

Imagine all the people

*Demographics and social change
from an insurance perspective*





Emerging Risk Initiative – Position Paper

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Foreword

After many years of constant population growth, the most recent demographic analyses are forecasting a progressive slowdown in population growth, with differing impacts across countries.

In Europe, a reduced birth rate coupled with increased longevity due to medical advances and increased quality of life will lead to a modified population pyramid and an increase in older age groups relative to younger ones.

These demographic changes have implications for current social habits and lifestyle: the increased older population will lead to new healthcare needs, while the reduced wealth of younger generations will lead to different, and possibly reduced, consumer spending behaviours.

This inter-generational divide should not be seen in isolation but should be considered in combination with other significant trends such as climate change, geopolitical dynamics and digitalisation, bringing additional uncertainty and vulnerability, as well as new opportunities.

Future change will profoundly modify the roles of urban and rural areas, potentially creating social tensions and new sources of inequality.

Without reproducing the content of many scientific studies, this document identifies the possible future challenges the insurance industry will face and provides stakeholders with a view on their growing importance.

In line with the objectives of the CRO Forum, the document aims to raise awareness, promote understanding and provide a guide to aid the management of these trends.

The paper considers the risks and opportunities of the main social and demographic trends, their implications on the insurance sector, the required business and operational changes and enablers. The paper also stresses the importance of the insurance industry's role in welfare and healthcare systems. The industry will be increasingly called upon to cover emerging protection needs, to promote policies against inequality and to support green growth and sustainable development.

This paper further reiterates the importance of the social dimension present in future risks and how the Environmental, Social and Governance (ESG) perspective is critical for mitigating such risks and the impact they may have.

I would like to thank my colleagues participating on the CRO Forum working group (from Allianz, Aviva, AXA, Generali, Hannover Re, Munich Re, NN, Prudential, QBE, RSA, Swiss Re, SCOR, Uniqa and Zurich) for their energy, commitment and extreme professionalism in preparing this publication, particularly given the extraordinary and difficult situation resulting from the pandemic crisis.

I would also like to extend particular thanks to the Generali team for their help in coordinating this ERI working group and preparing this paper.

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Executive Summary

Demographic change is constantly occurring, driven by many factors and resulting in wide-ranging consequences. The pace and extent of demographic change may vary over time, driven by other major trends and unpredictable events. Covid-19 has had serious health, social and economic implications, with some outcomes relatively straightforward and others yet unknown.

This paper analyses demographics and seeks to provide an understanding of what we, as insurers, can do to work with these changes. This paper is not attempting to predict the future: we will leave it to readers to make their own judgments.

The world is experiencing an ageing population in many parts of the world, particularly Europe, accompanied by shifts in the role and standing in society of both younger and older generations.

The working environment will change with the replacement of Baby Boomers⁽ⁱ⁾ by Millennials⁽ⁱ⁾ and Generation Z⁽ⁱ⁾. Technological changes in many dimensions will lead to an intensive use of automation, which will, in turn, modify the skills requirements and the overall way in which people work.

Increasing urbanisation means cities continue to grow and morph. More recent trends around the growing older population and changing mobility models - coupled with concerns around sustainability - raise important questions. The significance of these trends and the vast speed at which shifts are occurring require European insurers to consider the impact of these changes and the role they will want to play in shaping the future.

Life and Health sectors of the insurance business are most impacted by demographic developments. These areas will need to rethink Life and healthcare propositions, as well as the savings and pension offerings for different generations,

to address their emerging needs and vulnerabilities. Funding of long-term care is critical, and insurers will need to play a role in a more sustainable solution.

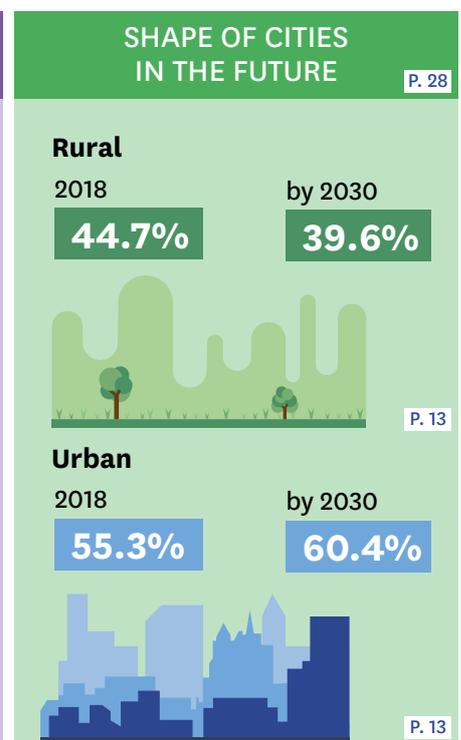
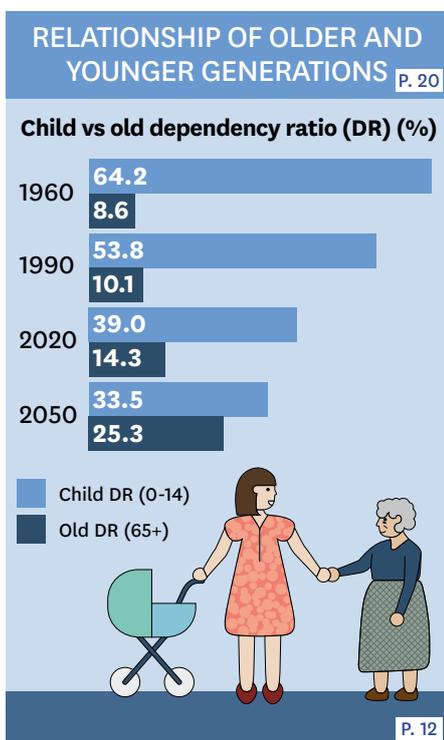
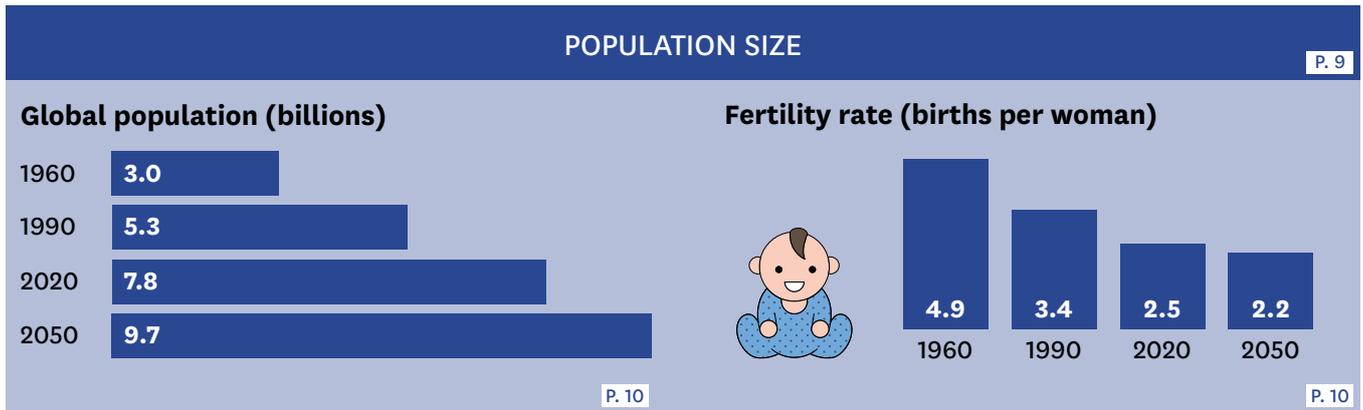
Property & Casualty (P&C) insurers will need to rethink the new mobility model for both younger and older generations, as each has its specific needs. The workspaces and work models adopted in an increasingly digitalised environment will also require new types of cover.

Operational challenges will range from adapting product design and distribution models, to increasingly leveraging Big Data and the Internet of Things (IoT). The employment gap, unavoidable under the current ageing scenario, will have to be addressed by embracing new ways of working and by focusing on Employee Value Proposition (EVP).

It is clear that the insurance industry has a very strong role to play, not only in understanding and addressing risks as part of its core business, but also in making the communities it serves more risk aware. Risk prevention or mitigation is achievable for all the trends analysed in this paper, from the needs of the elderly, to climate change, geopolitical dynamics and digitalisation. By increasing awareness of future trends and risks amongst policy makers and the general public, whilst providing mitigation through risk coverage solutions, the insurance industry has an essential role in making society more risk resilient.

In thinking through how the impact of future demographic developments may unfold, insurance companies need to prepare themselves for a wide range of scenarios to ensure a high degree of resilience in the face of much uncertainty. As carriers of risk in the societies and economies in which they operate, significant expectation rests with insurance companies to be active participants in finding solutions to the issues posed by demographic trends.

How is the global population changing?



Impacts on the insurance sector

LIFE & HEALTH

- Understanding new needs and vulnerabilities
- Rethinking Life & Healthcare proposition for both older and younger generations
- Updating the saving and pension proposition
- Evolving long-term care and critical illnesses

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PROPERTY & CASUALTY

- New mobility impacting motor insurance
- Decreasing workplace injuries in a digitalised environment
- Increased risk of catastrophes in cities
- Transitioning to a greener world

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OPERATIONAL CHALLENGES

- New product design and omnichannel distribution model
- Rethinking business and adopting big data/IoT solutions
- Bridging the employment gap
- Employee value proposition

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INSURERS' ROLE IN SOCIETY

- Promoting sustainability
- Supporting elderly care

- Providing basic healthcare
- Promoting social resilience
- Bridging protection gaps

- Adapting insurance services and products to meet the needs of a changing world

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Introduction

Demographic change does not happen overnight; it is a slow process which will alter our societies and our daily lives. It will also extensively change the business environment in which the insurance industry operates. Due to medical advancement and improving living standards worldwide life expectancy has increased by 27 years since the 1950s to 72.3 years in 2020 and the United Nations (UN) Population Division expects it to increase by another 4.3 years by 2050 (UN, 2019a). Never before have so many people reached retirement age (generally considered as 65). The portion of old people (65+) reached 9.3% in 2020, and it is expected to increase to 15.9% by 2050 (Population Pyramid, 2019). At the same time, the number of new-borns is expected to remain roughly constant, leading to a “double ageing” of the world population. Given these trends, the insurance sector should try to understand and evaluate possible future scenarios, notwithstanding the uncertainties surrounding them.

This paper gives an overview of emerging demographic trends which may impact the insurance industry in the future. A closer look is taken at those trends with disruptive and cumulative effects. The data provided has been collected mainly (but not exclusively) from the UN, to provide a comprehensive global view. Not surprisingly, this paper’s information and conclusions are consistent with the European Commission’s Report on “The Impact of Demographic Change”.

The paper is divided into three parts.

The first chapter provides an overview of global population trends. It is followed by a description of ageing, an outlook on expected developments regarding urbanisation and migration and other trends impacting demographics.

The second chapter focuses on these trends’ developments in Europe. It highlights the uncertainties as well as new risks and the interdependencies among them. Baseline scenarios are derived for each area of particular significance to the insurance industry and more generally, including an ageing population, the future of work and what a future city could look like.

The third chapter provides an in-depth analysis of the potential impact of the identified trends on the insurance sector, from the future role of insurers in society to changing customer needs with respect to products and distribution channels. In the end, insurers will need to play a more active role as a result of the demand for sophisticated assistance throughout the lifecycle of an insured. This is not only a challenge but also an opportunity, aligned with the increased focus on guidance being provided by insurance companies.

Finally, before going any further, given the ongoing backdrop to the drafting of this paper, a snapshot on Covid-19 pandemic is provided. As the Covid-19 consequences are highly uncertain, the paper should be read keeping in mind that trends and impacts may change in ways that are yet to be understood.

Covid-19, the virus that took over the world

On the 31st of December 2019, Chinese Health Officials informed the World Health Organisation (WHO) about a cluster of 41 patients with a mysterious pneumonia, whose cause was identified one week later by the Chinese authorities as a novel coronavirus.

Despite the Covid-19 being less deadly than some other communicable diseases, it can be considered one of the greatest health challenges of the past one hundred years, mainly due to the risk posed by the very high number of asymptomatic infected people unwittingly spreading the virus.

Missing a pandemic contingency plan

In the face of such an emergency, many healthcare systems around the world were unprepared, with insufficient healthcare workers, personal protective equipment, intensive care beds, tests and drugs. Reliable early testing systems were not initially available, and hospitals did not have appropriate isolation protocols for the large number of infected patients.

In addition to the lack of preparation on the frontline, the crisis was compounded by a seeming lack of coordination among scientists, doctors and politicians in some cases. This was perhaps not surprising since few countries had first-hand experience of dealing with a pandemic within their own borders. Put simply, there was no proper pandemic contingency plan.

Reacting to the virus

Lockdowns were among the unprecedented measures taken and were widely employed. They proved effective in mitigating the spread of the virus.

The reduction in air pollution and **greenhouse gas (GHG)**⁽¹⁾ emissions was a secondary positive effect of the lockdowns. However, the environmental benefits generated by lockdowns have not been long-lasting.

According to a study conducted by the Centre for Research on Energy and Clean Air (CREA) on twelve cities, as soon as economic and productive activities restarted and people began to move again (favouring cars instead

of public transport), the level of nitrogen oxide started to rise, reaching the same level in August as the pre-lockdown period.

Moreover, the efforts to bring about economic recovery might further impact the efforts to transition to a low-carbon economy and tackle climate change, as short-term support of existing industries takes precedence. While a number of jurisdictions are working on green recovery plans that

show that economic recovery and decarbonisation are not mutually exclusive, the long-term impact of the pandemic on carbon emissions remains highly uncertain. Covid-19 is also leading to a growing use of plastic around the world, curtailing recycling and increasing the use of incinerators, given the very large consumption of non-recyclable, single-use equipment. Covid-19 waste products, such as hand-sanitizer bottles, face masks and gloves, are already being found in our seas, further harming the ocean ecosystem.

On a more positive note, the pandemic is prompting individuals to change their habits, not only in terms of healthier lifestyles but also in terms of ways of working, with a significant acceleration of digitalisation, remote working and e-learning. In the long-term, the adoption of a new paradigm of working from home by those workers able to do so could result in reduced stress and improved productivity.

Globally, Covid-19 has led to a significant drop in GDP, massive increases in unemployment and the business failure/insolvency rate, and has severely harmed entire sectors, including manufacturing, commerce and tourism.

Thinking the unthinkable

At the time of writing, it is too early to say how Covid-19 will ultimately impact demographics. However, during the first months of the pandemic, it was observed that children and younger adults tended not to be affected as badly as older segments of the population, where high fatality ratios have been seen. Also, as the pandemic has progressed, data has shown that men appear to be more at risk than women.

It is widely acknowledged that the world will have to coexist with the virus for the foreseeable future, at least until an effective vaccine and a cure have been developed and comprehensively deployed.

In a world where health protection and assistance might be perceived as a core need, but also where significant vulnerabilities have been revealed, the overall demand for protection looks set to increase. Insurers should seize this opportunity to meet this demand with the necessary protection products, especially for global risks.

Looking further ahead, once the success of a vaccine or a new therapy allows societies and economies to eventually recover, what will remain are the lessons from this experience to improve tomorrow's way of life. With further pandemic events likely to occur in the future, preparedness will be key, which will require a renewed focus on identifying and understanding the complex interrelationships that exist in the emerging risk landscape.

“
We are all embarking on the
unthinkable.

E. Macron, 2020

1

World population in the future

This chapter provides key facts and figures on:

- the projected population growth;
- an ageing population;
- growing cities and migration.

It also highlights how demographics is interconnected with other trends.

1.1 Population growth

1.1.1 Global trends

Population trends are assumed to be influenced by multiple factors, such as changes in fertility rates, the proportion of people of reproductive age, longevity, life expectancy.

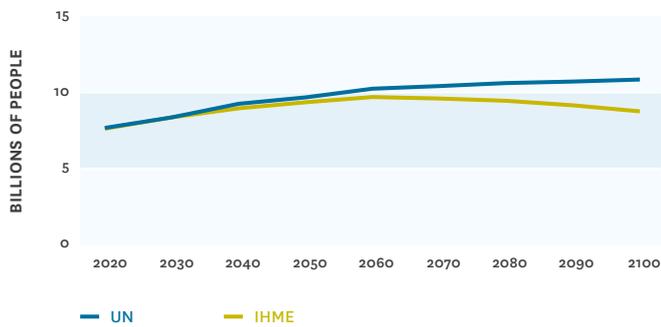
According to the UN, the total global population in 2020 is 7.8 billion, more than double the number in 1960, when it was 3 billion. The population growth rate peaked in 1965-

1970, at 2.1% per year, on average. Since then, it has slowed considerably, falling below 1.1% per year in 2015-2020 and is expected to slow further through to the end of the 21st century (UN, 2019b). World population is expected to increase further to 9.7 billion in 2050 and to 10.9 billion by 2100¹ (Figure 1).

However, the UN growth rate may be overstated. The Institute for Health Metrics and Evaluation (IHME) at the University of Washington in Seattle expects only 8.8 billion people in 2100, 2 billion less than the UN (Vollset, et al., 2020).

¹ In case of UN projections, the probabilistic median is reported.

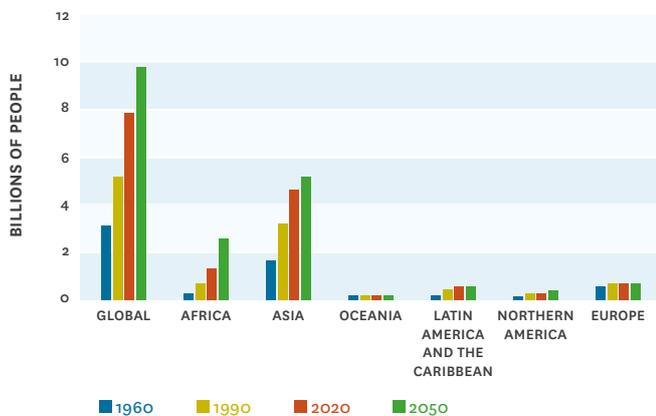
Figure 1: Development of world population (2020-2100), UN and IHME projections



They also expect world population to peak at 9.7 billion people in 2064 and decline steadily thereafter, based on a different extrapolation of fertility trends which mostly impact key regions, such as Sub-Saharan Africa and South Asia and South-East Asia.

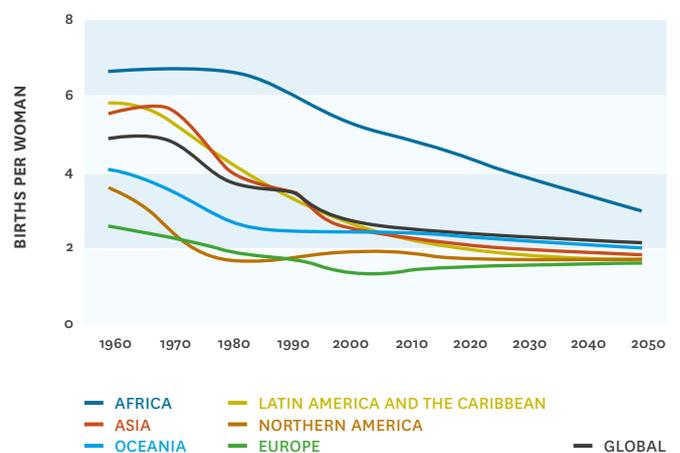
Still, the actual and projected population estimates across geographical regions show significant differences. Africa’s population is expected to almost double by 2050, from 1.3 billion people in 2020 to 2.5 billion people, driven, among other factors, by a higher fertility rate compared to other regions. Outside of Africa, the total population is projected to decline, starting before 2050. The European population² is projected to slightly decrease, from 747 million people in 2020 to 710 million by 2050 (Figure 2).

Figure 2: Total population across geographical regions, UN DESA, Population Division, World Population Prospects, 2019



The slowdown of the world’s population growth rate (and eventual decline in world population) is a direct result of the decreasing Total Fertility Rates (TFR) in many countries. This has halved from an average of 5 live births per woman between 1960 and 1965 to 2.5 in 2020. Global TFR is further projected to decline significantly to 2.2 in 2050, just above the population replacement TFR of 2.1. Europe has fallen beyond the natural replacement rate, with TFR currently at 1.6 and this is projected to remain relatively flat until 2050 (Figure 3).

Figure 3: Fertility rate across geographical regions (1960-2050), UN DESA, Population Division, World Population Prospects, 2019



The consistent decline in the TFR across most regions is connected to a range of reasons, including an increase in women’s education and access to employment, which leads to greater financial autonomy, improved family planning and heightened environmental consciousness.

² European population refers to the geographic region “Europe” (in line with the composition of geographical regions used by the UN Statistics Division in its publications and databases).

BOX: From obesity to hunger, food paradoxes influencing life expectancy

Obesity and sedentary lifestyles as a major cause of declining life expectancy

Prior to the 2020 Covid-19 outbreak (which might influence this data), the WHO noted that over 71% of the deaths in the world were due to Non-Communicable Diseases (NCDs)⁽ⁱ⁾, including cardiovascular disease, cancer, chronic respiratory disease, and diabetes (WHO, 2018a).

Growing obesity and sedentary lifestyle globally have the potential to significantly increase morbidity and mortality through the higher risks of NCDs. This, in turn, would have a significant impact on life expectancy and, ultimately, the total population. Even in developed countries, where people tend to live longer, life expectancy has stagnated recently and, in both the US and the UK, there have been outright declines in life expectancy in recent years (Ho & Hendi, 2018).

In 2016, the WHO estimated that worldwide 1.9 billion adults were overweight. In 2019, 38 million children under the age of 5 were recorded as obese. Obesity, once considered the challenge of only high-income countries, is currently also prevalent in many low- and middle-income countries mainly in urban areas. Global obesity has nearly tripled since 1975 (WHO, 2020a).

Childhood obesity is strongly associated with risk factors for cardiovascular disease, type 2 diabetes⁽ⁱ⁾, orthopaedic problems, mental disorders, under-achievement in school and lower self-esteem (WHO, s.d.). Diabetes, particularly, has seen an explosion around the world, largely because of the increase in obesity, unhealthy diets and physical inactivity. In 2016, diabetes was the 7th leading cause of death in the world and over half of the deaths from diabetes occur before the age of 70.

From obesity to hunger

While increased obesity can be observed worldwide, the world is simultaneously experiencing significant hunger.

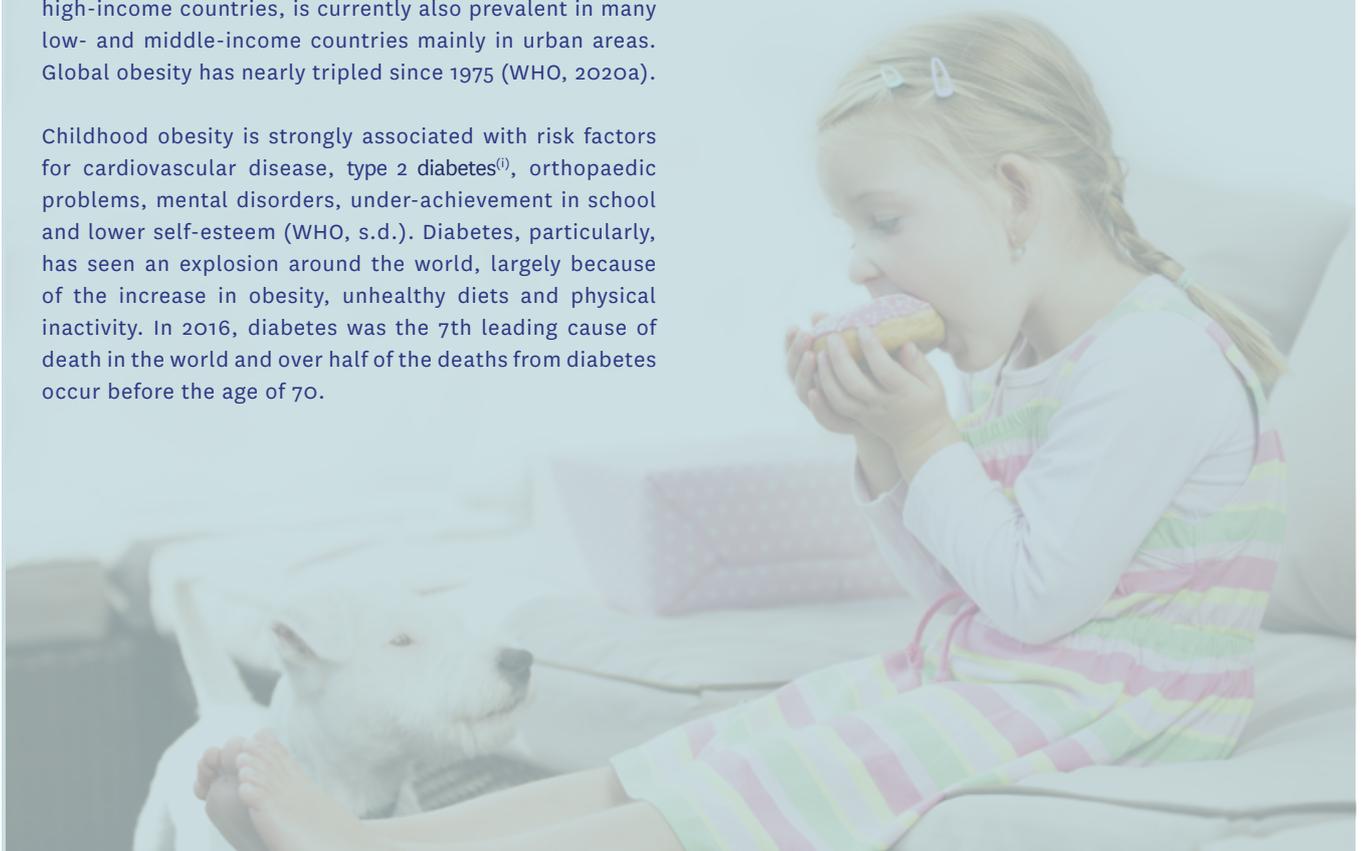
In 2014, the global number of hunger-stricken reached its lowest point (below 629 million) but this progress has been reversed recently and the number reached 688 million in 2019 and is expected to increase to 841 million in 2030 (FAO, s.d.).

Population growth increases the demand for food, which typically results in using more arable land and water.

“
More than half of the global population will suffer some form of malnutrition by 2030, unless urgent action is taken to improve access to high-quality food.

**J. G. da Silva, Former FAO
Director-General, 2017**

Consequently, some regions in Africa, Asia and America with high fertility rates will have the highest number of people facing food insecurity. Moreover, climate change is already affecting agriculture and food security. This further challenges the task to end hunger, achieve food security, improve nutrition and promote sustainable agriculture (FAO, IFAD, UNICEF, WFP and WHO, 2018).



1.2 Ageing population

1.2.1 Global trends

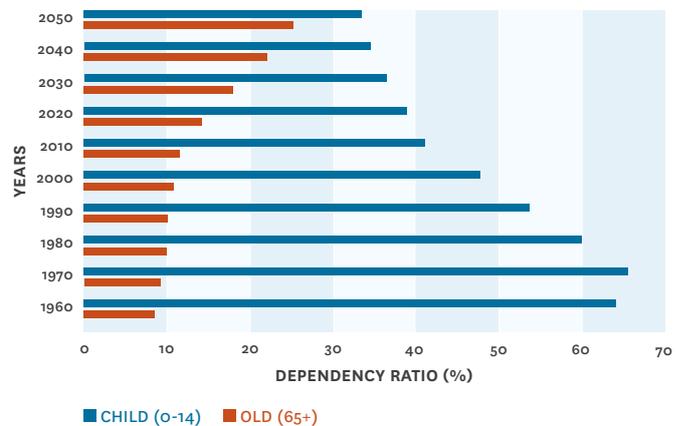
The world population pyramid in 1960 was characterised by a young and growing population. However, the population dynamics have changed significantly over time. Specifically, in 2020 global life expectancy reached about 72 years, an increase of around 20 years since 1960 (UN, 2019b).

The percentage of old people (65+) in the population is expected to grow to 15.9% in 2050, representing an increase of 11.1 percentage points (p.p.) from 1960, while children (0-14) are expected to be 21.1%, decreasing by 16.1 p.p. since 1960³ (Figure 4). This reshaping of the world’s age structure is driven by medical advances, increased quality of life and multiple other health-related factors.

Consequently, the old-age dependency ratio⁽¹⁾ is projected to rise from 8.6% in 1960 to 14.3% in 2020, and to further increase to 25.3% in 2050. Simultaneously, the child dependency ratio⁽¹⁾ has decreased from 64.2% in 1960 to 39.0% in 2020 and is expected to reach 33.5% in 2050 (Figure 5).

This is a profound shift that is causing a “sandwich effect” where the working age population (15-64) is increasingly squeezed and faced with new challenges as they care for both ageing parents and growing children simultaneously

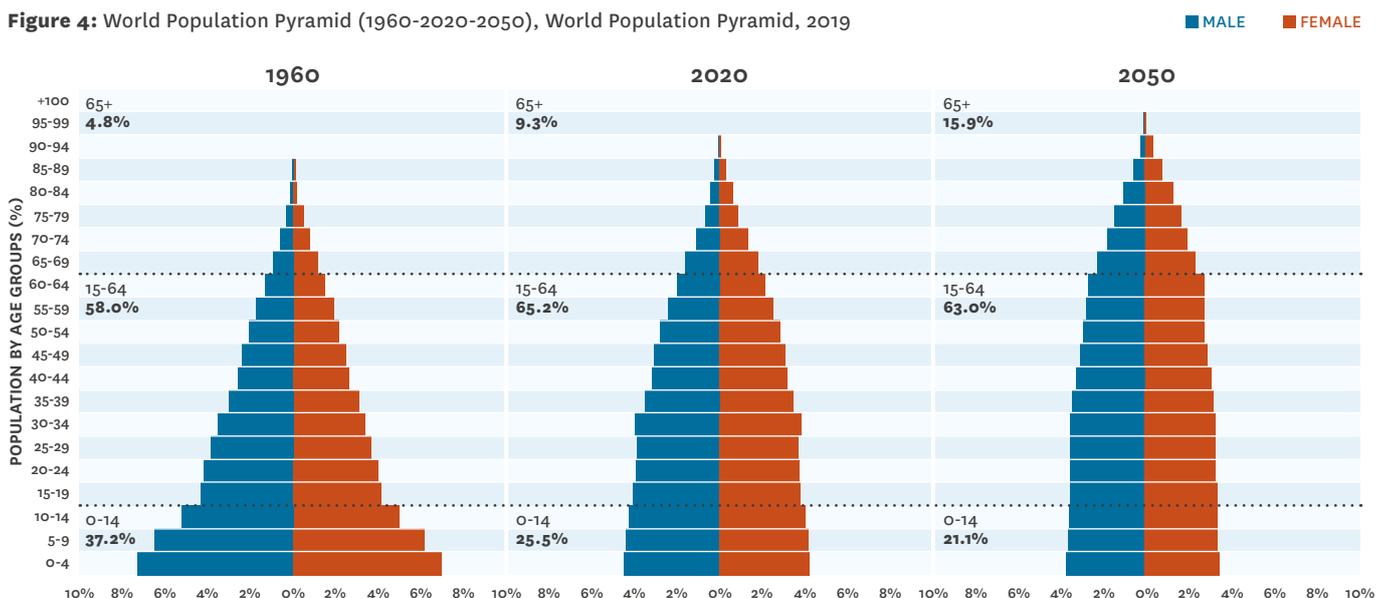
Figure 5: Old vs Child dependency ratio (1960-2050), UN DESA, Population Division, World Population Prospects, 2019



(section 2.1.2 Working age population). Globally, in 2020 the female labour market participation rate is estimated to be 52%, much lower than the 80% rate for males⁴ (ILO, 2020).

Europe will be particularly impacted by this shift, with the working age population expected to decline from 485 million in 2020 to 407 million by 2050. The European dependency ratio for older persons (65+) to the working age population (15-64 years)⁵ is already rising rapidly - from 13.6% in 1960 to 29.5% in 2020 - and it is expected to continue to rise, reaching 49.1% in 2050 (UN, 2019b).

Figure 4: World Population Pyramid (1960-2020-2050), World Population Pyramid, 2019



³ At EU level, the proportion of children is projected to decrease from 16% in 2018 to 14% by 2100, while the share of working-aged people is projected to decrease from 65% in 2018 to 55%. In contrast, the share of those aged 65 years or above is projected to increase from 20% at the start of 2018 to 31% by 2100. The share of those aged 80 years or above is calculated to almost triple, from 6% to 15%.

⁴ At EU level, in 2019 72.3% of the female population aged between 20 and 64 were active on the labour market compared to 84.3% of their male peers. Furthermore, only 7.8% of men were working part-time, while it was 29.8% of all women (Eurostat, 2020).

⁵ According to OECD, the working age population is defined as those aged 15 to 64.

1.3 Growing cities and migration

1.3.1 Global trends

By 2050, the global urban population is expected to account for 68% of the total population in the world, up from 55% in 2018. Consequently, the rural population is expected to decline in absolute terms, even though the overall population is growing. According to the UN, in 2018, the global rural population was 3.4 billion and is expected to decline to 3.1 billion by 2050. Rural-urban migrants are generally young, implying that migration also affects the age distribution in both rural and urban areas (UN, 2018a).

Global urban population growth will be significantly driven by India, China and Nigeria, with these three countries accounting for more than one-third (35%) of the global expansion. In Europe, the largest cities are expected to maintain their growing trend (UN, 2018a).

While highlighting the rural decline, the UN projects the number of megacities - with a population of over 10 million inhabitants - to increase from 33 in 2018 to 43 by 2030 (UN, 2018b) (Table 1).

This trend can be observed especially in developing countries. In these areas, as cities become larger, it becomes harder for living standards to be maintained. The UN reported that although the proportion of urban populations living in slums fell from 39% in 2000 to 34% in 2014, slums continue to grow

in absolute terms (UN Habitat, 2016). Besides accelerated urbanisation and population growth, a lack of appropriate land and housing policies contributes to this increase.

Adding to the pressure is that many developing country megacities are coastal and are particularly vulnerable to the additional stresses created by climate change, such as rising sea levels and these coastal megacities typically have a weaker health infrastructure (WHO, 2018b). All these pressures encourage further migration to Europe.

1.3.1.1 Depopulation of rural areas in developed countries

Depopulation of rural areas in developed countries is a major threat to local economies and societies that is already happening today. It limits growth opportunities, complicates provision of public services and jeopardises the existence of small towns and villages.

In the EU (Valdivia, 2018), the steady rural-urban migration for over a century is leading to a “demographic desert” in rural areas, with an increased risk of social exclusion and poverty as a result of an ageing population, lack of educational facilities, remoteness, and labour market problems. However, changes are occurring due to the Covid-19 outbreak, adding to the uncertain long-term effects on migration.

This challenge may be particularly difficult to address because it suffers from a ripple effect. As young people leave a rural area, the economic and social isolation is

Table 1: World’s population by inhabitants per urban/rural area, 2018 and 2030, UN, The World’s Cities in 2018, 2018

INHABITANTS PER URBAN/RURAL AREA	2018			2030		
	NUMBER OF CITIES/RURAL SETTLEMENTS	POPULATION (MILLION)	% OF WORLD POPULATION	NUMBER OF CITIES/RURAL SETTLEMENTS	POPULATION (MILLION)	% OF WORLD POPULATION
URBAN		4,220	55.3%		5,167	60.4%
10+ MILLION	33	529	6.9%	43	752	8.8%
5-10 MILLION	48	325	4.3%	66	448	5.2%
1-5 MILLION	467	926	12.1%	597	1,183	13.8%
500,000-1 MILLION	598	415	5.4%	710	494	5.8%
FEWER THAN 500,000	n/a	2,025	26.5%	n/a	2,291	26.8%
RURAL TOTAL	n/a	3,413	44.7%	n/a	3,384	39.6%
TOTAL POPULATION		7,633			8,551	

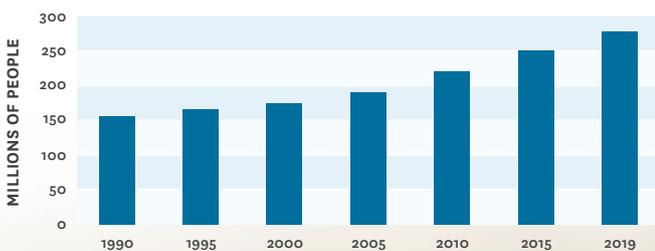
exacerbated - fewer schools, fewer choices of entertainment venues, fewer people to interact with, and a growing FOMO (Fear of Missing Out). This then leads to more young people leaving, which further worsens the issue for those remaining.

1.3.1.2 Migration flows

Economic opportunity, instability, natural disasters and conflicts are responsible for the displacement of people from their original country. A significant part of migration flows has been across international borders.

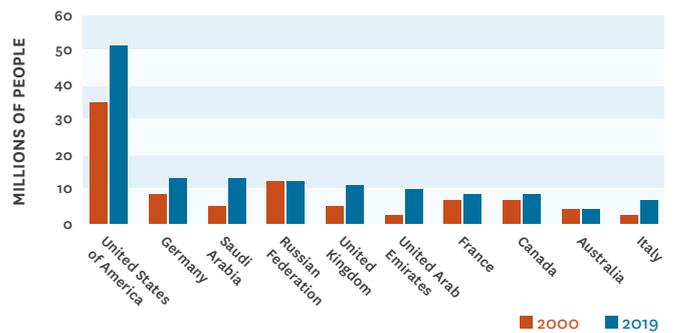
The International Organisation for Migration (IOM) estimates that the number of international migrants of all types is around 272 million (WEF, 2020a), 51 million more than in 2010 (Figure 6). This represents about 3.5% of the global population.

Figure 6: Trend of international migrants, UN DESA, International migrant stock: The 2019 Revision, 2019



The US continues to dominate as the primary destination country for migrants: about 51 million migrants were living in the US as at 2019, followed by a number of European countries (Figure 7).

Figure 7: Countries with the largest number of international migrants, UN DESA, International Migration 2019, 2019



1.4 Other trends shaping demographics

Demographics is influenced by a number of other potentially disruptive or even accelerating trends.

The most relevant ones are climate change and biodiversity; geopolitical dynamics; and, finally, digitalisation.

1.4.1 Climate change and biodiversity

According to the WHO, climate change will cause an estimated 250,000 (WHO, 2018b) additional deaths per year (from malnutrition, heat stress, diarrhoea and malaria) between 2030 and 2050. In Europe, in 2003, more than 70,000 additional deaths occurred during the exceptionally hot summer (Robine, Cheung, & Le Roy, 2007). The heat-related mortality is estimated to rise to between 60,000 and 165,000 deaths per year by the 2080s (Climate ADAPT, 2019).

Population growth is itself a driver of the global increase in GHG⁽ⁱ⁾ emissions, which contributes to climate change (section 2.3.3 Climate change and resilience). Population growth combined with the spread of energy-intensive economic models and lifestyles, including human demand for resources such as food and fuel, leads also to habitat loss and overexploitation - the primary cause of biodiversity loss globally.

Population growth contributes to biodiversity loss in a number of ways:

- reducing habitats for plants, mammals, insects and amphibians as non-natural human environments expand;
- fragmenting habitats, as the construction of residential, commercial and industrial buildings divide species' habitats into smaller units, compromising their ability to disperse and hunt, therefore limiting the resilience of species;
- noise and light pollution, prevalent in cities, negatively impacting wildlife;
- introducing non-native species that can lead to reduction or even elimination of native species in the area through competition pressure.

“

This is the first time a global generation of children will grow up in a world made far more dangerous and uncertain as a result of a changing climate and degraded environment.

Unicef, 2020

1.4.2 Geopolitical dynamics, growing inequalities and social unrest

Historically, international conflicts and wars have impacted demographics in many ways: directly, if considering for example the population size; and indirectly, for example by means of migration, or the changing role of women in the workforce.

Political factors are often key drivers of change; a current example is the response to globalisation leading to more protectionist activities impacting global trade. One drastic political program in recent times was the action taken by China to constrain population growth through the laws on having one child. The impacts of this one-child policy are long-lasting, even decades after the decision to repeal this law.

In the evolving geopolitical and social context, the world is seeing an increasing number of protests, movements, and social unrest. Notable examples include the recent BLM protests, the Occupy movement (with the slogan “we are the 99%”) in the US against social and economic inequality amongst other issues, the riots in cities in the UK in the summer of 2011 (PSE, s.d.), and the Gilet Jaune movement in France from 2018 (Wikipedia, 2020a), which began as a fuel tax protest and evolved into a larger protest around income inequality. Election results have triggered social unrest in many countries over the years, with the change in post-World War II political structures and alliances, and increases in nationalism, populism and protectionism in many regions.

Social and economic disparities driven by the concentration of wealth and income have an impact on life expectancy.

“

We are in a bottleneck of overpopulation and wasteful consumption that could push half of Earth's species to extinction in this century.

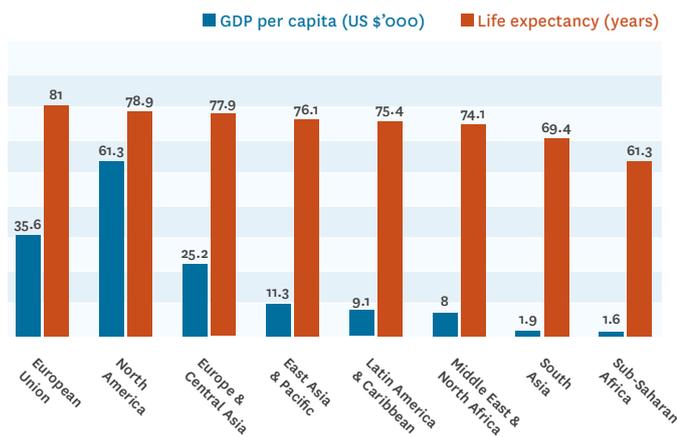
E. O. Wilson, Biologist, 2020

There is statistical evidence that wealthier people tend to live longer. However, some further insight can be made by looking in more detail at selected regions.

In the EU, for example, with a GDP per capita of \$35,660 in 2018, the life expectancy was 81 years compared to low-income regions such as the Sub-Sahara with GDP per capita of around \$1,589 and life expectancy of 61 years.

However, North America reported a lower life expectancy than in the EU, despite having a higher GDP per capita (Figure 8).

Figure 8: GDP per capita and Life expectancy across regions of the world in 2018, the World Bank, World Development Indicators, 2020



These disparities highlight that, in addition to GDP per capita, the access to affordable healthcare and the availability of adequate medical facilities and personnel can impact people’s health and longevity. According to the World Bank, in 2017 the EU had 3.7 physicians per 1,000 people compared to 2.6 in North America and 0.2 in Sub-Saharan Africa (The World Bank, s.d.).

1.4.3 Digitalisation

The pace of digitalisation is rapidly increasing, influencing both lifestyles and working patterns.

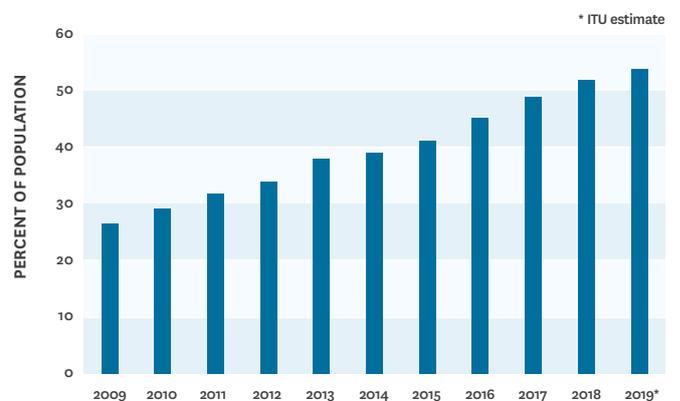
Globally, internet penetration is growing by one million users per day (Data Reportal, 2019). International Telecommunication Union (ITU) statistics report that the individuals using the internet as a percentage of total population more than doubled in ten years, from 25.8% in 2009 to 53.6% in 2019 (Figure 9).

This increasing digitalisation is affecting every aspect of life: healthcare, education, transportation, social interaction, work and entertainment. Digitalisation is further accelerated by a number of complementary emerging technologies, such as Artificial Intelligence (AI), Blockchain, Drones, IoT and 3D Printing, which are driving innovation and digital transformation in the world today.

A substantial body of research has been investigating how internet usage affects attention, social cognition, memory and knowledge retention. Some findings are conflicting but the literature, on balance, indicates that those who engage in frequent and extensive media multi-tasking in their day-to-day lives perform worse in various cognitive tasks than those who do not, particularly where sustained attention is required. This matter has also been raised by education providers, who are beginning to perceive detrimental effects of the internet on the attention span of children (Firth, 2019).

In this context, the population of young people who seamlessly adopt new digital technologies is growing. As digital natives continue to increase their use of online platforms for more and more services (even very complex services, like medical care) and organisations improve the automation of routine jobs, the nature of work will be transformed (section 2.2.4 New ways of working).

Figure 9: Individuals using the internet globally, ITU, 2019



BOX: Demographic trends and main insurance impacts in regions beyond Europe

Similarly to Europe, the US and developed insurance markets in Asia have low birth rates and ageing populations (Figure 10). This is particularly the case in Japan, where 31% of the population is projected to be aged 65 or over in 2030 (OECD, 2020).

Figure 10: Percentage of population aged 65+, projected to 2030, OECD statistics, 2020



Demography in US

The US population is not shrinking or ageing as fast as in other developed insurance markets, mainly due to the impact of immigration. By 2060, approximately 28% of the American population is projected to be Hispanic, compared to 18% in 2016 (U.S. Department of Commerce, 2020). At the same time, traditional family structures are changing, with an increase in the proportion of unmarried/single parents (from 7% to 25% between 1968 and 2017). Also, the number of families caring for both young children and older relatives is rising (Pew Research Center, 2019), creating an added financial burden for many working-aged Americans. These factors are pushing (re)insurers to adapt their products to meet the changing needs of both existing clients and potential clients arising from the emerging population segments.

Other large-scale socio-economic changes include the mass retirement of the Baby Boomer⁽¹⁾ generation, the large pension savings gap and the trend of Millennials⁽¹⁾ and younger generations to delay or omit traditional life choices (e.g. marriage, buying homes). From 2011 to 2029, around 10,000 Baby Boomers are expected to reach retirement age each day

in the US (Schneider, 2019). Whereas ageing Baby Boomers have the potential to increase claims for Life and Health insurers, Millennials and Generation Z⁽¹⁾ provide a challenge for insurers to design new products to remain relevant in the context of their often less traditional life and career paths. Simultaneously, as governments step back from providing pensions and the pensions savings gap grows, insurers have the opportunity to fill this void by developing products to provide financial security into old age.

“Adjacent innovation” (Goodman, 2019) could help insurers offer existing products in a new way by incorporating new technologies with new delivery channels, or by offering products to new customer segments. Examples include wearables⁽¹⁾, partnering with manufacturers and targeting previously under-served population segments.

Focus on life expectancy

Despite being one of the richest nations in the world and spending more on healthcare as a percentage of GDP than the OECD average, the US population experiences worse health across all age ranges and has lower average life expectancy than other comparable wealthy countries (Tikkanen & Abrams, 2020). Higher rates of preventable conditions are related to lifestyle, such as diabetes, hypertension and obesity. These conditions, in turn, contribute to the higher incidence of other chronic diseases in the US, such as heart disease and cancer.

The US “health gap” (Tikkanen & Abrams, 2020) can be attributed in part to adverse socioeconomic conditions; however studies have also cited other factors that drive these trends across all income groups. For example, an urban environment that encourages car use over walking and higher levels of stress in the general population which contributes to mental health issues and substance abuse (National Research Council (US), 2013).

Major insurance markets in Asia

Ageing populations and low birth rates in the region’s more mature insurance markets are reducing economic productivity growth, particularly in Japan and South Korea. China, although projected to have a younger population than those countries, is also ageing rapidly, partly due to the legacy of China’s one-child policy.

Simultaneously with ageing populations, Asian countries are at the forefront of the digital revolution, driven by exceedingly high customer expectations in this regard: 73% of customers in the region believe that they should be able to accomplish any financial task on a mobile device (EY, 2019a).

The focus on digital customer engagement and an increased awareness of the need for health protection, combined with a high savings propensity of people in the region is driving insurers to develop new value propositions, such as those related to financial well-being and Health insurance.

The changing face of Japan's Life insurance market

Japan is the second largest insurance market in the world and has the third largest Life insurance market.

Although currently nearly 90% of Japanese households have a Life insurance policy (EY, 2019b), the number of in-force policies is decreasing as the country's working age population contracts. As the population ages, consumer needs are also shifting away from death protection products towards products providing living benefits, including medical, critical illness and income protection insurance.

Demographic trends in developing (re)insurance markets

A number of developing countries, especially in Asia and some African countries such as Nigeria, Kenya and Angola, are experiencing increases in premium growth, largely due to the growing middle class, with increasing disposable income to spend on insurance. Private insurance also has a larger potential role to play in these countries, where there tends to be a larger protection gap to fill, as a result of a less developed government-funded social system.

In India, the middle-class is an increasingly digital-savvy client base (Asia Review, 2020) and InsurTechs⁽¹⁾ are encouraging a shift of insurance business from "push" to "pull" products over time, tailored on the specificities of the customer's needs and avoiding copying insurance solutions from other markets which may be less appropriate in India.



2

Emerging population trends for Europe

The previous chapter has highlighted the distinctive world demographic trends.

However, differing scenarios and uncertainties could result from different magnitudes of parameters used to extrapolate population trends, for example, the scale of immigration. Depending on the success of integrating immigrants into the economy, higher immigration could also reduce the skills shortage already being experienced in certain industries and thus would help to increase productivity.

Another key uncertainty is how digitalisation, automation and AI will impact life and work. While they will certainly make some existing professions obsolete, they will also create new jobs and opportunities. Digital technology could allow highly-skilled individuals in other countries to work remotely for European employers, supported by instant machine translation that reduces language barriers (Baldwin, 2019) and helps to bridge the talent gap. However, these technologies might create more competition and higher unemployment in domestic markets.

In light of these trends, this chapter identifies some key issues for the insurance industry. How will the ageing society unfold? What could the future of work and cities look like?



2.1 The changing roles and relationship of older and younger generations

2.1.1 European population getting older

Ageing is a critical trend in Europe (section 1.2 Ageing population), with healthy ageing becoming one of the main societal challenges. Healthcare system adequacy and sustainability over time will play a key role, implying that both the public and private sectors will have to adapt. In this context, medical advances, such as technology used in everyday life to support healthier lifestyles (for example through wearables⁽⁹⁾), disease prevention with real time monitoring tools, telemedicine and remote consultation, are of increasing importance in supporting healthy ageing and in making healthcare more accessible and in some cases, more affordable (ERI, 2019).

The ageing of societies not only has important economic implications, but also is leading to a rethink of the nature of age in society. Three main consequences of this ageing trend can be envisaged:

- the workforce is projected to contract and age, with implications on productivity and growth and, hence, on the affordability of welfare payments, such as pensions and healthcare;
- the older generation will emerge as both a distinct consumer segment and an important economic actor. This reflects not only the concentration of wealth in this cohort, but also changing perceptions around the meaning of old age and the status of the older people in society;
- for younger people, attitudes and values around key life issues, such as Health and pension provision, are likely to develop in different ways to their parents.

2.1.2 Working age population

The working age population across developed economies is set to contract over the coming decades. As noted, Europe will be among the earliest affected regions, with both Southern European countries and Eastern European countries likely to see a significant rise in their old-age dependency ratios⁽¹⁰⁾, to over 60% by 2050.

The working age population is also ageing: the share of the age group 50-64 in the total workforce is set to increase markedly over the next decades.

The combination of both a contracting and ageing workforce has important implications, therefore, for the affordability of public pensions, healthcare systems and debt in general. According to the European Commission, spending on healthcare for older people and pensions already accounts for 25% of GDP in the EU (Financial Times, 2020a).

Therefore, in order to prevent a substantial cut in the provision of welfare support to older citizens, countries will need to find ways to cushion the decline in the working age population.

One important measure would be to increase participation rates in the workforce, both of the older cohorts in the population (65-75) and women more generally. The former should be particularly encouraged in those countries which have passed pension reforms such as cuts in early retirement schemes and increasing statutory retirement ages.

Migration might be an additional boost to the working age population and so increase productivity, as long as successful integration policies are in place (IMF, 2019). This is the case of particularly strenuous jobs, such as in construction, where gaps in the supply of domestic labour may arise. However, it is most unlikely for migration to be sufficient to counteract completely the effects of an ageing population.

Another potential solution lies in the application of technological enhancements, i.e. machinery to support or replace individual physical power. The speed and impact of the deployment of such technology boosts will largely depend on the relative cost-benefits and labour immigration frameworks.

Meanwhile, some of the effects of an ageing workforce on productivity could be mitigated by adapting the work environment to the needs of the workforce. These adjustments range from measures which are relatively easy to introduce like bigger screens, brighter light, back-friendly chairs or height-adjustable desks to those which take a longer lead time like re-arrangements in the workflow or the development of alternative career paths.

Higher female participation rates could help increase the working population, but significant barriers remain. The first is related to working part-time, adopted by many women who have to care for an older member of the family or children. Another barrier concerns the increasing average age of women when they have their first child. As a consequence,

older parents reach the age of needing care earlier, possibly when their children are still in the midst of their working lives and not close to retirement. Therefore, improvements in formal childcare and the care of older people are preconditions to re-integrate women in the labour market. Additionally, the cost of care is also a major issue; given the fact that women's take-home salary is still not in line with their male counterparts, it is often more cost-effective for women to stay at home and look after children or an older family member themselves, rather than go out to work to earn a salary in order to pay for care.

2.1.3 Changing role of the older generation

The demographic changes described in relation to ageing will engender an economic realignment, that is already partially underway and reflects spending power shifts to older age groups. Contributing to this shift are both the concentration of wealth in this cohort (for example, in the US, **Baby Boomers**⁽ⁱ⁾ held nearly 60% of total wealth in 2019 (Hoffower, 2019)), and also the fact that older adults are living not only longer, but healthier lives. Thus, demand is likely to increase not only for services traditionally associated with ageing such as healthcare, but also leisure, entertainment, travel and mobility services, creating potential new business opportunities.

An interesting and slightly contradictory aspect to note is the discrepancy between the perception and the real needs and actions of the older generation. For instance, only 35% of people aged 75+ consider themselves to be old. This reluctance is causing a potential gap between producer and consumer expectations, which could, for example, be the reason why only 20% of the people who need hearing aids buy them. Another example of the slow uptake of products designed for the older generation is that only 2% currently purchase personal emergency response technologies, such as **wearables**⁽ⁱ⁾ that automatically call an emergency response number (Coughlin, 2019a).

Advertising messages should guard against a focus on only the potential negative aspects of becoming older, not least due to the risk of reinforcing the potentially negative perceptions of this section of the population, but also due to this in turn having a potentially detrimental impact, for example, on their employment opportunities (Coughlin, 2019b).

Moreover, these perceptions are indicators of a cultural rethinking of what it means to be old and there could be

important consequences for the economy and society. The **Baby Boomers**⁽ⁱ⁾, by rejecting the stereotypical view of old age, have effectively extended the definition of middle age up until age 70, with important implications for continued participation in the labour market and consumption patterns, amongst other things (BBC News, 2012). The potential for older people to act as part of the "solution" to the "problem" of posing an increasing care burden could be achieved through a greater recognition of their contribution to society. An example would include the more formal integration of public welfare, such as family care and volunteering.

2.1.4 Shifts in the position of the young

Demographics is expected to be a key driver of structural shifts in consumer spending. Younger consumers have distinctively different spending priorities compared to their parents and grandparents. They are growing up with the new possibilities that streaming, online-gaming, the sharing economy and low-cost flights provide. A vocal part of the generation is very conscious with respect to both their own health and their environmental impact. They eat healthier and fresher food; they are mindful of their carbon footprint and organise in various forms to conduct environmental and climate activism.

They are also typically more aware of and energised by issues of social inclusion, as shown by the recent protests in connection with the BLM movement, which were largely instigated by young people.

Moreover, in recent decades, intergenerational support appears to have become much more widespread: younger generations are not only differentiated from their parent's generation in terms of attitudes, but also economically. There is considerable evidence that **Millennials**⁽ⁱ⁾ may be the first generation to have worse lifelong economic and social prospects than their parents. Younger people tend to be more represented in employment within the so-called **gig economy**⁽ⁱ⁾, or other insecure forms of employment.

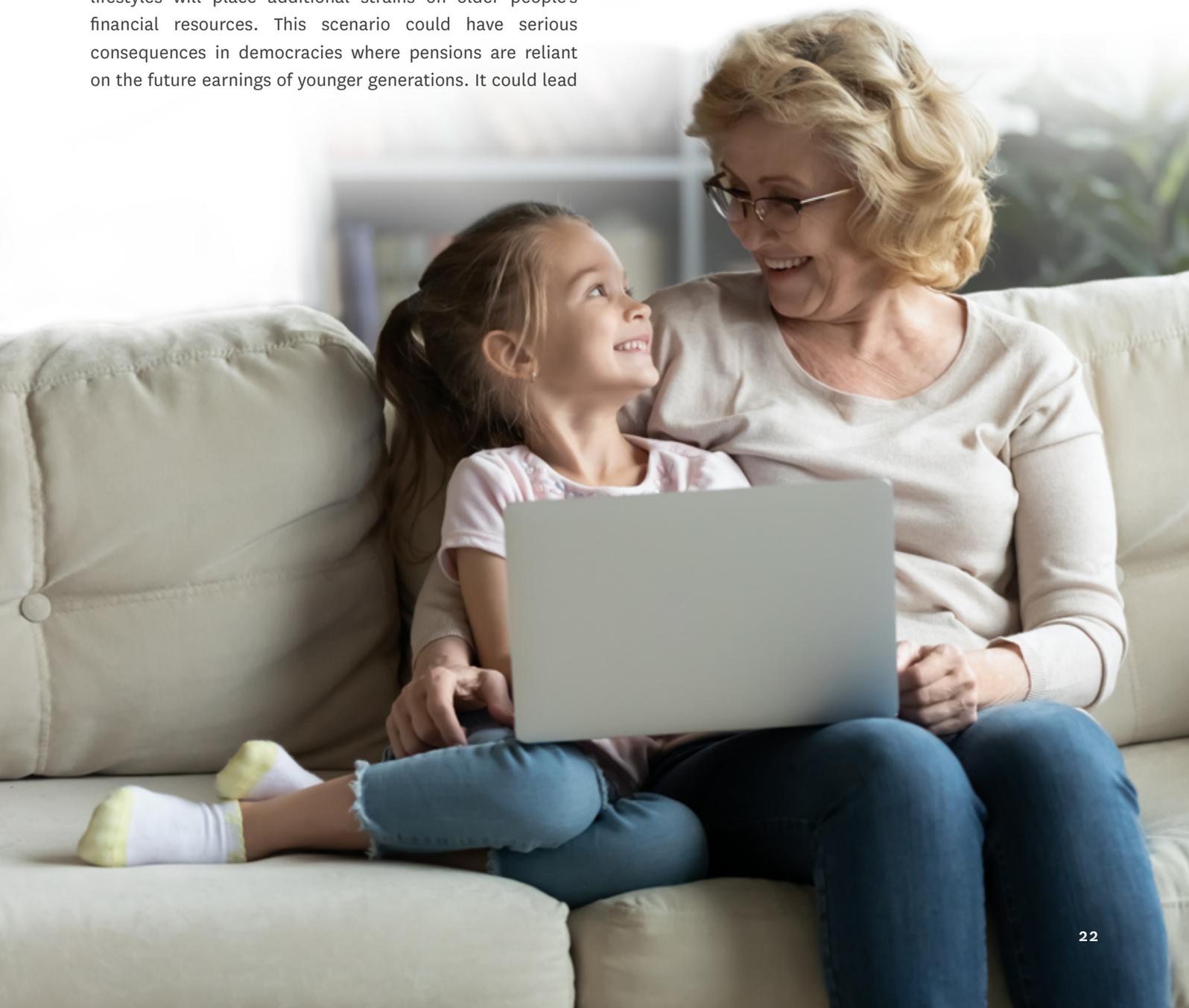
Young people are also less likely to own their home and more likely to rent, exacerbated by a less favourable macroeconomic scenario. The cost of housing has increased in many countries for the younger generation, resulting in diminished disposable incomes (which may also be impacted by additional debt due to increased cost of further education and other costs associated with lifestyle changes). Property

ownership, a key driver of inheritance value, is reducing and as a result, reduced property inheritance looks set to increase the absolute wealth gaps among Millennials and younger generations. All of this means that they have fewer opportunities to accumulate wealth compared to previous generations.

As **Baby Boomers**⁽¹⁾ continue to reach retirement age, the size of the older population requiring support is increasing in many countries. **Generation X**⁽²⁾ has been referred to as the “sandwich generation” caring for Baby Boomer parents in old age while financially supporting **Millennial**⁽³⁾ children. As both **child**⁽⁴⁾ and **old-age**⁽⁵⁾ dependency ratios increase, public resources will be constrained, while healthcare and pensions will become more expensive. The necessity to increasingly self-fund some of their retirement needs, together with increasing higher expectations for retirement lifestyles will place additional strains on older people's financial resources. This scenario could have serious consequences in democracies where pensions are reliant on the future earnings of younger generations. It could lead

to onerous taxes imposed on younger generations to pay for pensions and health expenditure, which when compounded with the pre-existing economic concerns and the additional long-term consequences of the Covid-19 pandemic, could result in significant additional economic pressures for the Millennials and younger generations.

As a result, there may be increasing political tensions between older and younger voters in the context of any proposed pensions reforms. Other areas, such as the challenges of climate change requiring major investment and policy change now to effect outcomes in future decades, are of higher value to younger generations and similarly have the potential to be politically and socially divisive.



BOX: *Elderly care system*

Historically, the dominant approach to labour-intensive elderly care has been home care, carried out by informal and unpaid care-givers, such as the family. This is linked to the fact that in pre-industrial societies people used to live in large families, resulting in close relationships within the family, from the grandparents to the youngest generation. The availability, ability, and willingness of the family to provide care to the older members at home were ensured (ESPN, 2018).

However, industrialised countries have experienced a change in family patterns, including an increased number of single households, a greater share of women in the labour market and an increasingly mobile workforce. These changes have led to a decrease of informal care provision in modern societies and changes in how care is provided.

Compounding this, demographic aspects are changing fast in industrialised countries. The trends in fertility rates and life expectancy are increasing the number of those requiring care in absolute and relative terms.

These changing circumstances are likely to continue in the future and thus influence both the supply and demand side of elderly care in the new world.

However, home-based care for the older generation is still preferred to residential care in industrialised countries. This is partly due to the political willingness to enable persons to stay as long as possible at home and partly due to the fact that in many countries institutional care is either underdeveloped or too costly for many (EC, 2018).

In this new world, home care is not only provided by informal care-givers but also by official (home) care services as help for daily life. These services provide the older people with the necessary support to be mentally, physically and socially active and live independently and autonomously in their communities as long as possible. Specialised care providers also seek to employ technological and medical developments to provide necessary care (EC, 2018). Ideally, care robots, for instance, will equally support care providers and those requiring care, enhancing the efficiency and quality of care.

A good example of this high-quality and patient-centred approach for home care is Norway, where the municipality provides essential care and social services to the older generation. Another example is the Dutch “Buurtzorg model”, a local and comprehensive approach, in which a team provides all necessary services from a single

source in a neighbourhood (ESPN, 2018) (White, 2016). These approaches reflect changing demographic and workforce conditions. They are also able to quickly adapt to technological changes and support the development of innovations for elderly care. This is particularly important as assisting technologies, such as video, remote health monitoring and electronic sensors, are very likely to play a major role in managing an increasing ageing population (Gabriela Beirao, 2016).

The increased supply of elderly care provision is generally not limited to the public sector. A competitive mix of private and public providers already exists in industrialised countries. Either services are bought from private providers as contractors or private providers compete directly with public providers. The two above examples from Norway and the Netherlands are mainly publicly financed with support from private providers.

Putting this high-quality and patient-centred approach at the heart of future elderly care also reveals some challenges. Availability of local well-qualified staff is often limited and must be sourced and continuously trained as the number of informal care providers declines. This approach also cannot satisfy all needs and thus residential care will still only be a part of the overall approach to address elderly care (EC, 2018).

Finally, the increasing demand, limited supply of high-quality service and specialised medical treatments in elderly care will lead to rising costs. As these costs cannot be borne by the public alone, a mix of public and private provision of elderly care will be favoured.

2.2 Future of work

Demographic and socio-economic shifts - longevity and ageing societies - are expected to have nearly as strong an impact on business models and organizational structures of companies as technological change. (WEF, 2016).

Future ways of working will likely be influenced by:

- the generational replacement between **Baby Boomers**⁽ⁱ⁾ and **Millennials**⁽ⁱ⁾;
- the current period of digitalisation, which is expected to be at least as transformative as the transition to the industrial age;
- individuals' and markets' potential to respond to changes in skills demand;
- new working patterns, including an increasingly flexible and remote working environment.

2.2.1 The passing of the torch: Baby Boomers give way to Millennials

The share of the age group 50-64 in the total workforce population is set to increase markedly over the next decades (section 2.1.2 Working age population). This trend is being driven in part by changes to social security and reforms to the pension market (notably, increases in state pension ages, the move from defined benefit to defined contribution schemes, and falling annuity rates). It also reflects increasing longevity, with more retirement years spent in good health, encouraging people to stay in work, or return to work. This is highlighted by the phenomenon of “unretiring”, where one in four retirees in the US and UK are now going back to work (Financial Times, 2020b). The decreasing working age population and the increasing ageing population will likely result in people working and saving for longer in order to afford a certain living standard (Swiss Re, 2018).

However, the impending retirement of large numbers of the **Baby Boomer**⁽ⁱ⁾ generation implies the loss of key skills and critical know-how to the economy which technology can only partly replace (Swiss Re, 2019a). Therefore, it will be important that companies continue to develop and motivate younger cohorts within their workforces.

Younger generations tend to have markedly different values and expectations of work compared to Baby Boomers - particularly,

Millennials⁽ⁱ⁾ and their successors, **Generation Z**⁽ⁱ⁾. Motivating and retaining workers in these generations will likely require a greater emphasis on diversity and inclusion within the workplace, as well as more flexible working arrangements. Millennials also demand business to show more awareness (and action) around areas such as climate change and a more sustainable basis of operations.

As a result, Millennials are shaping the new processes and how work is accomplished, since within the next three years, they will account for more than 50% of the workforce. They live by different principals similar to on-demand services; they have become accustomed to flexibility. Failing to provide these options, considered essential, limits potential accomplishment (Zigurat, 2018).

Accommodating the needs of this cohort will, therefore, require changes to work practices, organisational structures and business models, all of which are likely to prove highly challenging to companies. These needs include less formal hierarchy, extremely flexible team and work arrangements, less routine-work due to automation and much more work on a continuous project basis. Companies that fail to make the necessary changes could find themselves losing out in the competition for scarce talent in the future.

2.2.2 High / perpetual unemployment scenario due to extensive AI

Despite the difficulties surrounding the employment gap (2.1.2 Working age population), over the next 10 years there will likely be a change in the nature of work to a predominantly automated/digital basis of operations, with data as the key value-adding source for services and products. This shift has sometimes been labelled the “Fourth Industrial Revolution”⁽ⁱ⁾ and encompasses such emerging technologies as the IoT, robotics, machine learning, AI, nanotechnology, quantum computing and biotechnology (Maddox, 2019). Notwithstanding the uncertainties surrounding the impact of the scale and speed of these innovations, it is widely accepted that there will be no going back (CRO Forum, 2015).

Big data analyses are increasingly becoming a standard tool. For example, the analysis of large amounts of data brings significant advantages in relation to risk evaluation, loss analysis and client segmentation.

“*Automation of jobs is one of the greatest questions of our time.*”
D. Susskind

AI solutions are also playing an important role. Cloud services that use AI and machine learning to process data will therefore likely drive performance and competitiveness in the future.

The writing is on the wall: if something can be reduced to an algorithm, it will be automated in the very near future (Araujo, 2019). For highly educated - and thus also expensive functions (e.g. field engineers) - technological advancements like augmented reality glasses and other body-digital interfaces will be widely adopted sooner. These types of technologies will change the work practices, experience and style of various professionals.

Automation is expected to create new jobs while simultaneously replacing many more, especially in areas centred around routine tasks. Decision-making algorithms and automated triaging are likely to take over more of the diagnostic workload in future, with some impact on the demand for medical practitioners. Some workers, like taxi drivers and long-haul truckers, might not be affected immediately, but when the adoption of automated vehicles begins the change may be sudden as cost savings of up to 30% could result in a drop of demand for truckers in Europe of up to 4.5 million over five years (OECD, 2019a).

Ideas to manage unemployment linked to automatization include the introduction of a guaranteed basic income or robot taxes⁽ⁱ⁾, the first ensuring that each citizen has enough money on which to live, the second with the purpose to raise government revenues and disincentivise job-destroying automation.

2.2.3 Changing skill requirements: opportunities and challenges

Due to demographic and digitalisation trends, changes in skill requirements are inevitable. In particular, new skills in areas such as computer and digital literacy as well as robots and automation programming will gain significant importance (Deloitte, 2018).

In this context, re-skilling and up-skilling will be essential. The WEF, for example, estimates that by 2022 this need will involve at least 54% of employees (WEF, 2018). At the

same time, employees will be incentivised to engage with retraining initiatives (and to invest in their own human capital) to avoid being trapped in roles at risk of being rendered redundant through advances in automation (US Bureau of Labor Statistics, 2020).

Nonetheless, technical and socio-economic factors could impede retraining efforts. The former includes the apparent gap between the skills and knowledge that the workforce possesses and what is required in the new economy; the latter includes entrenched attitudes to older workers, who are often perceived to be less flexible and less tech “savvy” than younger workers, as well as lacking the financial resources to close the skill gap. However, these barriers need not be insuperable obstacles. For example, employees

with skill sets that are adjacent to those in demand could find that this also facilitates their retraining (e.g. clerical workers could apply their organisational skills to a new role). Older workers may find an advantage through their possession of so-called soft skills, such as critical thinking and emotional intelligence, which are also

likely to become more sought after in the digital economy (Harvard Extension School, 2019). The collaboration of individuals and teams across all levels of the organisation and all age groups might help to drive transformation in the digital, communicating and cultural aspects of a business.

An additional solution to the looming skills shortage (and something that has been a feature of the tech industry particularly) would be to import the required skills from other countries through visa programmes, such as the US H1-B visa⁽ⁱ⁾ for highly-skilled migrants. However, these programmes are already controversial (Calamur, 2019), and expanding them to the scale necessary to compensate for the skills shortages created by retiring Baby Boomers⁽ⁱ⁾ could prove divisive and raise tensions in the host community.

However, even with the above-mentioned solutions, the demand for digital skills is likely to considerably outstrip supply. Consequently, individuals with the requisite skills are likely to find themselves in high demand and able to command a premium in the employment market.

Already companies are experiencing difficulties in retaining skilled employees, with “retaining existing talent” as the top

“*A wave of automation and job loss is no longer a dystopian vision of the future - it’s well under way.*”

A. Yang, Political commentator and Entrepreneur, 2018

management challenge (Vistage, 2019). The challenge is likely to increase over time, driven by the twin trends of changing skills needs within the economy and an ageing workforce in most developed and many developing economies.

Recruiting and retaining highly skilled workers will, therefore, likely require organisations to rethink and adapt their existing HR policies. Most probably, they will need to be prepared to negotiate, as these employees will be fully aware of their market value. However, changes to remuneration are only part of the solution. Companies will need to ensure attractive career development opportunities: talented people seek out opportunities to grow, and they will flock to organisations that provide ample opportunities to do so (Hagel, 2012).

2.2.4 New ways of working

Professional careers where 40 years of working life are spent in one function of one single company and contracts with fixed working hours will become the rare exception. Most people will have a series of jobs, sometimes in the same field, sometimes not. Some will choose to become self-employed entrepreneurs, and, importantly, a growing number of workers will hold in parallel several part-time, shortlived, low-paid, jobs with little or no benefits. In the UK, for instance, the number of *gig economy*⁽ⁱ⁾ workers has more than doubled from 2016 to 2019 with one in ten adults working on gig economy platforms (Partington, 2019).

The way people work is generally trending towards more flexibility in terms of both location and schedule. Working from home, or any other remote working, is becoming more prevalent and accepted, which also means that offices will become less central operationally, and boundaries between office, home and other spaces will blur. Increased application of technology may decrease the severity and likelihood for some traditional work accidents and potential health threats (like workplace-related contamination), but it may foster new potential impairments (e.g. "burnout"). Greater flexibility can also be expected overall in terms of working hours. Worktime is likely to become more flexible as well, with the possibilities of part-time jobs and the choice of working times blurring the boundaries between work and leisure. But not everybody's work can be provided through virtual channels and digital media, and there will be huge scope for different models encompassing "high tech" and "high touch"⁽ⁱ⁾ work.

Nonetheless, more flexibility of work also comes with new challenges and responsibility for both employers and workers. Such *gig economy*⁽ⁱ⁾ approaches or "uberization" will open protection gaps. For workers in a gig economy, increased job insecurity is likely, saving and long-term planning will be challenging and prospects regarding pensions or other financial means to support older age will be bleak for many individuals.

This new approach to people management may require a significant change in organisational mindset, but it will be necessary if companies are to avoid significantly higher rates of employee turn-over and potentially increased employment costs in the future.



BOX: *New workers in the future employment landscape*

Employment trends: who wins, who loses?

Workers who are lower-skilled, older or in jobs at high risk of automation will bear the brunt of the changes and benefit little from the jobs created in high tech industries. These groups receive very little training compared to their better-skilled and younger counterparts: on average only about 20% of low-skilled adults in the OECD receive job-related training (a staggering 40 p.p. below that of high-skilled adults) (OECD, 2019b). This significantly raises the risk of some workers being left behind.

As already discussed, workers in many occupations are likely to face significant displacement of their activities by automation. In addition, wages may stagnate or even decline for middle- and lower-skill occupations that have a large supply of potential workers but have reduced demand, particularly in developed economies.

By contrast, roles requiring a high level of expertise are much less likely to be automated. A recent Office for National Statistics (ONS) survey of the UK employment market concluded that the three occupations at the lowest risk of automation are medical practitioners, higher education teaching professionals, and senior professionals of educational establishments - all occupations considered highly skilled.

However, even in sectors vulnerable to automation, workers may shift to performing new tasks, enabling overall employment to be maintained (Swiss Re, 2019a). Alternatively, workers could find themselves working in partnership with automated processes, with the robot taking over the repetitive element of the task, leaving the human to concentrate on those tasks requiring more judgement and those tasks that are difficult to automate. Furthermore, a beneficial side effect of the automation of much of the economy will be a huge increase in demand for “human centric” skills that machines cannot provide, for example, tasks requiring creativity, but also involving social and interpersonal skills: nurturing, caring, teaching, persuading, negotiating and so on. This trend is likely to be expected to drive significant employment growth in future.

Case study: sketching out the worker of the future

The overall impact of trends, such as automation on future employment, is likely to be more nuanced and less predictable than some of the media headlines suggest. This point is illustrated with two hypothetical examples of workers with different age and skill sets: a single, 30-year-old woman holding a PhD, and a 50-year-old vehicle mechanic with a family.

The young, highly skilled worker

On the face of it, the younger worker looks much better placed to adjust to the altered employment landscape of 2030. Her high level of education enables her to capitalise on the increased demand for roles involving the application of expertise. Her young age and absence of immediate relatives to care for should also enhance her adaptability which is important given that her career will include many more role changes.

Whether gender disparities on pay and promotional prospects will continue to apply or disappear is another question and time will tell. In the longer term, the younger worker’s career path will be subject to more changes and insecurity, which could make it difficult to finance important life goals, such as the purchase of a home, or to accumulate the savings necessary for a secure retirement.

The older, unskilled worker

The vehicle mechanic looks, at first glance, poorly placed to cope with the employment environment. He has a lower level of educational attainment (the equivalent of a high school diploma), which potentially leaves him less able to re-skill to take advantage of new opportunities. The job itself also requires little expert judgement. Meanwhile, the fact that he is older (in his fifties) and with a family, will likely mean he is not easily able to relocate, if needed. Notwithstanding the apparent low skill set of the worker, his role is not necessarily vulnerable to automation. Jobs in unpredictable environments, including vehicle mechanics, will generally see a lower level of automation by 2030, because they are technically difficult to automate and often command relatively lower wages, which makes automation a less attractive business proposition (McKinsey&Company, 2017).

2.3 Shape of cities in the future

In order for cities to provide their inhabitants with an adequate quality of life and resilience to cope with demographics and other trends, such as an ageing society and climate change, cities will likely need to revise their historic planning assumptions and prepare for the challenges of the coming decades.

Contrary to many other areas in the world, some European cities are expected to face declining populations in the future in line with Europe's overall population trend (section 1.1.1 Global trends). This trend will vary significantly between cities: while some city centres will become more sparse due to population shifts to the suburbs (Joint Research Centre, 2019), a third will see a population increase by more than 10% in the next 30 years. Despite likely decreases in population and denser population in some cities, smaller household sizes and building standards with larger room sizes in new suburban developments (Federal Statistical Office, 2019) are expected to lead to the further expansion of cities in the surrounding landscapes if building regulations do not change. This will increase conflicts between providing affordable living space and minimising impacts on the surrounding landscape and ecology.

Changes in future migration trends could also lead to impacts on the size and constitution of European cities. Migration-driven changes in size, age structure and cultural and religious diversity could require short-term changes in planning assumptions.

Moreover, while European cities might be less hard-hit by climate extremes than some other areas of the world and tend to have a relatively high adaptive capacity, some areas, particularly in southern Europe, face a combination of more severe heat and drought impacts and less capacity to adapt to those changes (EEA, 2016), while floods and storms are impacting other European areas. An increasing need to protect against heat waves (O'Sullivan, 2019) and other climate perils has the potential to further increase local inequality between those with sufficient means to adapt to the new extremes and the poorer parts of the population.

These challenges need to be handled in the context of an already extensively built-up city landscape which has developed over centuries in the case of many European cities. The effect of this is that already three quarters of the population live in an urbanized setting (Zlotnik, 2018). The distribution of age groups can be very heterogenous even within a city, therefore effective city-planning needs to understand local circumstances and take these into account.



BOX: Social challenges of cities

Europe has been predominantly urban since the mid-20th century, and the urbanisation trend is likely to continue (Eurostat, 2016). With some cities expanding, density may increase and urban architectures may change but, most importantly, the social and cultural make-up of cities will likely change too and demographic trends will interact with other parameters (e.g. technological innovation) (section 2.3 Shape of cities in the future). While some coming social challenges for cities will be similar to existing concerns (e.g. how to balance a city's spending needs with its income through taxes), others will be entirely new. What possible challenges may lurk between these poles?

Europe's urban landscape is shaped by long traditions that also come with path dependencies. Paris or London stand for large cities, but they are also political and cultural centres, with a particular way of life and mindset. The "Avenue des Champs-Élysées" or "Piccadilly Circus" have never existed in isolation, there has always been another walk of life: the other side of the city, the suburbs, or the more deprived areas. Still, the European city has largely managed to maintain a sense of cohesion and shared identities among city dwellers. Gated communities and slums have not been as prevalent as in other parts of the world. Ageing and diversifying populations need to be managed to keep the European city flourishing in the future.

In parallel, demands regarding city infrastructure, public space, mobility etc. are changing. The prospects of "smart cities" (section 2.3.2 Future of mobility) may lead to new inequalities and social questions: who can take advantage of the smart infrastructure? Who will be excluded, either for

(digital) illiteracy or for lack of resources? The smart city will need to be carefully thought through in terms of integration.

European city centres are also currently undergoing shifts in demand for office and retail space. The reasons for this vary and include digitalisation, pandemics (such as Covid-19), reshoring of labour from offshore centres and the proliferation of home office. It will be important to also seize the emerging opportunities. Planning the future city will necessarily also include integrating physical and digital space, as well as considering the relationship between city centres and their surroundings.

Public space will be subject to differing interests. Older people may prioritize, for instance, safety in public space reflecting a different risk perception. Immigration will further diversify city life and demands for enriched cultural landmarks which will be welcomed by some and rejected by others. To integrate and balance these different interests will be a priority for European cities to avoid more fundamental problems where segregation and social inequality erupt in social unrest and political violence on a recurring basis (WEF, 2020b).

Provision of critical services and benefits to as many as possible, together with interaction and communication between different parties is of vital importance to the resilience of cities and their inhabitants, and in turn for the insurance industry. One crucial challenge with implementing integrative measures for city life is that they are costly. Adequate propositions to tackle the looming exacerbation of the gap between different groups will also be demanded from insurers.



2.3.1 Ageing urban society

The infrastructure and services of cities, from education to healthcare, will need to take into account the developments of an ageing society. Aged citizens would be more willing to make real estate investments in cities which cater for their particular needs. The older generation does not only have special needs but can also fulfil important roles in providing services to their families and the wider society that can be enabled by good urban planning. While the older part of the population especially depends on a safe and healthy environment, improving those characteristics benefits all population groups. For instance, those with disabilities depend on a barrier-free environment. Safe and clean surroundings are particularly vital for the safety and health of vulnerable population groups such as children.

Decreases in cognitive and physical abilities, such as impairments in strength, hearing or seeing and general deterioration in health, require more frequent medical attention and have consequences on urban planning. Although the walking speed and travel distance of an aged population is only about half that of younger people (ARUP, 2015), public transportation and walking are still their most used modes of transportation and have implications on the density and distance between public transportation stops and stations. Walking is also considered a very effective preventative health measure (OECD, 2015), benefitting people of all ages. Improving the walkability of cities also has positive effects for social inclusion, as it is easier for older people to stay self-reliant and maintain social interaction.

Keeping cities barrier-free requires adaptation of existing public infrastructure and will need a special emphasis on maintenance of pedestrian areas. Ensuring public transportation is accessible to people with walking impediments or physical disability can require infrastructure changes, such as lift access to platforms and the avoidance of narrow passages and high curbs that cannot be navigated by wheelchair. To account for a slower walking speed, adequate traffic signals and islands for safe pedestrian crossings are also important, as well as frequent resting spaces such as benches. Easy access to green spaces also improves the desirability of moving around on foot and provides space for social interaction. In European cities around 44% of the urban population already live within 300m of a public park (Joint Research Centre, 2019).

Notwithstanding some positive effects due to the increased use of telemedicine, access to healthcare will remain important in an ageing society. While some elements of medical care such as regular check-ups can be partly covered remotely, certain

types of medical concerns, as well as emergency situations, will always require a face-to-face physical assessment. As such, the proportion of consultations that are face-to-face might even increase with an ageing population, where continuity and the personal exchange with a familiar medical professional are positive factors influencing treatment and care success. Therefore, easily accessible healthcare needs to be either located in proximity to living quarters or well connected with transportation services.

Senior housing also needs to be barrier-free, accommodate special needs for wheelchairs, and mobility impairments. Retrofitting apartments for such needs can be expensive and difficult to achieve within existing infrastructure. More assistance will also be required for ongoing maintenance of accommodations. Leaving aside affordability matters, ageing citizens face the decision to retrofit their existing living place or to move to an age-adequate setting.

2.3.1.1 Better catering for the older generation in urban areas - two scenarios

As cities start to accommodate the needs of a changing population, several models are possible. There are advantages and disadvantages to each, and their desirability will depend on specific local circumstances.

Scenario 1: Dedicated “greying campuses”

With an ageing population relying on access to similar services and facing a reduced radius of mobility, developing dedicated living quarters would allow an efficient provision of infrastructure such as housing, barrier-free environments, tailored transportation services and easy access to health and social services. A campus style development could offer a wide range of easy-access services such as grocery stores, a library, a post office, the health clinic, a social club, and other local amenities. Housing would be optimized for reduced space requirements, managed care settings, and for the potential disabilities of the residents.

Efficiency gains not only extend to the construction environment, but also to enabling easier access to the targeted services, such as educational and leisure courses. Educating local service providers in the special requirements of the older generation could also be done in a more focused and efficient way.

The biggest disadvantage to such a model would be that it would require occupants to relocate from their existing places of living into a new and unfamiliar environment. Finding suitable areas to develop such a campus is challenging in already densely

built cities. There is the danger of relocation to cheaper, less developed, and remote areas, effectively isolating residents from others.

Increased distance between older generations and their families and younger people is likely to lead to more social isolation and more limited opportunities to participate in and support society, such as performing family care and volunteering activities.

Scenario 2: Mixed generations model

The contribution of older generations to society through volunteering or family care, especially by grandparents, can be substantial. Proximity to family and services facilitates that contribution. Furthermore, informal care by relatives is currently the most important source of care for dependent older people (Rodrigues, Schulmann, Schmidt, Kalavrezou, & Matsaganis, 2013). Improving the ability for parents to remain an active part of the workforce is seen as an important contributor to future economic prosperity. While the availability of professional care services tends to increase in cities, availability, quality and cost vary greatly across countries. Formal professional and informal family driven services will need to be provided in varying degrees across countries and cities and will likely complement each other.

The older generation also predominantly expresses the desire to age within the community to which they belong (also referred to as “age in place” (WHO, 2007)) and to remain embedded in their familiar surroundings and social networks. Maintaining interaction with younger generations in general is also cited as a contributor to a higher quality of life. Getting comfortable with new surroundings and different social contacts can be especially challenging for older citizens with onsetting mental and physical impairments.

Accommodating the special needs of an ageing society might be more complex in this scenario. Retrofitting existing housing with the infrastructure required for physical impairments can be expensive or not possible due to technical or legal restrictions. Providing public infrastructure and services essential for older generations across the whole city area might also drive up costs, although improvements such as better public transport and more green spaces, as discussed above, will benefit the whole population. A further consideration is that where older people continue to occupy large family homes, this might perpetuate housing shortages and price increases (Savills World Research, 2015).

Efficiently catering for the requirements of all generations in this model will require innovative solutions where trends

such as digitalisation and the sharing economy can serve as catalysts. Using digital healthcare services for both monitoring and consultation could reduce costs and travel requirements, while ride-hailing and more flexible transport systems enhance transportation options.

Adapting the housing stock to be prepared for such a model also requires novel solutions that allow modular apartment construction and intergenerational housing that can be easily reconfigured and adapted to the changing age profile of its occupants. For example, in the UK such trends are already observable for individual-unit dwellings in suburban settings and further novel ideas exist such as home-share schemes. (CBRE, s.d.).

2.3.2 Future of mobility

Living in smart cities will also drive new spending patterns. Improved transport options, for example, will likely mean fewer cars being bought. Similarly, an increase in autonomous machines being part of our daily lives and increased remote working could mean differences in where people are required to be physically present with impacts on shopping and service locations. Growth in the sharing economy will also mean a shift in what people are willing to spend money on.

Congestion leads to lost time for a large part of the population. Trips within city limits, as well as commutes to and from surrounding areas, contribute to city traffic. Successful traffic reduction measures will need to address the different sources of traffic individually. Daily commuting is a major source of trips across the city limits. Over many years, residential areas within cities have become increasingly more limited and expensive, adding to the daily flow of commuters. While it is too early for long-term projections, the Covid-19 pandemic has brought new questions to this trend. On the one hand, increased home-office use has at least temporarily led to lower commuting rates. On the other hand, continued anxiety over the use of public transport and an emerging trend to move out of city-centres to more spacious and green living areas might counteract that trend. While efficient high-capacity public transport services, such as trains, can help make commuting more environmentally friendly, new transport infrastructure is expensive to build and difficult to plan in an already built-up urban environment. Pre-Covid-19 ways of working resulted in a “rush-hour” commute and congestion which is difficult to avoid as planning for peak-demand is economically challenging. Cities are increasingly trying to discourage commuters from using cars by levying congestion charges or limiting available parking spaces. While these approaches do have some effect, they do not address

the underlying imperative of daily trips to the office for many employees.

A bigger impact on reducing the flow of commuters might come from modern technologies and the ability to work remotely where this is possible. If fewer trips to the office reduce requirements for office space, this could have significant impacts on the desirability of city homes versus suburban and country living. A growing number of retirees, with different service requirements and no commuting needs, might further add to a move away from cities. Additional incentives to reduce longer-distance commuting could be set by a more collaborative and decentralized approach to urban planning that improves the viability of local centres (McCay, 2018).

Decarbonizing individual trips within city limits is another important contributor to reducing a city's GHG⁽¹⁾ emissions. A number of European cities are already encouraging alternative modes of transport and are discouraging car travel. Making road

infrastructure more cyclist-friendly will also play an important part in encouraging the reduction of car use (depending on local topography and climatic conditions). Cities are increasingly planning for separate cycling lanes to improve safety for cyclists and cycling highways that allow fast and uninterrupted travel across the city.

In the smart cities of the future, digitalisation will allow more efficient trips in terms of time and cost and provide integrated payment options through corresponding apps.

The transport of goods, as well as people, must also be considered. Whilst the increase in online shopping might lead to fewer individual shopping trips, it will also increase the number of delivery trips. New innovations are being developed to optimize the delivery miles e.g. via autonomous self-driving robots or drones (McKinsey, 2018). Whether this leads to an overall increase or decrease of traffic is uncertain and likely to vary across cities.



2.3.3 Climate change and resilience

With their high concentration of assets and people, cities could be hard-hit by climate change but could also be part of the solution. Estimates suggest that cities are responsible for 70-75% of global CO₂ emissions, with transport and buildings being among the largest contributors (UNEP, s.d.). Overall, buildings account for over 40% of global GHG⁽¹⁾ emissions and are one of the biggest sources of potential emission reductions. However, on the current trajectory, emissions from buildings are set to double by 2050 instead of dropping (UNEP, s.d.), as the uptake of more efficient building standards is slow. Poor planning and layout issues exacerbate a city's carbon footprint, such as long travel distances and inadequate public transport (UN, 2019c).

Depending on the city's location, increased risk from flooding, sea level rise or more heat-days will challenge existing infrastructure. Particularly, cooling needs due to increases in extreme temperatures might lead to energy demand skyrocketing. Using today's cooling systems requires an exceptional amount of power - cooling is expected to account for 37% of power use by 2050 (IEA, 2018).

Combating increasing flood risk will require a holistic set of actions. Sea walls, storm surge barriers, water pumps and overflow chambers can offer some protection for high risk areas. Flood risk management will however also need to be integrated into the wider city planning, using city parks and public spaces as emergency reservoirs for floodwaters and ring-fencing areas that cannot be reasonably protected. Effective flood management might also need to extend beyond the city limits by restoring floodplains and widening rivers - potentially leading to conflicting priorities between cities and rural communities.

The "urban heat island effect" of a concrete environment that stores heat and blocks cooling winds will further exacerbate heat extremes in cities (Kottasová, 2019) (see BOX: Health risks connected to cities). The growing older population will be disproportionately impacted by the increase in heat waves.

Making cities and their residents resilient against emerging heat stress will likely require changes in regulatory frameworks and the widespread application of new technologies and building codes. Concepts are already being tested but would require much more widespread application. Aside from more

energy efficient air-conditioning, passive cooling will gain in importance for individual buildings. Using brighter colours and installing plant growth on buildings can lead to additional cooling effects. Also, reducing the amount of enclosed spaces and including more parks and other green spaces in urban planning, would allow water to be absorbed into the ground. This would help to reduce the risk of stormwater runoff damage and support cooling of the urban environment through the effect of evapotranspiration (evaporation from soil and other surfaces and transpiration from vegetation).

On a wider scale, town planners are looking to utilise natural cooling effects from other sources, for example harvesting cool winds from surrounding mountains, lakes or the sea. Planners would also aim to minimise building obstructions that would keep heat trapped in the city centre.

Building climate resilient cities may therefore require a redefinition of the landscape of cities in some cases, with a number of green public parks that provide cooler recreation spots for city dwellers (EC, s.d.). The need for greener and open spaces in cities conflicts with the economic perspective that aims to densify cities by using high-rise buildings to support demand for living and commercial space. Planners will therefore need to be careful that a greener and more liveable city does not also translate into a more expensive city with reduced supply of housing driving up prices. To find balanced solutions for individual cities and quarters, the design will not only be defined by the local city authorities but will also increasingly need to consider various stakeholder interests and involve these in larger projects. The purpose, appearance and culture of cities may therefore be subject to significant change, depending on the outcome of these efforts.

“*Some may still deny the overwhelming judgment of science, but none can avoid the devastating impact of raging fires, and crippling drought, and more powerful storms.*”

B. Obama

BOX: Health risks connected to cities

Climate change

Many cities are among the areas most vulnerable to the consequences of climate change. City dwellers are at a greater risk of developing a number of health problems due to factors associated with the urban environment, for example air pollution. Cities also experience warmer average temperatures due to the prevalence of heat absorbing surfaces and a lower density of vegetation (the “urban heat island” effect). These factors cause hotter days and more frequent and longer heat waves compared to non-urbanised areas; the urban heat island effect can raise temperatures in cities by as much as 3-5°C. Warmer average temperatures will worsen the urban heat island effect and increase concentrations of air and water pollutants that are harmful to health. Cities also concentrate many people in areas that may be exposed to the risk of natural catastrophes, such as severe flash flooding caused by heavy rainfalls and storm water runoff.

Therefore, the effects of climate change are likely to exacerbate the climate-related health impacts of urban living. For example, climate change may increase the numbers of hospital admissions and deaths related to heat waves and severe droughts. As natural perils are likely to become more severe and frequent, deaths may also increase in urban areas exposed to, for instance, floods and tropical cyclones. In addition, shifts in the transmission ranges of vector-borne diseases or poorer control of other infectious diseases are more likely. Consequently, the number of heat-related diseases and deaths will increase. Overall growing awareness of health systems regarding climate sensitive health issues and resulting structural actions may have positive effects on health. However, current projections indicate that the negative effects will prevail.

Resources and Infrastructure

Already in 2008 more than half of the world’s population lived in urban areas, of which more and more are located in vulnerable zones and enduring non-existent or unstable infrastructure (e.g. water, electricity, sewage and waste disposal) (Revi, et al., 2014). Urban populations consume water mainly for non-agricultural purposes, leading to water scarcity by overuse of groundwater, rivers and lakes (The Groundwater Foundation, 2020).

Pollution

According to the WHO, in 2018 only 3% of urban populations in low- and middle-income countries lived in an environment with good air quality, and not more than 51% in high-income countries (WHO, 2018c). Pollution levels in many cities (especially in developing countries) are several times higher than the recommended reference values. In many heavily polluted areas of the world, morbidity from air pollution is a burden for regional healthcare systems. Epidemiologic studies show that air pollution is associated not only with chronic airway diseases, but also with chronic cardiovascular ones. There is a direct link between the incidence and prevalence of these conditions, population density and industrialisation. Due to the focus on economic development, increasing health risks related to air pollution may be observable in the near future in emerging economies, as a result of many factors, including the worsening air quality from increased car use.

Infectious diseases

Viral diseases, such as SARS, H5N1 (so-called avian influenza) and Covid-19, carry the risk of global spread (pandemic outbreak). Even if they differ in structure and specific characteristics, many outbreaks in recent decades originated from densely populated areas, where there was also close contact between humans and infectious wild or domestic animals. It is widely understood that high population density is, among others, an important promoting factor for an outbreak of viral diseases.

Social effects and stress related diseases

NCDs⁽¹⁾ related to life in densely populated urban areas include sleep disturbances, mood and anxiety disorders. The proximity of individuals and families and the mass of people living in high-rise residential complexes can lead to psychological illnesses, depression and other social stresses such as conflict and crime. The lack of affordable housing is also increasingly becoming a problem for people in cities. Finally, over-crowded transport systems and challenged road networks, causing daily traffic jams, can increase the stress levels of inhabitants.

3

Impacts on the insurance sector

This paper has so far covered the significant backdrop to this next section. Chapter 1 introduced global demographic trends, highlighting how these can be influenced by other trends.

In chapter 2, the various trends were distilled into three forces shaping Europe's future: the changing position of the older generation, the future of work and the shape of future cities.

The future presents challenges that will affect every society and every industry. This chapter aims to provide a deep dive on the most significant impacts of these challenges for the insurance sector.



3.1 Possible impacts on Life and Health

With the world becoming older, major changes in lifestyle among younger generations and the evolution of cities, the Life and Health sector may be the most impacted businesses of the insurance industry. With older people working longer and a growing dependency ratio, the insurance sector will have a key role in society in:

- rethinking the Life and healthcare proposition, accommodating both younger and older generations, and also considering how to support people living longer with critical illnesses and disabilities;
- updating the saving and pension proposition;
- understanding the new vulnerabilities of the ageing population;
- rethinking the insurance role in long-term care.

Rethinking of Life and healthcare proposition

Cost aside, most Millennials⁽ⁱ⁾ would be likely or very likely to buy Life insurance if it was faster and easier to transact, and if they better understood products and benefits - notably protection, long-term care, critical illness (IBM, 2020). On the basis of this evidence, the challenge for the insurance industry is to introduce Millennials to the advantages of these products in a simple way.

To help bridge the Life insurance coverage gap for Millennials, insurers could support younger generations with a complete overhaul of the product offering: by promoting healthier lifestyles and the principle of prevention; by providing additional services in case of illness or disability; by creating ecosystems which combine healthcare and wellness centres, ancillary support/care services (baby-sitting services, for example), shopping and other assistance needs. To reach younger customers, insurance companies will need to develop simple products, in which younger generations will see immediate value to their lifestyles and economic circumstances.

For all generations, insurance propositions will be required that increasingly focus on combining Life and Health product components, for example longevity benefits and hospitalisation cover. Demand may dictate propositions with even more tailored underwriting, considering more granular information resulting in premiums that incorporate health and wellness factors. Appetite can also be expected to grow for other basic, worry-free retirement propositions.

The new propositions need to address the issues raised in chapter 2, with innovations including:

- more flexible protection, savings and pensions plans to reflect the new patterns of working, incorporating features such as: income smoothing to mitigate against volatile earnings from **gig economy**⁽ⁱ⁾ work or periods of retraining; and private disability insurance products, where cover is not provided by employers. These products could allow workers to structure a flexible career path. Care will be needed to ensure these flexible products are not overly complex and the benefits fully explained and understood;
- as much support as possible to allow older workers to continue participating in the labour force;
- understanding the implications of a shift to more digital work, where physical injury and disabilities could give way to mental illnesses;
- bridging for older workers as state pension ages increase, particularly in cases where health issues make it impossible for the worker to continue participating in the labour force, despite encouragement to do so;
- increased engagement from younger customers to buy in to plans early in their career journey to ensure the support is available later in life;
- holistic products which have the potential to encompass broad aspects such as education/training, debt, housing needs in addition to the more traditional product features;
- products that reflect medical developments in long-term care and critical illnesses, such as diagnosis through genetic testing prior to developing symptoms, development of new diseases like the increase in skin cancer and people being able to live longer thanks to new long-term treatments.

Insurance providers will be focused on providing value for money, whilst managing cost pressures and margins. One strategy would be to offset the reductions in loadings with increased volume. The need to understand and implement a business model based on lower margins will become increasingly critical for insurers.

Overall, insurers will have to develop propositions that increase the productivity and risk mitigation for both Millennials⁽ⁱ⁾ and Baby Boomers⁽ⁱ⁾. A healthier older generation will mean more older people working productively for longer (thus reducing the pressure of the increasing old-age dependency ratio⁽ⁱ⁾) and Millennials will require risk mitigation given the nature of their jobs and career paths.

This will imply going beyond just financial insurance, to becoming more embedded in customers' lives and being more active partners in managing their changeable needs. Health insurers will likely need to provide advice,

assistance and foster prevention practices. Increasingly they will be relying on technology and medical advances, such as wearables⁽⁹⁾. Health insurers will play a key role in promoting healthier lifestyles, for example through the use of disease monitoring tools, such as those used for diabetes. Insurance solutions are expected to both rely on and foster the widespread adoption of new medical solutions, such as remote healthcare. This will result in more affordable and new medical solutions accessible in real time, lower costs, an improvement in health outcomes and more accurate product pricing.

With increasing reliance on more affordable cross-border and remote healthcare, insurance companies will be required to review the pricing for products that will dovetail with the existing public health systems in Europe – augmenting, but not replacing these systems. For example, the older generation in Europe will increasingly have the possibility to consult medical professionals in developing countries for both cost and access reasons.

Updating the saving and pension proposition

The insurance industry will need to focus on developing flexible and innovative savings products capable of responding to younger generations whose careers and therefore incomes are more likely to be routinely interrupted by planned as well as unplanned breaks. Low-cost products that support potentially smaller payments early on in life and are able to be drawn down during career breaks should be attractive. Products that allow for interaction with state support, and contributions from cross generation dependents should also feature. Innovations may need to consider mutual interests in collective familial products to cater for multiple needs over a generation, perhaps longer.

When addressing new saving and retirement solutions for an older workforce, specific attention should be paid to women. Their participation in the labour market is a critical offset to any potential productivity decline that might result from an ageing workforce. Insurers need to design new offerings for saving and pensions tailored to the specific needs of women in the workforce. Of course, given the need for career flexibility, it is likely that products designed for women may in fact be appealing to all younger generations, irrespective of gender.

Thus, for all age segments, there will be an increasing demand for innovative retirement propositions, for example flexible premium payments or variable annuities

tailored to the individual risk profiles of the customer. Additionally, given the pressure on public sector budgets, society and governments themselves are likely to be highly supportive of new, more creative and affordable insurance and pensions propositions. There are already examples of interactions between governments, individuals and private companies, such as insurers and asset managers working together on the definition of the pan-European personal pension product (PEPP). Such considerations are also good examples of the need to strike a balance between innovation and solutions that can be achieved with some certainty.

Another element that will affect the type of saving and pensions solutions that can be made available is the prevailing financial scenario. The current levels of low interest rates, expected to persist for the foreseeable future, require a new model of savings and retirement solutions with a different type of financial protection offered; for example fewer guarantees, emphasis on protection vs guarantee, and a greater focus on the balance between investment growth and the cost of downside protection.

Understanding the new needs and vulnerabilities of an ageing population

Insurers will have to carefully consider the new risks and vulnerabilities of an older world. Covid-19 makes evident how the older population is increasingly vulnerable under certain circumstances. This group is also significantly affected by the climate change impacts of heatwaves and extreme weather conditions. Similarly, increased population density in cities and the resultant higher levels of pollution and disease will have the greatest impact on older populations. These impacts will be reflected in product pricing.

In addition, there is almost certainly going to be tensions arising from the health bifurcation of an ageing population. In a significant number of cases, people in their 60s, 70s and even 80s are extremely healthy, enjoy an active lifestyle and are able to work if they choose. However, there will also be those in their 50s or 60s with challenging health situations. With increasing state pension ages, insurance companies will have to address this divide by designing products that suit all needs. Those in robust health require long-term income security. Those with health challenges require that medical needs are met, that they are not overly pressured into working when not well and can enjoy as comfortable an early retirement as possible.

As explored in the 2019 ERI paper, medical advances will also impact the benefits to patients and create challenges for society and insurers (ERI, 2019).

Finally, further evaluation will be required to assess whether current mortality and morbidity trends based on the past experience remain applicable with the addition of new entrants (i.e. immigrants) to the population. While immigrants may be expected to have a different health, vaccination and immunity profile, it has been shown that a successful integration into their new home country leads to a levelling of such differences after a couple of years. However, other differences may persist, as witnessed during the Covid-19 crisis, that disproportionately affected less advantaged socio-economic groups in many countries. Results of these trends need to be translated both into Health insurance products with appropriate consideration of the effects for older age groups.

Rethinking the insurer role in long-term care

One important feature of the increasing age of populations in Europe and of the reduction in the availability of informal

care provided by the family (particularly women) is the massive increase in the need for long-term residential care. For example, in the UK by 2030, the number of older people with care needs, such as help with washing and dressing, is predicted to rise from 2.5 million (2010) to 4.1 million - an increase of 61% (Snell, et al., 2011). In many European countries, the state has historically funded this care. However, this is becoming unaffordable (in the UK, again, for example, the Select Committee on Public Service and Demographic Change, a parliamentary committee, estimates public expenditure on social care and continuing healthcare for older people may rise from £9.3 billion in 2010 to £12.7 billion in 2022 to keep pace with expected demographic changes (IFoA, 2015)). A patchwork of different solutions has, therefore, grown up across the continent to meet long-term care needs. These mix public and private sector elements and often require a significant contribution from the individual. In some countries/regions (the UK, again, as an example), the cost of care can consume nearly all the assets the individual has accumulated throughout life. This type of system undermines incentives for the individual to save for a pension.



Clearly, there is a need for a more sustainable solution and the insurance sector appears to be well placed to deliver on this. However, significant impediments exist to private sector involvement in the market. These include, on the supply side, uncertainty over longevity and morbidity and, on the demand side, the potential cost of the products, uncertainty over availability of informal care and consequent need for paid care; uncertainty over who to insure in a household, and uncertainty over availability and shape of state support far into the future (The Strategic Society Centre, 2011).

While these are formidable barriers, they may not be insurmountable. An initial review of the literature (IFoA, 2015) (The Strategic Society Centre, 2011) suggests that a possible way forward could be through public-private partnership, rather than a purely private sector solution. Crucially, this would also include an auto-enrolment/compulsion to overcome issues, such as the knowledge gap (individuals generally underestimate the risk that they will need care) and the cost of products through the pooling of risk. Potentially, there are two main ways insurers could support the long-term care market:

- provision of products. These are likely to fall into three categories: savings type products (essentially, adapting pensions to include a fund to meet care costs as well as funding retirement); protection products, allowing individuals to buy protection (in later life) against the risk of needing social care; and equity release loans, so that individuals can realise some of the equity within the primary residence (typically, their principal asset without needing to sell their home);
- investment in care or retirement homes (which could also provide insurers with a new and stable income stream to back long-term liabilities).

While the involvement of the insurance sector could ameliorate some of the problems with care affordability, it is unlikely to provide a complete solution to the challenge of long-term care for society. Requiring mandatory participation may not by itself render the schemes affordable as the experience with the well-regarded Netherlands social insurance scheme, the AWBZ (the Exceptional Medical Expenses Act) shows. Although compulsory (every Dutch citizen older than 15 years of age pays a mandatory income related contribution), AWBZ requires reforms to prevent a growth in expenditure that would render the scheme unsustainable (Schut & van den Berg, 2012).

There would also be other important risks for insurers, including reputational risks (associated with care home provision - for example, if there were any instances of mistreatment of residents by companies contracted to provide care services in homes owned by insurers), or anti-selection risks on protection products.

Notwithstanding these issues, the overwhelming interest of society in developing a sustainable approach to social care will likely require that insurers are part of any eventual long-term solution.

3.2 Possible impacts on P&C

Increasing urbanisation, additional pressures from lower GDP growth, the progressive embedding of AI and innovation (especially within the work environment but also in day-to-day life), as well as social tensions triggered by phenomena such as growing inequality, are leaving clients facing new and unknown risks. In line with this new risk environment, P&C offerings and pricing are expected to be reshaped due to:

- a new mobility model and a digitalised environment;
- the importance of addressing the needs of different generations;
- increased exposure to catastrophes in cities notwithstanding the parallel shifts to a greener world.

New mobility

One P&C line that will almost certainly see a major impact from technological advances and from urbanisation is motor and it is crucial to understand the needs that will result from a new new mobility model, especially in urban areas.

Millennials⁽ⁱ⁾ are choosing not to own cars and the older generation, living longer, is likely to be an early adopter of autonomous vehicles due to the challenges of driving when older and because an on-demand autonomous vehicle does not tie down the accumulated capital, nor require the effort and costs of maintenance, parking etc. A significant reduction in motor claims frequency can be expected, as has been observed from reduced road usage during the Covid-19 outbreak. Reduced costs from a lower accident frequency might however be offset to some extent by higher repair costs, driven by the increased complexity of vehicles that include expensive sensor and computation technology. As driver-assisted systems take a more prominent role, new questions on assigning liability for accidents to the driver or the manufacturer will emerge.

Potentially there may be an increase in policies sold to vehicle manufacturers. At the same time the new modes of mobility and the sharing economy will probably create the opportunity to sell new type of coverages adopting the “pay as you use” proposition and to develop new partnerships to adopt for example a B2B2C⁽¹⁾ operating model.

Workplace in an older and digitalised environment

Another P&C line likely to see major changes is workplace injury. Trends such as automation and shifts in work modes (gig economy⁽¹⁾ and non-traditional work trajectories) are expected to have a significant impact. With future workforces likely comprised of more highly-skilled workers and increasingly white-collar work, the risk of workplace injury will almost certainly be much lower. A reduced number of workplace accidents would primarily benefit workers’ compensation or employers’ liability classes.

In addition, increasing use of technology to reduce the physical demands of work (e.g. by using automated picking equipment in warehouses) will further have the potential to reduce workplace accidents. However, in this highly automated environment, the issue of assigning liability for claims/accidents will emerge again.

Also, this trend towards fewer P&C losses - particularly in the workplace - may be partially offset due to increased losses given the older workforce.

Working from home will impact workers’ compensation and employers’ liability depending on the relative safety the home environment compared to the traditional work environment. If health and safety standards are not maintained in the home environment, we can expect claims frequency to increase.



Differentiated offering for younger and older generations

P&C insurers will have to increasingly focus on meeting the different expectations of older and the younger generations, as their insurance needs diverge.

The older generation will require more tailored products for their specific leisure needs along with a number of complementary services. This could lead to new ecosystems in a number of sectors from travelling to wellness to education, where the insurance company can arrange and orchestrate partnerships with other service providers, acting as service integrator and offering a final product tailored to specific customers' needs.

Digitalisation will play a major role in this as it could be used by the older generation to prevent or reduce losses, allowing real-time monitoring to reduce crime, fire, accident, and other P&C losses. Insurers can use new technologies to more accurately price risk and to encourage the older population to adopt them, particularly if they allow clients to pay less P&C premia. However, given the challenges for the older generation to adapt to new technologies, there will need to be a concerted effort, also driven by the insurance providers, on making these digital solutions more user-friendly and managing delivery to the older people to make sure they are effectively used.

In an older society, medical costs are likely to increase due to increased demand from an ageing population. Also, in an increasingly urbanised society, increased pollution, the adverse impacts of climate change and increased exposure to pandemics from a greater population density in cities, will also contribute to an increase in bodily injury claims costs.

A consequence of the future of work is that younger segments will increasingly need job and business interruption products. As new generations will work in a flexible working environment, they will experience the vulnerabilities of not having a fixed contract and will be willing to seek protection against the risk of being unemployed, possibly due to illness. Therefore, an insurance product to consider is unemployment cover, sometimes also called retrenchment cover, with country-specific benefit features depending on the state social security. The required product will likely also include a significant savings component, essentially making sure that when the employee has periods of employment or “gigs”, that part of it is saved for times when

the “gigs” dry up, or when the employee wants to take a break. Effectively, these products would act like income-smoothing mechanisms, with some additional insurance coverage, particularly for disability.

One completely new line for P&C arises from increasing digitalisation. Millennials⁽¹⁾ and digital natives intuitively understand the need for cyber coverages for their digital activities.

Increased risk of catastrophes in cities

Risk and opportunities will not only depend on the population age structure, but also on where risks are located.

Continued urbanisation will lead to further concentration of assets in cities, with the potential for higher losses from individual natural catastrophe events and the likelihood of widening the protection gap for certain perils, as people increasingly find themselves living in high-risk zones. How pronounced this trend will be will depend on the combination of local changes in climate hazards, exposed assets and adaptation efforts by public and private actors.

In the context of providing insurance solutions to reduce potential protection gaps, parametric insurance products⁽²⁾ could become more widely used. Parametric insurance solutions provide a pay-out following a catastrophe event of pre-defined intensity, rather than being subject to property damage. This removes the need for costly and time-consuming loss adjustment procedures and also means that claims payment is rapid, thus giving individuals the financial support that they need following a disaster. Parametric solutions are already being applied in a number of countries, providing previously uninsured individuals with affordable coverage for major hazards.

As the nature of the built environment changes, we can also expect changes in the frequency and severity of property claims. If we see improving building standards and design, as well as better land-use and planning, then we could expect lower claims frequencies and severities. Insurers can support such improvements, for example by providing advice and through appropriate product pricing, that discourages building in high risk zones.

Technologies such as the IoT - with increased traffic sensors, fire alarms and improvements in remote sensing - also have enormous potential in making cities safer, again reducing claims frequencies.

It is difficult to know at this time the relative size of these impacts and whether the increasing ability to mitigate risks (through IoT, remote sensing) would offset the increase in potential catastrophic pay-outs as a result of extreme climate events in an increasingly urbanized world, but insurance companies will need to pay close attention to both trends to manage their risks effectively.

Transitioning to a greener world

While cities may be strongly hit by climate change, society is also likely to react and there may be an acceleration of efforts to limit future climate change and quickly make the transition to a decarbonized economy. However, in the transition phase, we can expect transition risks to impact cities disproportionately as the cities have a high concentration of assets. The required changes in technologies and behaviours for a successful decarbonisation might also impact insurance portfolios. New technologies for energy generation and efficiency will change risk profiles across industries. With the large carbon-footprints of concrete and steel, new construction materials, such as wood and using recycling techniques will also be essential. With little data on the durability and safety of newly developed materials, this will present a new challenge for insurance pricing and risk assessment.

Related to this, during the transition phase, cities and local governments might also be held liable by their citizens for failing to adequately enforce environmental standards. If counterparties held liable seek to recover any such payments from insurance policies, this could have a significant impact on claims to casualty policies.

3.3 Impacts on insurers as investors

In the financial landscape, insurance companies are major investors and investing in appropriate ways to meet the liabilities and other demands on insurance companies is at the heart of the industry. The trends we have covered will have a profound effect on the investment environment. Demographics is probably the best understood (and slowest moving) of all these trends, so if it was the only major one, insurance investment strategies could probably cope reasonably well, notwithstanding the challenge of matching increasingly longer liabilities under an ageing scenario with sufficiently long assets. However, with trends being interconnected, their combined effects lead to a very challenging investment environment.

For equities, the last few decades have experienced a positive trend, even outstanding, in the last twenty years. But as growth slows in Europe and other developed markets, these traditional equity markets may not deliver the same returns. Consequently, insurance companies will increasingly have to diversify their equity investments into regions where returns will likely exceed those in their home markets. Looking forward, insurance companies could benefit, for example, from continued demographic and economic growth outside Europe, diversifying their investment portfolio in regions with higher demographic and economic growth expectation as well as in regions with generally higher wealth growth rates.

A related issue is industry rotation and concentration. A striking feature of the recent equity markets is the concentration of gains in the technology sector (FAANG⁽¹⁾ in particular) and the relative stagnation of traditional sectors. This change in relative equity values is happening much faster than before, driven by the above-mentioned trends.

Similarly to technology, another driver for changes in value of investments derives from the understanding of climate change implications. The transition towards a greener world is for example mostly expected to impact coal related assets, as financial players will orient their agendas towards a more sustainable environmental policy.

At the same time, demographics and the other trends present real opportunities for equity investment. Examples of this are already emerging, so-called “ageing” thematic investment funds, focusing on the most impacted sectors, consumer goods and healthcare.

Companies that address age-related diseases, innovative companies that provide technologies and new solutions and services to provide better care at lower costs and the ones focused on leisure and services for older people could be profitable investments for insurance companies. Such firms could also be target of the M&A strategies of insurance companies to climb the value chains of providers (health institutions, security companies against theft, facility management services, etc.) to reduce the costs and pay-outs, offering value-added services to clients.

Fixed Income, especially government bonds, are longer-term by their very nature and are supposedly less volatile, and hence critical for insurance companies as they match their longer-term liabilities with assets. Fixed income has

also had positive returns the last few decades. The challenge today, however, is that interest rates have sunk so low that it is very difficult to see strong future returns - the coupons are close to zero (or below zero in some sovereign bonds in Europe) and capital gains depend on interest rates going further into negative territory, which seems unlikely.

This presents an especially challenging environment for all investors, including insurance companies. Given the low fixed income yields from developed nation sovereign debt or high-grade corporate bonds, the temptation is to chase yield through either developing nations' sovereign or corporate bonds, or high yield bonds in developed countries. All these assets present significant risks and it is not clear if this strategy will work for insurance companies.

Insurance companies are also significant investors in residential and commercial real estate in Europe, but the declining and ageing population puts these investments at potential risk. Of course, it gets more complicated as we overlay the other trends. The urbanisation trend might tend to keep property prices high and rising. However, the redevelopment and repurposing of cities to serve the ageing population means that particular properties may lose their value. In effect, urbanisation requires investors to become much more active in repurposing property, so removing one of the key advantages of real estate for insurance - the passive nature of the investment.

Other physical asset groups - such as infrastructure including airports or utilities - will also see their returns and asset values affected by demographics and the other trends. Again, the starting point for European infrastructure assets is subdued demand as the population shrinks and ages. However, the other trends will also play a role. European infrastructure and transport were considered stable, high return assets, very suitable for insurance companies. However, the Covid-19 pandemic has shown the vulnerabilities of such assets in the short-term, and it is uncertain whether previous demand levels will return, as people permanently change habits.

Standing back, every asset class is facing a high degree of uncertainty, and insurance companies as investors are going to have to adjust to this new normal. It seems inevitable

that, consistent with recent trends, insurance companies will have to shift some of their investments to faster growing developing markets, but this will come with new risks and the need to develop new skills.

Sustainable investments

A final key consideration is the role that the insurance industry plays as society demands investors help to shape our future world.

This means that insurance companies taking into account ESG factors are certainly going to expand. Inevitably, insurance company investments will have to satisfy stringent criteria for sustainable and inclusive growth. However, this will also allow insurers to propose sustainable investment options to savings and pensions customers. This requires a careful consideration of ESG-related risks and risks related to the transition phase.

3.4 Operational challenges for insurers

The impact of ageing and digitalisation will not only be felt in the market. The way that insurance companies manage their own operations will also be transformed, as products' manufacturers, distributors and as employers. In this section, we review some of the most salient changes likely to affect insurance operations.

Product design and distribution model

One implication that has emerged in our analysis is the need for product innovation and products tailored for specific purposes and customer segments. Of course, creating more customized products means insurance companies will need to work in different ways.

Older insurance employees will often know and understand the wishes and needs of their contemporaries better than younger staff, and can become key figures in product development, marketing and sales. Many years of professional experience, their expertise, their leadership potential and a large network also help older employees to be advantageously involved in innovation or strategy projects, that also provide an excellent opportunity to train younger staff.

“
In the new world, it is not the big fish which eats the small fish, it's the fast fish which eats the slow fish.

**Klaus Schwab, Founder
and Executive Chairman World
Economic Forum**

Distribution models could be differentiated between older and younger generations, ranging from physical to digital and leveraging on, for example, partnership or strategic alliances with digital distribution players.

With respect to client facing activities, insurers will need to seamlessly link multiple front office technologies that allow clients to be served according to their preferences. One of the main challenges will be how to adapt distribution models to make young people aware of the benefits of protection products and provide constant advice to them along the life path, according to their changing needs. Moreover, younger clients will want digital-only services, while older clients will often expect to be able to reach a person.

Similarly, understanding of the customer base through other lenses will be critical for both design and distribution. Some of the most important lenses are gender, ethnicity, socio-economic and (dis)ability needs.

Depending on product/touchpoints and customer needs, insurers will have the opportunity to develop an omnichannel approach with a combination of agents/financial advisors, B2B2C⁽ⁱ⁾ models as well as online channels. All of this is going to require significant changes to the way insurance companies traditionally work.

Rethinking business and adopting big data/IoT solutions

Digitalisation will have a profound effect on how insurance companies operate.

One such technology is AI. From everyday complaints management to forward-looking sales management, decisions that were previously taken based on experience can be assisted by constantly growing data files, sophisticated algorithms and AI, or even completely automated in real time. Modern analysis techniques and handling large volumes of data are essential prerequisites for a successful digital transformation into a data-driven insurer. The job description of an underwriter is changing dramatically. Knowledge transfer and understanding new topics are required.

An example: clients with expected low loss ratios will be identified with predictive analytics, using extensive profile and behavioural data. These clients can therefore be offered a simplified risk assessment process. This measure improves both the customer experience and internal processes, thus simplifying the policy issuing process and, above all, saving costs.

AI is already transforming processes and it will continue to do more so in the assessment of insurance claims. The assessment requires information from heterogeneous, partly analogue client documents. This presents insurers with two challenges. On the one hand, analysing the documents is very time-consuming and, on the other, digitalising them is a major operation. AI will overcome these challenges.

A third area where AI will make a significant difference is fraud detection. By using machine learning to detect the patterns in fraudulent claims, insurance companies will have much better fraud detection rates at a fraction of the cost.

All three of these AI examples require extensive re-engineering of insurance operations and mindsets. Essentially, operations need to be organised to feed the AI system to yield the best results. Traditionally skilled individuals will find their skills increasingly obsolete, and AI and Data Analytics specialists who can work in high-performing teams will be critical to success. Insurance companies will also have to pay huge attention to data integrity, data architecture, data security and data ethics.

Traditionally, insurance companies assess risks, price accordingly and manage claims. In the past, they have not been deeply involved in customers' day-to-day lives.

IoT changes all this. Now there is a technology that is useful for reducing risk, eliminating incidents before they occur, and reducing losses when incidents do occur. Consequently, the insurance company role undergoes a profound shift - no longer is it a silent financial partner to help deal with risky situations. Instead, the insurance company becomes an active operational partner for the customer, as they work together to eliminate as many losses as possible. This applies to crime (e.g. household devices that detect intruders), to accidents (e.g. drones that assess structural defects in physical plant and equipment), to healthcare (wearables⁽ⁱ⁾ providing real time information on health status, and triggers like 10,000 steps encourage healthy behaviours and lower premia).

This shift obviously has enormous implications for the internal operations of insurance companies, as there needs to be a completely new orientation to be an active partner with the customer.

Bridging the employment gap and restructuring the way of working

With the ageing of the workforce in Europe, it will be harder finding the right-skilled professionals, owning, among other requirements, important digital skills. While finding highly-qualified staff is already challenging, retaining them and keeping them motivated is probably even more difficult (section 2.2.1 The passing of the torch: Baby Boomers give way to Millennials). To bridge the employment gaps and make sure they attract and retain the right talent reflective of the customer base, insurance companies will have to do a number of things.

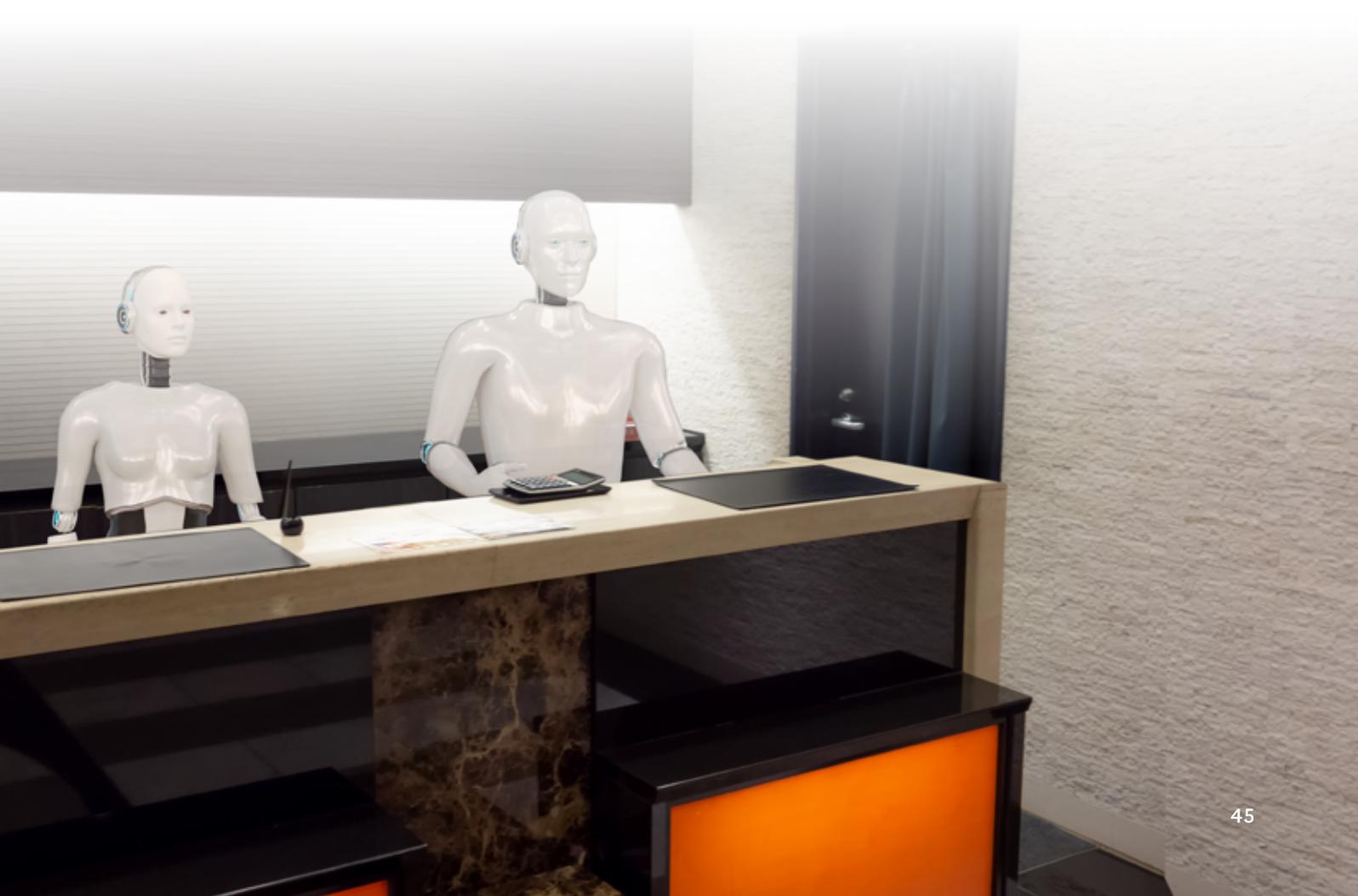
The first is to increasingly expand the recruitment pool by leveraging a diverse base of professionals from all around the world, increasingly expanding remote working possibilities, and embracing greater and greater levels of automation.

The second is to restructure the way of working, particularly to be able to retain older workers in productive roles. European insurance companies will be expected to lead the way in restructuring work to be more accommodating

to these older workers (which the insurance company needs to operate); accommodations may include: flexible working hours, including part-time work (<20 hours); working remotely, and support for older workers who may initially not be as technologically savvy; other workplace changes that allow older workers to keep working as well as enhancing their productivity.

A third is to broaden the reach for good employees in Europe. It is generally thought that better-skilled and all in all younger candidates are recruited in cities. However, remote and other flexible working arrangements will relieve the dependency of insurance operations on their immediate physical surroundings for hiring employees. This should make operations more robust and allow for more synergies to be gained.

Having transferable skills that can be used in multiple roles and career fields (e.g. communication skills, teamwork ability, dependability, organisational skills, adaptability and technology literacy) among the workforce has the potential to alleviate the workforce gap of insurance companies.



Rethinking the Employee Value Proposition

In becoming attractive as the employer of choice, insurance companies will have to rethink the EVP. To this end, it makes sense for the relevant insurance company to define significant points and communicate these to future employees: this involves creativity and individuality, but also the employer's values and culture, which are increasingly important in addition to salary or other incentives. Appreciation and flexibility should also be mentioned in this context. Today's talented people look for companies that they can identify with and which suit their beliefs and values.

The EVP is designed to present a company's unique selling point as a future employer (Gartner, s.d.). The EVP reflects to the outside world, for example via online presence, what the insurance company offers employees, and what employees can expect from the company. Highly qualified staff need an adequate working environment and working conditions, such as a good work-life balance, but also further training, support, responsible tasks, considerable scope for initiative, flat hierarchies and opportunities for advancement.

Overall, the degree of change in internal operations in insurance will be enormous. In fact, the insurance sector is in the process of becoming highly dynamic, and the demands on senior management and the entire organisation to respond to the new world are enormous.

3.5 Insurers' role in society

Society and governments will increasingly look to Europe's major insurance companies to play a role in a number of critical transitions, including:

- the advancement of the sustainability agenda;
- support with elderly and basic healthcare and bridging protection gaps to address new needs.

As demographic trends expose societies to new risks, the insurance industry's knowledge of risk and expertise in all aspects of risk transfer and mitigation will be increasingly valuable. The role of the (re)insurance industry is crucial in supporting **societal resilience**⁽ⁱ⁾ and more broadly in contributing to sustainable economic development.

Promoting sustainability

As a major institutional investor with several trillion Euros in assets under management, the (re)insurance industry will be increasingly expected to direct significant resources towards contributing to a more sustainable world. In this regard, many (re)insurers have ESG investment criteria and sustainability strategies that prioritise investment in assets that have a positive impact on the environment and society, in areas such as climate change, biodiversity loss, pollution and human rights.

Investment in sustainable bonds (or social impact bonds) is one example of how (re)insurers can invest in projects that improve environmental and societal sustainability and welfare. Faced with the demographic trends that are seeing more people living in urban environments, investment in "social" bonds provides support to projects such as those promoting affordable housing and access to education. Equally, investment in "green" sustainable bonds can finance projects such as those that reduce the impact of urbanised areas on the environment. Such projects may contribute to efforts to ensure access to affordable, reliable and sustainable energy sources, that build resilient and sustainable essential infrastructure (e.g. transport, water networks) and that make cities, and human settlements in general, better places to live.

Elderly and basic healthcare care in an era of strained public budgets

Insurance companies could increasingly become involved in how elderly care is organised in the future - through the "greying campuses" or mixed generations models (section 2.3.1 Ageing urban society). This may include becoming involved at the policy level and being called-on to create resources for elderly care, such as through training of home assistants. Insurance companies could also be a primary source for capital expenditures required to make this transition possible. Alternatively, as noted, insurers could enter partnerships with the public sector to develop protection products to help fund the cost of long-term care and alleviate the pressure on the state.

As demographic age structures reshape in the future, Health insurers could become more involved in supporting the system of public healthcare provision. While direct interactions, e.g. ownership of service providers such as care homes and hospitals, have already been applied successfully as a value adding service, to the benefit of affluent population segments. However, the need for

further public-private integration should be considered on a wider basis in future (see BOX: Elderly care system). This would allow Health insurers to offer better coverage to their insured, while at the same time providing added bandwidth to the healthcare system in the communities where they operate. These types of public-private partnerships are likely to have received a boost from the Covid-19 pandemic, as the need for prolonged fiscal consolidation (to reduce substantially higher government borrowing) will make it challenging for governments to meet their healthcare obligations.

Bridging developing protection gaps resulting from demographic trends

One of the principle ways that the (re)insurance industry promotes societal resilience⁽ⁱ⁾ is through its function to absorb the financial impacts of shock events.

However, the expansion of urban areas combined with future climate trends are likely to lead to increasing numbers of people and their property becoming more exposed to natural perils, such as floods, hurricanes and earthquakes. In turn, this brings with it the likelihood of increasing insurance protection gaps, as people find themselves living in areas that are essentially uninsurable through the private insurance market alone.

In these situations, the (re)insurance industry is in a unique position to collaborate with governments and decision makers in the development of insurance pools and in developing novel ways to cover major risks, given its extensive expertise in data analysis, risk modelling and knowledge of risk transfer solutions. In view of its understanding of natural hazards, the industry can also promote hazard awareness and encourage the use of mitigation techniques, such as the adoption of building standards and practises that will help to create the hazard-resilient societies that will be needed in the future.

Equally, as (re)insurers of health risks, the industry can also help to create viable solutions regarding the protection gap in long-term care (section 3.1 Possible impacts on Life and Health).

Insurance industry partnerships with international development organisations, working towards improving resilience for vulnerable populations in developing countries in the face of natural catastrophes and health-related disasters such as pandemics, are expanding in scope. Such

partnerships increasingly enable the (re)insurance industry to provide more support for sections of society that are typically beyond the boundaries of traditional markets.

Adapting insurance services and product offerings to support individuals and society

Future societal trends may increasingly generate a space for European insurance companies to adapt insurance products to meet the needs of a wider range of socio-economic groups. For example, in response to the potential increase in the numbers of migrants in Europe that could occur due to trends relating to climate change and geopolitical tensions, insurers may need to pay closer attention to the development of products that better meet their complex insurance needs. Considerations may include the portability of insurance coverage, policy language used and coverage restrictions. These complexities are also likely to be compounded by a migrant's inability to afford premiums despite regulations on minimum wage and employment benefits. Many countries worldwide are already facing difficulties in meeting the insurance needs of migrants (Tangcharoensathien, Thwin, & Patcharanarumol, 2016).

A further area where the welfare of society can be supported by the insurance industry is through the development of insurance products to address the needs of individuals as their livelihoods are impacted by the demographic changes that have been described in this paper. This could be during different life phases, such as helping to bridge the needs of those entering the job market after studying, or during a period of job insecurity (e.g. precarious self-employed workers/freelancing workers at risk of technological unemployment) and perhaps even temporary situations where people exit the workforce to care for family members in early or later life stages. This latter example could address the issue of how previously unpaid domestic work can be financed.

Conclusion

Throughout this paper it has become apparent that a significant shift is underway in the global demographic and social landscape, driven by various trends. Seen in isolation, these trends are not unfamiliar, and each could already be considered a game changer to some degree. However, when combined they have the potential to be hugely transformational and could have far-reaching consequences for the global economy and society.

As described within this paper, the impacts and significance of demographic change are likely to be particularly visible in three key areas: the changing roles and relationship between generations, the future of work and the shape of cities in the future. Each of these requires careful consideration and monitoring.

Throughout modern history insurance has been at the heart of societal development, whether that be the very early insurers supporting the exploration of the new world, or today's insurers supporting space exploration.

Insurance can continue to be at the heart of these transformations, by enabling and supporting these changes, recognising the trends quickly and with sufficient clarity.

To this extent, demographic change creates significant challenges, but also opportunities for the insurance sector and it will be increasingly important for insurers to become closer to their customers and more aware of their needs. This, at times, will require both product innovation and increasing levels of operational flexibility and agility.

However, it may also require careful and deft influencing of policymakers and industry leaders to ensure the needs of society can be met, especially in relation to healthcare, in which the insurance industry itself should play an important role.

In addition, as insurers, we also need to operate as responsible investors, maintaining a careful watch on ESG-related matters while ensuring delivery of the long-term asset values needed to support our liabilities. Beyond

recognising how our investments could influence significant factors like climate change, influencing some of the more societal factors, such as the changing relationship between generations, is perhaps more challenging.

Finally, we need to consider the impact on our own operations and our employees. Recognising the need for change in the workplace, rethinking the Employee Value Proposition (EVP) and defining the best way of transforming through technology for the benefit of our customers. There is time to work through these issues, but standing still will not be an option.

While the paper has attempted to explore many of the relevant topics, numerous open questions remain.

- How can our customers' insurance needs be best met during the changing demographics of prolonged middle-age, new ways of working and increased urbanisation?
- What new skills will the insurance industry need to develop to remain competitive?
- How can the insurance sector best use its influence as institutional investor to support goals beneficial to society?
- In what other ways should insurers continue to play an active role within society?

Tomorrow's world will be a different one, and the insurance industry has a role to play in how to respond and react to the changes ahead. These responses will have many ramifications for individual companies, for the sector, for our customers and for society as a whole.

Insurers will have to re-think their value proposition to respond to both an older world and younger, more digitalised generations, alongside an increasing need to sustain pension and long-term care needs. Insurers will also have to adapt to new mobility models and ways of working.

Hopefully, this position paper can contribute to an understanding of how to face and navigate the demographic and social challenges that lie ahead, to the benefit of us all.

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Glossary

B2B2C

Acronym for Business to Business to Consumer. It is an e-commerce model that combines business to business (B2B) and business to consumer (B2C) for a complete product or service transaction. B2B2C is a collaboration process that, in theory, creates mutually beneficial service and product delivery channels (Techopedia, 2017).

Baby Boomer

Term used to describe a person who was born between 1946 and 1964 (Investopedia, 2020a).

Child dependency ratio

The ratio of the number of younger people at an age when they are generally economically inactive (0-14) compared to the number of people of working age (15-64) (Eurostat, 2018a).

FAANG

Acronym that refers to the stocks of five prominent American technology companies: Facebook (FB), Amazon (AMZN), Apple (AAPL), Netflix (NFLX); and Alphabet (GOOG) (Wikipedia, 2020b).

Fourth Industrial Revolution (4IR)

A fundamental change in the way people live, work and connect which is enabled by a technology revolution (WEF, s.d.).

Generation X

Demographic cohort following the Baby Boomers and preceding the Millennials. Researchers and popular media typically use birth years around 1965 to 1980 to define Generation Xers, although some sources use birth years beginning as early as 1960 and ending somewhere from 1977 to 1985 (Wikipedia, 2020c).

Generation Z

The generation that was born between 1996-2010, following Millennials. This generation has been raised on the internet and social media, with some the oldest finishing college by 2020 and entering the workforce (Business Insider, 2020).

Gig economy

An economy where temporary, flexible jobs are commonplace and companies tend toward hiring independent contractors and freelancers instead of full-time employees. A gig economy

undermines the traditional economy of full-time workers who rarely change positions and instead focus on a lifetime career (Investopedia, 2020b).

Greenhouse gases (GHG)

Gases in the atmosphere such as water vapour, carbon dioxide, methane and nitrous oxide that can absorb infrared radiation, trapping heat in the atmosphere. This greenhouse effect means that emissions of greenhouse gases due to human activity cause global warming (IPCC, 2019).

H-1B visa

Visa in the United States under the Immigration and Nationality Act, that allows U.S. employers to temporarily employ foreign workers in specialty occupations (Wikipedia, 2020d).

High touch

The involvement of personal attention and service. In business, the term often refers to situations where trust between the customer and employed individual(s) is necessary (Wikipedia, 2020e).

InsurTech

Derived from the words “Insurance” and “Technology”, the term is used to refer to companies that are using technology to disrupt the insurance industry (Hargrave, 2020).

Millennial

Generation born between 1981 and 1996, although some have seen them as starting in 1980 and being born as late as 2004 (Investopedia, 2019).

Non-communicable Diseases (NCDs)

Group of conditions that includes cardiovascular diseases, cancer, mental health problems, diabetes mellitus, chronic respiratory disease and musculoskeletal conditions. These disorders are largely preventable and are linked by common risk factors, underlying determinants and opportunities for intervention (WHO / Europe, s.d.).

Old-age dependency ratio

The ratio of the number of older people at an age when they are generally economically inactive (65+), compared to the number of people of working age (15-64) (Eurostat, 2018b).

Parametric products

Alternative risk solutions provided by insurance and reinsurance companies that enable organizations to finance or to transfer risk in a non-traditional way, with the aim to complement traditional insurance and guaranteeing a direct payout (Insurance Journal, 2020).

Robot tax

A legislative strategy to disincentivize the replacement of workers by machines and bolster the social safety net for those who are displaced (Wikipedia, 2020f).

Societal resilience

The capacity of an economy or society to minimise income and asset losses caused by shock events (Swiss Re 2019b).

Type 2 diabetes

A form of diabetes (formerly called non-insulin-dependent, or adult-onset) resulting from the body's ineffective use of insulin. It is largely the result of excess body weight and physical inactivity (WHO, 2020b).

Wearable device

Products controlled by electronic components and software that can be incorporated into clothing or worn on the body like accessories (Science direct, 2017).



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