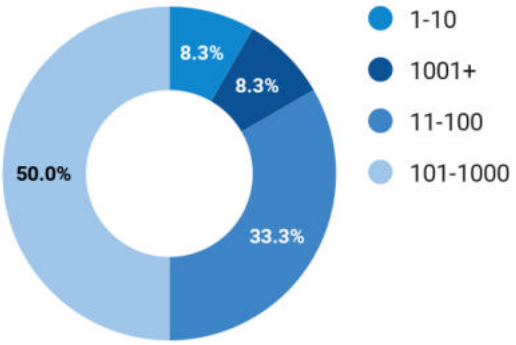
from one retiree would cover credit lines for two other members.

Longevity Credit Unions Analytical Overview

Funding Status



Number of Employees



Key Performance Indicators

Parameter	2016	2017	2018	2019	2020	2021	2022
Net worth ratio	10.89%	10.95%	11.30%	11.37%	10.32%	10.26%	10.42%
Return on average assets	0.76%	0.78%	0.92%	0.93%	0.70%	1.07%	0.86%
Median credit union average cost of funds	0.27%	0.28%	0.33%	0.44%	0.37%	0.24%	0.19%
Median credit union average yield on loans	5.30%	5.19%	5.16%	5.25%	5.10%	4.84%	4.61%
Median credit union return on average assets	0.34%	0.38%	0.56%	0.60%	0.39%	0.50%	0.42%

Longevity Credit Unions vs. Banks

Although both banks and credit unions have similar offerings, there are some important distinctions to make between these two types of institutions. The primary difference between a bank and credit union is their tax status. A bank is a for-profit financial institution while a credit union is a not-for-profit financial institution. Credit unions may have cooperative agreements with financial institutions that greatly expand access to ATMs and branches.

Credit Union Bank

Nonprofit institutions owned by members	For-profit institutions that may be privately owned or publicly traded.
Generally, credit unions offer lower interest rates on loans, fewer fees and higher APYs (annual percentage returns) on savings products.	As a rule, banks offer both higher fees and interest rates on loans while their APYs on savings products tend to be lower.

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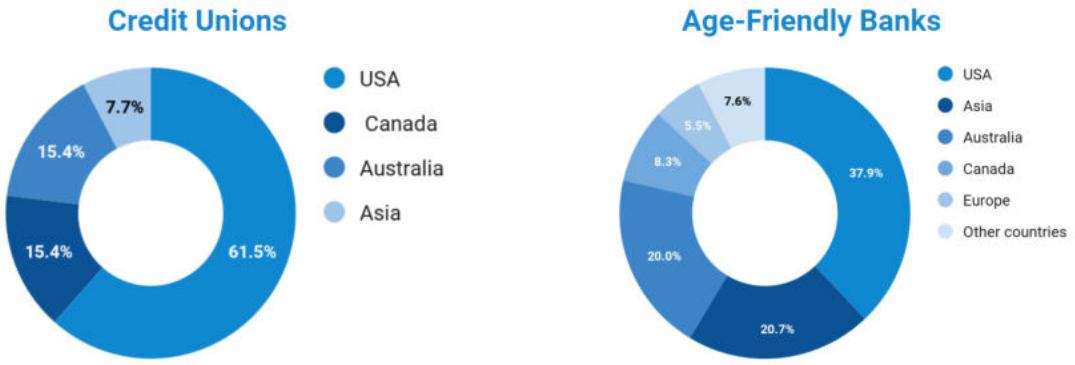
Inconvenience with fewer locations, mostly nondigital ones	Likely, more branches and ATMs making it easier to access your money.
Distribution of financial benefits among members and excellent customer service but limited scope of services	Banks provide a much wider array of options (commercial credits, perks to cardholders) and have more money to invest in FinTech.

The USA is still firmly in the lead in terms of its proportion of reverse mortgage companies (61.5%). Canada and Australia ranked second and third, with 15.4% each.

Location Distribution



Providers of Reverse Mortgage

A reverse mortgage is a type of loan used by homeowners of at least 60 years old who have considerable equity in their homes. By borrowing against their equity, seniors get access to cash to pay for cost-of-living expenses later in life, often after they have run out of other savings or sources of income. In comparison with traditional asset-backed loans, reverse mortgage loans provide the elderly with a means of hedging Longevity Risk, while retaining tenure in the home.

How Does a Reverse Mortgage Works?
You're 62 or older and have equity invested in your home
You need to access to that equity to pay your daily expenses
A reverse mortgage allows you to borrow against your home's equity with no monthly payment required as long as you stay in your home
The loan is repaid once the house is sold

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There are some challenges for the Longevity economy that drive the popularity of reverse mortgages for retirees: a low-interest financial environment that provides insufficient returns on pension savings, generous retirement age and early withdrawal rules, a great fluctuation in the labor market, an erosion of traditional family support systems, and a significant proportion of one-person households.

Longevity Economy Challenges

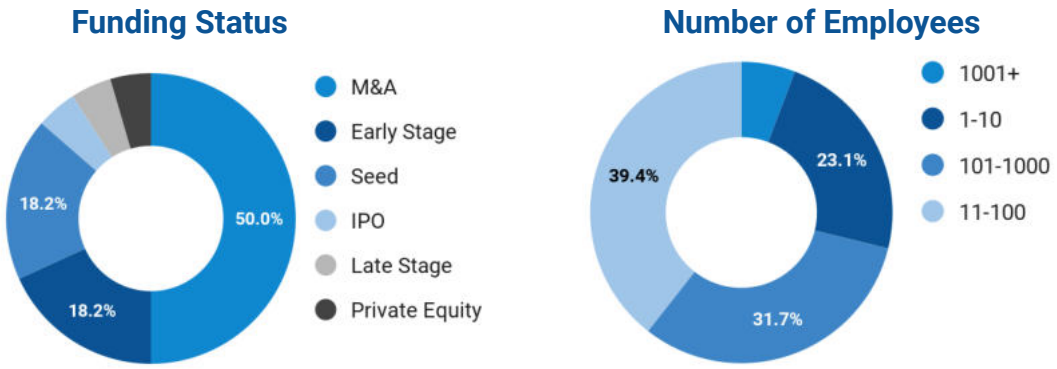
Occupancy and Longevity risks: the risks that the borrower could live in the house much longer than expected	**House price risk:** Accurate long-term valuations of the mortgaged property should be made
Interest rate (the lender finances the capital). A high interest rate environment can obviously exacerbate the cross-over risk	**Maintenance risk:** is a form of moral hazard, arising when the reverse mortgage borrowers fail to maintain their homes in good condition

Due to the dramatic improvement in the mortality rate since the 1970s, Longevity Risk has become the most crucial risk in a reverse mortgage product. As a result, banks and other lenders should form reserve capital to cover the Longevity Risk or transfer it to capital markets. The effective measure of Longevity Risk, such as biomarkers-based biological age prediction models, is crucial for the lender policy.

The M&A category is in the lead by Funding Status. Next are Early Stage Venture and Seed categories. IPO, Late Stage Venture, and Private Equity complete the list.

By the number of employees, most companies have 11-100 employees (39.4%); 31.7% of companies have 101-1,000 employees; 23.1% have 1-100 employees, and the smallest number of companies have 1,000+ employees.

Longevity Risk Detection Companies Analytical Overview



This segment covers the companies authorized to provide reverse mortgage loans to retail clients. In the UK, reverse mortgages are called equity release loans. Europe has a great potential to accelerate the equity release loans market given the aging trends and

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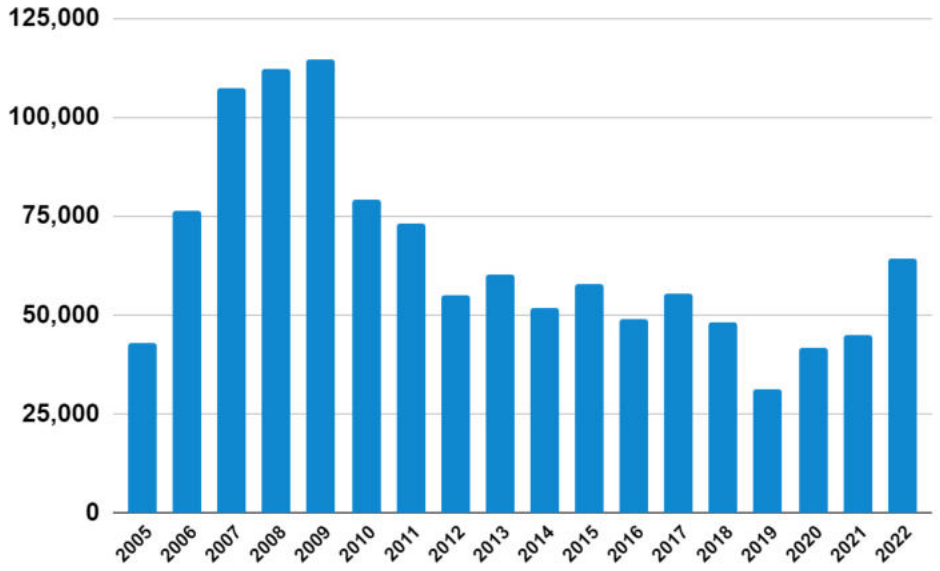
development of financial services industries. As of 2022, the Longevity-focused reverse mortgage providers account for the record $42.3 million of total funding (compared to $50.3 billion as of the end of 2021).

Nearly all US reverse mortgages are federally insured Home Equity Conversion Mortgages (HECMs). Due to the real estate bubble and the 2008 world financial crisis, huge banks and other financial institutions were apathetic to this financial instrument. They could not discover an effective solution to deal with certain idiosyncratic risks, such as Longevity Risk and CDO structural difficulties. However, increasing demand for reverse mortgages due to factors described earlier, and better risk-management algorithms will enhance loan volume in the near future.

Annual HEC Million Endorsement, Number of Deals



The USA is still firmly in the lead in terms of its proportion of reverse mortgage companies (58.4%). The UK ranked second with 35.7%, and the gap between these countries is not very large.

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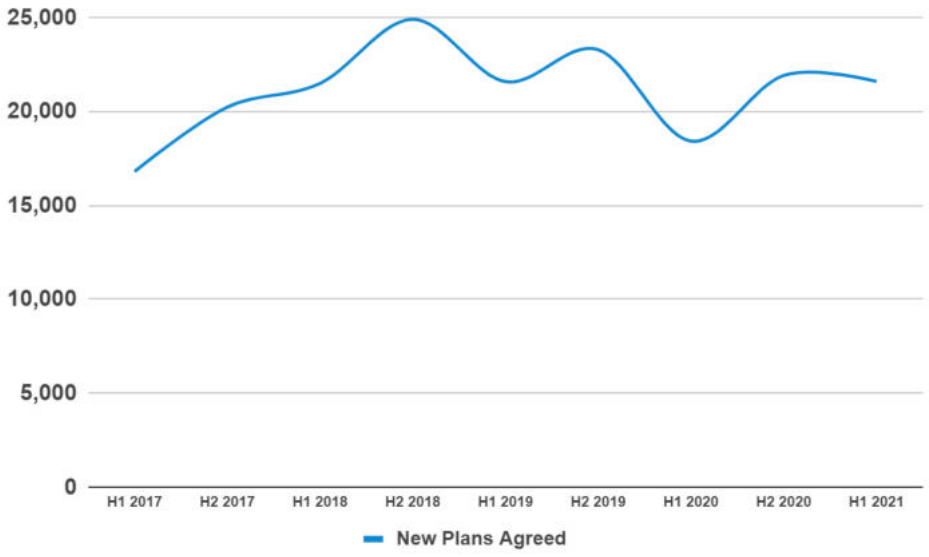
Half-Year Trends In Equity Release Customer Numbers

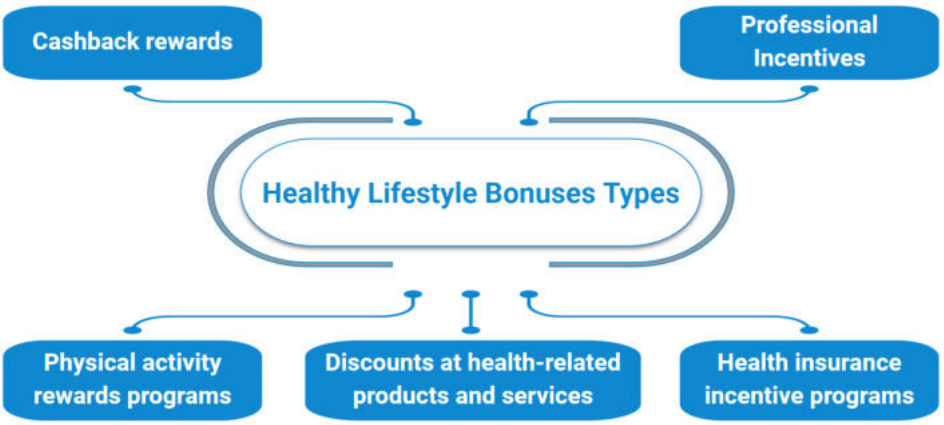


The UK Borrowers have released $4.6 billion so far in 2021, surpassing previous years and putting the market on track for over $5.3 billion of activity this year, according to the Equity Release Council's forecasts. The UK market is yet to witness the future growth as a lack of customer awareness of the product is being diminished.

Healthy Lifestyle Bonuses

The segment involves companies that provide solutions for an active and healthy lifestyle. Although such solutions may have different business and revenue models, they still indirectly influence the state of Longevity of their clients. With growing demand from clients, this segment is expected to be represented by a larger number of companies in upcoming years.

Healthy Lifestyle Bonuses Types



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Market Trends: Healthy Lifestyle Bonuses

1. **Healthy Lifestyle Has Become the Integral Part of Marketing Strategies**

Applying the principles of customer loyalty to healthcare is a developing field, and it is one of the most exciting growth areas in the loyalty industry. Great attention is received by transactional behaviors, i.e., purchases and other interactions with a brand. Personal habits related to health and fitness is one of the most challenging areas of life to create change.

2. **Deeper Interconnection of Retail and Wearables**

Wearables are alerting companies of the potential to tap into consumer loyalty. Increasing wearables usage arrives against a backdrop of a range of macro issues, such as the recognition that obesity is a major societal issue and the United States' Affordable Care Act. As a result, many brands are focusing on their role in supporting and enabling healthy lifestyles.

3. **Increasing Pool of Potential Clients**

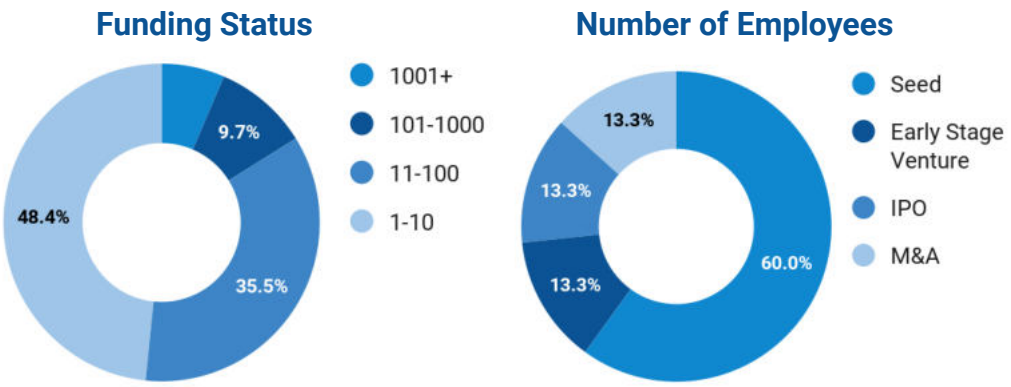
The increase in the number of people talking about healthy living is no coincidence as people are struggling to find work–life balance amid a work-from-home reality. On top of that, the economic uncertainty and poor job employment climate aggravates issues further, which may cause anxiety over work performance.

Healthy Lifestyle Bonuses Subsector

The Seed category is in the lead by funding status. Next are Early Stage Venture, IPO, and M&A categories.

By the number of employees, most companies have 1-10 employees (48.4%); 35.5% of companies have 11-100 employees; 9.7% have 1-100 employees, and the smallest number of companies have 1,000+ employees.

Healthy Lifestyle Bonuses Subsector Analytical Overview



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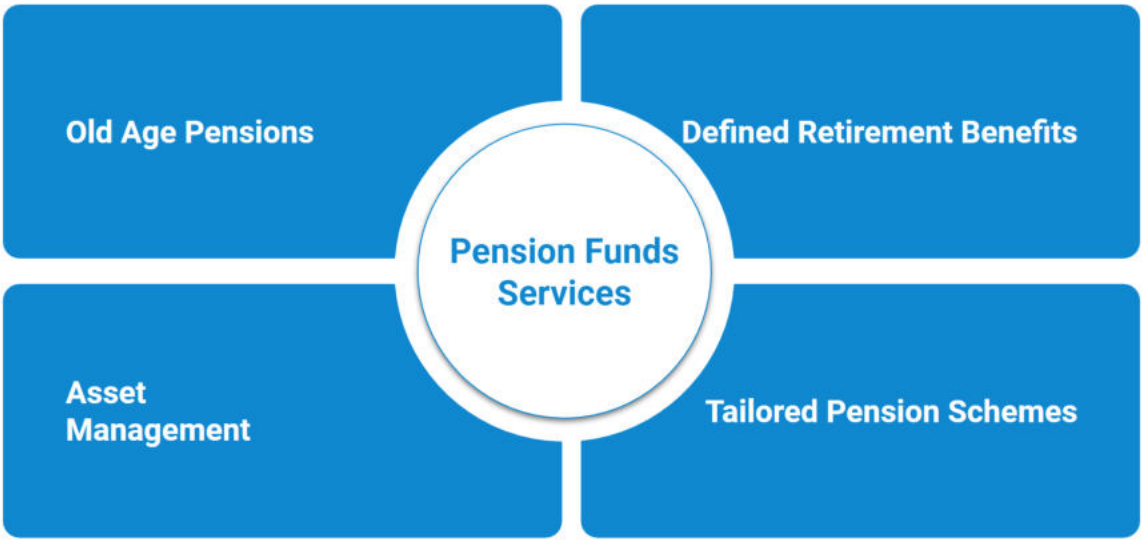
2022 has witnessed the slight decrease of private funding of companies engaged in healthy lifestyle bonuses, reaching $37.8 million, compared to $50.7 million in 2021. Data were collected for 30 private companies, 15 of which had at least one disclosed funding round during 2015-2022.

Pension Funds

Pension Funds Services Framework



This segment covers governments-backed pension funds that serve as investment pools that pay for workers' retirements. Funds are paid by either employees, employers, or both.

Market Trends: Pension Funds

Defined benefit pension funds are exposed to Longevity Risk more than any other type of Longevity financial institutions due to lasting trends when their retirees live longer than expected. As life expectancy has increased in recent years, their exposure has risen fast; just one additional year of life expectancy can contribute 5% to a pension fund's overall liabilities. Pension trustees are finding it challenging to achieve appropriate returns especially in a low-interest rate climate.

Transferring Longevity Risk to the reinsurance market is gaining wider adoption as it is the effective instrument to tackle the existing problem. Both sides may be interested in such a move.

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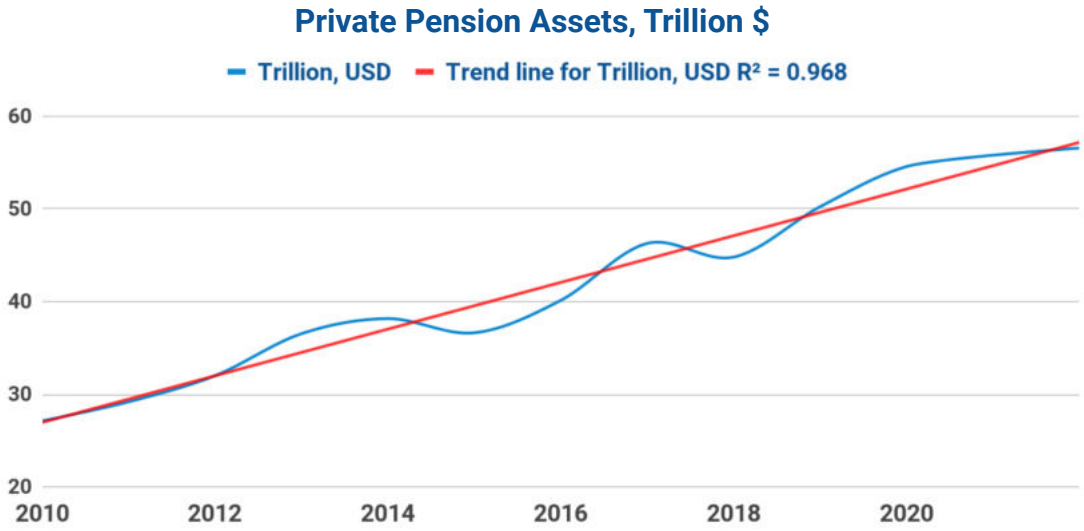
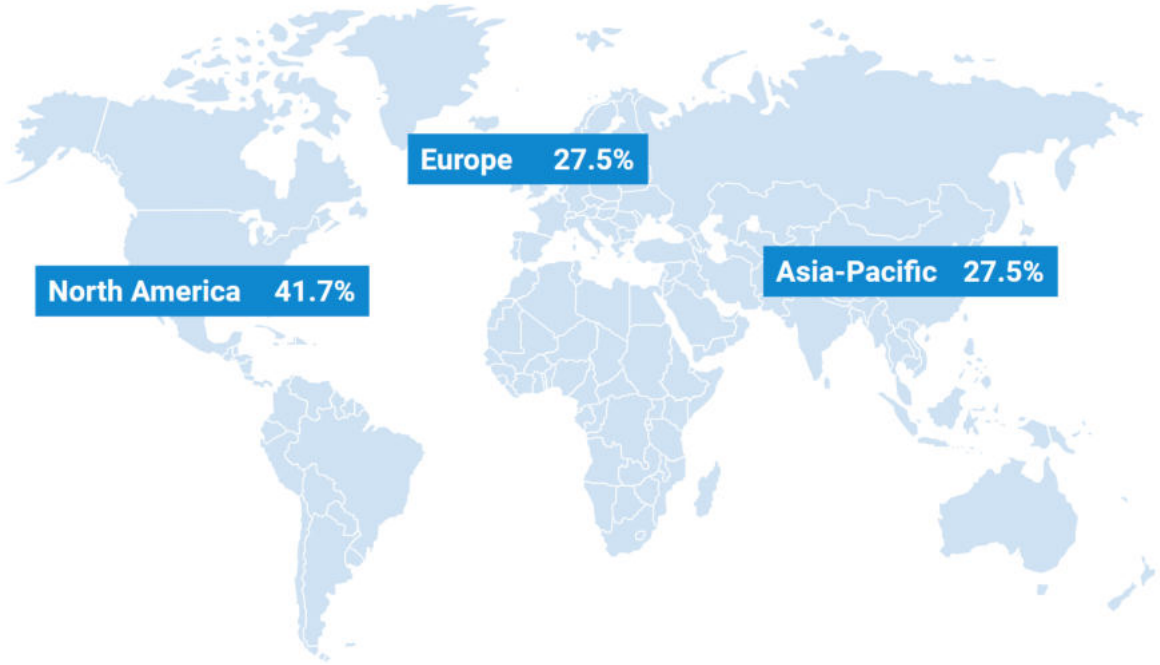


The pension risk transfer market has seen significant growth in recent years. The US pension risk transfer (PRT) market alone, involving predominantly the operations of pension buy-ins and buy-outs and Longevity swaps, had a record-breaking year in 2021, with an estimated total volume of between $38 billion and $40 billion. The high transaction volume in 2020 was fueled by strong equity returns and rising interest rates. In Q4 2022, transaction volume in the USA has risen more than 44%, compared to the same quarter last year.

Allocation of AUM Across Regions for Top 300 Pension Funds



Source: *Willis Towers Watson, A Thinking Ahead Institute and Pensions & Investments joint study*

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The USA, Japan, and Canada have the largest pension funds, with the USA having the most (42, nine, and eight entities, respectively). Sweden and Denmark have the most European funding. Welfare states like Japan, Korea, and those in Europe have larger pensions while the USA and Canada have more funds.

Assets under Management (AUM) by Regions across Pension Funds

Region	AUM $(B)	# Funds	Life Expectancy	Retirement Age
North America	11,936	51	78	67
Asia	4,972	16	82	61
Europe	3,917	26	82	65
Middle East	392	5	76	60
Africa	163	1	69	65
Latin America	87	1	76	65

Corporate Pension Funds

A corporate pension plan is a benefit that provides income in retirement, based on the employee's length of service to the company and salary history. Pension funds are pooled monetary contributions from pension plans set up by employers, unions, or other organizations to provide their employees or members retirement benefits.

AUM by Regions across Corporate Pension Funds

Region	AUM $(B)	# Funds	Life Expectancy	Retirement Age
North America	1,999	65	78	67
Europe	686	28	82	65
Asia (Japan)	142	2	85	60
Latin America (Brazil)	51	4	76	65
Middle East (Saudi Arabia)	48	1	75	60

Corporate pension funds are among the largest Longevity Risk takers, which requires the development of actionable frameworks to ensure the stability of such financial institutions and the stability of the population's retirement benefits.

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The analysis of top 100 corporate pension funds in 14 countries with almost $3 trillion of assets under management shows that the USA, the UK, and the Netherlands have the highest number of large pension funds (61, 11, and five funds, respectively).

In other regions, only Japan, Brazil, and Saudi Arabia have private pension funds that manage a large number of assets.

Takeaways

- **The Longevity Financial Industry** has a potential to strengthen the economy, helping to increase the engagement of elderly, on the one hand, and to open new niches for businesses focused on financial services and health-related insurance, on the other hand. The retired or nearly-retired 60+ years population represents the wealthiest part of the financial system and has global purchasing power. There are a lot of opportunities for age-friendly companies to develop new products designed for customers who are living extra-long lives.

- **Age-friendly banking** comprises the development of banking services and products able to meet the needs of senior clients. Currently, age-friendly banks are mostly traditional banks with expanded functionality for senior clients. Some of them have already started to adjust the way they provide the services to the specific needs of elderly (e.g., closer cooperation with caregivers, assisted services at bank branches). However, the market has only a few examples of neobanks providing services exclusively for elderly. Yet, the banking industry poses the opportunities for future market entrants.

- **Private pension funds** are exposed to the effects of Longevity much more, compared to the other categories of Longevity Finance. Therefore, the transactions of pension risk transfer are gaining popularity across the industry over the last 3 years. The North American region is the largest region in terms of number of funds and AUM, accounting for 41.7% of all assets while the European and Asia-Pacific regions have the equal proportions. During the upcoming years, the pension industry is expected to adopt a wider range of alternative assets into clients' portfolios.

- **State pension funds** need to adapt to the changes brought by Longevity. By 2030, pension and old-age expenses could reach up to 13-15% of world GDP, reaching €10-13 trillion in total. Therefore, the state-owned pension funds need to be aware of these forecasts to act accordingly. Out of the top 300 largest pension funds across the globe, sovereign and public sector pension funds accounted for 141 funds and represent 68.0% of total assets under management. The USA, Japan, and Canada have the highest number of large pension funds. The financial industry sees more active onboarding of the opportunities of Longevity and tackling the risks associated with it by both incumbent market players and

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new tech start-ups.

- **Longevity credit unions.** The primary difference between a bank and credit union is their tax status. A bank is a for-profit financial institution while a credit union is a not-for-profit financial institution which serves its members and helps with wealth management through mutual lending. Longevity credit unions are dedicated to helping aging people of every socioeconomic status achieve financial wellness. Also the Longevity credit unions offer savings and checking accounts; CDs offer competitive yields.

- **Providers of reverse mortgage.** A low-interest economic environment that provides insufficient returns on pension savings, early withdrawal rules, a fluctuating labor market, an erosion of traditional family support systems, and a large proportion of one-person households drive the popularity of reverse mortgages for retirees. This division covers retail reverse mortgage lenders. Equity release loans are reverse mortgages in the UK. Europe's elderly population and growing financial services sectors might boost the equity release loans industry. Longevity-focused reverse mortgage providers raised $42.3 million in 2022, compared to $50.3 billion in 2021.

- **Healthy lifestyle bonuses.** A healthy lifestyle helps keep and improve people's health and well-being and overcome stress. And some companies reward their customers for being active. More healthy lifestyle bonuses companies appear every day. Now, if people are active, they can get bonuses for walking and walking with the dog. Receive a higher deposit at the bank, discounts, cashback on purchases, deals on flights and taxis, and much more. Companies can engage with clients outside the shopping cycle by encouraging participants to lead active lifestyles.

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Longevity WealthTech

Outline of Sections

Introduction

The Longevity WealthTech Industry comprises products and services that either simplify or enhance the creation and maintenance of wealth – from savings to investment – for all ages in society. The term "WealthTech" covers a new generation of financial technology companies that create digital solutions to transform the investment and asset management industry. New companies are arriving on the scene and are offering advice based on AI and Big Data.

The importance of Longevity WealthTech lies in providing tech-enabled products for management of personal wealth by people of old age. Given the statistics on the increasing proportion of seniors with general wealth, the sector is poised to demonstrate continual growth in the future.

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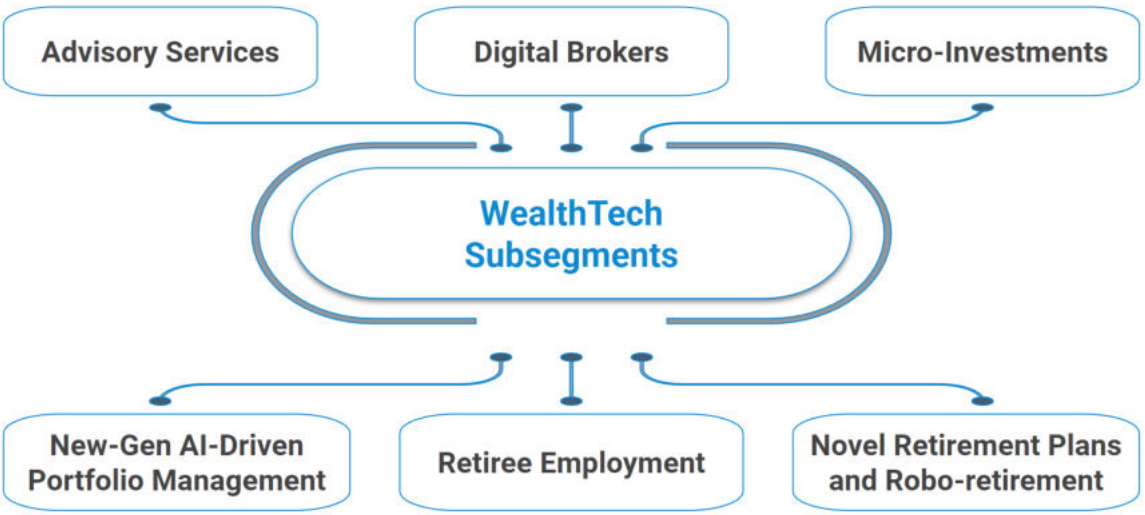
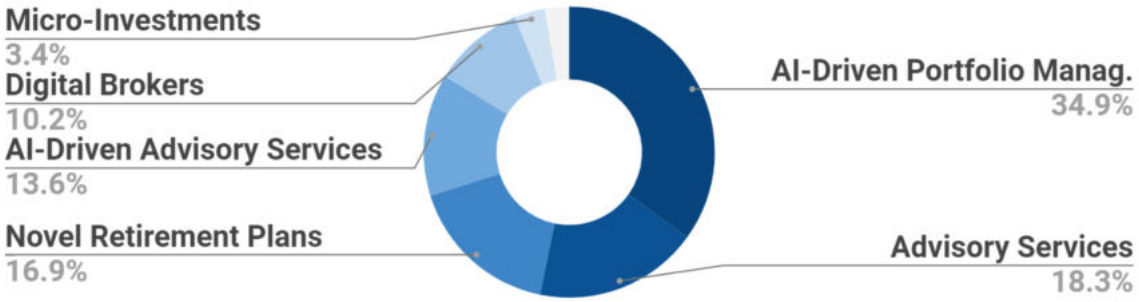
Longevity WealthTech Overview

Longevity WealthTech Framework



Across the structure of the Longevity WealthTech segment, AI-driven portfolio managers take the lead as the most frequent type, in comparison with other companies. AI, being one of the most important 21st-century tools, enhances and brings to the new level approaches in wealth management. Major applications of AI are found among at least 48% of Longevity WealthTech companies.

Companies Distribution by Segment



Digital brokers receive the most interest from investors and, as a result, the most sufficient funding on average, a staggering $7 billion per digital broker company. Funding shown in the graphs includes IPOs.

Despite quite a drastic difference between most funded type and least funded, the last place brings quite huge numbers. Novel retirement plans and robo-retirement companies on average manage to raise $540 million.

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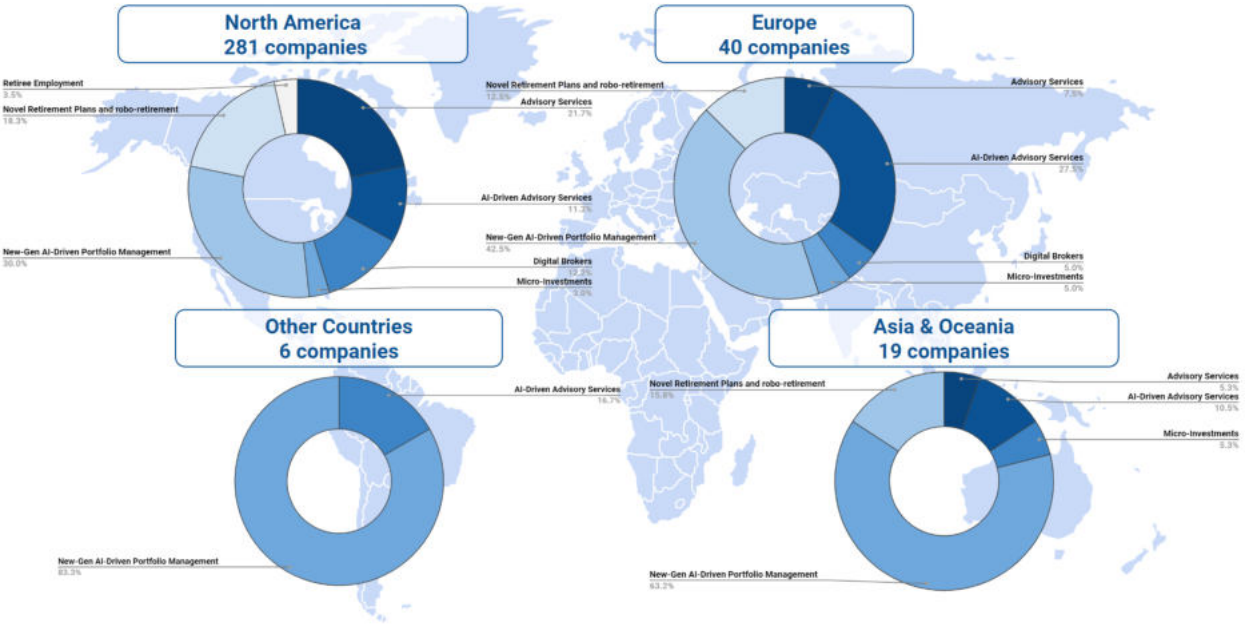
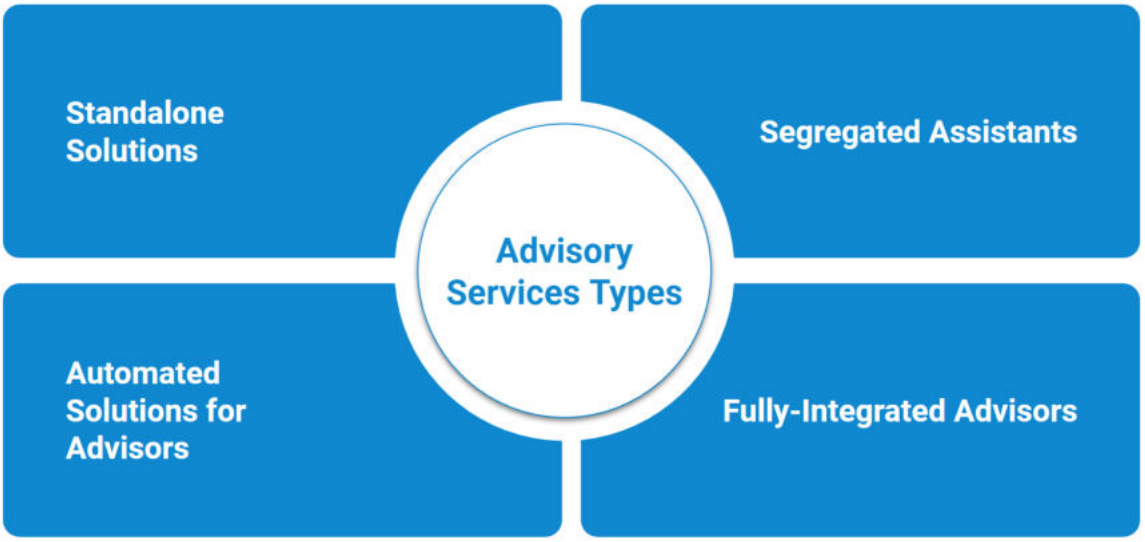
Longevity Finance Geographical Distribution



Advisory Services

The segment aggregates solutions utilizing Machine Learning algorithms that provide consumers with advice based on the most lucrative investment possibilities, the user's risk aversion profile, and other data.

Advisory Services Framework



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As the population ages, wealth managers and investment advisors are increasingly looking for ways to educate their clients on the importance of long-term planning and the flexibility that must accompany the possibility of Longevity.

Market Trends: Advisory Services

Wider proliferation of hybrid advisory models:
A hybrid robo-advisor is a digital investing service that typically combines a professionally managed account (through the help of a robo-advisory service) with access to financial guidance or planning provided by human advisors. The retail market is witnessing a rise in hybrid robo-advisors that combine the best of both worlds in an easy-to-use platform that makes processes affordable, accessible, and attractive to new-age investors.

By collaborating with WealthTech providers and using robo-advisory services, traditional wealth managers can increase efficiency, cut costs, and scale capabilities.
However, before relying entirely on hybrid robo-advisors, the industry will need to address challenges such as data privacy and cyber threats, as well as issues related to the size of investments and the deep expertise required to develop and manage robo-advisory competencies.

Greater attention of advisory services to sustainability
The robo-advisory phenomenon has led to the rise of **socially responsible investing (SRI)** or impact investing. SRI is the practice of investing in companies that operate according to certain ethical guidelines or provide products and services that either follow certain guidelines or address different social issues.

These “green” investing apps are encouraging investors to put their capital to work and save the planet, with the pandemic further strengthening the mindset that managing social and environmental challenges is essential.

Advisory Services Subsegment

The M&A category is in the lead by funding status. Next are Early Stage Venture and IPO categories. The Private Equity, Late Stage, and Seed complete the list.

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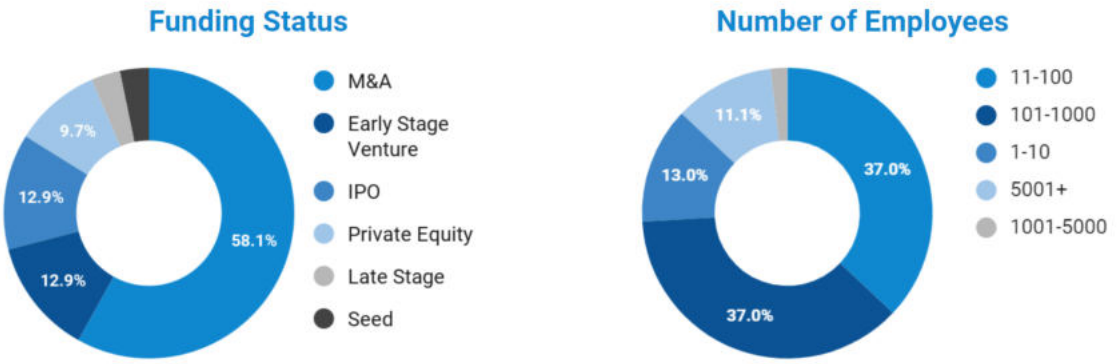
Advisory Services Market Overview



In terms of the number of employees, most companies have 11-100 or 101-1,000 employees (37%); 13 % of companies have 1-10 employees; 11.1% have 5,001+ employees, and the smallest number of companies have 1,001-5,000 employees.

2022 has witnessed the record high of private funding of advisory services, reaching $325 million over four investment deals. Data were collected for 54 companies.

Digital Brokers

Online platforms and software tools make stock market information and investment possibilities available to everybody. Many modern-day financial consumers are more demanding of simple and easy wealth management options that can be accessed at any time.

The accessibility of smartphones has created digital brokers who are disrupting the investment and wealth management sector by developing finance apps that make stock markets and innovative tools more accessible to a wider consumer base.

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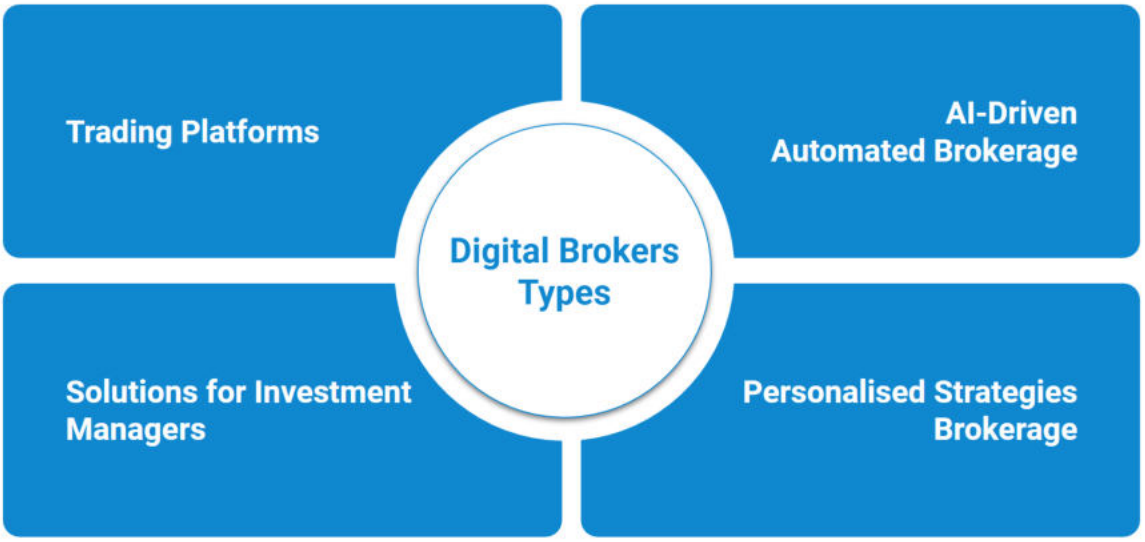
Digital Brokers Framework



Market Trends: Digital Brokers

Digital Brokerage User Experience Is Now the Key Differentiator in Retail Investing: Firms can no longer create a distinctive value proposition with competitive pricing. Recent recession fears have also caused the Federal Reserve to cut interest rates, eating into many firms' net interest revenue. As the barriers between traditional business models deteriorate and more organizations expand into adjacent lines of business, the digital brokerage user experience becomes the crucial factor, setting firms apart. Elevating the user experience requires a deep understanding of investor preferences and a willingness to reimagine how products and services are packaged and delivered to consumers.

The market is set to see greater diversification of solutions: Digital brokers are increasingly looking for novel ways to boost revenues and differentiate their product offerings from rivals to sustain growth. Incorporating social elements and crypto trading are two paths digital brokers may take, but other strategic options may also be pursued. For example, eToro added a decentralized finance (DeFi) portfolio comprising 11 DeFi crypto entities, including Ether, Uniswap, and Chainlink.

Digital Brokers Subsegment

The M&A category is in the lead by funding status. Next come Seed and IPO categories. The Early Stage Venture, Late Stage Venture, and Private Equity complete the list.

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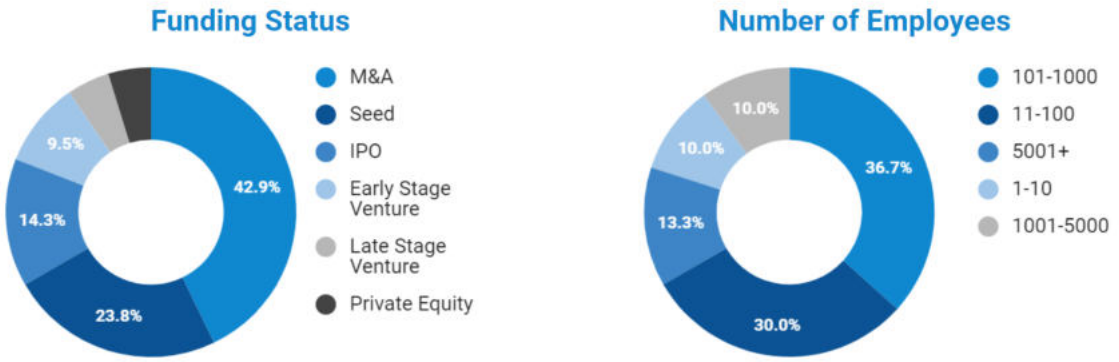
Digital Brokers Market Overview



By the number of employees, most companies have 101-1,000 employees (36.7%); 30% of companies have 11-100 employees; 13.3% have 5,000+ employees, and the smallest number of companies have 1-10 and 1,001-5,000 employees.

2022 has witnessed a decrease in private funding of companies engaged in digital brokers, reaching $648 million, compared to $5.4 billion in 2021. Data were collected for 30 private companies.

Micro-investments

Micro-investments solutions largely comprise the products and services that are making the investments more accessible to a wider pool of investors. In the Longevity context, such solutions are addressed at senior customers and are adjusted to the specific needs of this age group.

This is a reasonable trend, given the increasing volume of wealth accumulated by the older population and wider adoption of digital products among them.

Market Trends: Micro-investments

Micro-investments are a tool that does not guarantee retirement incomes: Micro-investing can be a great way to get started with investing when a person does not have much in savings. Consistently contributing small amounts can add up over time when invested properly, but clients will need to contribute substantially more to secure future retirement. In fact, for persons who wish to build a substantial investment, micro-investing is probably not the best option. Although it does build up considerable savings in the long term, after accounting for inflation and other costs, the value of the savings in the future declines considerably.

The micro-investments market is expected to keep growing in the years to come: The micro-investing platform market demand is estimated to grow at 21.1% CAGR between

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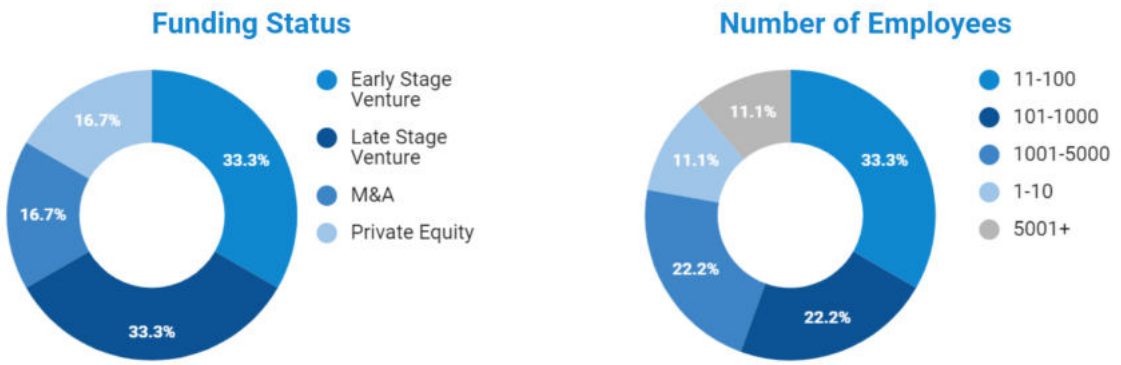
2022 and 2032, compared to 19.0% CAGR during the period of 2017-2021. With increasing awareness about micro-investing and with the rise in popularity of micro-investment across the globe, more apps and platforms have developed, providing consumers with a variety of choices for investing their money, which helps to drive the micro-investing platform market during the forecast period.

Micro-investments Subsegment

The Early Stage Venture category and Late Stage Venture are in the lead by funding status. Next is the M&A category. Private Equity completes the list.

Micro-investments Market Analysis



By the number of employees, most companies have 11-100 employees (33.3%); 22.2% of companies have 101-1,000 and 1,001-5,000 employees, and the smallest number of companies have 1-10 and 5,001+ employees.

2022 has witnessed the record high of private funding of micro-investments reaching $1.7 billion over three investment deals. Data were collected for 10 companies.

New-Gen AI-Driven Portfolio Management

AI-driven portfolio management tools provide an enhanced experience to investors. It is expected that such solutions will continue to gain support from people of older age. Lower fees and investment minimums are reasons to consider a digital portfolio over a human fund manager.

In many cases, AI-driven portfolios can perform better than a professionally managed one because while professional fund managers can only use currently available information in an attempt to outperform the market, AI can utilize Big Data and scrape the internet to build highly intricate models that predict future market movements with precision.

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Market Trends: New-Gen AI-Driven Portfolio Management

AI onboarding in portfolio building strategies become the new normal
Today, AI is mostly adopted by quantitative funds or asset managers with strong quantitative expertise even though their core investment process is not purely quant. They generally rely on AI for assistance rather than full delegation of the investment strategy (something that is not that infrequent with other quant strategies, such as factor investing). At the same time, active asset managers who do not rely on quantitative processes for their core strategy seem to shy away from the advantages of AI.

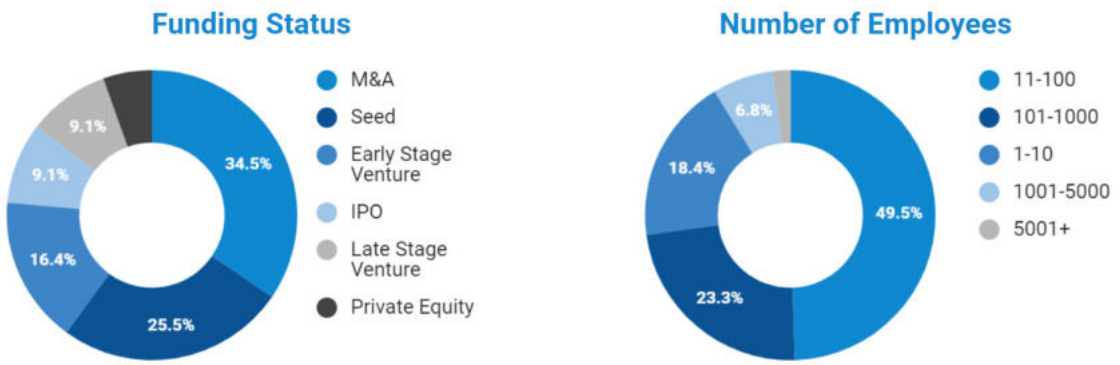
AI can be adopted by asset managers to a larger extent than it is today. The AI techniques adapted to financial data and textual information (news, conference calls, etc.) could help fund managers absorb more information at a lower cost than when relying on broker research.

More time is still required to apply AI in portfolio management more broadly
The reality is, most investment advisors – especially those at smaller firms – do not leverage a lot of new technology. Many rely on legacy wealth-management systems, generic services, or their standard go-to ETFs and mutual funds. This means most people's money grows slower and with less certainty because just one person is making decisions. It does not matter how smart that individual is; it is impossible for them to be right every time. The next generation of investors are not looking to go down the same beaten path; they understand the importance of personalization and real-time decision-making.

New-Gen AI-Driven Portfolio Management Subsegment

The M&A category is in the lead by funding status. Next come Seed, Early Stage Venture, and IPO categories. The Late Stage Venture and Private Equity complete the list.

New-Gen AI-Driven Portfolio Management Market Analysis



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By the number of employees, most companies have 11-100 employees (49.5%); 23.3% of companies have 101-1,000 employees; 18.4% have 1-10 employees, and the smallest number of companies have 1,000-5,000+ employees.

2022 has witnessed a decrease in private funding of companies engaged in New-Gen AI-Driven Portfolio Management, reaching $107.4 million, compared to $911 million in 2021. Data were collected for 103 private companies.

Novel Retirement Plans and Robo-Retirement

This sector maps the innovative solutions related to retirement plans. When an individual invests with robo-advisors, they may answer questions about existing savings, the rate of personal contributions, target savings goal, and risk tolerance.

By factoring in the client's responses and some assumptions about various asset-class returns, the robo-advisor can help predict whether or not the person is on track to reach retirement goals by the target date. If a person is at risk of missing a goal, it can also recommend ways in which the person can get back on track.

Meanwhile, from savings to investment, the WealthTech Industry comprises any product or service (almost similarly IT-based) that either simplifies or augments the creation and maintenance of wealth for all age demographics in society. New WealthTech companies are emerging and offering advice based on AI and Big Data. These forms of advice include:

- **Robo-advisors:** automated services that use Machine-Learning algorithms to give users advice based on the most profitable investment options, yield targets, user's risk aversion profile, and other variables.
- **Robo-retirement:** another version of robo-advisors particularly known in the United States. Companies in this category specialize in managing retirement savings.
- **Digital brokers:** online platforms and software tools that put stock market information and the possibility of investing within anyone's reach.
- **Financial products** designed for investors anticipating to live 100 years and beyond.

We can anticipate the emergence of new wealth management technologies in the WealthTech Industry. By using these technologies and adapting existing products and services, financial service innovators can significantly enhance the financial lives of people over 60. The depth and diversity of this group create an incredible opportunity to execute innovations on their behalf and address their financial health challenges

head-on. With the convergence of AgeTech and WealthTech, the Longevity Financial Industry is likely to see the rise of AgeTech Longevity banks.

Market Trends: Novel Retirement Plans and Robo-Retirement

Retirement wave rolling in across WealthTech segments: The great portfolio decumulation is underway. For example, approximately 10,000 people turn 65 in the USA every day. Relative to accumulating, spending from a retirement portfolio is a more intricate endeavor, particularly with vanishing pension guarantees and the transfer of risk to retirees in the form of 401(k)s and IRAs. Accumulation options are of limited benefit to retirees if a health crisis or market downturn occurs, especially when withdrawals are needed to cover meaningful nondiscretionary spending.

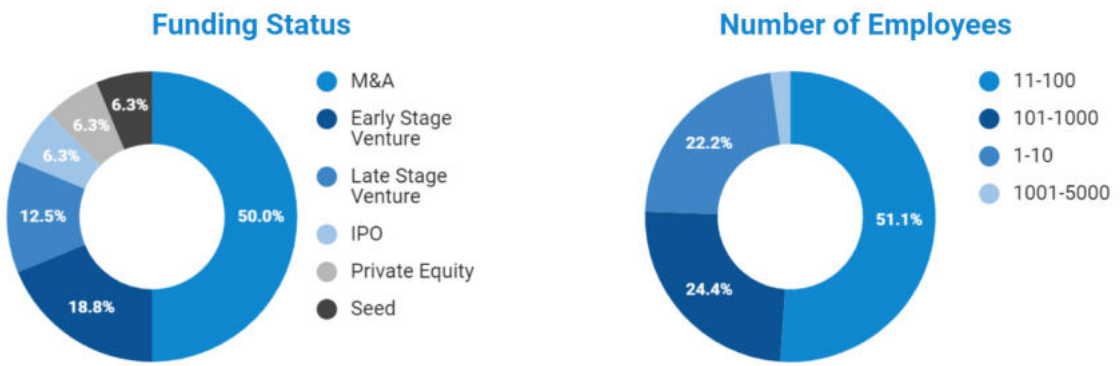
The demand for more retirement benefits is rising: Along with pension plans, such as 401(k) plans in the USA and employer matches, workers want more help with their finances, and employers are finding ways to realize those wishes.

Employers are responding to this desire by providing financial counseling or benefits tied to student debt relief. While this may not be the same as contributing money into a retirement plan, having an understanding of the big picture of one's personal finances allows them to free up cash they can then save for the future or get them on a clear path to retirement security later in life.

Novel Retirement Plans and Robo-Retirement Subsegment

The M&A category is in the lead by funding status. Next come Early Stage Venture, Late Stage Venture, and IPO categories. The Private Equity and Seed complete the list.

Novel Retirement Plans and Robo-Retirement Market Analysis



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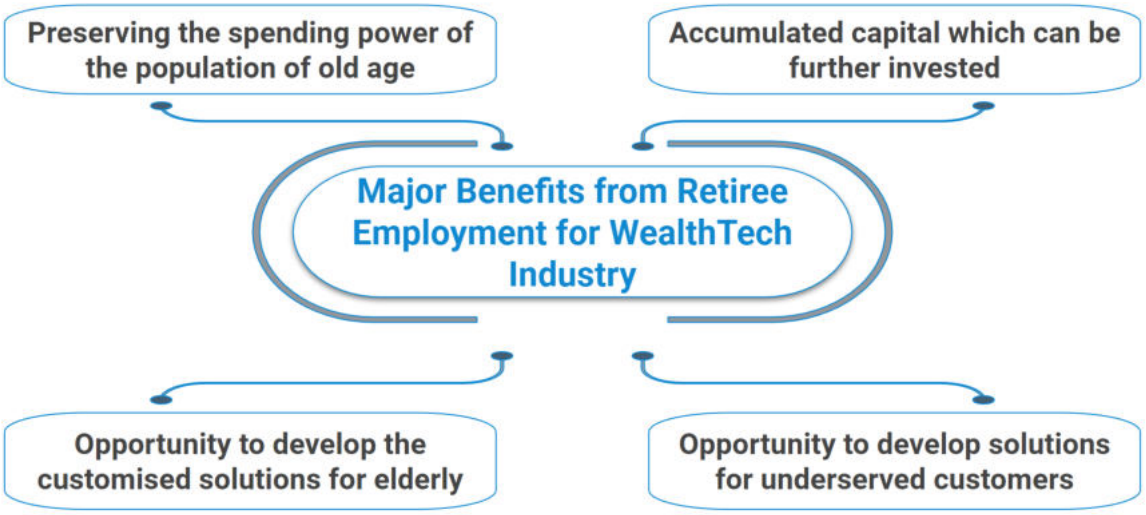
By the number of employees, most companies have 11-100 employees (51.1%); 24.4% of companies have 101-1,000 employees; 22.2% have 1-10 employees, and the smallest number of companies have 1,000-5,000 employees.

2022 has witnessed a decrease in private funding of companies engaged in novel retirement plans and robo-retirement, reaching $30.3 million, compared to $205.9 million in 2021. Data were collected for 50 private companies.

Retiree Employment

The standing trend of the older population remaining economically active in senior age and constituting a significant proportion of the workforce unlocks the opportunity to develop the respective solutions for such clients. They may involve a wide range of options, ranging from specialized hiring platforms and educational initiatives, to benefits of employment.



Market Trends: Retiree Employment

The "un-retirement" trend could help increase the available pool of workers: Retirees have rejoined the labor force at a steady clip in recent months, attracted by a hot job market and reduced COVID health risks. This "un-retirement" trend could help increase the available pool of workers and ease the hiring challenges businesses have reported. As of H1 2022, in the USA, 3.3% of people who were retired a year earlier were employed, meaning about 1.7 million people "un-retired" over that time.

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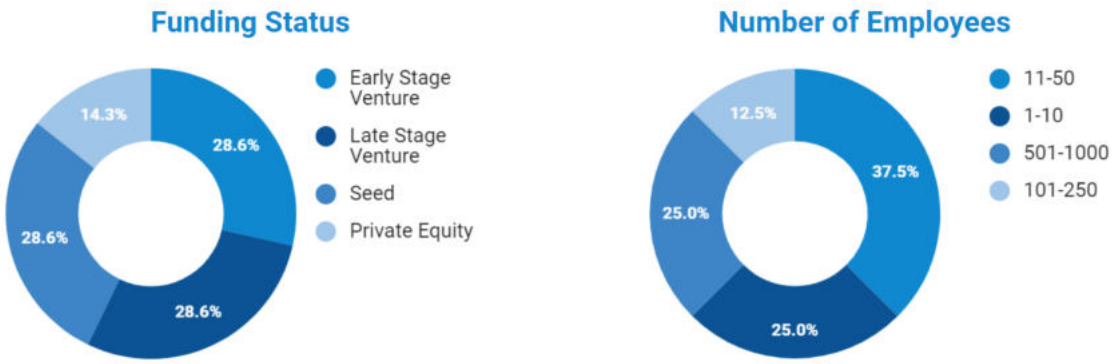
Hired seniors represent the growing economic power: Companies are hiring more workers aged 50 and older, and this trend is growing. With fluctuations in the economy came a decrease in pension plans and other forms of worker security. This evolution opened the floodgates to older workers since it helped to level hiring practices. The number of older workers increased, and replacing them with workers who have the same level of skill and experience is difficult.

Retiree Employment Subsegment

The Early Stage Venture and Late Stage Venture categories are in the lead by funding status. Next are Seed and Private Equity categories.

Retiree Employment Market Analysis



By the number of employees, most companies have 11-50 employees (37.5%); 25% of companies have 1-10 and 501-1,000 employees, and the smallest number of companies have 101-250 employees.

2022 has witnessed the record high of private funding of retiree employment reaching $389.8 million over seven investment deals. Data were collected for eight companies.

Takeaways

- Increases in life expectancy and the encroachment of the Silver Tsunami have resulted in the emergence of the relatively new term "Longevity WealthTech," targeting people who expect to live up to 100 years or more. Increased life expectancy creates demand for and investment in the Longevity Industry; Longevity creates healthy functioning centenarians; and healthy functioning centenarians enable WealthTech, which supports greater Healthy Longevity, making their ongoing emergence and growth almost inevitable.

- **The Advisory Services** sector is actively embracing AI and Big Data to deliver high-caliber experience to clients and to resolve complex tasks. The next step is

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for AI to better facilitate advisors' relationship management as opposed to making purely trading decisions. As an example, an advisor could use AI during a client meeting to call up specific client information and model the performance of potential recommendations, a task that previously would have taken a team of analysts a long period of time.

- **Digital Brokers** involve online platforms and software tools that make stock market information and investment possibilities available to everybody. The sector has attracted a record $5.4 billion of investments in 2021. The ongoing digital revolution, accelerated by the COVID-19 pandemic, will continue to have a major impact on the way brokers provide services. As the need for digital services ramps up, data analytics skills – including the ability to accumulate various sources of online data, analyze which products are most relevant to a particular client, and then communicate that data effectively – will become more important for brokers.

- **Micro-investments** can help people to save money. However, such investing options are mostly represented by younger clients. According to data from Statista, 12% of young people between the ages of 18 and 29 reported that they had used online investing platforms in the past year. Automated investors who are participating in the micro investing world may find that micro-investments are great for beginners. Micro-investing platforms are easy to understand and simple to use.

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Segment 3:

Concepts

Segment 3: Concepts

Introduction

The next several years will likely be the time when Longevity-focused FinTech entities will evolve from MVPs into Longevity FinTech 2.0 companies when progress in AI, InsurTech, LegalTech, RegTech, and Human Biomarkers of Aging will converge into a single integrated technology. This technological convergence inside the Longevity Industry will deliver more sophisticated results, and it is expected to result in the emergence of Longevity Investment Banks, ETFs, Longevity-focused stock exchanges or alternative trading systems, etc. **All of these concepts herald the emergence of Longevity as the primary variable of global financial prosperity as health and wealth become more closely aligned.**

Longevity Biomarkers for De-Risking

Many financial services and products can be optimized using biomarkers and, in particular, Biomarkers of Human Longevity. Such an approach offers great value for a variety of financial entities, both governmental and privately held, providing optimized hedging solutions.

While the InsurTech sector is the leading example of financial companies onboarding the practical application of Biomarkers of Longevity today, it is just the start of a much larger trend that will involve the financial industry (across many sectors) incorporating the use of **Biomarkers of Human Longevity** – and potentially other market-ready, tangible forms of human validation – into their products, services, and strategies in a number of different ways. The most recent trend shaping the InsurTech Industry is the measurement and analysis of epigenetic biomarkers.

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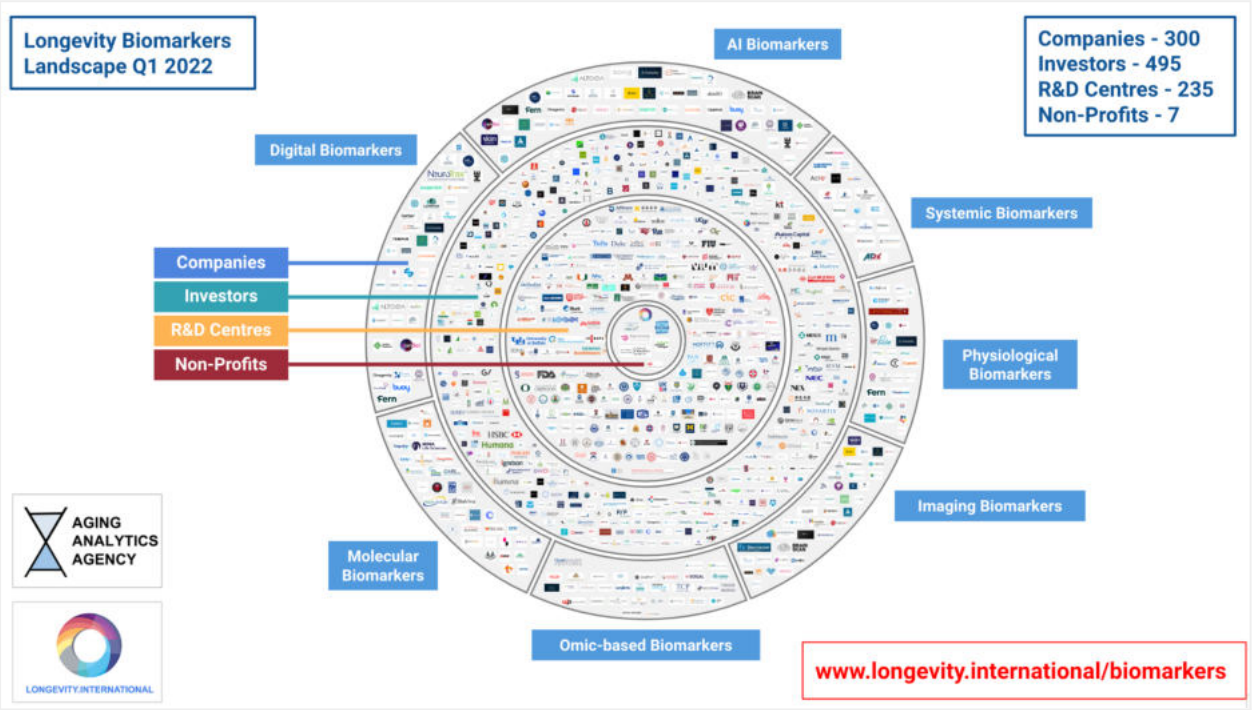
Longevity Biomarkers Mindmap



Source: www.longevity.international/biomarkers

Longevity Stock Exchange

Currently, the Longevity Industry is confronted by structural complexity, low liquidity, long capital lock-up, and opaque scientific due diligence. The enormous growing Longevity market is not effectively serviced by current private capital means, creating a massive symbiotic opportunity for parties ready to bridge this existing gap and leverage these untapped potentials.

There is no existing specialized thematic financial marketplace for the Longevity Industry. Current financial and regulatory frameworks are fragmented, being originally designed for the previous era of BioTech and HealthTech industries. In their present state, they significantly limit access to the liquidity of technologically matured companies while, at the same time, failing to protect and de-risk the financial interests of investors to the degree required for their actual participation.

A well-functioning Longevity Exchange can help alleviate those issues by bringing more private companies public, allowing price discovery and providing public capital inflow to advance a growing sector with monumental societal impact.

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Longevity Investment Bank

The concept of Longevity Investment Bank can be described as an institution aimed to service corporate and institutional investors intending to trade Longevity financial assets and instruments. Longevity Investment Bank will enable the involved parties to manage their investments, thereby, creating innovative environments with advanced InvestTech solutions.

The novel nature of the Longevity Investment Bank lies, among others, in sophisticated Longevity investment analytics, bringing the most innovative developments in HealthTech, BioTech, and Longevity Industries into the financial scope of emerging investment products and financial services and providing parties involved with comprehensive data for making investment decisions.

Longevity Exchange-Traded Fund

A particular exchange-traded fund (ETF) dedicated to Longevity derivatives will boost confidence of investors in the Longevity Industry. The Longevity ETF will consist of the stocks of the Longevity-focused publicly traded companies.

With the investors gaining confidence in the Longevity Industry because of ETFs, the liquidity gap currently sending most Longevity start-ups to Death Valley will be bridged. They will give investors a greater possibility to invest in the Longevity Industry, while being secure about their funds.

InvestTech Bridge to Neutralize Liquidity Gap

Financial innovations, recently gaining the term “InvestTech,” can provide liquidity to Longevity companies and technologies, and form a bridge between the Longevity Industry and conservative financial markets. This would inevitably enable the injection of around 1% of the tens of trillions of dollars currently lying dormant as "lazy money" within the Global Longevity Industry.

In practice, this means once such a liquidity bridge is established and the Longevity Liquidity Gap shrinks, the industry will have the immediate ability to attract around $300-500 billion pessimistically just within the first few years and at least several trillion within 5-7 years.

Considering the current natural pace of innovation in the Longevity and financial industries, even without any specific innovations in the InvestTech field, the current

problem of illiquidity will likely be resolved naturally in 7 to 10 years, but with these new bridges in place within 3 to 5 years.

Longevity Index and Index Fund

Ground-breaking technologies are transforming how humans age. At the same time, the investors' interest in the space of Longevity will grow significantly in the coming years. With the launch of the thematic Longevity Index, investors may have a benchmark to measure performance and optimize their investment strategies. The primary goal of the Longevity Index is to attract interest from new investors who are looking to allocate capital to the rapidly growing trend of extending Human Longevity.

Longevity Index can be designed to reflect the major dynamics of the Longevity Industry. In order to deliver comprehensive coverage of the Longevity Industry, the Index must consist of publicly traded companies from more than 20 sectors that can be described as Longevity-focused or providing Longevity-related solutions in the corresponding areas. It is crucial for the Longevity equities basket to be created using a combination of cutting-edge technical and fundamental analyses.

Longevity Innovation Marketplace

Longevity Innovation Marketplace is set to involve many users, providing access to a high volume of precisely targeted health-focused products and services, combined with periodic measurement of the effects of these products in their general state of health and biological age.

Such a marketplace could be a perfect place for mass-marketing new types of Longevity financial structured products in the form of synthetic derivatives that will be tied directly to the aging population, as well as an apparent trajectory for growth. For example, a platform with a Longevity Marketplace should provide access to financial products like derivatives tied to real estate or nursing homes. Other examples are survivor bonds, which pay a coupon based on the "survivorship" of a stated population group, and Longevity notes, which reference a pool of predefined lives.

Longevity Decentralized Autonomous Organization

A decentralized autonomous organization (DAO) is a LegalTech and FinTech structure with no central governing body whose members act in the entity's best interest. DAOs

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make bottom-up decisions using cryptocurrency and blockchain technology. Longevity DAO uses crypto mechanisms to support real Longevity, pharma, and BioTech studies and companies via collective funding, a collaborative environment.

Longevity Rating Agency

Longevity Rating Agency is a first-of-its-kind company aiming to deliver industry-related analytics, rankings, and benchmarks for making strategic decisions, proper market intelligence, and defined business needs.

Longevity Rating Agency will generate the analytics required for vetted decisions for organizations active in Longevity or interconnected fields. It will be designed to develop industry-specific rankings and benchmarks.

The possible scope of such an institution may involve the identification of new opportunities for growth of Longevity companies, the generation of approaches to mitigate the risks of inappropriate or under-informed business decisions, in-time identification of new trends and challenges confronting Longevity Industry decision-makers, and the generation of actionable insights to effectively react to dynamically and rapidly changing competitive landscapes.

Aging Wallets

Aging Wallets is an emerging concept that can be considered as the integration of personal health and finance data. Such aging wallets may include the formation, storage, and analysis of anonymized personal data, as well as access to up-to-date, certified, personalized Longevity solutions, including drugs, training, and technologies.

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