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“Patient centricity”: when Healthcare and
Technology work jointly to create new value.

Generali Insurance Case Study

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«Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do.»

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Introduction

We are the so-called "*all and now*" generation, the one that is connected 24/7 to some super technological device, the one that is constantly on the move to reach its goals.

But we are also that frustrated and uncertain generation, most often in conflict with itself and others, which has lost sight of the most important values by focusing on *God money* and on the Instagram stories.

This decade is revealing now its frailties, due to situations that only prove that with work, money, aspirations and ambition removed, we simply remain people.

Insecure and emotional people, who need the affection of their beloved ones, to feel part of a community.

People who need those values that, despite risking being lost in the chaos of the big cities, still keep us firmly anchored to our roots.

People who are not at all *homo oeconomicus* but, on the contrary, subject to a series of limits and constraints, imposed by society and sometimes even by themselves.

People who spend a lifetime working and sacrificing themselves to achieve a series of dreams, but in the end in doing so, they forget about living and looking at the view outside the window.

The festivities of the year come and go, the birthdays of the grandparents as well, some forgotten wedding anniversary, the first communion of the child where perhaps a parent was not present...

In sacrificing to get that long-awaited promotion or to prepare for that last exam you do not realize many things: that the strength, dedication, charisma that once, when we were young we had, with the passing of years and with the changing of the situations and the context, we leave behind us the most beautiful, carefree years...those of youth.

And not only population aging is a challenge, but being healthy is a challenge too.

Health, physical and mental, is the best ally to be able to overcome the daily challenges in all its nuances and even more making us stand up even in all those situations where the negative factor is predominant.

And as many doctors affirm "*prevention is better than cure*" in this work we will try to offer

an overview of how much the Italian health system, but also the global ones, is still far from being totally optimal and efficient.

We will try to highlight the importance represented by technological innovations and how these on a large scale have not yet been implemented at a generalized level and for the care of all.

There have been many advances in health care thanks to scientific discoveries and new methods of application, processes, methods, technological devices, but there are still so many spaces to fill and it is for this reason that *technology* and *health* must move hand in hand in the evolution of society. Only in this way, through *prevention*, *education* and *care*, will there be a society that focuses on the health care and integrity of its citizens, rooting itself in a health system that is more equal and democratic for everyone.

In the first chapter, a definition will be given to the term “*health*” according to four different perspectives: the first by the World Health Organization, as also defined by the Italian health system and its *three pillars*, a further definition of health will be provided according to the system declination in the insurance classification, in the Sickness and Accident branches and finally a more modern definition provided from the latest Deloitte Monitor Research on the Healthcare sector.

In the second chapter will be given evidence of the main statistics and data concerning the Health sector, again according to an insurance perspective, analyzing how these numbers have been moved in the biennium 2018-2019.

In the third chapter, after giving a definition of the terms technology and insurtech, we will analyze the relationship that exists between the Health care and Technology sectors.

The main emerging trends in digital technologies that are rising in the healthcare field will be highlighted; examples of health technology offerings from both Italian and foreign players will be provided and finally the chapter will conclude with a focus on the main challenges and opportunities that await in the next years.

Finally, in the fourth chapter, the case study of “*Immagina Benessere*”, one of the leading products of *Linea Immagina* of Generali Italia, will be presented.

A description of the insurance contract will be provided for each of the five solutions, giving

specific evidence of the value proposition and the sales process.

In conclusion to this work we will give an overview of the objectives in question, highlighting what has been done so far, nationally and internationally, analyzing then the critical issues that are still lacking to solve and optimize and all those gaps still to be filled thanks to the joint use of technology, people and data.

CHAPTER 1 – Health

The philosopher Arthur Schopenhauer once said:

“Health is not everything, but without health everything is nothing”.

Nothing could be truer if you think at the importance of being healthy to better face what life offers: health to enjoy moments of peace and relax when you are on vacation or with your family, health to face stressful and difficult situations, as work, a sick child, an elderly parent etc.

In the following pages, will be given some definitions of the term health care.

There is no unique definition, and even if health concerns of a total well-being status, literature and scholars criticize some aspects of this clause.

1.1 World Health Organization in defining *health*

In 1948 the World Health Organization¹ defined health as “*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*”².

¹ The World Health Organization (WHO) is a specialized agency of the United Nations that is concerned with international public health. The constitution of the World Health Organization had been signed by 61 countries on 22 July 1946, with the first meeting of the World Health Assembly finishing on 22 July 1946; the document came into force on 7 April 1948.

Its current priorities include communicable diseases, in particular HIV/AIDS, Ebola, malaria and tuberculosis; the mitigation of the effects of non-communicable diseases such as sexual and reproductive health, development, and aging; nutrition, food security and healthy eating; occupational health; substance abuse; and driving the development of reporting, publications, and networking. Fine more on <https://www.who.int/>

² The Constitution was adopted by the International Health Conference held in New York from 19 June to 22 July 1946, signed on 22 July 1946 by the representatives of 61 States (Off. Rec. Wld Hlth Org., 2, 100), and entered into force on 7 April 1948.

Over the years academia and scholars has had the opportunity to re-examine this definition to implement and develop it according to the evolution of the environment and the progress of societies.

Despite this, still today the term health is much debated regarding the inequality of its effective implementation in different parts of the world: developed countries, developing countries and under-developed countries give different definitions to the term health. Therefore, contrary to the uniqueness of the word health, there are more real case meanings.

Think of what health represents for a young person, twenty-five years old, just started working, with a long life ahead to live and now think about a person at the age of 70, who lived a full life but who now finds himself doing accounts with steels, memory loss and helping himself/herself with a cane.

Do these people give the same meaning to the word health?

But also think at two people both of 18 years old, one who lives in Copenhagen, Denmark, enrolled in the first year of university and who comes from a wealthy family. Then, think of a second person living in Ba'quba near Baghdad, Iraq, who can barely read and helps his father in the carpentry shop.

Do these people, of the same age, born during the "*millennials*" years, living in the period of "*Yes, we can*", give maybe the same definition of health?

Is the definition given by the World Health Organization (henceforth WHO) of health therefore unambiguous everywhere, any time, for everybody around the world?

Rather than talking about the uniqueness in meaning one should debate the uniqueness of the application of the term health in real life, to each person, regardless of the place where he or she lives. It is here that the ambiguities and inequalities of the term emerge.

In 1966 the Italian Alessandro Seppilli³ introduced some elements that offered an innovative interpretation of the concept of health:

³ Alessandro Seppilli, born in Trieste on 7 May 1902, graduated in medicine from surgery at the University of Florence (1926). In 1938, due to the fascist measures of so-called "defense of the race" he was forced to leave university research to move to São Paulo, Brazil, where he worked in a small pharmaceutical company. In 1946, after the war, he returned to Italy. In May 1949 he became full professor of hygiene at the University of Perugia, where he established the Institute of Hygiene. The same period (1954) in collaboration with the World Health Organization he created the Experimental Center for Health Education

“Health is a condition of harmonious balance, physical and psychic, of the individual, dynamically integrated into his natural and social environment” (Seppilli, 1966).

The words *“harmonious balance”* within the definition gave a dynamic dimension to the concept of health.

The balance became a constant research, between an *internal part*, the ability of control of the individual, and an *external part*, which had to do with the environment in which the person is inserted, an environment that can be favorable and beneficial or unfavorable and hard to live in.

Antonovski,⁴ in 1979, in defining his model of health, argues that health appears as a *continuum*, a property of the living system, which is not perfect and is subject to anthropic processes and inevitable death. All identifiable in a continuum process.

Within this continuum there are different phases of life: stages which are best faced, without excessive worries or responsibilities, usually when one is a child and in a pre-adolescent phase. In the long run, the responsibilities, anxieties and stress begin to make themselves heard.

And all the time people thought they had when they were young begins to shorten.

and the School of Specialization in Hygiene (1955). He was president of Section I of the Superior Council of Health (Rome, 1964-1981) and of the Italian Institute of Social Medicine (Rome, 1971-1977). He introduced modern health education in Italy, he was the initiator of the potable water fluorination and anti-smoking campaigns. He was one of the "fathers" of the health reform and the first hygienist who opened the collaboration with anthropology and other social sciences. His activity led him to become Mayor of Perugia for the entire period from 1953 to 1964 and to that of president of the Board of Directors of the Monteluce Polyclinic Hospital (Perugia, 1978-1980). With regard to the activity of Alessandro Seppilli we can see, at least, the School of Hygiene of the University of Perugia 1948-1977, "The Health Education", vol. XXII, fasc. 3-4, July-December 1977, extracted 103 pp., And pp. 3-34 of the "Annals of the Faculty of Medicine and Surgery of the University of Perugia which publish the Proceedings of the Anatomical-Surgical Academy", vol. 86, II semester 1995 (which also constitute a tribute to his figure after his death in Perugia on 2 February 1995).

⁴ Aaron Antonovsky (19 December 1923 – 7 July 1994) was an Israeli American sociologist and academician whose work concerned the relationship between stress, health and well-being (salutogenesis). A key concept in Antonovsky's theory concerns how specific personal dispositions serve to make individuals more resilient to the stressors they encounter in daily life. Antonovsky identified these characteristics, which he claimed helped a person better cope (and remain healthy) by providing that person a “sense of coherence” about life and its challenges; Helen Antonovski (his wife) developed a scale ("Orientation to life questionnaire") in 1987 to measure it. Recent research in psycho neuro-immunology has supported the relationship between emotions and health contained in Antonovsky's theory.

The WHO, taking its cue from these and other scholars, wanted to further broaden the concept of health definition and application, adapting it to the developments that were taking place in those years at an economic, political, social and cultural level.

Already starting from 1978, the WHO decided to change strategy and put the focus on a different public health perspective, drawing attention to how important was not only to live healthy, but to *prevent* disease damage, according to health national and international policies (Alma Ata Declaration⁵).

From this moment on, there will be an increasingly concrete desire to intervene on several fronts on the issues analyzed; initially the focus was mainly directed on those countries more developed and economically advanced, but then, the focus was shifted to all countries, trying (at least) to implement an increasingly and fairly health policy.

Alma Ata Declaration has expressly declared unacceptable the inequality of health among countries of different continents, from a social, political and economic point of view.

The members also reiterated that “*healthcare is a fundamental right of every human being*”, highlighting the theme of a social and economic development that is pre-requisite for a situation of well-being on a global level.

There is one section of the Alma Ata Declaration dedicated on the role of the state in providing adequate health and social measures. This section enunciated the call for “*Health For All*” which became a campaign of the WHO in the coming years.

In a 1984 document on health promotion drawn up in preparation for the Ottawa Charter, the following passage can be read:

“(...) this perspective arises from a concept of “health” understood as a field of application of individual abilities or group, intended to modify or cohabit with the environment. Health is therefore seen as a resource of our daily life, and not as the

⁵ The Declaration of Alma-Ata was adopted at the International Conference on Primary Health Care (PHC), Almaty, Kazakhstan (6–12 September 1978). At the time there was an urgent need for action by all governments, all health and development workers, and the world community to protect and promote the health of all people. It was the first international declaration underlining the importance of primary health care. The primary health care approach has since then been accepted by member countries of the World Health Organization (WHO) as the key to achieving the goal of "Health For All" but only in developing countries at first. This applied to all other countries five years later. The Alma-Ata Declaration of 1978 emerged as a major milestone of the twentieth century in the field of public health, and identified primary health care as the key to the attainment of the goal of "Health for All" around the globe.

purpose of our existence, it is a positive concept that emphasizes both resources personal and social issues than on physical abilities”.

At the WHO conference held in Ottawa (Canada) on November 21, 1986, the final version of the health promotion paper was adopted and formalized into the “*The Ottawa Charter*”⁶.

“The Ottawa Charter” gives a more elaborate definition of health promotion:

“Health promotion is the process that gives people the means to ensure greater control over their health level and improve it. This way to proceed derives from a concept that defines health as the extent to which a group or an individual can, on the one hand, realize their ambitions and satisfy their needs and on the other, evolve with the environment or adapt to it. Health is therefore perceived as a resource of everyday life and not as the goal of life: it is a positive concept that values social and individual resources, such as physical abilities, so health promotion is not only linked to the health sector: exceeds lifestyles to aim at wellness”.

The conference also listed *five strategic actions* to be implemented to promote health at both national and international levels:

- a) *Building a systematic health (national and international) policy;*
- b) *Promote ideas, give means (to implement them), mediate (between conflicting interests with those of health);*
- c) *Strengthen community action (participation), development of individual skills;*
- d) *Create a favorable environment;*
- e) *Redirect health services*

⁶ The Ottawa Charter is a global health milestone, and remains a vital reference for health promotion. The Charter identifies five components of health promotion action and prerequisites for health, including peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity. For more visit: <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/>

Leaving aside the criticism of what has been said and done following the Alma Ata Declaration and The Ottawa Charter, the World Health Organization is playing a fundamental role in making people aware of how important it is to live healthy.

Parallel to the implementation of policies aimed at the collective well-being, it is even more important acting on an informative and educational front, to foster a culture of well-being that makes people aware of what it means “*having a good state of health*”. Only starting from the individual education of each person, healthcare can be effective even at a more general level, through the great health care organizations, but also (and above all) through the small gestures of each of us.

This, therefore, can be done both through direct actions on the field and also through the use of social media (WHO Instagram account counts more than 1.7 million followers).

WHO is currently active in the Gaza Strip, where for a year had been conducted an analysis on trauma injuries caused by the war and the atrocities of the place. From 30th March 2018 to 30th March 2019, 277 Palestinians were killed and 28,014 injured (172 people became permanently disabled because of their injuries, of whom 36 are children).

Alongside this, it is also engaging in supporting the response to an outbreak of HIV in the area of Larkana in Sindh, Pakistan.

In conclusion, it is evident that the term health has matured with the evolution of society, it is no longer “*the purpose of life*” or an action to be undertaken ex post that a disease or an accident has manifested, but a resource to be exploited in everyday life, as a prevention activity.

Today, health is no longer cured, but taking care.

In the next paragraph it will be analyzed the Italian health system, trying to highlight its main peculiarities, strengths and weaknesses.

1.2 Italian National Health Service

Treccani, the Italian online encyclopedia, defines health as a:

“state of physical and mental well-being, an expression of the structural and functional normality of the organism considered as a whole; the concept of health does not therefore correspond to the simple absence of disease or evolutionary lesions in progress, of functional deficits, of serious mutilations, of relevant pathological phenomena, but expresses a condition of overall psychophysical efficiency.”

In Italy, health is an *inalienable right* of the citizen, protected, at a supra-national level, by the Universal Declaration of Human Rights (Helsinki, 1948) and, at a national level, by the Italian Constitution (art. 32).

Article 32 of the Italian Republican Constitution indeed states:

“The republic protects health, as a fundamental right of the individual, as well as an interest in the community, guaranteeing care for the poor.

No one can be obliged to be treated, except by law.

The law cannot in any way violate the limits imposed by the respect of the individual.”

On December 23, 1978, Parliament voted and introduced the *Law No. 833*⁷, which states that the care of the individual is and will be guaranteed by the *National Health Service*.

The National Health Service is based on three founding principles: *universality* of the health care, every citizen has the right to health, on the *solidarity* of financing through general taxation and on the *equity* of the access to the services.

⁷ The law n. 833 of 1978 (published in the Official Journal of the Italian Republic on December 28, 1978, No. 360) has the purpose of implementing Article 32 of the Italian Constitution which states to be the right to healthcare protection implemented according to the principles of Article 3. This law introduces the National Health Service in Italy.

It consists of 5 sections, each dedicated to a specific theme for a total of 52 articles:

- Chapter I - Principles and objectives
- Chapter II - Competences and structures
- Chapter III - Performance and functions
- Chapter IV – Personnel
- Chapter V - Controls, accounting and financing

To ensure uniformity of performance throughout the entire national territory and to better comply with the three principles of universality, solidarity and equity, the Italian system has established the Essential Levels of Assistance (ELA)⁸ – *Livelli Essenziali di Assistenza (LEA)* in Italian.

On the National Health Service website it can be read a series of values which, according to the Italian Ministry of Health, are a fundamental part of the national health system.

In consideration with what was said in the first paragraph regarding the inequality in terms of the effective implementation of healthcare at a global level, the Italian health service highlights a series of strengths that make Italy a country attentive to the health issue, among the first places at the European level.

1. High quality assistance for all Italians

The Italian Health Service makes the right of health care accessible to all Italians, without discrimination of income, gender or nationalities.

2. At the first places in the world for healthy life expectancy

Italy is the second longest living country in Europe, after Spain, with an average life expectancy of 82.7 years (80.6 years for men and 84.9 for women); at EU level the average life expectancy exceeds 80 (80.6 years)⁹.

It is not a coincidence that these two countries (Spain and Italy) are competing for the top places in Bloomberg's ranking on which country has the higher indices in the health sector. In

⁸ The essential levels of assistance (LEA – Livelli essenziali di assistenza in italian) are the services the National Health Service is required to provide to all citizens, free of charge or against payment of a participation fee (ticket), with the public resources collected through the general taxation (taxes).

On March 18, 2017, through the Decree of the President of the Council of Ministers (DPCM), the new essential levels of assistance were published in the Official Gazette (ordinary supplement No. 15).

The DPCM identifies three major levels:

1. Collective prevention and public health, which includes all prevention activities aimed at communities and individuals;
2. District assistance, that is to say the activities and the sanitary and socio-sanitary services spread on the territory;
3. Hospital assistance (day hospital, day surgery, first aid, etc.).

⁹ The data reported refer to the publication *State of Health in the EU: Companion Report 2017*, prepared by the European Commission Directorate - General of Health and Food Safety.

fact, in 2019 Italy resulted second in the Bloomberg Global Health Index¹⁰ for health care after Spain. According to Bloomberg, this position is attributable to the Mediterranean diet.

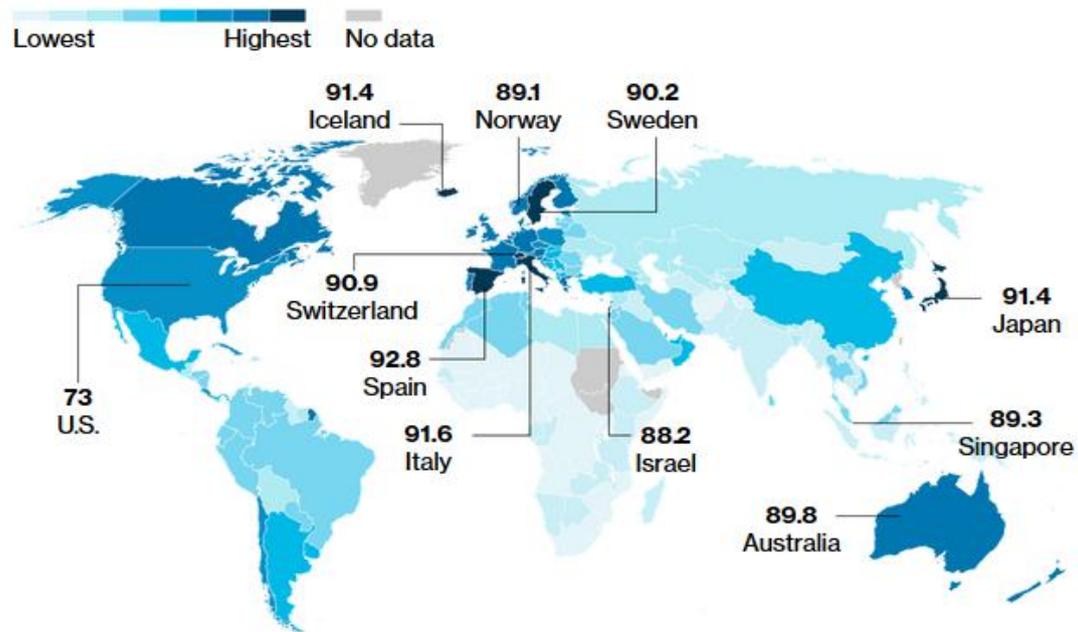


Figure 1. Sources: Bloomberg analysis of World Health Organization data; United Nations Population Division and the World Bank (2019)

In the European Union EU-28, *life expectancy in good health* (defined by the years of life in which there is no physical or cognitive activity limit) is 63.3 years for women and 62.6 years for men. Life expectancy at birth in good health for Italy is 57 years and 8 months for women and 60 years for men.

In Italy the increase in life expectancy compared to 2000 is mainly due to the reduction in mortality rates after the age of 65. At the age of 65, Italians have a higher life expectancy than their peers in other EU countries, but with differences between men and women. In 2015, a sixty-five-year-old Italian woman had a life expectancy of 22.2 years, while for a man of the same age it fell to 18.9 years. At the age of 65, women were barely a third of future years without disabilities (7.5 years), while for men the years without disabilities were 40% (7.8 years) of those remaining¹¹.

¹⁰ The 2019 edition of the Bloomberg Healthiest Country Index analyzed 169 countries to see which was the healthiest country in the world. Different factors and parameters were analyzed, such as life expectancy, environmental factors, eating habits, fiscal and mental well-being, etc.

¹¹ Source: The State of Health in the EU, 2017

In Italy, seven out of ten are declared in good health. Compared to other European countries there is a greater homogeneity of health status compared to the economic condition¹².

3. Leader in Europe for the number of free drugs

Italy has a pharmaceutical handbook for public health richer than in Europe: in Italy, in fact, the NHS offers citizens all the drugs for the treatment of serious and chronic diseases, including the latest generation of innovative drugs. The total and public per capita expenditure on drugs in Italy is in line with the European average. 69% of national pharmaceutical expenditure is borne by the NHS: total pharmaceutical expenditure reached € 28.1 billion in 2017 (€ 464 per capita), of which € 19.5 from the NHS (€ 322 per capita) and 8.6 (142 euros per capita) borne by the patient¹³.

4. Excellence in transplant

Italy has one of the best national networks for organ transplants in Europe from the point of view of the quality of interventions, the management of donor databases and the availability of organs.

5. The pediatrician free for all children

Italy is the only country in Europe to guarantee the possibility of choosing a pediatrician without any expense for families for all children aged 0-14.

6. At the forefront of high-tech diagnostics

Italy is among the countries with the highest number of public nuclear CAT scans and magnetic resonances for millions of inhabitants in Europe.

7. Quality standards and safety of care

The provision to all citizens of health services according to quality and safety standards is guaranteed by the definition of criteria and standards of national significance that become part of the regional accreditation systems so that health facilities have adequate resources, skills and organization to the activities provided. Accreditation is therefore the indispensable prerequisite for a healthcare facility to become a provider on behalf of the National Health Service, ensuring the equality of conditions between public and private providers, protecting

¹² Source: Istat Report 2018

¹³ Source: Annual Report of the Drug Observatory for the year 2017 - Centro Cergas Bocconi

the free expression of the right to choose the care facility by the citizen and allowing the equality of tariffs and equity in the remuneration of suppliers.

8. *Prevention. To stay healthy and avoid diseases*

Italy can claim to be at the forefront of prevention activities with more than 150 public prevention departments and over 10 thousand operators dedicated.

Italy was the first European country to make the new HPV vaccination against cervical cancer available to 12-year-old girls for free. Although from 2013 to 2016 the vaccination coverage showed a decreasing trend, falling below the 95% threshold recommended by the WHO, in 2017 there was a significant improvement in vaccination coverage for all age groups, thanks to the extraordinary measures implemented during the year.

In Italy there are important results in the fight against passive smoking with a significant decrease in respiratory and cardiovascular diseases associated with smoking.

The country has over 5,000 public operators committed to health and safety in the workplace.

The program *Gain health*, against alcohol, smoking, improper nutrition and physical inactivity, in coordination with many other ministries and institutions, has now been operational for an integrated approach to the promotion of healthy lifestyles in all areas, from school to work world.

Furthermore, Italy has an efficient veterinary network, with more than 10 thousand operators, which guarantees the healthiness of food and the safety of pets.

But as in everything, there are also negative aspects that over the last few years have increased due to the economic crisis of 2007: a lower per capita income, public health care expenditure diminishing, non-equipped public hospital infrastructures and scarcity of the medical staff compared to the increasing demand.

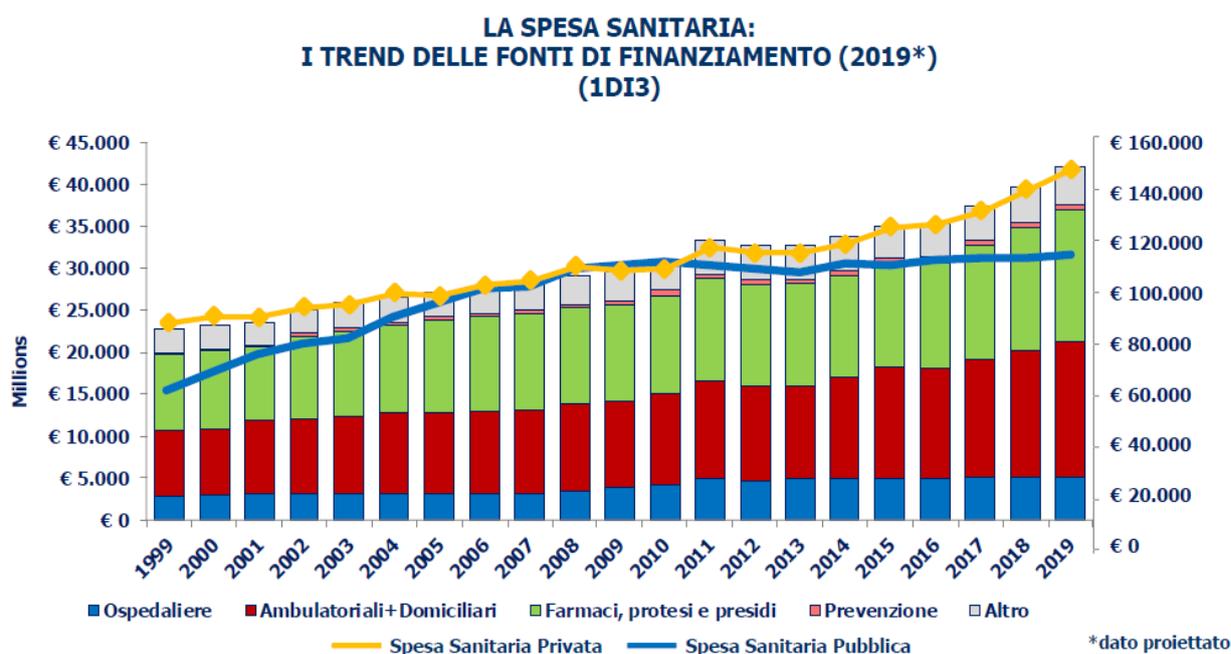
The proportion of people in the lowest income group reporting unmet needs for medical care due to costs is particularly high, suggesting a significant degree of inequality in access to care. Various vulnerable groups are nevertheless exempted from cost-sharing arrangements.

Following the economic recovery in recent years, the health benefits package was revised and expanded in 2016, but there are concerns regarding regions' financial ability to implement this more generous benefits package, which must be provided to all residents in the country. The allocation of funds raises concerns regarding the capacity of poorer regions to fund access to

these services without increasing regional taxes (or running deficits), possibly leading to growing rates of unmet needs and rising of the so called “out-of-pocket” payments.

Figure 2 shows the differences in health spending, between the private sector (yellow line) and the public one (blue line).

Since 2008 the growth in public health spending has practically stopped, while the one paid out-of-pocket continues to grow, in particular starting from 2016, where there was a strong surge.



Fonte: Elaborazione RBM Assicurazione Salute S.p.A. su dati ISTAT

Figure 2. Source: RBM Assicurazione Salute Spa elaboration on ISTAT data, data presented on the occasion of the 2019 Welfare Day. Mix private and public health expenditure

In the shadow of the National Health System, in recent years, a “self-organized” healthcare system has grown, the Private healthcare spending, fed mainly due to the lack of absorption of the care needs of citizens which has deeply affected the capacity redistribution of the national health system and the same function of social cohesion originally carried out by the national health system.

In paragraph 1.2.2 “Private healthcare spending” it will be analyzed this topic in more depth.

1.2.1 The *three Pillars* of Healthcare

What was analyzed in the paragraph “*National Health System*” is part of the so-called first pillar of healthcare. Two more pillars can be added to this one.

The one of the supplementary health protection (second pillar) which can be on a collective or individual basis, insured either by professional health funds or by open health funds.

And finally, the third pillar, managed through insurance policies, for individuals and families, offered and managed by insurance companies.

In a more summary way we will be able to schematize them, classifying them in¹⁴:

1. *A national health system (First Pillar) aimed at guaranteeing basic health care to all citizens and, above all, health services adequate to the economically weaker sections of the population, managed by the State and the Regions through the organizational structures set up for this purpose. (ASL) and regulated by the laws in force on health;*
2. *A supplementary health system (Second Pillar) managed by supplementary health authorities (Health Funds, General Mutual Aid Societies and Health Care Funds) aimed at guaranteeing the right to health of all citizens and promoted through the work of members of these institutions as regulated by the laws in force on the subject of Health Funds, Mutual Aid Society and Health Care Funds;*
3. *A private health system (Third Pillar) managed by the insurance companies and aimed at providing health coverages built on the basis of actuarial elements and proposed by insurance intermediaries as codified by the rules set out in the Consolidated Law on Private Insurance and of Collective Interest. (ANSI, 2017)*

¹⁴ QUADERNO ANSI n°5/2017 “*La logica dei tre pilastri della sanità*” a cura di Roberto Anzanello, 2017

1.2.2 Private healthcare spending

In figure 2 of the paragraph 1.2 *National Health System* (page 20) private health spending now stands at € 37.3 billion and is estimated to reach € 42 billion within the end of 2019: the IXth Report of RBM-CENSIS on the Italian health care, it has calculated a growth of +7.3% since 2014 mainly due to the lengthening of waiting list times, which, in spite of the attempts at reduction, reach, in certain cases durations that are not compatible with the LEA (essential levels assistance).

“In 2019 health services paid out-of-pockets by clients will increase from 95 to a sum of 155 million” – Marco Vecchiotti, CEO and General Director of RBM Assicurazione Salute Spa affirmed during the Welfare Day.

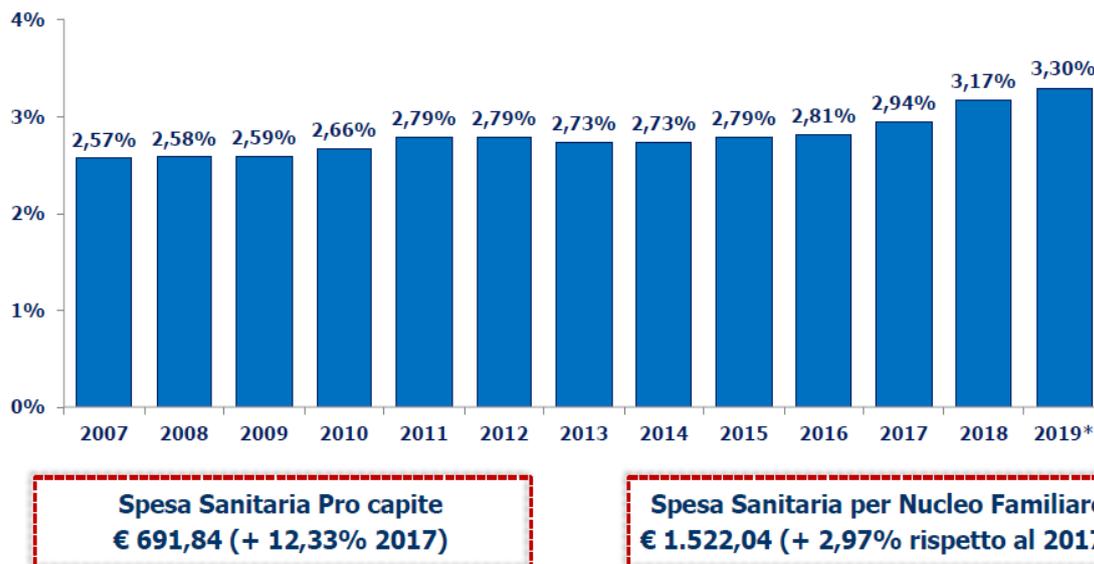
Continuing *“there are 19.6 million Italians “force” in health to pay out of their own pockets to get essential services prescribed by the doctor: at least one health benefit per year and of these 19 million about 50% belongs to the social categories more fragile, such as the elderly and the chronically ill.*

1 Italian out of 2, is “resigned” and does not even try to book a health service with the NHS, going directly to the private sector putting his hand in the wallet”.

Figure 3 shows the average private healthcare expenditure per family that is equal to 1,522 euros (+ 2.97% from 2017), the per capita one is 691.84 euros (+ 12.33% 2017).

While the need to finance healthcare costs through loans and consumer credits increases from 10.44% to 27.4%.

**INCIDENZA % DELLA SPESA SANITARIA PRIVATA
SUL REDDITO PRO CAPITE (2019*)**



Fonte: Elaborazione RBM Assicurazione Salute S.p.A. su dati OECD

*dato proiettato

Figure 3. Source: RBM Assicurazione Salute Spa elaboration on OECD data, data presented on the occasion of the 2019 Welfare Day. On the left box the per capita private healthcare spending, on the right the average of healthcare expenditure in one family

To better understand how much this expenditure actually affects the person, it is necessary to distinguish between a healthy / sick person or a chronically ill person.

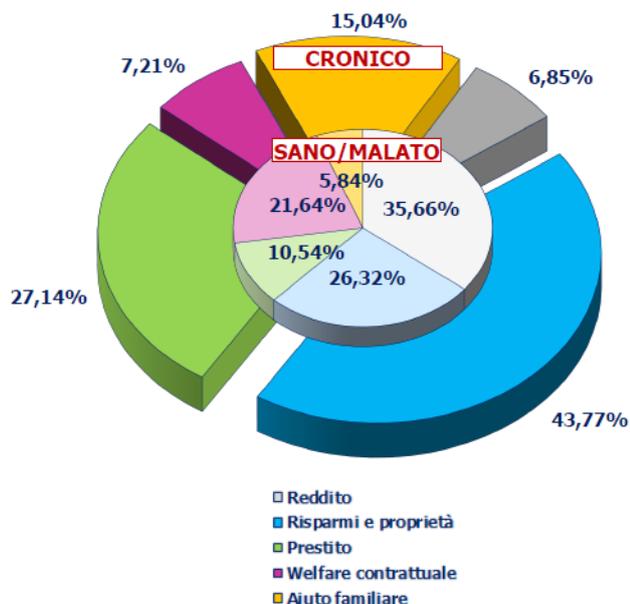
In this case, in figure 4, the range of renunciations between healthy / sick (16.7%) and chronically ill (47.8%) is highlighted.

In addition, on the right side of figure 4 there is the evidence of the mix of payment methods that the two targets use to pay for private healthcare.

In the case of the chronically ill person, in almost 48% of the cases the savings/assets are affected, followed by 27% of loans and 15% through family help.

At the same time, for the healthy/sick segment in the majority of cases (35.66%) income is affected, followed by savings and property/assets (26.32%) and 21.64% with contractual welfare proposed by the company.

COME PAGANO LE CURE PRIVATE GLI ITALIANI? (2019*)



Fonte: Elaborazione RBM Assicurazione Salute S.p.A. su dati RBM-Censis

*dato proiettato

Figure 4. Source: RBM Assicurazione Salute Spa elaboration on RBM-CENSIS IX Report data, data presented on the occasion of the 2019 Welfare Day. "How italians pa for private healthcare?"

In figure 5 the inequalities are even more noticeable: age, state of health, residence in the territory and income bracket are the four clusters.

There is a peak of renunciation for at least every cluster: 50% of adults between 31 - 60 years of age have at least once given up on a cure, as well as 47.8% of chronic patients, almost half reside in the south or in the islands and another 33.8% of the income bracket 0 - 15 thousand euros renounced care due to excessive costs or long waits.

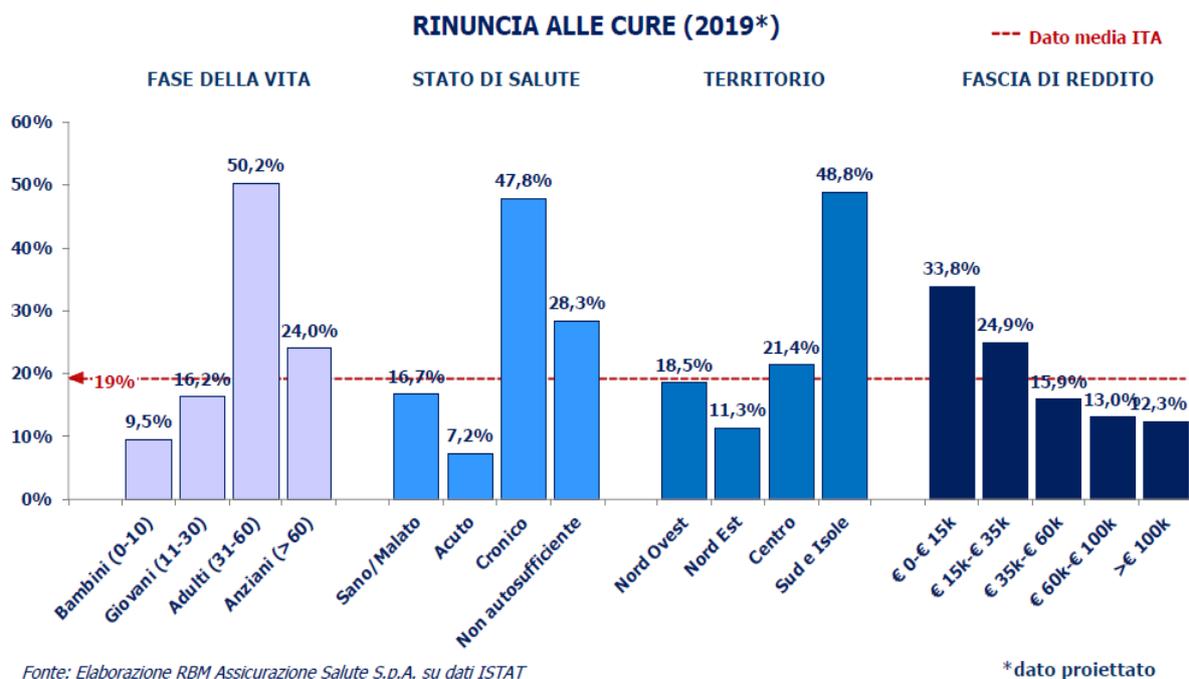
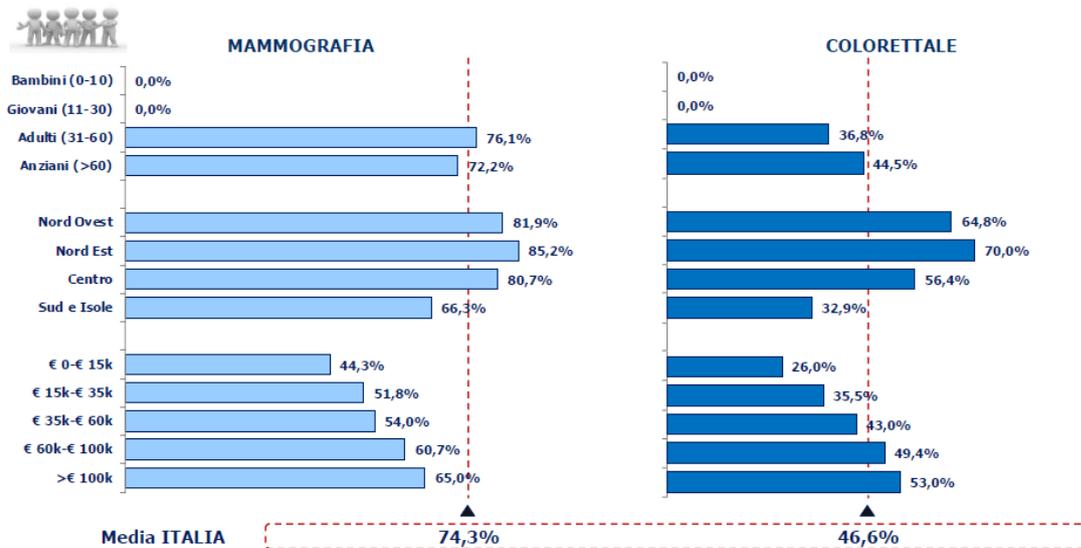


Figure 5. Source: RBM Assicurazione Salute Spa elaboration on ISTAT data, data presented on the occasion of the 2019 Welfare Day. Renunciation of treatment divided by cluster: Age - Health condition - Residence on the territory - Income

A final distinction can be highlighted between mammography and colorectal examinations, the first dedicated to women and the second for men.

Here too the peaks of renunciation are more visible in colorectals, and above all the frequency in prevention is lower for the inhabitants of the south and the islands and in the lower income bracket (0 - 15 thousand euros).

FREQUENZA DEL RICORSO ALLA PREVENZIONE (2018)



Fonte: Elaborazione RBM Assicurazione Salute S.p.A. su dati ONS e PASSI

Figure 6. Source: RBM Assicurazione Salute Spa elaboration on ONS and PASSI data presented on the occasion of the 2019 Welfare Day

To better understand figure 7 it is useful to have clear the definition of “private health expenditure”.

In fact there are multiple classifications and terminologies, in this work we will use the one given by the *OECD (Organization for Economic Co-operation and Development)* in 2004. The *OECD (Colombo, F. and Tapay, N., 2004)* proposes a four-compartment classification that differs within the aggregate “paying third parties”, called “private health insurance”.

The following is the *OECD* classification (2004)¹⁵:

1. *Primary private insurance*: it concerns the case and the countries where there is no public insurance, or there is, but there is also the possibility for citizens with certain characteristics to exercise opting out, that is, the possibility of calling each other outside the public system (for example, in Germany);

2. *Duplicate private health insurance*: is private insurance that covers the coverage of services and benefits included among those present in the public coverage, even if characterized by certain operating conditions, such as, for example, faster access to care. This type of insurance does not include the exemption from the contribution to the financing of public coverage;

¹⁵ The following passage is taken from “La previdenza sanitaria integrativa configurazione, dimensione, effetti e implicazioni di policy”, Aldo Piperno, 2017

3. *Complementary private health insurance: it is the one that plays a role of support and completion of public coverage, for example the coverage of residual costs that in the absence of insurance would be borne by the user, such as the sharing of various types of expenses;*

4. *Additional private health insurance: one that covers additional services not covered by public insurance* (Piperno, 2017).

In this way, it is now easier to understand Figure 7 and how Italian healthcare expenditure is subdivided within families.

SPESA SANITARIA PRIVATA PER FUNZIONE (2019*)

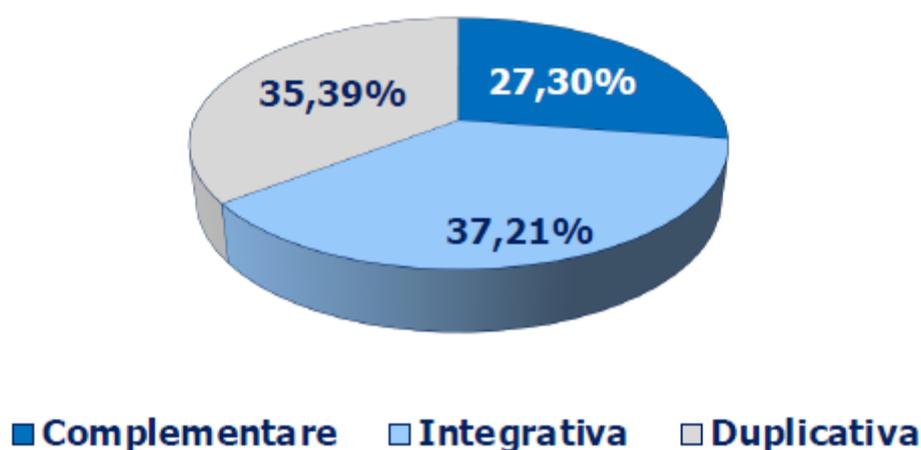


Figure 7. Source: RBM Assicurazione Salute Spa elaboration on ISTAT data presented on the occasion of the 2019 Welfare Day. Composition mix of the Private Healthcare Spending

In this way we can clearly see which functions of private health expenditure can be increased and improved.

“Double the right to the healthcare of Italians is therefore a priority that cannot be postponed, institutionalizing supplementary healthcare through government interventions. It is no longer enough to simply guarantee adequate funding for public health, but it is necessary to entrust the care acquired by citizens to management outside the National Health Service through a Second Open Health Pillar” - Marco Vecchiotti states.

It will not be easy to intervene at national level through a social health care culture, educating Italians not only to cure themselves but above all to *prevent* possible diseases.

In 2050 it is estimated that 30% of the Italian population will be over 65.

In this case, will public health spending suffice to offer the welfare that every member of the society needs?

The answer will remain open, for now.

To conclude this part we use a further statement by Vecchiotti that seems to have understood the context in which Italy is currently living:

“It seems clear that in the long term only a change of pace will allow us to solve the difficult puzzle of the Italian healthcare: the solution is health prevention as a long-term action able to prevent the onset of diseases or at least to identify them at an early stage, before they become serious or irreversible, with relative multiplication of health care costs. Today there is a lot of talk about health prevention but too little practice and effectiveness: the challenge is to introduce the priority of prevention into social culture, from lifestyles to the use of many forms of screening”.

1.3 Disease and Accident branches in Insurance classification¹⁶

In the previous two paragraphs definitions of the term health were given from the point of view of the World Health Organization (WHO) and from the point of view of the Italian Ministry of Health and its National Health Service.

We will see now the classification offered at the *Insurance level* within the Non-Life Division.

In fact, health care insurance is headed by the Non-Life sector and is placed in the first and second branches. The first branch concerning the accident area and the second concerning the illness area.

¹⁶ The totality of the definitions and classifications given in this chapter refer to the text “*Manual of private insurance law*” by Luigi Farenga, G. Giappichelli, March 2019, ESN 9788892103498 and the presentation “*Health insurance*” by Dr. Donatella Rossi, Actuarial Technique course for Insurance of Professoressa Anna Maria Palazzo A.A. 2012/2013

To better understand the difference between accident and illness, some definitions are proposed.

The online dictionary of *Corriere.it* defines illness as:

“Any pathological state or alteration of the organism or its organ from the anatomical or functional point of view”.

In summary, disease or illness can be defined as the opposite of health.

In fact the WHO defines disease as:

“An alteration of the physiological state of an organism (including possibly the psychological one) capable of reducing or negatively modifying normal functions, together with the complex of physiological reactions deriving from the pathological state. In the definition of disease the principle of transience is fundamental: every pathology has a term that can be represented by the healing of the organism, from its adaptation to a different physiology (or to a different condition of life) or from death”.

Instead in Treccani we can find the definition of the term injury (or accident):

“In common use, an accidental event with harmful and sometimes lethal effect, such as an accident at work, characterized by the violent cause, by the death or inability of the subject who suffered it.”

To better classify and understand the difficult insurance world we will try to place the Accidents and the Illness areas within the Non-Life Branch.

The attachment to the *legislative decree of 17 March 1995, no.174*, classifies the risks for the Non-Life branch (the branches in all are 18, we are interested in analyzing only the first two):

1. *Accidents* (including accidents at work and occupational diseases): as flat-rate benefits, temporary allowances, mixed forms and people transported;
2. *Illness*: as flat-rate benefits, temporary allowances and mixed forms

From a purely insurance point of view, the Non-Life business includes one-year policies (“accident” and “illness” insurance) where the insurer is exposed to random outlays in the amount and in the number.

Insurance forms in the *Illness* branch include:

1. *Reimbursement of medical (or care) expenses:*

- Complete form: total reimbursement of medical expenses (or care) incurred during hospitalization due to illness;
- Supplementary form (or overdraft): reimbursement of expenses actually incurred by the insured in the event of hospitalization with deduction of the costs incurred by the NHS and/or by another health insurance policy (or with a fixed deduction of 25% on the compensation):
 - with deductible: to limit the cost and guarantee a significantly higher ceiling;
 - the “large surgical interventions” condition can be used to guarantee medical expenses;
 - special contracts aimed at covering “oncological diseases”

2. *Per diem in case of hospitalization:*

- Payment of a given sum of money for each day of stay (daily allowance indicated in the contract) flat rate;
- In general it is provided for inpatients at hospitals or health care institutions following:
 - disease;
 - accident;
 - childbirth

Often contracted by professional categories that do not have a salary in the event of interruption of work.

3. *Permanent disability due to illness;*

4. *Temporary disability due to illness.*

The *accident* insurance, on the other hand, has the purpose of providing certain benefits when the insured person suffers damage due to an accident.

The insurance sector describes the accident as: “*an event due to a fortuitous, violent and external cause that produces objectively verifiable bodily harm, resulting in death or permanent disability or temporary disability*”.

The benefits of this type of insurance are in this case:

1. *Capital in the event of death*

In this case, compensation for death occurs:

- even after the expiry of the policy;
- within two years from the day of the accident.

Some features:

- liquidation to the designated beneficiaries or, in the absence of designation, to the heirs in equal parts;
- the compensation cannot be combined with that for permanent disability,
- if the death occurs after payment of the compensation for permanent disability: difference between compensation for death and compensation for permanent disability already liquidated.

2. *Capital in the event of permanent, total or partial disability (depending on the “degree” of disability):*

The compensation is due if the permanent disability is verified:

- even after the expiry of the policy;
- within 2 years from the day of the accident

Partial permanent disability: the compensation calculated on the sum invalidity: total permanent, in proportion to the degree of invalidity established according to certain criteria and percentages.

3. *Daily allowance in the event of temporary incapacity caused by an accident:*

- fully due for each day on which the insured person found himself in total physical incapacity to attend to his occupations;
- 50% for each day on which the insured was unable to wait for part of his occupations.

Daily allowance:

- payment for a maximum period of 365 days,
- cumulative compensation with those due for permanent disability or death.

As for the insurance forms:

1. professional accident insurance (private or INAIL);
2. non-professional (private) accident insurance;
3. complete accident insurance (private).

Not only that, health can also be found in the *Life Division* (long-term insurance: problems

relating to the survival of the insured person over time).

1. *Permanent Health Insurance (PHI): disability income (professional) not necessarily permanent:*

It was introduced in Italy by Law No. 742 of 1986 and constitutes the IV of the Life Branches.

It represents an insurance form that provides for the payment of an annuity, of a pre-established installment, for the periods in which, due to an accident or illness, the insured is totally incapable of receiving income from employment.

The British definition indicates instead:

"incapacity, for the purposes of this contract, means that the insured is totally unable, due to accident or illness, to carry out their occupation or the occupations provided for in the policy and that the insured person does not perform any other occupation ".

As we have already said it is a disability pension (professional) not necessarily permanent that:

- multi-year duration,
- non-cancellable (permanent),
- a constant annual premium,
- the duration does not exceed the retirement age,
- absolute time limit,
- short period of qualification of the illness or accident,
- initial period of shortage

2. *Dread Disease or Critical Illness Cover (DD) - capital in the event of serious illness:*

It is an insurance form that intervenes in the circumstance in which the insured person is struck by a particularly serious illness, through the payment of a fixed flat rate capital.

It has features:

- it is not a compensation claim,
- does not offer compensation commensurate with the actual care and / or surgical expenses,
- the financial support provided aims to meet the needs of the insured while he is alive,
- does not intend to offer revenue for the partial replacement of labor income,
- payment takes place only after the diagnosis of the disease.

Other features are:

- Benefit equal to the sum agreed in the policy;
- Multi-year duration;
- Constant annual premium;
- Short qualification period of the illness or accident;
- Initial shortage period;
- Autonomous or “Stand Alone”;
- combined with a life insurance (TCM) - most frequent case:
 - “anticipatory”;
 - “additional”
- survival cover (payment of capital in the event of the insured surviving a serious illness)

To be included in a DD contract every disease must meet the following criteria:

- must entail a need for money for the person;
- must have a clear and precise definition;
- must not allow the anti-selection by the insured;
- there must be a solid and sufficient statistical basis for calculating the coverage costs

Diseases generally covered by insurance (they belong to the main causes of death of the population):

- heart attack,
- cancer,
- stroke,
- heart or bypass surgery,
- kidney failure,
- organ transplant,
- multiple sclerosis

3. Long Term Care (LTC): annuity for self-sufficiency.

"Complex of interventions, provided by public or private institutions, necessary in the face of situations of need for assistance for predominantly elderly individuals in conditions of non self-sufficiency."

- People unable to understand or want.
- Need for assistance at various levels:

- House assistance,
- Living room with assistance in rest homes,
- Admission to homes or care institutions.

Among the reasons why LTCs are successful at insurance level, there are ongoing trends:

- *Demographic trends:*
 - longer life expectancy,
 - decrease in birth rates.
- *Aging of the population:* impact on the demand for long-term social and health services.
- *Social trends:*
 - pulverization of family units,
 - increase in women's employment rate (impact on informal assistance provided by families within them).

As far as LTC insurance is concerned, this is a contract that covers the risk against loss of self-sufficiency in carrying out the elementary activities of daily life.

The element of non-self-sufficiency is measured based on the lack of autonomy in performing certain actions of daily life (ADL).

Among the causes of non self-sufficiency there may be:

- traumatic events,
- acute diseases,
- degenerative diseases,
- natural aging process.

We intend the risk of not self-sufficiency that ability of the individual to carry out a series of elementary activities of daily life (Activities of Daily Living - ADL):

- quantification of the different levels of non self-sufficiency in relation to the lack of autonomy in carrying out the LDAs.

Typical ADLs:

- to wash,
- getting dressed and undressing,
- use the services,

- moving from bed to chair and vice versa,
- controlling yourself in continence,
- feeding

The main types of LTC are:

- Pre-funded plans (for healthy people):
 - complementary: (main guarantee of various nature + LTC guarantee (anticipatory, additional));
 - pension supplementation: immediate life annuity with single premium purchased at retired age;
 - insurance packages: full-life health insurance; health insurance packages pairing with a deferred life annuity;
 - autonomous coverage: fixed income paid since the insured is in need of assistance (can be suspended in case of recovery);
 - collective: LTC coverage combined with a retirement plan; pension integration

Instead, immediate care plans (for non self-sufficient people) are:

- Immediate annuity LTC annuity: coverage for those who are already in conditions of non self-sufficiency.
- Enhanced annuity (Enhanced annuity).

LTC performance can be:

- *Monetary*:
 - in compensation: compensation for assistance costs incurred,
 - in the form of fixed indemnity: income and capital.
- *Of service*: assistance at health institutes and centers affiliated with the company.

Most frequent method: benefit in the form of an annuity to be paid in the event of non-self-sufficiency:

- a) Annuity rate established in the contract in a lump sum,
- b) Variable annuity rate with the degree of self-sufficiency.

Terms of payment can be:

- temporary periodic premiums,

- periodic annuities, not temporary,
- single premium,
- initial shortage period,
- ceilings, deductibles and exclusions,
- mechanisms for indexing benefits or premiums (to cope with the increase in LTC service costs over time).

1.4 Current trends, issues and “*smart health*”

In the previous pages we have seen how health is defined in the context of the World Health Organization and we then saw the classification of health care within the Insurance sector.

In the following pages health will be analyzed in the current context and we will try to define the term *smart health*.

Resuming what was said in the introductory part, these years are frantic, disruptive and hasty. It has been years when people never stop, and sometimes wondering if people act in that way just to get more money.

It is not just having more money, it is about all that surrounds having money: a good job, making a career and therefore also earn more money, have a nice house and a nice car, travel in distant and exotic places...in short, self-achievement!

People run back and forth until they drop, then stop, probably, when it's too late.

It would be enough to run less and better, not to get in the sixth gear and then ruin the engine, going in fourth is fine, and the view is even better!

It is well known that walking is better than running!

The *World Insurance Report 2019*¹⁷ was recently published by Capgemini in collaboration with EFMA.

This document highlights a series of trends and issues that arise in the health care sector and not only, from an insurance point of view to prevent and reduce potential risks.

¹⁷ World Insurance Report 2019 is the document that emerged from the partnership between Capgemini and EFMA in terms of how technology is impacting the insurance world and the relationship between insurers and customers. For more visit: <https://worldinsurancereport.com/>

The main evidences that emerge from the document are the following:

- five macro-trends have been identified that are giving rise to emerging risks: *climate changes, technological advances, social and demographic trends, new needs in the health sector and changes in the business context*;
- health and social security issues are crucial in the family spending budget and more and more families feel the limits of the public pension. In fact, there is an increase in uncertainty about any work-related illnesses and / or injuries that could lead to income reduction but also to temporary or permanent disabilities. Preventing these critical issues is essential, insurers must become promoters of a far-sighted culture in the choice of supplementary pension plans to public ones and other solutions in the field of health, wellness and well-being;
- at a global level, less than 25% of corporate clients and less than 15% of those who hold private insurance claim to have sufficient insurance coverage to protect them against any of the emerging risks arising from the aforementioned macro-trends;
- less than 40% of life and health insurers declared that they had set up a pipeline of new products to offer complete coverage in the field of emerging risks;
- the slow response to emerging threats has created significant gaps in insurance coverage for customers exposed to these risks:
 - 83% of retail customers have a medium / high exposure to cyber attacks and the loss of their savings, but only 3% is adequately covered against these risks;
 - among corporate customers, 81% sustains increasing healthcare costs for workers, against which only 17% can count on adequate coverage; 87% are at risk of cyber attacks and only 18% have satisfactory coverage; almost 75% is threatened by growing natural disasters, for which only 22% is actually covered;
- insurers must respond to new threats and customer expectations by adopting new technologies, such as machine learning, artificial intelligence and advanced analytics and signing new partnerships. In fact, in this context the theme of Big Data enters forcefully, understanding how important is having data on customers nowadays is crucial, for optimizing the target and offering products that respond as closely as possible to customer needs. In fact most respondents claimed to be willing to share some of their private information and to pay higher premiums if on

the other hand they receive customized products that are tailored to their needs (personalized risk-control and prevention services).

Personalization thanks to Big Data and Data Analysis is everything!;

- technological progress must also be accompanied by a change in mentality. Insurers must take a step forward in areas where they traditionally play the role of "payers", while becoming partner of their clients and preventing risks, working more closely with them to reduce risk and provide services on demand and parametric insurance. Speed of response and virtual and physical interaction are everything! (WIR, 2019)

Insurers need to prioritize customer perspectives and use those insights to create and adapt product offerings that meet today's dynamic needs and close the coverage gap.

In addition to these concerns, one more has been added.

Recently the World Health Organization has reviewed what it said a few years ago regarding the so-called *burnout*, referring to work-related stress as a disease and inserting it in the relative list¹⁸, now, after decades of studies, it has been decided to recognize it as a *syndrome*, providing also directives to doctors to diagnose and find a cure.

Before being able to affirm that we are dealing with work-related stress, we must investigate and verify that these are not other pathologies such as anxiety, adaptation disorder or depression, because in this case the term burnout would no longer fit into the case of occupational phenomena.

¹⁸ The WHO released the eleventh revision of the world classification of diseases on 18 June 2018. ICD is the foundation for the identification of health trends and statistics globally, and the international standard for reporting diseases and health conditions. It is the diagnostic classification standard for all clinical and research purposes. ICD defines the universe of diseases, disorders, injuries and other related health conditions, listed in a comprehensive, hierarchical fashion. For more info: <https://www.who.int/classifications/icd/en/>

This year the WHO also stated that work-related stress is not a disease, but a syndrome, belonging to a "occupational phenomenon" related to excessive workload or lack of work. For more info: https://www.who.int/mental_health/evidence/burn-out/en/

This phenomenon was studied for the first time by the psychologist Herbert Freudenberger¹⁹ in 1974, but only in the so-called "aid" areas, such as doctors, nurses and other general staff who offer assistance to the person. According to Freudenberger, these professions could cause high levels of work-related stress due to the load of work hours per week, few hours of sleep, high pressure due to contact with more or less serious patients etc.

Over the years the burnout phenomenon has been extended to a greater number of professions and can range in multiple work contexts, from celebrities who seem so distant and almost divinized (actors, models, singers) to housewives. And this is because suffering from the work-related stress syndrome is not so much (or rather not exclusively) due to the type of work activity that takes place but to the way in which one reacts and that one faces the critical situation with which one finds oneself "fighting".

There are strong people who react positively to stress and workload, but there are other more sensitive and emotional people who find themselves in more or less critical situations that have difficulty in reacting in a safe and determined manner.

To meet these challenges, WHO has already been activated.

According to the WHO, half of the world's population now lives in cities (that's more than 3,500 million people). By 2050, two-thirds of the planet will be urban dwellers, and 90% of the shift will happen in Africa and Asia.

This trend means that focusing on urban development that benefits health is more important than ever.

WHO has been working to improve health in cities for decades and has several key initiatives. As well as the *WHO Healthy Cities Network*²⁰, which takes a holistic approach to urban health, many different networks and initiatives support cities to work on specific topics. These include the *Partnership for Healthy Cities*, which focuses on preventing non-communicable

¹⁹ Herbert J. Freudenberger (1926–1999) was a psychologist, though he had many jobs during his life, including practitioner, editor, theoretician, and author, his most significant contribution is in the understanding and treatment of stress, chronic fatigue and substance abuse.

Freudenberger was one of the first to describe the symptoms of exhaustion professionally and perform a comprehensive study of "burnout". (Freudenberger, Herbert; Richelson Géraldine (1980). *Burn Out: The High Cost of High Achievement. What it is and how to survive it*. Bantam Books)

²⁰ WHO Healthy Cities is a global movement working to put health high on the social, economic and political agenda of city governments. For 30 years the WHO European Healthy Cities Network has brought together some 100 flagship cities and approximately 30 national networks. For more visit: <http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/who-european-healthy-cities-network>

diseases and injuries, the *WHO Global Network for Age-friendly Cities and Communities*, and the *Urban Health Initiative*, which focuses on climate and air quality.

The seven trajectories on which the WHO is focusing are:

1. *Tackling mental health in cities:*

Overcrowding, pollution, few green spaces, work stress, etc. can lead to greater intensity and growth of mental illnesses. To reduce this possible risk, modern cities need suitable infrastructures to facilitate cohabitation, increase green spaces and parks, the number of bicycles that can be rented daily / periodically and promote proactive development that generally improves people's daily lives.

2. *Reducing road traffic crashes:*

Considering that in 2015 globally there were more than 1.3 billion cars and only in 2018 the cars of first registration were 98 million, road traffic crashes are now the leading cause of death for people aged 5-29 years. They claim more than 1.35 million lives each year and cause up to 50 million injuries.²¹

“While many countries have both national legislation on risk factors such as drink driving and seat-belt wearing, enforcement strategies and policies are often made at the city level. Urban planning, which is essential for ensuring safe roads and environments, also takes place at the local level” (WHO, 2019)

For this reason, addressing road safety challenges requires both national and city levels to work closely together.

In addition to adequate legislation on the correct circulation, WHO considers of primary importance to increase awareness and information through targeted advertising campaigns that educate people to a correct culture of “being at the wheel”.

3. *Innovative approaches to reducing urban violence:*

One interesting data provided by the WHO is the case of Medellin: in 2002, before its transformation, Medellin’s homicide rate was 185 per 100,000 population, accounting for nearly a third of all deaths in the city; by 2008, it had fallen to 30 per 100,000. Urban violence is not confined to Medellin, of course. Around the world, every minute of every day, a person dies by homicide, many more are injured, and still more suffer from violence that leaves few physical consequences but is deeply damaging at

²¹ All the data mentioned here are part of statistics collected by WHO. For more details visit: <https://cities-spotlight.who.int/>

cognitive and emotional levels. Violence, including shootings and stabbings, is a leading killer of people aged 15-44 years. Tens of millions are injured every year by non-fatal violence, including sexual assault, and it can lead to behaviour that is risky for health.

4. *Encouraging physical activity for better health:*

This initiative is linked to the first one. Physical activity helps prevent heart disease, stroke, diabetes, and some cancers, and also helps prevent obesity and improves mental health and well-being. The importance of physical activity in ensuring good health has long been demonstrated, yet around the world 1 in 4 adults, and as many as 3 in 4 adolescents, are not active enough.²² It is up to the city administrations to design modern cities, in line with the social changes that interact in people's daily lives. Let the city become a complex of security, well-being, entertainment and “home”.

5. *When air quality in cities makes it hard to breathe:*

According to WHO survey nine in ten people breathe polluted air every day. Every year, polluted air kills 7 million people. A third of deaths from stroke, lung cancer and heart and respiratory diseases – three of the biggest killers – are due to air pollution.

“Air pollution is caused by many sources, including vehicle and factory emissions and polluting household fuels such as coal and kerosene. Smoking in public places can also affect access to clean air in cities.

To help people better understand how polluted the air is where they live, WHO, UN Environment, and the Climate and Clean Air Coalition’s Breathe Life campaign have developed an online pollution meter.²³ Sustainable approaches

²² In 2018, WHO produced its first ever *Global Action Plan on Physical Activity*, which sets the goal of reducing physical inactivity by 15% by 2030 through four key policy action areas: creating active society through better knowledge and understanding of the multiple benefits of regular physical activity; active environments through policy that support physical activity by providing safe and accessible spaces in which to be active; active people through policy actions to increase provision of opportunities for people of all ages and abilities to be active: and active systems which includes policy actions to strength research, governance, data systems and financing mechanisms to support the implementation of physical activity.

²³ For more about the *Breathelife Campaign* visit: <https://breathelife2030.org/city-data-page/>
https://breathelife2030.org/?utm_source=facebook&utm_medium=share-graphic&utm_content&fbclid=IwAR0HIFyr6hw7aUv4UHtVSZ38-49eIctt4AaKj0EpgHBA258WDIGfPxNH10Y

to climate and health requires strong advocacy and action, and the BreatheLife campaign supports local urban leaders in communicating the cost of inaction”
(WHO, 2019)

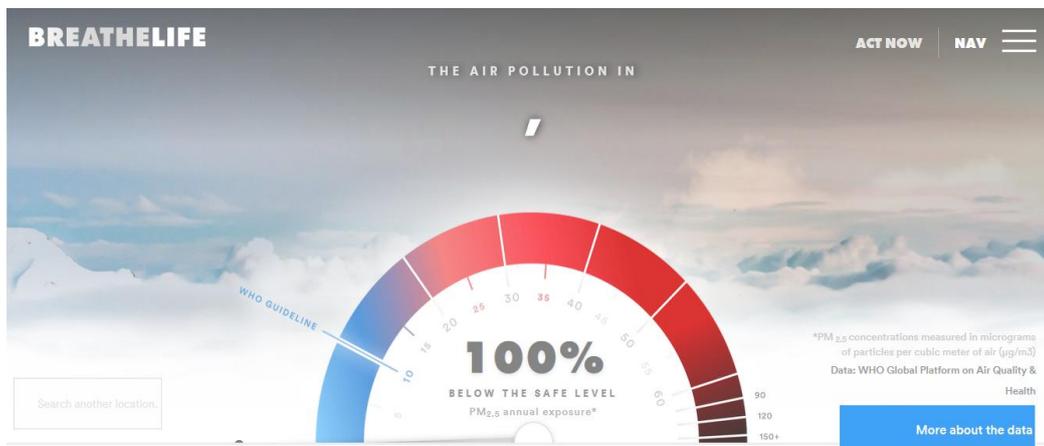


Figure 8. Represents various indicators of pollution and the related targets that the WHO has set to achieve to reduce child mortality and deaths due to air pollution.

6. *Creating age-friendly cities:*

The world is rapidly ageing and the number of older people (aged 60 or over) is growing faster than all other age groups. Numbers of older people is expected to rise from 962 million to more than double (2.1 billion) by 2050 and to more than triple (3.1 billion) by 2100. It is also true that being elderly today is not like being 50 years ago, thanks to medical techniques, personal care, technology, healthier living, sports etc. But on the other hand it is also true that 50 years ago the pollution levels were consistently lower, work stress was not conceived and so on.

Being aware of these numbers, it is good to prepare to accommodate a growing number of elderly people and therefore build cities that promote livability for all ages.

“Adapting city structures to the needs of a growing older population is preparation to meet the challenges of demographic change” (WHO, 2019).

7. *The challenge of ensuring a healthy diet:*

Eating healthy meals can seem like a challenge in cities many fast-food chains serving food and beverages that are high in fats, salt, and sugar, but in recent years there has been a greater attention (fortunately) to the promotion of a culture that is attentive to healthy food. Healthy food does not mean removing meat, salt, sugar and carbohydrates from the tables of the citizens, but rather giving them greater awareness in having a diet healthy, balanced and varied also made of fruit and vegetables.

Around the world, millions of people struggle to eat a healthy, balanced diet every day.

“People in urban areas may often work very long hours which can prevent them from investing time in buying fresh food for home cooking and eating well. Providing easy access to food that is not only healthy but affordable will be crucial in improving the diets of people who live in towns and cities. For many, extreme poverty, food scarcity, or living in a zone affected by climate change or conflict can mean they have very little food, or no food at all; every day, more than 820 million people go hungry” (WHO, 2019)

It will be of primary importance for the coming years that the WHO with the national states commit themselves to guaranteeing a fairer and healthy food chain for all.

Also within the Companion Report of the European Commission (EU, 2017) it can be read that there is a fundamental focus on the health of European citizens and on the alignment of the supranational policies that guarantee to all members more balanced and fair health protection and regulations at EU level.

What is most important for the European Commission is the retrieval of data on people; possessing valid statistics in short time is the main driver to be able to adequately respond to a growing health demand.

“(…) providing the right services to the right people at the right time, so as to improve people’s well-being. Currently, there is significant fragmentation in the available health data in the EU, as most health statistics concentrate on particular diseases and/or particular health care settings (e.g. hospitals) without taking a person-centred view”. (Companion Report EU, 2017)

Many companies support healthcare by offering hospitals, nursing homes, private clinics etc. their management software that integrates ERP (enterprise resource planning) systems with healthcare consultancy²⁴.

These services implement data storage at the overall structure level, allowing a complete view of the data available. All the patient's historical data are available (Electronic Medical Record, Patient Dossier, Admissions, Order Entry etc.).

²⁴ These topics will be taken up and dealt with more fully in the third chapter of this work

These systems, if used correctly and consistently at European level, would enhance the management of healthcare, contributing to an improvement of the entire patient care experience and, above all, reducing waste and optimizing healthcare costs.

In conclusion of this first chapter, we highlight Deloitte Monitor's Research, “*2018 Global health care outlook - The evolution of smart health care*”, which offers an overview of how “*smart health*” should be represented in the twenty-first century:

- i. Appropriate treatments are delivered at the appropriate time, in the appropriate place, for the appropriate patient;*
- ii. Clinicians use technology to more accurately diagnose and treat illness and deliver care;*
- iii. All care delivery stakeholders across the ecosystem effectively and efficiently communicate and use information;*
- iv. The correct individuals do the correct work (e.g., nurses handle patient care, not administrative tasks);*
- v. Patients are informed and actively involved in their treatment plan;*
- vi. New, cost-effective delivery models bring health care to places and people that don't have it;*
- vii. Efficiency improves; waste declines*

CHAPTER 2 – Market context

In the first chapter the term health care was defined from different perspectives, starting from the WHO definition to the more modern Deloitte Monitor survey “*smart health*”.

In this chapter, a more quantitative overview will be provided, through evidence of the market context.

Firstly, the Italian scenario will be analyzed, both on the supply side and on the demand side, then a more international overview will be provided too.

2.1 Italian market context

The Italian market in the first quarter of 2019 saw an acceleration in Non-Life premiums, with total premiums around € 9,4 billion marking a +4,0% compared to the end of the first quarter of 2018²⁵.

Figure 9 shows the total Non-Life Class in 2017, 2018 and 2019 for Italian companies and non-EU company representatives.

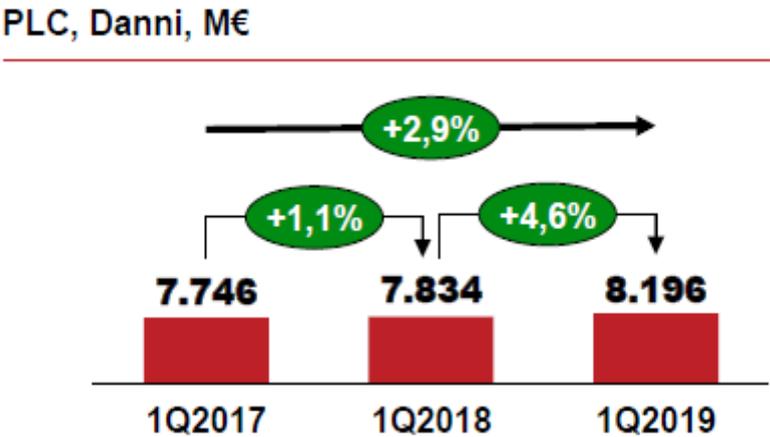


Figure 9. Total Non-Life Division 1Q 2019, compared with the respective premiums for 2017 and 2018. Source:

²⁵ Source ANIA, Trends in quarterly non-life premiums, Year V - No. 17 June. The gross premiums of the Italian direct portfolio booked in the Non-Life sector were provided by insurance companies operating in Italy and by representatives of Italian companies with registered offices in European and non-European countries. It should be taken into consideration that the gross premiums recorded for damages are € 8,196 million for Italian and non-EU companies and € 1,228 million for EU representations.

ANIA, Trends, quarterly Non-Life Premiums

The growth is mainly due to the Non-Motor sector with a significant increase of +6,1% comparing with 2018 and total premiums around 5,1 billion euro, while, despite growing, the Motor business stands at +1.5% in the same period.

It is the highest variation has been registered since 2002.

The statistics in the following graph (figure 10) refer, as before, to Italian companies and representatives of extra EU companies, this is the reason of the 4,1 billion euro instead of 5,1.

PLC, Totale Non Auto, M€

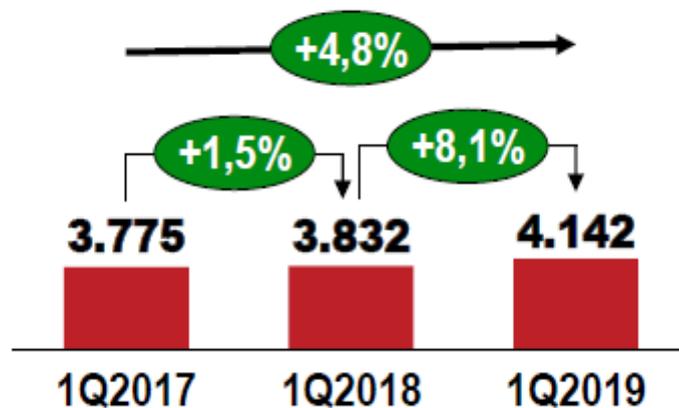


Figure 10. Non Motor Total Premiums (million €)

In particular, in the Non-Motor sector, premiums have this growing trend due to the recovery of the general economic context and the increase in the variety of the insurance offer. In fact, insurance companies (and others) offer more innovative and technological products and/or services.

In an increasingly “on demand” and sophisticated world, people look for the immediacy of solving their own problems, they predefine a 360-degree and super personalized customer experience, or, as insurance jargons uses to say, tailor-made.

In the Non-Motor segment, the most representative segments are the Health and Property world, which grew by + 6,1% and +4.5% respectively (figure 11).

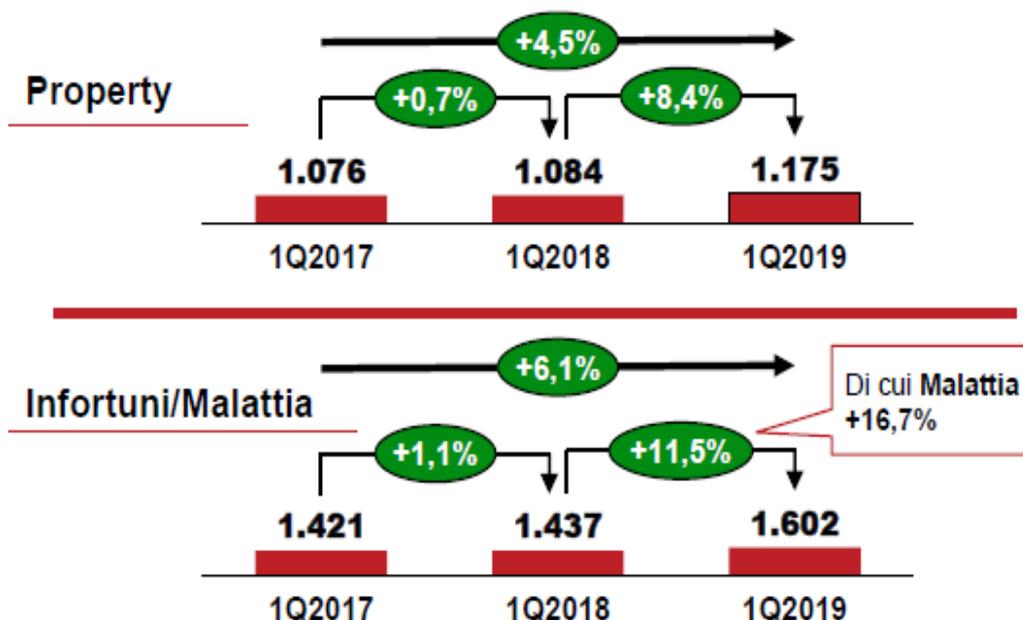


Figure 11. Non Motor Segment - Property; Accident & Illness businesses

In addition to the data obtained from ANIA²⁶, regarding the first quarter of 2019, a series of data is available from Innovation Team, a consulting company of the MBS Consulting Group, which presented the ANIA data for the fourth quarter of 2018 on graphs and tables.

The main trends and composition mixes are shown below.

Non-motor premium income reaches € 20.6 billion (of which € 3.7 from EU companies) in the fourth quarter of 2018, with an increase of 3.6%.

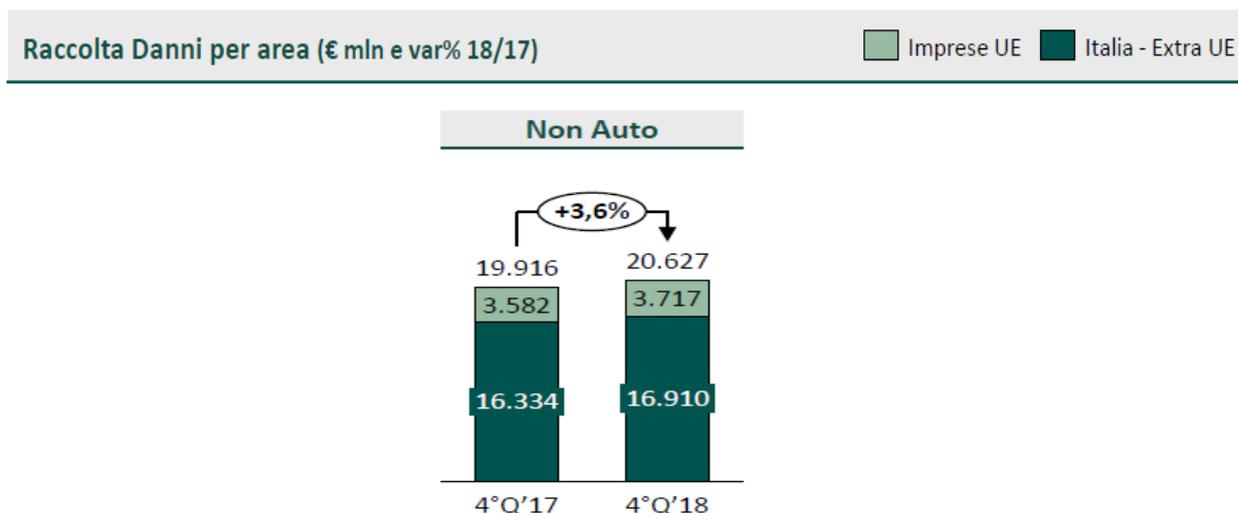


Figure 12. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor Business

²⁶ Founded in 1944, ANIA is the association that represents insurance companies operating in Italy. Its purpose, as required by the Statute, is to develop and spread the culture of safety and prevention, so that both people and companies and society as a whole can be protected more and better.

From the pie chart (figure 13) it can be seen the mix of the composition of the non-life premiums in the third quarter of 2018, consisting mainly of the Motor business (53%), followed by the segment of Health (17,1%), the Property reaches almost 16%, Liability (11.4%) and Other (10.1%).

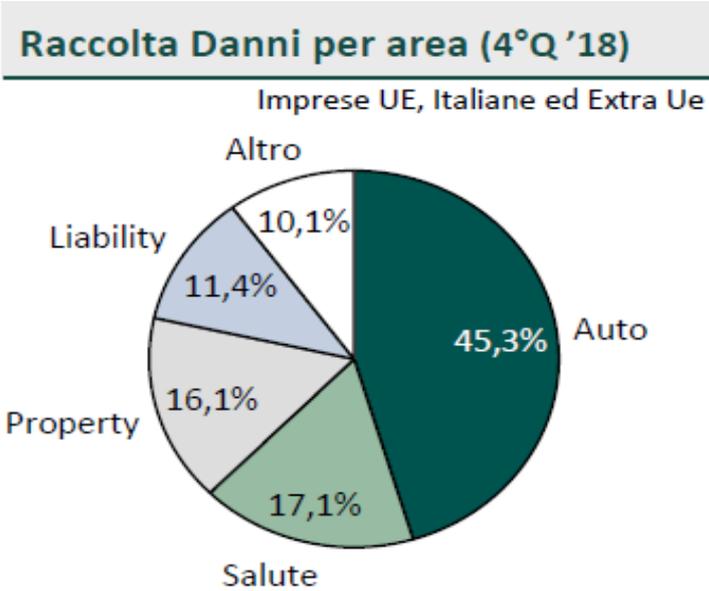


Figure 13. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor Business composition mix at the fourth quarter

The growth in the Health sector which is confirmed as one of the most significant in terms of size, marks an increase over 2017 (+ 3.6%) in line with the non-Motor market, with funding of around € 6.5 billion (figure 14).

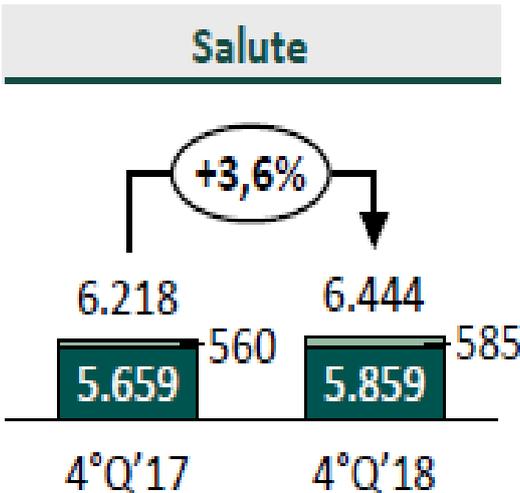


Figure 14. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor - Health segment variation 18/17

The growth of this sector is no a coincidence given the current Italian situation, where the aging of the population and the non-self-sufficiency of those over 65 are among the major concerns for the future.

For this reason many Italians are converging towards insurance solutions that aims are to prevent and protect in risk situations such as diseases or critical illnesses, surgical interventions, reimbursement of medical expenses for hospitalizations and / or specialist visits, preventive check-ups etc.

In the following pages, the health offer of the major Italian players will be highlighted.

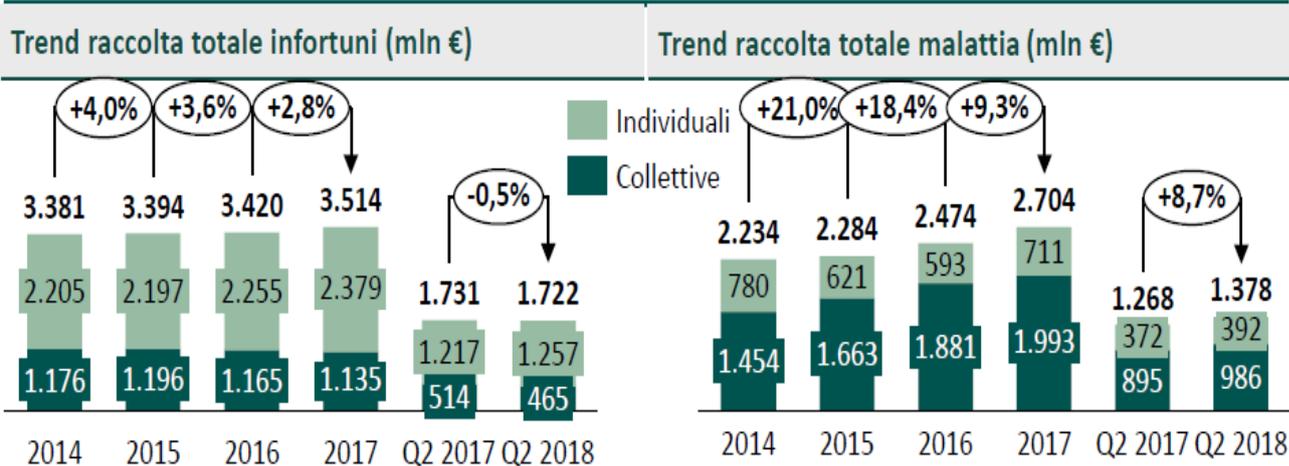


Figure 15. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor - Health segment - Accident on the left; Illness on the right side

Accident premiums are slightly down (left side of figure 15), while illness is on the rise.

In the accident segment, the most widespread offers concern compensation for permanent disability or for driving accidents and most of the contracts are individual.

The disease market, on the other hand, appears to be very concentrated among a few operators and is mainly characterized by the offer of solutions to reimburse medical expenses, proposals mostly in collective form.

Salute



Figure 16a. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor - Health segment - Composition mix by channel (Italy & extra EU); 4Q 18/17

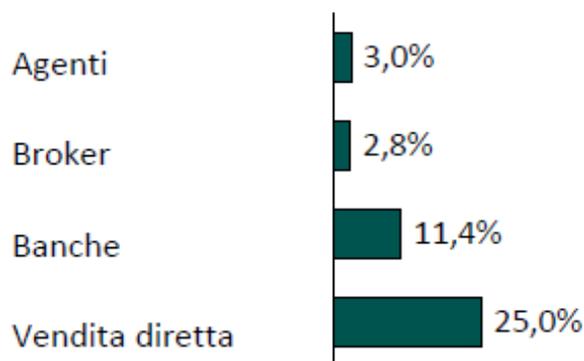


Figure 16b. SOURCE: Innovation Team calculations based on ANIA 2018 data; Non Motor - Health segment - Composition mix by channel (Italy & extra EU); Var% 18/17

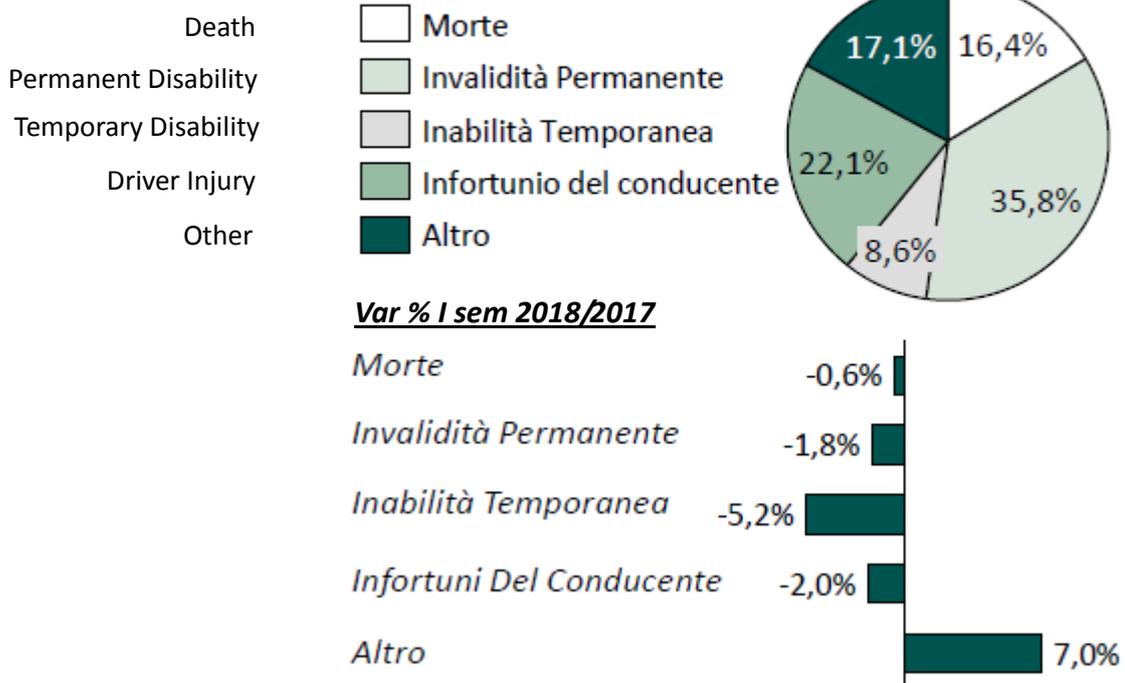
The Agencies remain the market reference channel for Non-Motor premiums with a share of 56.5% (with premiums up 3.00% on 2017) (figure 16a).

The share of collection that passes through the Agency channel is significantly higher in the Car, Property, and Liability. Exceeds half, reaching almost 60%, in the Health area.

In this area, the importance of Direct Sales is confirmed, with a share of 16.7% and a significant growth (+ 25.0%); there was also a significant increase in funding through Banking Branches (+ 11.4% with a share of 13.1%), while for Brokers (12.9% in terms of share), growth is more contained (+2.8%).

In the Accident market (figure 17) the most widespread offers concern indemnities for permanent disability (35.8%) followed by injuries to the driver (22.1%), Other (17.1%), Death (16.4%) and temporary disability (8.6%).

INFORTUNI – Premi per garanzia I semestre 2018 e Var. % I sem. 2017-2018



Premi Infortunio per tipologia – I semestre 2018

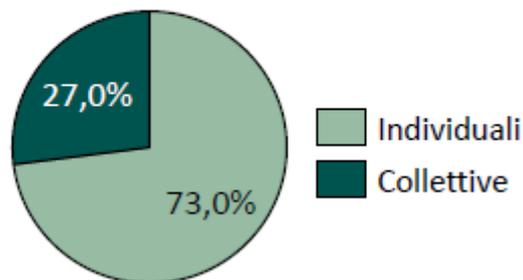


Figure 17. SOURCE: Innovation Team calculations based on I semestre 2018 ANIA data; Health segment - Accident

The Disease business (figure 18) shows a more concentrated mix composition compared to what was analyzed in the accident segment: the offer of solutions is mainly characterized by reimbursement for medical expenses (77.0%) mostly proposed in collective form, permanent disability (more than 9%), hospitalization and recovery (6.4%), Long Term Care (1.2%) and other solutions (6.3%).

In particular, with regard to the Long Term Care²⁷ solutions, these are up compared to the first half of 2017 by 16.2%.

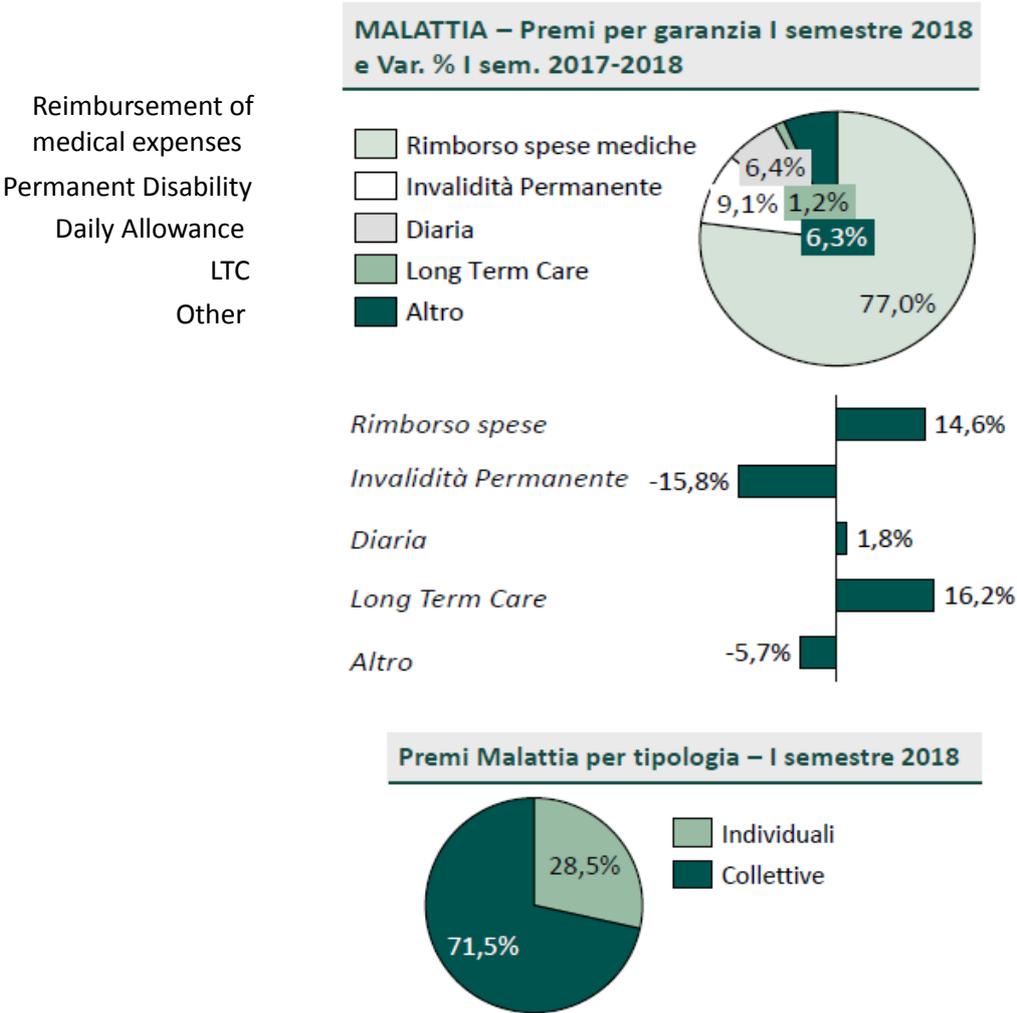


Figure 18. SOURCE: Innovation Team calculations based on I semestre 2018 ANIA data; Health segment Illness

²⁷ The long term care (LTC), as discussed in the first chapter, is a guarantee linked to problems of non self-sufficiency, that is, a protection solution that is triggered when one should lose one's ability to independently perform the elementary activities of the daily life, related to mobility, nutrition and personal hygiene.

Loss of self-sufficiency means the total, permanent and irreversible inability to independently carry out the elementary activities of daily life related to mobility, nutrition and personal hygiene. The latest ISTAT survey on the "Health condition and use of health services" found that 18.5% of over 65s (about 2.5 million people) report a condition of total lack of self-sufficiency and it is estimated that in 2050 will be over 5 million.

2.1.1 Focus on the offer side: how are the main Italian players behaving?

There, where the National Health Service does not arrive, private players come into play ready to integrate and sometimes replace the public.

Alongside the predominance of insurance companies to make up the health world, we can see the banking channel which according to ANIA data is up 10% in the third quarter of 2018.

The offer of these players ranges from traditional medical expenses reimbursement services or compensation in case of accident / illness to the most innovative products launched in the last year that are linked to healthy lifestyles where the primary focus is physical and mental well-being and are highly customizable.

The health care offer of the main insurance and banking players is shown below²⁸.

a. Generali Italia

Generali Italia at the fourth quarter of 2018 shows a decline in Non-Life premiums, -1,7% for the Motor business and -1,5% for Non-car Damage. However for this business there is a recovery thanks to the lines of accidents and illnesses.

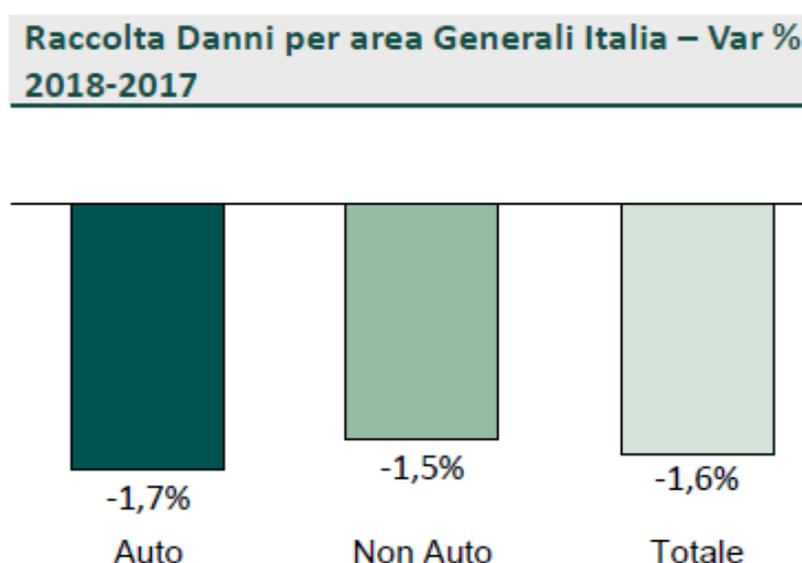


Figure 19. SOURCE: Innovation Team elaborations on Balance Sheet data and Press releases; Non-Life Business Generali Italia, Motor & Non Motor, var % 18/17

²⁸ The data presented in the following pages are taken from statistics of ANIA, Innovation Team MBS Consulting, Budgets of the Companies listed below on their respective websites etc.

The pursuit of the goal of becoming "Life-Time Partner" for customers (set out at the November 2018 Investor Day), is based on some fundamental transformation drivers:

- *Digitization of the Distribution Network (customer and campaign management profiling and interaction dashboard through the so called "AgentHub")*;
- *Offer of innovative products and services designed taking advantage of the potential of digital data analytics*;
- *Digital connectivity infrastructures between the Company, Agents and Customers (Mobile and WebHub²⁹)*

"*Immagina con Generali*" is the new line of insurance solutions of Generali Italia that accompanies the person in the realization of his or her own projects.

Within the Immagina Line, Immagina Benessere³⁰ is the solution that offers a program of protection, prevention and assistance services that can be customized based on the lifestyle of the person.

And even in the event of an unforeseen event, the client will be able to continue to pursue life projects.

There are 5 solutions, depending on lifestyle and other criteria. Let's see them one by one.

- 1) *DEDICATED TO YOU - PREVENTION AND ASSISTANCE* always active with the package of Prevention and Assistance services - START which includes emergency services such as for example a rapid evaluation of the first symptoms, a consultation between doctors to identify the best therapy, a doctor or physiotherapist at home, night and holiday emergency service and also the family collaborator;
- 2) *INDEPENDENCE* - to always be able to provide for the client and the beloved ones, because being provident makes stronger and safer even in the event of unforeseen problems. In this area the client can discover and choose life annuities or guarantees for cases of serious injuries or health problems;
- 3) *ACTIVE* - to be always fit and physically active, minimizing temporary moments of inactivity. In this area it will be able to discover and choose the guarantees for a daily allowance in the event of hospitalization, and also of childbirth, or due to an accident;

²⁹ Investor Day of November 2018 - Strategic Plan 2019-2021 Generali Italia

³⁰ Immagina Benessere will be analyzed more in depth in the final chapter of this work. Here is just mention within the Line "*Immagina con Generali*".

- 4) *CONTINUITY* - to plan and carry out the projects a customer has in mind, for work or family, even after the client, protecting his/her beloved ones and how much it has been achieved in life.
- 5) *DEDICATED ESPECIALLY TO YOU* - for those who have specific interests or activities, such as those who are passionate about sports or travel or those who are engaged in an entrepreneurial activity. The customized packages include guarantees and ad hoc clauses for the family, the sportsman, the traveler, the senior, the professional / entrepreneur as well as the Legal Protection.

b. Unipol Financial Group

UnipolSai's total 2018 non-life premiums (figure 20) increased slightly compared to the previous year (+ 1.1%).

Non-Motor segment is quite positive (+ 2.0%), albeit decidedly slowdown compared to the growth of 2017 (+ 6.3%).

In particular, the Disease branch improved (which comes to weigh 17% from 14% in the 2017).

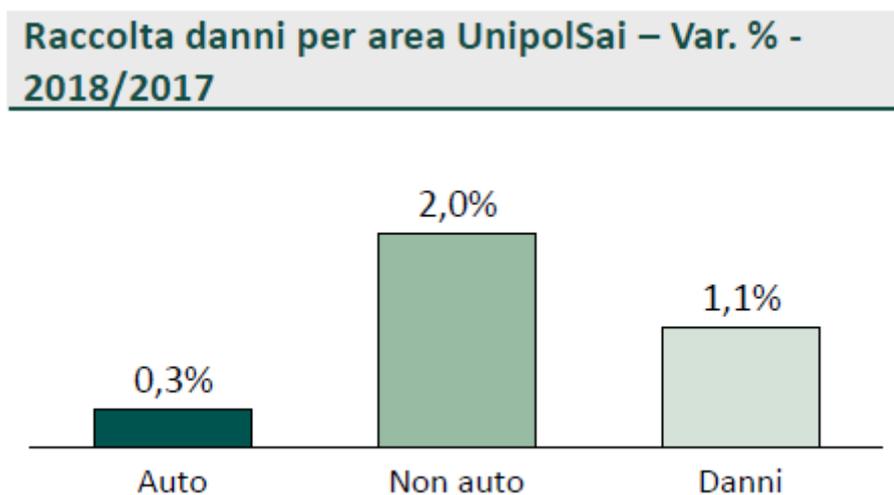


Figure 20. SOURCE: Innovation Team elaborations on Balance Sheet data and Press releases; Non-Life Business UnipolSai, Motor & Non Motor, var % 18/17

Figure 21 a. shows the composition mix of the different branches: life (35.1%), cars (34.2%) and non-motor (30.8%).

As regards the part below in Figure 21 b., more than half of the damage collection is due to the motor world (53.0%), while health and property are classified respectively at 17.0% and 15.0%.

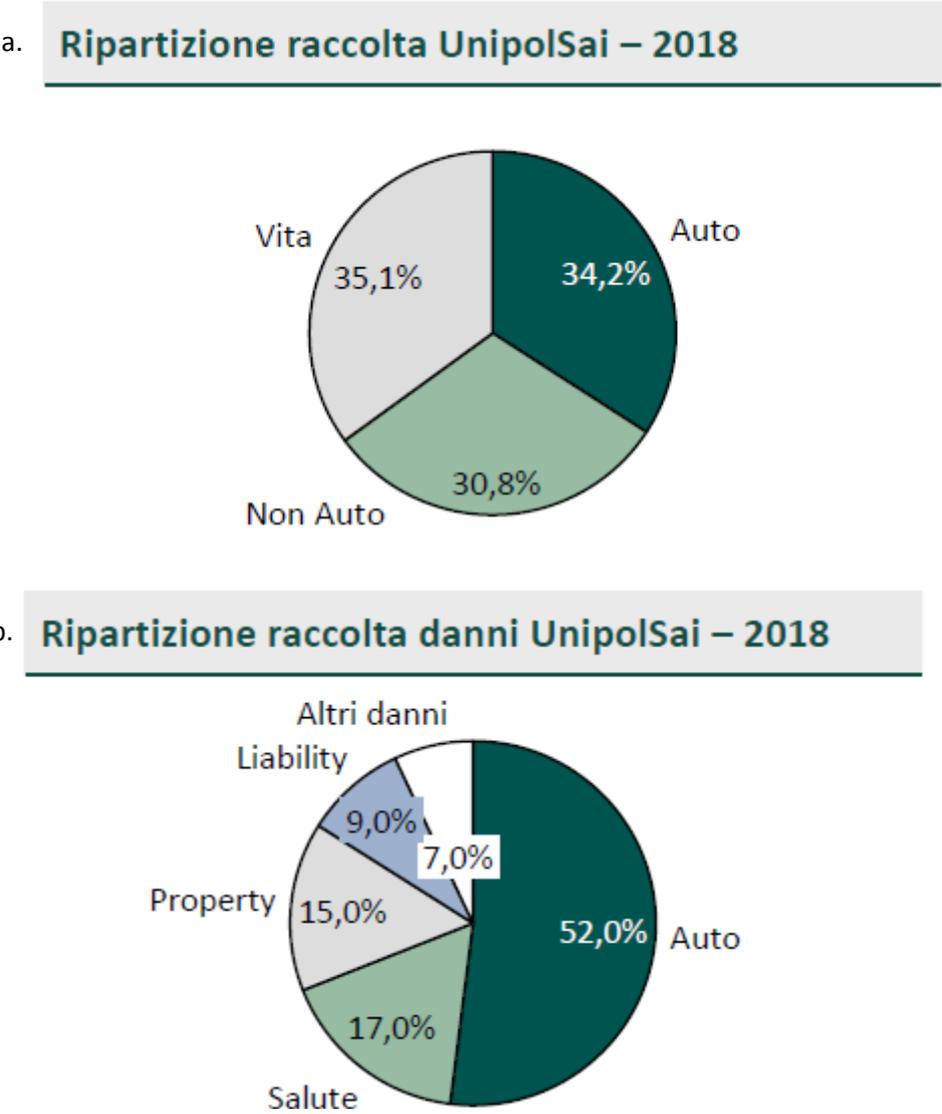


Figure 21. SOURCE: Innovation Team elaborations on Balance Sheet data and Press releases; Composition mix of UnipolSai (a), composition mix of Non Life premiums (b) - 2018

c. RBM Assicurazione Salute

In December 2018, RBM launched the new VivaLaSalute! product, an innovative solution that encourages the adoption of healthy lifestyles and finances savings for the most serious diseases and old age.

VivaLaSalute! is supported by a pool of specialists to plan early diagnosis checks, nutritional plans, organize an appropriate sports activity etc.

It is divided into 4 modules: Prevention, Physical Well-being, Food Well-being and Mental Well-being.

The prevention module includes first visits such as health assessment, cancer diagnosis, cardiovascular, metabolic etc.

Physical well-being includes plans for training and coaching services, visits for non-competitive sporting activities, physiotherapy, voucher for reimbursement of expenses in the health field (running shoes, treadmill etc.) reimbursement for purchasing devices.

On the other hand, wellness includes intolerance tests, vouchers for reimbursement of expenses for organic foods or food supplements, coaching services etc.

Lastly, the mental well-being module includes psychological visits and sleep monitoring, voucher for reimbursement of expenses such as cinemas, theaters, wellness and relaxation trips, yoga, massages etc.

d. Allianz Italia

In 2018, Allianz Italia premium collection exceeds 16 billion euros, mainly driven by the growth in the Life segment (+ 3.8% in comparison with 2017), which is confirmed largely in the composition of the total portfolio (71.8%). The positive change in Non-Life branch amounts to +1.04 p.p., for a total collection that accounts nearly € 4.6 billion (figure 22).

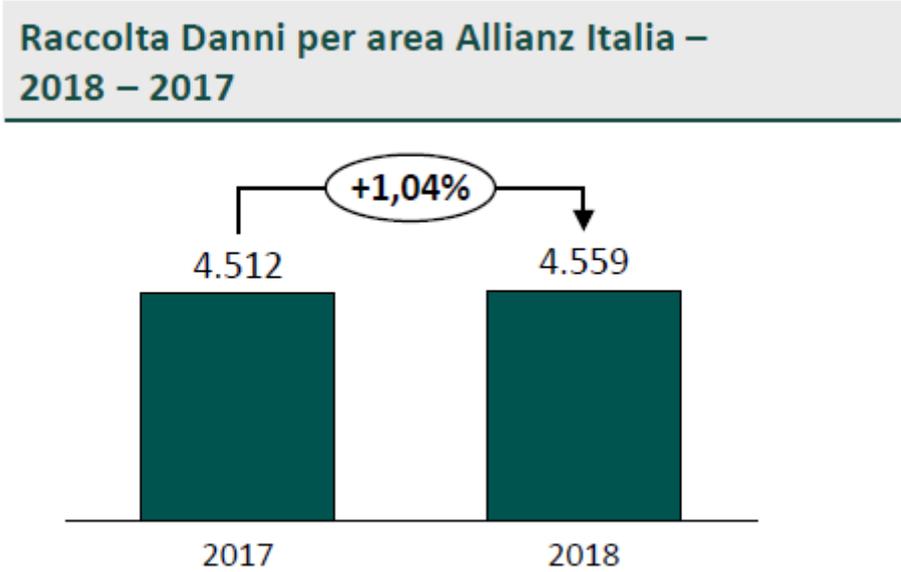


Figure 22. SOURCE: Innovation Team elaborations on Balance Sheet data and Press releases, Non Life Premiums of Allianz Italia, var 18/17

A third of the entire annual Non-Life premium income (€ 1.4 billion) was acquired in the fourth quarter of 2018 (+ 2.6% over the comparable period). The Non-Motor trend was also positive, due to the growth in funding from both Corporate customers and Retail customers.

Among Allianz Italia's flagship products there is Allianz1, which has achieved its reputation for modularity and customization, which is able to offer different solutions to various target customers, both retail and business.

In the health field, there is the Allianz1 solution that offers a series of insurance coverage for health and illnesses and one solution dedicated to the protection of four-legged friends, dogs and cats.

The figure shows the simplicity with which the different modules are configured and chosen according to the customer's needs.

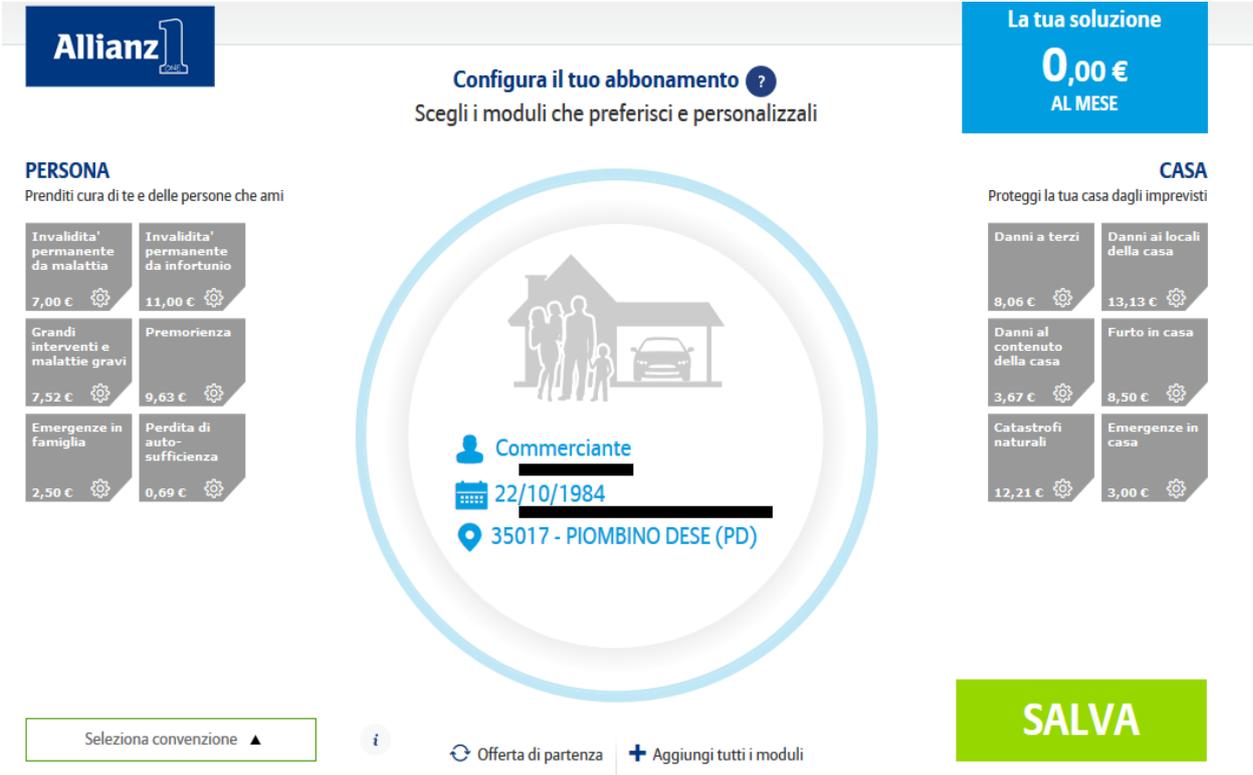


Figure 23. Screenshot taken from the Allianz website - Selection of modules according to date of birth, municipality of residence and profession.

e. AXA

In July 2018, AXA renewed the “Protezione Salute” product, which provides 6 basic covers and alternatives that can be integrated with accessory covers.

The basic and alternative covers are:

- check-up
- first assistance / assistance 360
- hospitalizations, interventions and day hospital
- hospitalizations, interventions and day hospital in agreement
- serious illnesses
- major surgical interventions
- high specialization and physiotherapy treatments

The accessory guarantees instead are:

- visits and assessments
- daily allowance
- post-recovery recovery period
- accidents without hospitalization
- capital for convalescence
- legal protection

i. Intesa SanPaolo Assicura

Intesa SanPaolo Assicura offers to Intesa SanPaolo customers the *XME Protection* product line dedicated to Family, Health and Property / Home.

In the Health solution we find four different modules:

1. *Accidents*: Coverages that protect the person and his family in the event of an accident, small or large, with an insurable capital personalized on his needs, compensation for broken bones, loss of the school year or aesthetic damage;
2. *Prevention, Diagnostics and Medical Advice*: Coverages that offer the possibility of making an annual check-up with personalized preventive exams based on age and sex at affiliated facilities, diagnostic tests prescribed by the attending physician, medical advice;
3. *Serious illnesses*: Coverage that offers a capital in the event of the diagnosis of a serious illness, with the possibility of choosing the level of compensation according to

one's needs, second opinion and home care by physical therapists and nurses are also included;

4. *Surgery*: Coverage that guarantees compensation in the event of surgery due to illness or injury, including childbirth requiring intervention.

2.1.2 Focus on the demand side: what Italians are asking for?

This paragraph takes up a little already seen in *1.2.2 Private healthcare spending*, regarding private spending on healthcare.

Here it will be seen, from the side of demand and therefore of Italian families, what they are asking for the health care sector from the insurance and banking world and others suppliers.

Here the focus is not only on the health care field, but on the more general topic of family welfare.

Family welfare is an industry that is worth 143.4 billion euros today, equal to 8.3% of GDP³¹.

But what does it mean family welfare?

All the commitments that the family supports to ensure the well-being and social security for its members, in areas such as health and assistance, work, education, social security and insurance, culture and leisure.

³¹ These data refer to the research carried out by MBS Consulting and the Innovation Team over the course of 2018 on over 2,400 families to analyze the welfare needs and expenses of the nuclei of different economic and social conditions, collected in the publication "*Osservatorio sul bilancio di welfare delle famiglie italiane*"

Figura 1 - Spesa di welfare delle famiglie italiane 2018 - Miliardi di euro

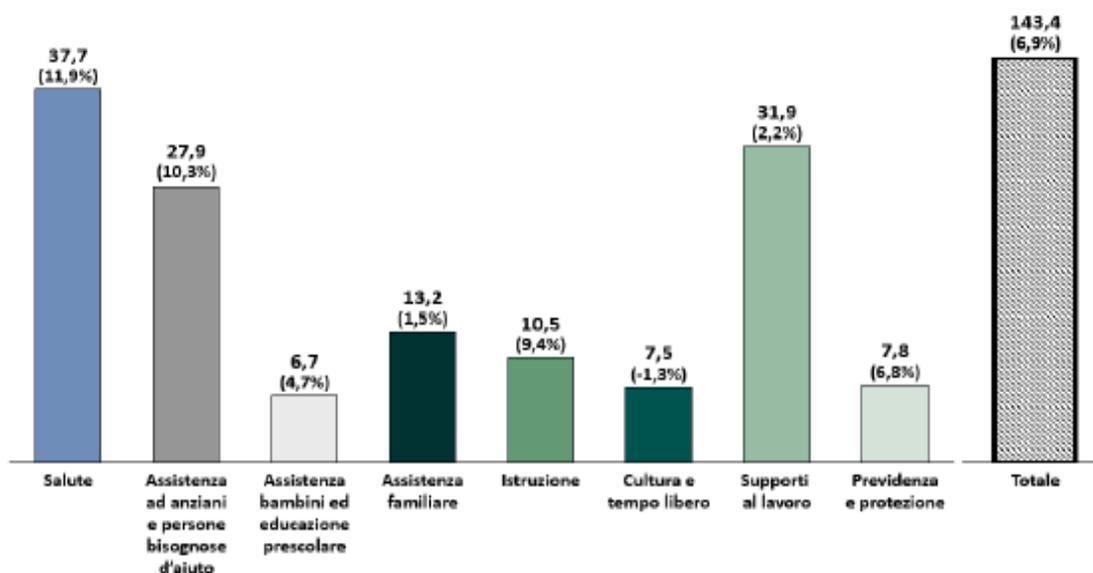


Figure 24. Source: Mbs Consulting and Innovation Team data; Percentage of spending in welfare field - 2018

The most significant expenditure (37.7 billion, + 11.9% on 2017) is sustained for health (as we have also underlined in the first chapter) – figure 24. Almost all Italian families (25.5 million) have a minimal health expense every year, and the average amount is 1,476 euros per family.

The second “item” for economic value is that for work supports (31.9 billion), as the transport and supply costs necessary to work, supported by 16.8 million families, for an average annual amount of 1,914 euros.

Children's education costs 10.5 billion (+ 9.4%). This expenditure concerns 5.9 million families and weighs on average for 1,813 euros on each user family.

Assistance to the elderly and people in need of help costs a total of 27.9 billion, including carers, residential facilities and expenses for qualified health personnel. The families with spending are 2.1 million, with an average expenditure of 13,306 euros but the families that have elderly or needy persons for help are around 6.4 million, that is a quarter of Italian families.

The items of expenditure for pre-school education and children and care of the home complete the assistance, with 6.7million families and 13.2 billion euros respectively.

The expenses for culture and leisure have a total value of 7.5 billion euros, they are supported by 16.1 million families for a rather small average amount, of 469 euros per family.

Finally, the area of social security and protection, that is, individual voluntary payments into pension funds, life insurance for the protection of persons and policies for the protection of domestic assets. A total expenditure of 7.8 billion euros supported by 8.1 million families: on average 954 euros per family.

Compared to 2017, total welfare spending increased by 6.9% (figure 25). The items of welfare spending increased most significantly those relating to health (+ 11.9%) assistance to the elderly and people in need of help (+ 10.3%), and education (+ 9.4%). Only the expenses for culture and free time see a slight reduction (-1.3%).

Spending on welfare absorbs an average of 18.6% of net family income, around € 5,611 per year, compared to an average annual income of € 30,134. Savings stop at 8.2% of net family income, while other consumption expenses that are not part of welfare cover 73.2% of income.

Figura 2 - Spesa di welfare delle famiglie italiane: 2017 vs 2018 - Miliardi di euro e %

Aree	2017	2018	Variazione (%)
Salute	33,7	37,7	11,9
Assistenza ad anziani e persone bisognose d'aiuto	25,3	27,9	10,3
Assistenza bambini ed educazione prescolare	6,4	6,7	4,7
Assistenza familiare	13,0	13,2	1,5
Istruzione	9,6	10,5	9,4
Cultura e tempo libero	7,6	7,5	-1,3
Supporti al lavoro	31,2	31,9	2,2
Previdenza e protezione	7,3	7,8	6,8
Totale	134,2	143,4	6,9

Figure 25. Mbs Consulting and Innovation Team data; Welfare spending of Italian families, var 18/17 in bn €

The costs for welfare have therefore a significant impact on the family budget but differentiated according to the economic condition: this type of expenditure weighs in fact much more for the weak segment of the population (22.8%), with a saving that barely reaches

over 2%. For the higher groups, on the other hand, the share of welfare spending remains around the average, with much higher savings.

2.2 Global market context

We have seen what is happening at the Italian level, on the supply side and on the demand side.

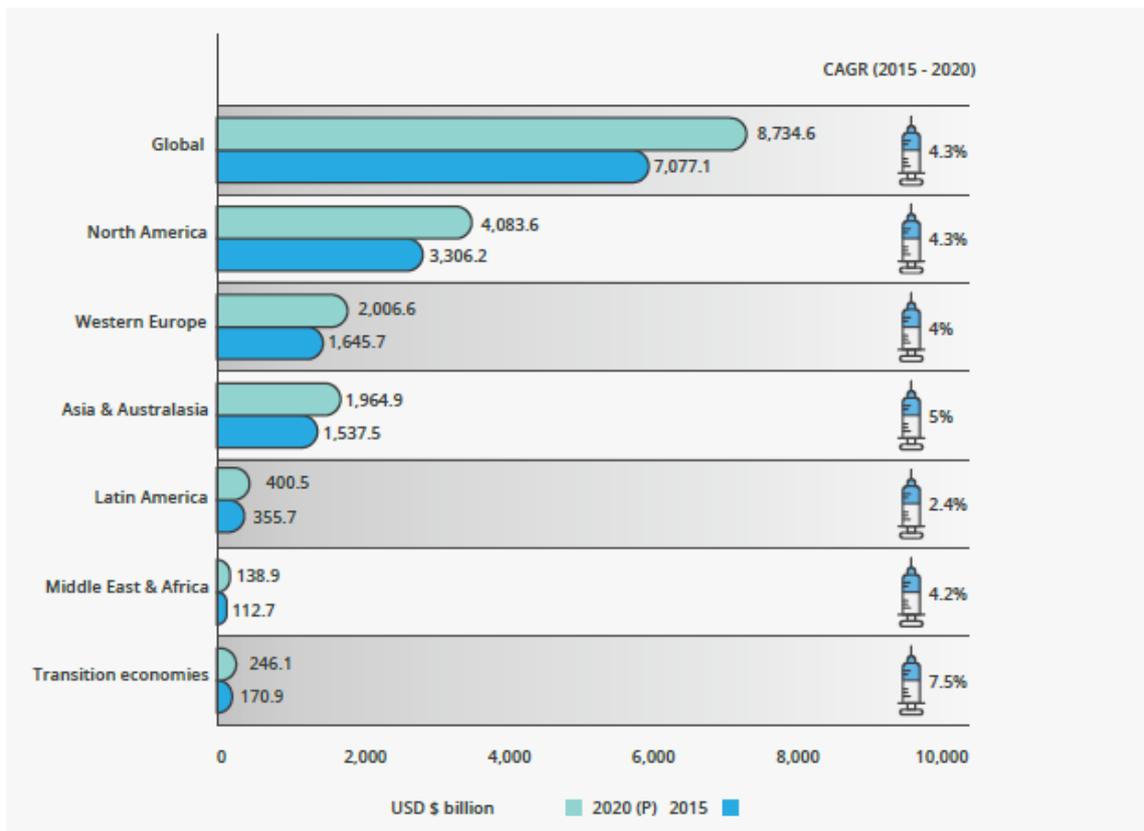
We will see in the following pages what is happening globally on the subject of healthcare.

Global health care spending is projected to increase at an annual rate of 4.1% in the years 2017 -2021, up from just 1.3% in 2012-2016.³²

Combined health care spending in the world's major regions is expected to reach USD \$8.7 trillion by 2020, up from USD \$7 trillion in 2015 (figure 26).

Per-person health care spending will continue to vary widely, ranging from \$11,356 in the United States to just \$53 in Pakistan in 2021.

³² The data here presented are collected in the “2018 Global health care outlook - The evolution of smart health care” of Deloitte Monitor on data of World Industry Outlook, Healthcare and Pharmaceuticals, The Economic Intelligence Unit, June 2017



Source: World Industry Outlook, Healthcare and Pharmaceuticals, The Economic Intelligence Unit, June 2017

Figure 26. Source: Deloitte Monitor elaboration on World Industry Outlook data; Healthcare and Pharmaceuticals, The Economic Intelligence Unit, June 2017

Among the drivers that will increase global healthcare spending, according to Deloitte Monitor Report, we find:

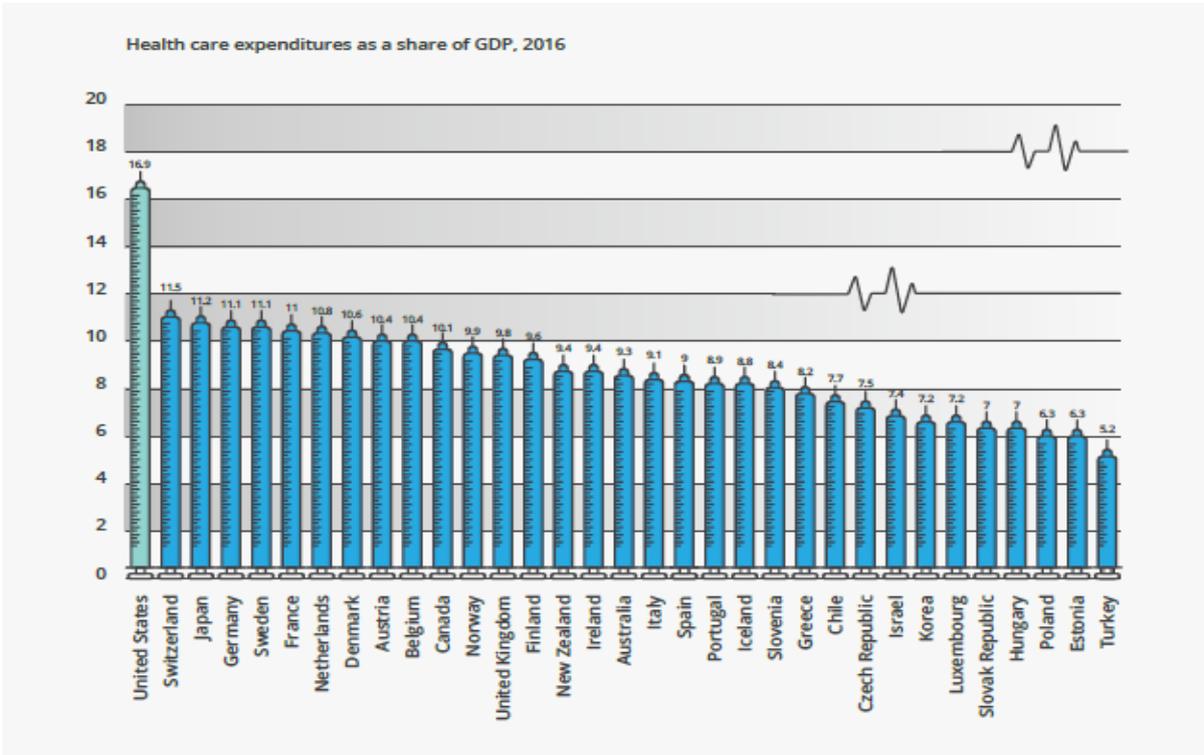
- *Aging and increasing populations:* it is estimated that by 2021 the population over 65 will reach and exceed 650 million, making up 11.5% of the total world population;
- *Developing market expansion:* the phenomenon of globalization and internationalization will not be diminishing but rather this will constitute more and more mobility at continental and extra-continental levels;
- *Advances in medical treatments:* technological progress will become more and more alive going to play a primary role in the healthcare world;
- *Rising labor costs:* labor costs will continue to grow, above all, to go hand in hand with the social evolution and the developing of the company welfare systems in favor of the working community. (Deloitte Monitor, 2019)

Figure 27 shows the spending trends for health care in different countries: spending more does not mean “being healthier” and more spending also leads to greater inefficiencies and waste.

Jeroen Tas, Chief Innovation and Strategy Officer at Royal Philips, expressed concern in this regard during the "Talks on Tomorrow" event of last March:

“The United States spends about \$ 3.2 trillion on healthcare and of this, waste represents about 30 - 40%. Healthcare is therefore a sector in which there are great opportunities to have better results. Just to get an idea, the total waste of USA is comparable to Holland's GDP”.

Figure 3. Health care spending by country



Source: OECD

Figure 27. Source: Deloitte Monitor elaboration on OECD data; Health care spending by country, as a share of GDP, 2016

Many are the factors that will increase the level of health care spending even more in the coming years.

Suffice it to say that the estimates state that in Japan the population over 65 will reach 30% of the total one in 2021, Western Europe will sail at around 21%.

So not only aging of the population is a critical issue, but Deloitte Monitor also reports:

“Rapid urbanization, sedentary lifestyles, changing diets, and rising obesity levels are fueling an increase in chronic diseases - most prominently, cancer, heart disease, and diabetes - even in developing markets. China and India have the largest number of diabetes sufferers in the world, at around 114 million and 69 million, respectively. Globally, the number is expected to rise from the current 415 million to 642 million by 2040”. (Deloitte Monitor, 2019)

Will the diverse health facilities be able to accommodate this “health race”?

Not only, the sustainability of costs in the next years will become a concern to be managed at high levels, through stringent regulations, but also with regard to the management of infrastructures that will best meet these needs, in rapid and effective terms.

Will the technology be able to simplify, improve and innovate the healthcare system also by treating diseases that for now are still incurable?

We will try, in the third chapter, not so much to answer these questions which unfortunately for now are still very difficult to answer, but we will at least give an overview of what is happening globally in the areas of health care and technology.

CHAPTER 3 – Health & Technology

In the first chapter the term health care was defined according to different perspectives; in the second chapter the main statistics of expenses in the areas of accidents and illnesses have been highlighted, and the more salient data were shown in graphs and tables.

Now, in the third one the connection between health care world and technology area will be studied, analyzing how the latter can and could be an excellent ally in the medical field within a few years.

Even if the technology requires no introduction, a brief definition of the term will be provided.

*“Technology ("science of craft", from Greek τέχνη, techne, "art, skill, cunning of hand"; and -λογία, -logia) is the collection or knowledge of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation”.*³³

Just as it happened for the term health, the meaning of technology has also changed over the years; with the evolution of the context and societies, it has changed meaning and adapted to these external factors.

In the Paleolithic era technology meant using stone tools to feed, protect and live everyday life.

The fourth millennium introduces the Bronze Age and thanks to the invention of the wheel in Mesopotamia and the writing in the lower Danube valley the passage from prehistory to

³³ Wikipedia defines technology as follow: *“Technology ("science of craft", from Greek τέχνη, techne, "art, skill, cunning of hand"; and -λογία, -logia) is the collection of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation. Technology can be the knowledge of techniques, processes, and the like, or it can be embedded in machines to allow for operation without detailed knowledge of their workings. Systems (e. g. machines) applying technology by taking an input, changing it according to the system's use, and then producing an outcome are referred to as technology systems or technological systems”.*

history was marked. These two technologies brought enormous benefits in terms of knowledge, saving time and energy.

But, the real emblem of technology and novelty is the First Industrial Revolution³⁴: Watt's steam engine has effectively brought modernity to the current meaning as we all know.

From there everything is well known and the pages of history books have been filled with technological innovations uninterruptedly.

If Bill Gates' dream was a computer on every desk, now the dream of the most famous Mountain View company could be more like a Google Home in any home.

In less than 70 years we have gone from the *Digital Computation* era, to the *Digital Communication* era and finally to the current and more attractive *Digital Fabrication* phase, with 3D printers and “artisan 4.0” laboratories³⁵.

Digital Computation refers to the era of mainframe computers used in big corporates; in order to talk about computers as they are understood today, one must go to the Z1 of Konrad Zuse in 1939 which brought to light the first of an innovative series of electromechanical calculators based on the binary system. In fact, Zuse's will be recognized by the international computer science conference of 1998 as the first functioning programmable computer in history.

The second timeline, *Digital Communication*, refers to the era of Web 1.0, the one born with Berners Lee in May 1990 with his World Wide Web or more effectively www. The websites were static at the time, sometimes they contained images, and their purpose was merely informative - consultative and there was no interaction between the user and the clicked content.

³⁴ The first industrial revolution developed in England towards the end of the 1700s, mainly in the textile-metallurgical sector thanks to the use of the steam engine within the production process. This revolution, the first of the three that followed it (a fourth is now in the process of development) brought with it a profound and abrupt change, not only in the economy but in all levels of society, politics, lifestyles and culture: for example the formation of a new class, the working class, had a noticeable impact on the political-economic level in the years to come.

For more details see: Mantoux P., *The Industrial Revolution*, Res Gestae, EAN: 9788866971375, 2015

³⁵ The part concerning the three phases Digital Computation, Digital Communication and Digital Fabrication are taken from my three-year thesis “*Digital Revolution: I fab lab universitari*”, and the cited authors have been included in the bibliography section.

The more interactive Web 2.0 “*embraces the dumb power*” (Kevin Kelly, 1997) of the network economy, and belongs to the billionaire giants like Instagram, Snapchat, Twitter and Tumblr. But, Digital Communication has not stopped evolving and today we are actually entering the phase of Web 3.0, the web of semantics and things, the so called *Internet of Things*.

Finally there is the third phase, that of the *Digital Fabrication*, to which the short essay by Neil Gershenfeld also refers, entitled “*How to make almost anything. The Digital Fabrication Revolution*”.

This in fact preaches precisely of a revolution in progress, a revolution that however affects the environment of manufacturing and industry, not so much that of services.

Also Chris Anderson, known for his famous theory of *Long Tail*, was interested in it and in 2010 he published an article that became extremely clicked titled “*In the next Industrial Revolution Atoms are the new Bits*”.

The title is very apt, because what the Digital Fabrication does is just to transform bits into things and objects and, then vice versa, to bring back physical matter in the form of new data.

This would lead to a drastic reduction in waste, in fact it is believed that a modern 3D printer can use as an input for printing 80% of waste material from subtractive machines (as laser cutter or numerically controlled cutters) and only 20% will result from virgin material.

This is the age we are living now, an era full of challenging opportunities, but which unfortunately is faced with “old”, bureaucratic mindsets, formalisms, waste and various inefficiencies, which the generation in power has not been able to remove yet.

3.1 Technology and Insurtech area

So, what does technology mean in 2019?

Technology, in 2019, is the set of the definition provided by the biggest online encyclopedia at the beginning of this chapter, plus a set of other “things”.

Perhaps, to understand what technology means today, we should take the definition given by Wikipedia and re-read it in terms of six current macro-arguments or pillars:

1) *Sharing Economy*

Sharing Economy may seem a new and trendy concept. Actually, it is not.

For centuries, man has been used to sharing: things, time, affections and energies.

So why in the last few years there is so much discussion about this phenomenon which according to many is a new one?

The novelty lies precisely in the fact, that while in the past “things” were shared with a few people, who could be family, friends, neighbors, etc., they are now shared with all those who participate in this type of economy.

Schor³⁶ (2014) would call it "*Stranger Sharing*", because now things are shared with people outside the personal circle, of which fundamentally we don't know much and therefore trusting or not represents a question mark.

The critical point is due to the fact that among strangers you can also share very personal things, like home, car and in other cases even the food prepared by someone else.

What simplifies making this phenomenon even safer are the platforms (especially digital) through which the sharing economy works.

We trust others through reviews, ratings, scoring, number of stars received and so on.

The sharing economy is well connected with the other theme of the "*open source*" and *collaborative* movement on whose companies 2.0 and foundations as Wikipedia and other *peer-to-peer* platforms were born.

The mission of these communities is to make available most of the information, software, knowledge in general, to its participants and to those who surf the web, thanks to the logic of volunteering, open, democratization and peer.

Figure 28 shows how Sharing Economy works within the "*on-demand*", "*second-hand*" and "*product-service*" economies.

³⁶ Schor, J., Fitzmaurice, J.C, (2014) "*Collaborating and Connecting: The emergence of the sharing economy*" and Schor, J., (2014) "*Debating the Sharing Economy*"

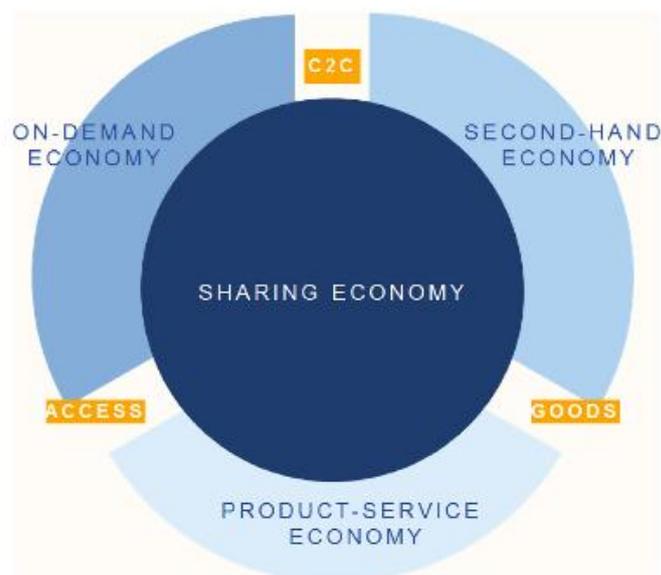


Figure 28. SOURCE: Sharing economy and related forms of platform economy (Frenken et al., 2015)

2) Blockchain³⁷

“Blockchain is a distributed, decentralized, public ledger.”

When we say the words “block” and “chain” in this context, we are actually talking about digital information (the “block”) stored in a public database (the “chain”).

“Blocks” on the blockchain are made up of digital pieces of information (figure 29).

Specifically, they have three parts:

1. *“Blocks store information about transactions like the date, time, and amount of your purchase from a specific web site.*
2. *Blocks store information about who is participating in transactions. A block for your splurge purchase from a particular online shop would record your name along with nameoftheshop.com. Instead of using your actual name, your purchase is recorded without any identifying information using a unique “digital signature,” sort of like a username.*
3. *Blocks store information that distinguishes them from other blocks. Much like Maria and Giacomo have different names to distinguish from one another, each*

³⁷ For more see S., Melanie, *“Blockchain: Blueprint for a New Economy”*, O’Reilly Media, ISBN 1491920491, 2015

block stores a unique code called a “hash” that allows us to tell it apart from every other block. Let’s say you made your splurge purchase, but while it’s in transit, you decide you just can’t resist and need a second one. Even though the details of your new transaction would look nearly identical to your earlier purchase, we can still tell the blocks apart because of their unique codes. ” (Fortney, 2019)

In order for a block to be added to the blockchain, however, four things must happen:

1. *A transaction must occur*, like a purchase on your favorite online shop;
2. *That transaction must be verified*. With other public records of information, like the Securities Exchange Commission, Wikipedia, or your local library, there’s someone in charge of vetting new data entries. With blockchain, however, that job is left up to a network of computers. These networks often consist of thousands (or in the case of Bitcoin, about 5 million) computers spread across the globe (most of this transaction happens in a second);
3. *That transaction must be stored in a block*. After the transaction has been verified as accurate, it gets the green light, then, the transaction will likely join hundreds, or thousands, of others like it;
4. *That block must be given a hash*. Once all of a block’s transactions have been verified, it must be given a unique, identifying code called a hash. The block is also given the hash of the most recent block added to the blockchain. Only hashed, the block can be added to the blockchain. (Fortney, 2019)

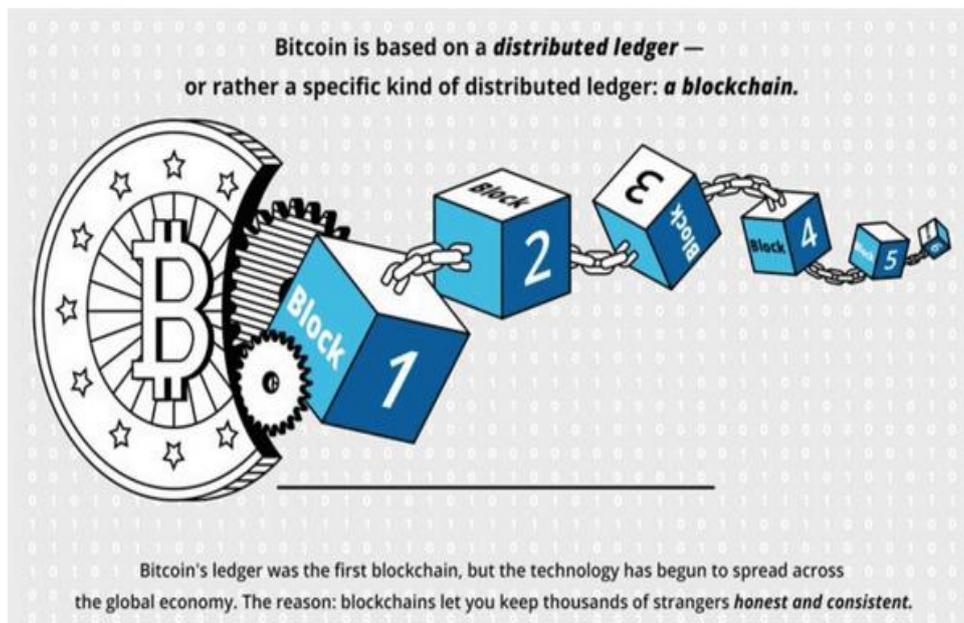


Figure 29. SOURCE: Luke Fortney (2019) “Blockchain Explained” - <https://www.investopedia.com/terms/b/blockchain.asp>

3) *Cybersecurity*

*“Cyber security refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. Cyber security may also be referred to as information technology security.”*³⁸ (Lord, 2019)

Cyber security has become a very important topic today, given that almost all of the data, both personal and public, of people, organizations, hospitals and governments pass through the Internet to be stored in specific databases. If these data are hacked and made public they can compromise the integrity of both people and organizations, especially if it concerns the disclosure of sensitive material such as a person's health, financial data, secret government data etc.

This theme is of primary importance in a modern society where the culture of *open source* and democratization of information make themselves advocates of this era. What is needed is a regulation that comes from above and that leaves no gap in terms of penalties for those who do not respect the privacy of data and people.

³⁸ For the entire article see: <https://digitalguardian.com/blog/what-cyber-security>

4) IoT – Internet of Things³⁹

“The internet of things, or IoT, is a system of inter-related computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.” (Rouse, 2018)

Owning a car equipped with a black box and camera means being part of the Internet of things, because in the event of carelessness the car brakes if you approach the car in front, “tells” you to respect the limits in the city and “teaches” you a more correct driving style.

Having Google Home or Alexa at home also means being part of the Internet of Things because while you're leaving work you can say “Hello Alexa, I'm coming home. Can you turn on the air conditioning?” and in the event of a break-in, it sends an immediate message to the owners to alert them.

But, how does IoT really work?

An IoT ecosystem consists of web-enabled smart devices that use embedded processors, sensors and communication hardware to *collect*, *send* and *act* on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices - for instance, to set them up, give them instructions or access the data.

5) Artificial Intelligence (AI)

Merriam-Webster defines artificial intelligence this way:

1. *“A branch of computer science dealing with the simulation of intelligent behavior in computers;*

³⁹ Kevin Ashton, co-founder of the Auto-ID Center at MIT, first mentioned the *internet of things* in a presentation he made to Procter & Gamble (P&G) in 1999. Wanting to bring radio frequency ID (RFID) to the attention of P&G's senior management, Ashton called his presentation "Internet of Things" to incorporate the cool new trend of 1999: the internet.

MIT professor Neil Gershenfeld's book, *When Things Start to Think*, also appearing in 1999, didn't use the exact term but provided a clear vision of where IoT was headed.

2. *The capability of a machine to imitate intelligent human behavior.*”

The Encyclopedia Britannica states:

“Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.”

Lastly, Wikipedia definition is the following one:

“In computer science, artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans. Colloquially, the term “artificial intelligence” is often used to describe machines (or computers) that mimic “cognitive” functions that humans associate with the human mind, such as “learning” and “problem solving”.”

The benefits brought by the AI are enormous and in many cases have not yet been fully exploited.

Companies like Amazon could not even have been born without the help of this tool. Amazon in fact bases its entire business on Machine Learning, from the time of purchase, warehousing, shipping and customer care.

Talking about artificial intelligence seems like talking about science fiction movies where robots are ruling the world.

Things are not actually like this and for now *Machine Learning* is still learning!

6) *Big Data*

According to Lyotard (1979) the Post-industrial era is characterized by:

- the increasing importance of the digitised data and information, which become bigger and bigger;
- the loss of importance of education and humanistic knowledge;
- the core role of managers with respect to the ability to manage an ever-increasing amount of data in a performative way.

Big Data has changed the relationship between knowledge and power, in fact in the modern era power is equated with the possession of the greatest amount of information.

Whoever holds more information holds the economic and political power (i.e. *insider trading* problem, that is the *exploitation of non-public information*, the divulgence of which will have an effect on stock prices).

Economic power allows to possess more knowledge (more information) and such knowledge allows to condition the decision power (to direct people's choices/political power).

So Big Data in this context can be the combination of 10 Vs:

- a. *Volume: Size of data*
- b. *Variety: Different type of data*
- c. *Velocity: The speed at which Data is generated*
- d. *Veracity: Data accuracy*
- e. *Value: Useful Data*
- f. *Validity: Data quality, governance, Data Management*
- g. *Variability: Dynamic, evolving behavior in data sourcing*
- h. *Venue: Distributed heterogeneous data from multiple sources/platform*
- i. *Vocabulary: Data Models, Semantics that describes data structures*
- j. *Vagueness: Confusion over meaning of Big Data and Tools used*

We have seen what technology means today.

Let's analyze the second term: *insurtech*⁴⁰.

This term is the union of the words “*insurance*” and “*technology*” and it would be the declination in the insurance world of the term “*fintech*” which was initially introduced in the banking-financial field.

⁴⁰ For more see: B., Andrea, V., Rossella, “*L'Assicurazione nell'Era Digitale*”, MFC Editore, 2018 and Galbraith, Rob “*The End of Insurance As We Know It: How Millennials, Insurtech, and Venture Capital Will Disrupt the Ecosystem*”, 2019

It is almost strange, reading the terms insurance and technology together, because most people would say insurance companies have nothing to do with the technological field, rather they consider insurance companies old, perhaps dishonest, slow and difficult to understand. The *anti-technology* maybe!

Yet, for some years, more and more often we hear about insurtech: it is not so much the traditional companies that talk about, but more the press, media and start-ups.

Insurtech, like technology, incorporates the six pillars described above, applying them to the insurance sector.

Let's look at some examples of what insurtech is or is not (see also figure 30).

Insurtech is a platform that allows people to check prices and rates, allowing them to see the offer for each company, choosing the most convenient and relevant to their needs (eg Facile.it, Segugio etc.).

Insurtech is a company that allows people to activate temporary and on-demand policies for any need, from pets to travel (eg Yolo, Lemonde, Genertel etc.).

Insurtech is a platform where the subscription of policies takes place in a safe and transparent manner thanks to the blockchain technology, but also that which through the app offers complete assistance in the event of claims (from the detection of damage to the compilation of the complaint) in a simple way and via smartphone.

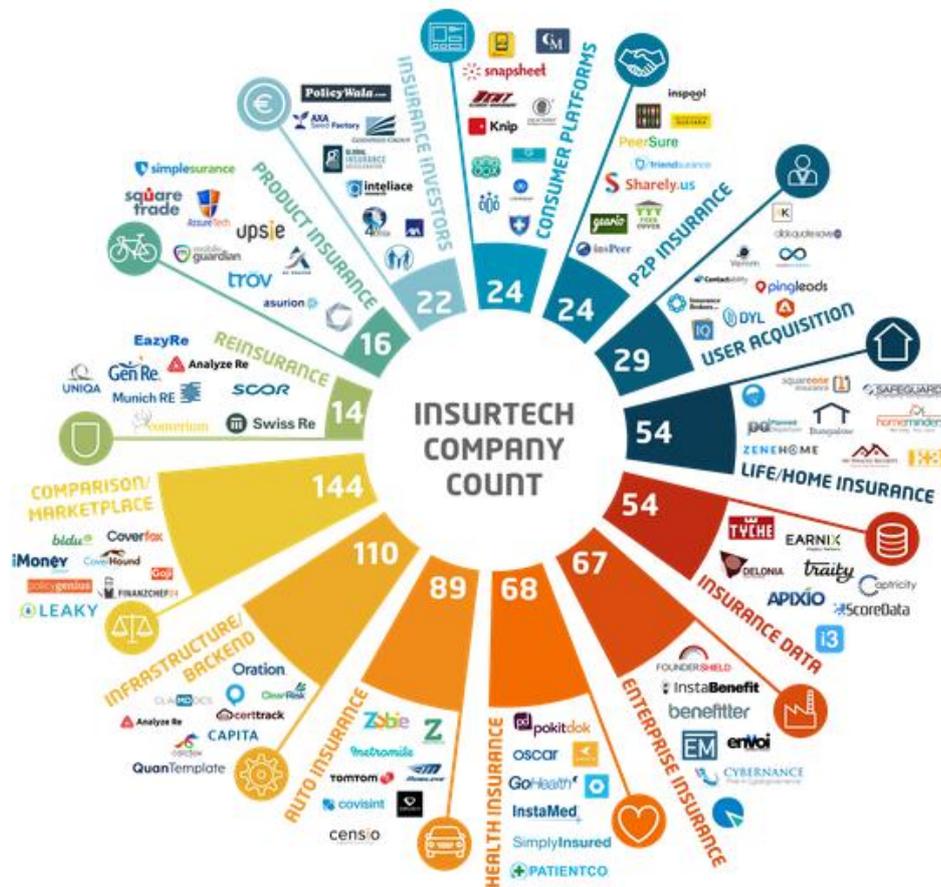


Figure 30. SOURCE: InsuranceUp, “Assicurazioni, 7 temi in cui le insurtech battono le compagnie tradizionali” - <https://www.insuranceup.it/it/scenari/assicurazioni-7-temi-in-cui-le-insurtech-battono-le-compagnie-tradizionali/>

It is not insurtech that company that requires excessive documentation, checks and deadlines for the settlement of a claim.

It is not insurtech that company that does not offer a digital experience to the customer, offering them an app and an interactive website where they not only receive relevant and customize communications, but rather manage the main operations of their contract.

Among the six pillars defined previously, what most influences the insurtech world is the Internet of Things and the entire ecosystem that is created around it.

If you think, Insurtech is not such a recent and innovative factor. Already in the early 2000s there was talking about black boxes and policies on kilometers traveled.

And before 2000 the data obtained were used to better target consumers and their preferences.

The only difference is that now it is done systematically and with the help of more structured mechanisms and resources. All this gave birth to the six pillars mentioned above.

Today the theme of black boxes not only monitors the driver's driving status, if it respects the limits in the city and on the highway, the way of braking, but it allows the companies to diversify the prices to be put on the policy. It helps providing data to the company knowing that the driver belongs to the category of people who use the car only to do the shopping or to bring the children to school or kindergarten, or to the one who used the car every day to go to work or even to those who use it only on weekends to do a trip out of town.

For each of them the insurance company will be able to apply the best prices with the help of the available data.

Think again about all the sensors for the home; an even more integrated and complex ecosystem is in place.

In the event of flooding or power failure, the system independently sends a message to the operations center that verifies what happened, and also sends an alert to the owner of the house and a craftsman as a plumber or electrician to minimize the damage in the case of negative event.

Not only large insurance companies, but also micro and small companies can work in the insurtech world, thanks to the emergence of *micro-insurances* and *peer-to-peer* systems already described in the pillar of the Sharing Economy.

These new business models have enabled more disadvantaged population groups with low economic resources to employ life insurance policies, home insurance policies, supplementary pension policies but also insurance for their “things”, as smartphones, televisions, bicycles, cars etc.

Two of the biggest issues debated by many economists are concerning with Big Data and Cyber Security.

Since the 4.0 era has brought the *democratization* and *decentralization* of data and information bringing with it enormous benefits, but also many problems in terms of privacy violation, price differentiation against certain population groups, abuse of power, categorization of people based on interests, backgrounds, diseases and religions that provoke (sometimes indirectly, but sometimes even directly) discrimination.

It will be the responsibility of national governments, but even of large multinational companies, to protect consumer data and not to disclose more than what can be called “public”.

Therefore using data and information as the most valuable resources⁴¹ ever will be an enormous opportunity to be developed in the coming years.

Insurtech will do well to have these challenges in mind in order to get the best out of the innovation wave.

3.2 Innovation-driven healthcare

Consider these chilling numbers provided by the World Health Organization:

*“ Your chances of being harmed while traveling by plane are 1 in a million
Your chances of being harmed while receiving medical care are 1 in 300 ”* (WHO, 2018)

These numbers highlight a major problem in the world of the health care system, where health care due to inadequate therapies and human error, is the main cause of death for many patients who pass through hospitals and medical facilities.

Technology, as we have described it previously, should ensure that these numbers decrease dramatically and help people's health improving their lives.

On the article of La Repubblica of 8 March 2019, in view of the *Talks on Tomorrow*⁴² event it can be read:

“ Innovation is the key to progress and no sector such as health reflects the level of modernity and civilization of a nation. It is logical therefore hope that these two words - innovation and personal care - go hand in hand and more and more, for a tomorrow in which reliable technological partners facilitate the entry of progress into people lives, allowing access to services through sustainable solutions ”

⁴¹ “The world’s most valuable resource is no longer oil, but data”, The Economist, print edition 6th May 2017, link of the article: <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>

⁴² For the full video see at the link: https://www.repubblica.it/dossier/tecnologia/talks-on-tomorrow-2018/2019/03/12/news/talks_on_tomorrow_salute_e_innovazione-221331016/

By *innovation-driven healthcare* we mean innovation put at the service of personal care, thus allowing *people, data* and *technology* to be connected in a single, well-functioning integrated ecosystem.

This ecosystem so defined would allow to have at the time of need the medical data of a patient through databases that create a so called “*patient history*”, in which there is all his or her digital medical record. Inside it can be found information on the problem and on the diagnosis, on any previous interventions, allergies, previous illnesses, data even on family members who have the same illness or a similar illness and so on.

In this way the doctor and all the medical staff can have the totality of the information of the patient allowing to have a global view on the actual problem to be treated.

Thusly, the technology through small and big data flows helps to carry out the diagnosis in a detailed and more accurate manner as possible offering the most specific care for that patient.

Debating of innovation applied to the health care sector means talking about topics such as: augmented reality during the execution of interventions, telemedicine solutions to assist patients also remotely, artificial intelligence to carry out predictive analyzes and new robotic instruments capable of favor the rehabilitation process and so on.

Starting from the assumption that the *health care of the future* is already a reality, and that we are only at the beginning of an epochal turning point driven by companies and research institutions that are investing in *cutting-edge projects* with already tangible results; we must however deal with the reality that this kind of health care of the future is still very far from being applied in every hospital of the Italian peninsula.

Most of these are research projects that work well in *state-of-the-art* innovative centers but which may not work in public hospitals where there are no infrastructures to connect to these technologies and the staff probably is not prepared adequately yet, not in this moment at least, to use these types of instruments.

The health system is therefore called upon to seize the opportunities offered by the *digital revolution* to face the challenges that are looming on the horizon of a sector characterized by strong regulatory constraints and by a society in which the increase in life expectancy is leading to a large gap between *available health resources* and *real needs*.

At the opening of the “Talks on Tomorrow” event Daniela Minerva, director of Live and La Repubblica's columnist, states that the major challenges facing the healthcare landscape are:

1. Sustainability of health systems

2. Database management

Jeroen Tas, Chief Innovation & Strategy Officer at Royal Philips, affirmed that approximately 80% of people entering a hospital do not really need it: this flow of people could be moved to different structures and in many cases this prevention could be done already at upstream and therefore in people's homes, thus creating greater efficiency in terms of cost savings and focus only on those patients who really need to be assisted in a specific structure as is the hospital with all the medical equipment and the available staff.

In his speech, Tas pays plenty of attention to the issue of building an *infrastructure* that includes not only the patient, the doctor and the medical staff, but also the patient's family, technologies and all his or her previous medical data.

In particular, three themes are addressed:

1. *Personalization of information for each individual patient*, which collects a bit what we have already said to be “*patient history*” with all its digitized medical data which can then be transferred from one structure to another to also ask for a second opinion to other hospitals and other doctors;
2. *Patient centrality or centrality*: which is a theme very dear to this work.
Centrality of the patient because in many cases the focus is on the disease and on the treatment, but doctors forget the person, his or her dignity, alienating him/her and making it a simple number inside a large hospital. On the contrary, it is necessary to create empathy and closeness above all in a difficult and critical context such as a hospital is in which there are even very serious cases of illness;
3. *Interdependence of data and creation of an information infrastructure* that can therefore take place even outside the hospital structure and be directly built in the patient's home. In this way, having access to a series of data that are interdependent and therefore from multiple sources, collecting also data on lifestyles, nutrition, stress, allergies, etc., it will make the therapy optimal for the patient.

Is this possible and feasible in the near future and at sustainable costs?

Tas also offers his vision of solutions:

1. Create evidence for better results, through *the infrastructure networks* mentioned above;
2. Create a better *experience for the patient*, who is placed at the *center*;
3. Not only better experience for the patient, but also for the doctor and the medical staff, who, through technological tools, can better see “the inside” of the patient, can request for a second opinion from other hospitals in short time and therefore have better results;
4. Have the *certainty* that everything during the intervention (the process, the method) took place with the utmost knowledge and expertise having all the data available. In this way artificial intelligence itself learns through the cognitiveness of which scientists are endowing it.

All this would democratize health care making it more equal for everyone, especially to fill those discrepancies between rich nations and poor countries.

When will this be possible on a generalized level in Italy and around the world?

It is not known yet, but we are living in the era where everything, or almost everything, is possible!

The era of health 4.0 is shaping new scenarios and new *insurance business models*.

In the next chapter the new emerging trends in the healthcare will be analyzed and in chapter 3.4 an overview of the health insurance offer of the main Italian players will be provided, on the facsimile of what has already been said in chapter 2.1.1 “*Focus on the offer side: how are the main Italian players behaving?*”.

Insurance companies are among the main bodies that seek to make their own contribution to the sustainability of the health system by offering increasingly innovative solutions that are close to the needs of Italians.

“If until recently the company was conceived as the solution to a problem, today in health this is no longer enough. Citizens ask us to help them deal with their well-being in a systematic and preventive way, no longer paying damage but helping them to prevent it. Patients have become 4.0 too: 77% already use technology for the care of their own well-being and 55% are willing to share their health data through devices

with industry stakeholders and insurance companies.” - explains Isabella Fumagalli, Head of Territory for Insurance in Italy of BNP Paribas Cardif.

The cost is the same but the result is different.

“ We have to move from those who pay to those who help to prevent: our new face is “preventive insurance”. The promise of (health) insurance to the customer is no longer “I pay you because you are ill” but “I try not to make you sick” ” - explains Veltri of BNP Paribas.

In this way the insurance companies are the real *life time partners* of their clients in the medium-long run and they are taking back the role that was theirs from birth, the *social* one.

3.3 Emerging trends in healthcare technology

“In 2016, the global digital health market was at \$179.6 billion, according to Transparency Market Research.⁴³ Growth in this market is anticipated to rise at a CAGR of 13.4% between 2017 and 2025, reaching \$536.6 billion by the end of 2025.” (TMR, 2017)

⁴³ *Global Digital Health Market 2017 - 2025*, Market Research Report, Transparency Market Research (2017). For more visit: <http://healthstandards.com/blog/2017/10/25/digital-health-trends-2025/>

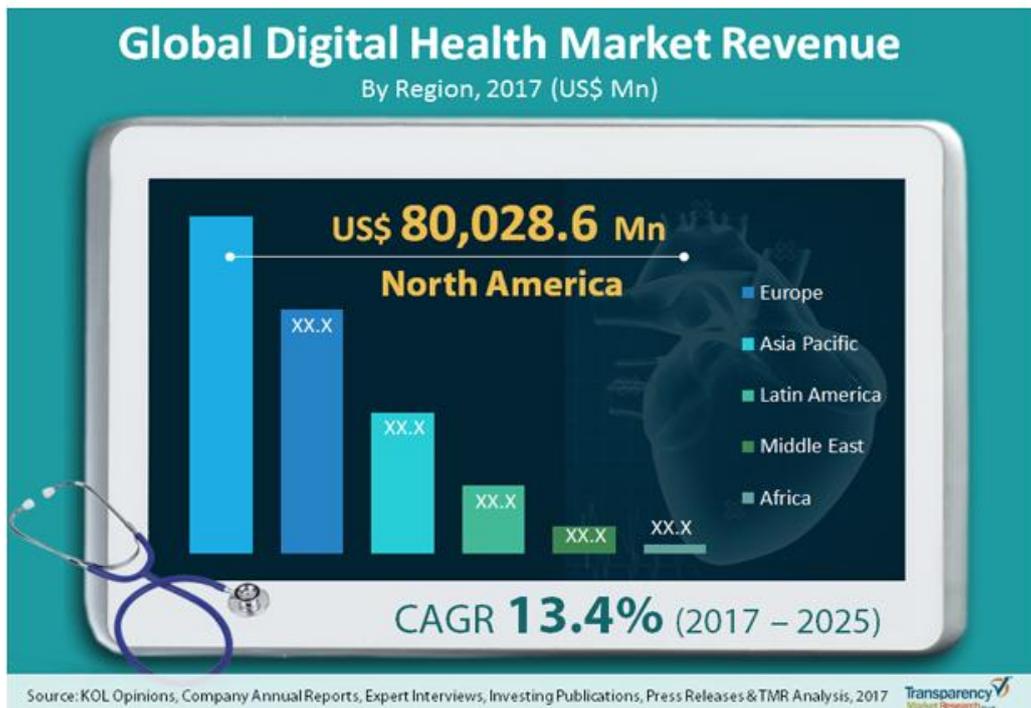


Figure 31. SOURCE: 2017 Global digital health market growth, Transparency Market Research; (US \$ Mln)

The health innovation ecosystem is proving to generate enormous potential: according to *DigitalHealth.Network* research, in fact, from January to October 2018, over 18 billion dollars were invested in Digital Health's start ups with a growth rate of + 56% compared to the same period in 2017.

In 5 years, an average of 45 billion dollars of venture capital have been collected in those start ups, sums of investment that approach those of the pharmaceutical sector.

TMR classifies Digital Health market in terms of two product categories:

1. *Healthcare information systems* include tele-health, EHRs / EMRs, and population health management;
2. *Wearable devices*: smart watches, fitness trackers, smart eyewear (including AR and VR), smart clothing, medical devices and other infotainment devices as headphones etc.

These are the types of products that are included in the digital healthcare environment, but let's see now, more broadly, what are the emerging trends in the technologies that accompany the development of products applied to the health care sector.

The major opportunities (already mentioned in the previous chapter) concern the databases and *the flow of information* that according to many should be integrated into an *ecosystem* in which more actors are intertwined.

Technology could therefore help the healthcare sector from a management point of view of data transmission from one place to another, at advantageous costs and in a short time, optimizing the treatment and care of the patient.

However, the problem arises of how to treat these data in terms of privacy and disclosure of sensitive information and here the pillars discussed in “*Technology and Insurtech area*” regarding Cyber Security and Big Data could come in handy.

Other emerging trends that are entering the technological and digital panorama applied to the health care sector are:

a. Medical Apps & Mobile Health

Smartphone is the object most loved by people. Nobody leave home without having it with them, and in my personal story, I have no recollection of having ever forgot the phone at home. *Never!*

Many things can be forgotten, such as the calendar, homework, headphones, water bottle, but the phone is not among the things you forget at home.

And that is why among the main emerging technological trends in the health sector there could only be apps, medical apps specifically.

For medical we do not mean only those “official” that are therefore really medical and passing through hospitals, but those apps that can be downloaded independently from Google Play that help us in counting the steps (walking or running), in the maintaining healthy lifestyles that therefore integrate physical activity into a correct and varied diet.

More specific are the cases of *Health-tracking apps* and *Therapeutic Apps*.

Health-tracking apps can track blood pressure, heart rate, sleep period, distance covered, and number of steps taken with accuracy. They can also let you see the data in a readable form, save the data, do a statistical analysis of it, compare your results with standard results and provide advice for improving your health results.

Therapeutic apps, also known as “*digiceuticals*”, help to improve health and wellness. Therapeutic apps are prescribed by medical practitioners together with

normal methods of treatment and are *clinically validated* for their purpose. They can be used to help people with chronic pain, asthma, or attention-deficit hyperactivity disorder.

“ *Telehealth – or telemedicine - puts the online doctor in your pocket* ”
(syberscribe.com⁴⁴, 2019)

Telemedicine is present in all those areas where Internet, through its search engines, helps you in finding the best doctor near your location in that particular disease, the costs of the treatment, the reviews of other patients, on what territory it operates and so on.

If it is Sunday, telemedicine allows you to see which pharmacies are open within a certain radius of kilometers and if you live in big city centers you may even have the possibility to order the drugs you need at your home address. Many health and accident insurance policies offer these services to their insured especially if they also have difficulty in walking or moving from home.

Telemedicine seeks to *bring the doctor to the patient* outside the hospital facilities by offering the possibility of having *video chat* and *video consultations* with the doctor and speaking face-to-face while being at distance.

And this creates two benefits:

- a lower flow of people in hospitals. It is known that this is a big problem and moving those patients who are less serious and who prefer to be treated at home is a significant advantage that reduces health costs;
- a better experience for the patient who stays at home, in the place where he feels most safe, without the coldness of the walls of the hospitals in contact with his family and his personal effects.

Telemedicine, thus understood, represents a great challenge for the future and there are already many cases implemented both by public bodies (hospitals, clinics) and private (insurance companies).

⁴⁴ For the full article see the link: <https://www.syberscribe.com.au/blog/10-emerging-trends-healthcare-technology-2019-beyond/>

b. *Healthcare IoMT*

IoMT stands for *Internet of Medical Things* and it represents the *disruption* of smart devices and smart sensors into the healthcare sector.

Do you remember the numbers provided by WHO at the beginning of chapter 3.2?

The IoMT, to reduce those deaths statistics, is an excellent solution because it would be able to have a series of smart and digital devices connected each other to transmit the *correct data* from the specific patient to the specific doctor without any margin of error.

While some people are victims of misdiagnosis or flawed medical procedures, many are still harmed because staff fail to track patients and correct medications. Even providing a wrong patient is an example of failure to track the medication.

“IoMT technology offers a high-tech alternative to barcode scanners. Rather than staff manually scanning patients as they enter the X-ray room, an RFID tag worn by the patient can alert the monitoring system that the patient has been placed under the X-ray machine” (Martin, 2018)

In this way, deaths due to human error would drop dramatically. In addition, the devices connected to the patient and to the doctor's handheld or mobile handset would allow to have a real-time view of the patient's condition and if there is an emergency of the person, to have in real time the position of the doctor and alert him to arrive in the patient's room more quickly.

The same thing applies to drug management. Think of the huge amount of drugs that run in a hospital, the risk of making a mistake and taking the wrong drug to the patient is quite high. Connected medical devices could potentially sound an alert if staff brings the wrong medication into a patient's hospital room.

Late in 2017, the American Food and Drug Administration (FDA) approved the first “*digital pill*”⁴⁵ that does just that.

⁴⁵ “FDA approves pill with sensor that digitally tracks if patients have ingested their medication”, for the press announcements see FDA website: <https://www.fda.gov/news-events/press-announcements/fda-approves-pill-sensor-digitally-tracks-if-patients-have-ingested-their-medication>

“The product is approved for the treatment of schizophrenia, acute treatment of manic and mixed episodes associated with bipolar disorder and for use as an add-on treatment for depression in adults” the FDA wrote.

The pill works by transmitting data from its internal sensor to a “*wearable patch*”, after which the information processed is transmitted on a mobile app to be analyzed more closely by the doctors and scientists who take care of the patient to see if there are states of improvement or worsening of the disease.

No less important is the progress in genome sequencing. Knowing the genetic profile of the disease and the response to the treatment of patients, it should be easier to predict the results of therapies.

c. *Big Data and AI (Artificial Intelligence)*

Once again, Big Data and AI are mentioned among the main emerging trends in the health care sector. This time the two are scanned jointly because large amounts of data processed and analyzed through artificial intelligence provide optimal solutions and treatments for patients.

The mechanisms of AI and Machine Learning (ML) can simultaneously and without error process more than 100,000 data from the same patient and, not only offer the best cure for him/her with “harm reduction”, but rather is able to *predict*, through genetics and genomics data, if a particular person is subject to that kind of disease.

Jeroen Tas during “Talks on Tomorrow” states that about 70% of people over 80 are facing neurological diseases: in this case artificial intelligence could help by analyzing DNA and genes to identify many years before if the person will or less suffer from diseases such as Parkinson's, Alzheimer's and so on.

Indeed, for the purpose of diagnostic support, machine learning allows computers to learn from the data to which they are exposed, without being programmed. Although *electronic medical records* have been in use for some time, technology has only recently allowed decentralization of information thanks to blockchain databases, making interoperability and secure the access to patient data. Finally, online communities, such as *MedHelp* or *PatientsLikeMe*, play a major role, where patients can support each other and contribute to research.

Within the healthcare industry, nothing requires more processing power than medical imaging. From 3D panoramic x-rays to whole-body MRI scans, medical images are becoming immensely complex and artificial intelligence represents a good ally in the coming years.

d. *Electronic Health Records*

Also included in the topic is the Electronic Health Records trend, which stores all the data of a specific patient and makes them available at any time in a digital format.

*The Digital Health Evidence Review*⁴⁶, released by the Australian Digital Health Agency, has found that Australia is one of the few countries that is leading the way in giving patients personal control of their own electronic health records.

These digital warehouses allow a great saving of energy and paper: energy saving because having all the data of a patient stored in a specific place gives the certainty of having all the information concerning him/her from age, to diagnosis, to treatment, to other diseases, allergies etc, and paper savings because everything is digitized and dematerialized.

This creates *synergy* between patient and medical staff because both parties have the information they need and can help each other.

In many other cases it is useful to have these EHR systems because people can also transmit and share treatments that may not be applied in that specific hospital but they are used in other parts of the world: they are the so-called “*Open EHR*”.

e. *AR & VR*

It seems like a bit of science fiction or videogame stuff and yet *augmented reality* and *virtual reality* are actually making their contribution to the health care field.

In particular, augmented reality improves the image quality of magnetic resonances, X-rays, CT scans to contribute to the best care for the patient. Indeed, through an app, you can turn on the camera of your smartphone and see and locate the digestive system, the respiratory system, the cardiovascular one and so on.

⁴⁶ The Digital Health Evidence Review is the research conducted by the Australian Digital Health Agency (Australian Government) in the field of digitalization of patient information and “medicare” data in a unique and accessible location (called *My Health Record*).

Internationally, implementations of systems similar to *My Health Record* that allow citizens access to their health information may be found in Austria, Denmark, Estonia, Finland, France, Norway and Sweden.

Imagine the important contribution they offer surgeons during an operation.

And the same is true for virtual reality, which although still far from being applied in a direct way, helps in the simulation and training areas of certain situations in which surgeons and trainees are able to improve their techniques.

Figure 32 shows all the technologies we mention in a more schematic view.

Top Referenced Technologies: Q3 2017

Technology	Major Themes Related to Technology Area (Referenced in Articles Collected During Q3 2017)
Mobile/Mobile Health	<ul style="list-style-type: none"> • The use of mobile apps to manage chronic disease • Apps for addiction treatment • Physicians want mobile tools that improve efficiency and patient safety
Big Data	<ul style="list-style-type: none"> • Data analytics is driving precision medicine and disease diagnosis • Data helping insurers to quantify risk, rise of wearable-generated data
Social Media	<ul style="list-style-type: none"> • Millennials' use of social media is shaping physician interactions and self-diagnosis activity • Social media is a core part of health analytics and is powering predictive health and medicine
Electronic Health Records	<ul style="list-style-type: none"> • Challenges of EHR adoption in low-resource settings • Use of blockchain and other technologies to improve EHR data quality
Artificial Intelligence	<ul style="list-style-type: none"> • The use of AI-powered virtual assistants to aid disease diagnosis, engagement and treatment of mental health conditions • How AI is being incorporated into numerous digital and emerging technology innovations in health (mainly machine learning)
Virtual Reality	<ul style="list-style-type: none"> • The use of virtual reality technologies in mental health, specifically to help manage anxiety, PTSD, depression, autism and other conditions

Source: Enspektos, LLC

Figure 32. SOURCE: “Top referenced technologies in digital health”, Enspektos Q3 2017 - <http://healthstandards.com/blog/2017/10/25/digital-health-trends-2025/>

3.3.1 Digital Health Insurance: Italian market

In the previous pages we have defined the terms technology and insurtech and how these two areas are declined and “incorporated” in the health care sector.

In the previous chapter we also offered a quick overview of the main digital and technological trends that are occurring in the healthcare sector and well-being of the person outlining the main peculiarities.

If, as it was already anticipated, health care technology still finds great difficulty in its generalized and widespread application within the current medical and health structures, other realities are making their efforts to face this ever-increasing need to have health in “*one click*”.

Two Italian branches that seem very interested in *digital health* are the insurance and financial companies. Their offer will be analyzed in the following chapter.

In Italy, health is one of the main concerns. In this context stand out:

- Fear of a serious illness (41%)
- The spread of pandemics (36%)
- Suffering from precarious health (28%)
- Concerns related to terrorism (47%)
- Work precariousness (43%)⁴⁷

This concern is not only linked to the fact of keeping fit by improving physical appearance or sleeping better and more hours during the night, but the main cause is traceable in work-related stress as already seen in the first chapter of this work related to the so-called “*burnout*” phenomenon. In fact, 40% of respondents indicated stress as the main cause of anxiety concerning with their health, and this aspect also affects young people.

Directly connected to this issue, there is then another criticality that only goes to feed this “*Italian anxiety*”: the assiduous use of Google in the search for information on symptoms and probable treatments (41% of the interviewees said they use this approach before going to ask their doctor about it).

And we all know how many false and misinformed news go around the websites!

Despite this “anxiety” about one's health, only 1 in 10 respondents claim to have an insurance product dedicated to health care.

The values, according to Aviva analysts, are instead higher in other European countries, as France where the percentage rises to 34%.

⁴⁷ This is what emerges from the *Consumer Attitudes Survey 2019*, an international survey carried out by the Aviva insurance group, on the perception of their health in 14 countries around the world.

Insurance policies play an important role in guaranteeing tranquility and security in a context such as the Italian one, where factors akin aging of the population, hardness in the sustainability of health care costs and public pensions, wages and salaries in decline etc., only increase fears and uncertainties for the future.

As part of the analysis of the trends in the insurance offer, IVASS⁴⁸ carried out an in-depth analysis of the offer of health policies linked to the use of digital technologies (the so-called “*digital health insurance*”).

The spread of policies, that, through the use of digital devices (such as electronic bracelets and other wearables) and genetic diagnostic tools, are gaining more precise information on the health status of customers, is rapidly growing, both in Italy and abroad.

Data, digital tools and people live together in an ecosystem centered on the health care world.

To facilitate and improve the inter-relationship between insurance services and health services and at the same time encourage healthier lifestyles through healthy behaviors, these types of policies are born and therefore stand out from the *traditional “reimbursement” of the damage* shifting more and more on the *prevention, education and adoption* of healthy lifestyles.

The offer of these policies is part of a context characterized by new health needs not just for the elderly, retired, disabled, but also for young people who are attentive to living well and living healthily in a technological context.

According to the research carried out by ABI⁴⁹ (Allied Business Intelligence) traditionally connected devices, such as PCs, smartphones and tablets, will arrive in 2020 to represent less than a third of all objects inter-connected, of which there will be an increasingly significant share of objects belonging to the category of “*Internet of Humans*” (body / wearable sensor).

We are therefore witnessing the natural evolution not only of the aforementioned Internet of Things, but of the inter-relation between IOT and IOH, which determines the passage from an era of *stand alone devices* to an era where everything is connected through networks of people and smart devices, synergistically.

⁴⁸ IVASS, *Analisi trend prodotti assicurativi - Le nuove polizze sulla salute: La Digital Health Insurance*, a cura del: Servizio Tutela del Consumatore - Divisione Prodotti e Pratiche di vendita (18 Ottobre 2016)

⁴⁹ Allied Business Intelligence, a multinational company specialized in business intelligence - ABI Research, “*Internet of Everything Market Research*”, 2014

“In this scenario, digital health insurance appears as one of those sectors where interesting development margins are envisaged. The so-called e-health indicates the set of IT solutions and technologies applied to healthcare through the support of IT tools, specialized personnel and new doctor-patient communication techniques”

(IVASS, 2016)

The contexts of application are different but it is possible to encompass the main areas of development in 4 macro sectors:

1. *Telemedicine*: is the set of medical and IT techniques that allow the provision of health services for the care of a patient at a distance. There is talk of putting the patient at the *center* of everything, and not the disease: telemedicine could in this way enter into the daily life of the person through *home care* and no longer at the hospital or other health facilities that they would not allow the patient to be at his/her ease;
2. *Remote control*: the set of IT solutions connected to devices with sensors for remote assistance. It is generally used for monitoring elderly or disabled people at home with the aim of improving their quality of life and preventing injuries and illnesses;
3. *Auto check up*: contains the tools for monitoring one's health independently and without medical support (smart watch connected to the smartphone);
4. *Wellness tracking*: it is the sector that contains tools for monitoring physical and training activities (eg shoes connected to the GPS).

The subject of digital healthcare insurance fits well in this panorama.

Some examples⁵⁰ will clarify what is meant by DHI offer.

“ For example, an American insurance company offers its customers a pedometer bracelet connected to the insurance plan and a dedicated app: every day the app presents the customer with a personalized target to reach and if it reaches it, a dollar is

⁵⁰ The two examples, made anonymous, are taken from IVASS, *Analisi trend prodotti assicurativi - Le nuove polizze sulla salute: La Digital Health Insurance*, a cura del: Servizio Tutela del Consumatore - Divisione Prodotti e Pratiche di vendita (18 Ottobre 2016).

The first example concerns an American insurance start-up that in less than two years has raised funds for more than 300 million dollars, radically renewing the customer experience of health policies.

The second refers to the same company as the first example that decided to extend to health in Germany.

credited. At the end of the month, the company sends those who have reached the set goals a \$20 gift voucher to spend in online shopping.

Even in Germany an insurance group launched a digital program a few years ago for customers who signed up for temporary cover in the event of death or occupational disability. The system turned out to be really simple and immediate: the insured who enrolled in the program, sent data on his lifestyle and was rewarded if the style turned out to be virtuous. For example, a thousand points for each medical check, 4,000 if she/he stopped smoking, 2,000 for a 100km bike ride, etc. Depending on the lifestyle, a level is achieved that guaranteed a discount of up to 11% on the life insurance premium and up to 16% on that for professional disability. Furthermore, the discounts could also be used for the purchase of drugs, gym passes, purchase of sports products and healthy foods ” (IVASS, 2016)

Also in the Italian market innovative insurance solutions and “*digital oriented*” integrated services are emerging and in the next chapter we will present the most peculiar one.

IVASS groups digital health insurance into 3 offer categories:

1. Wellness and discount programs

To meet the needs of their customers, insurance companies have launched wellness programs that aim to reward those who keep fit through movement monitoring, with customized technological tools and tutoring.

The customer, also by purchasing these policies, can take advantage of the following types of discounts:

- a) At the subscription:* if all the values are in the standard one (and also the health questionnaire, where foreseen, it does not present anomalies) a reduction of the premium equal to 15% or 10% is applied, depending on the signed formula, which remains in force for the entire duration of the policy;
- b) In the course of the contract:* it is necessary to exceed a pre-established threshold (c.d. milestone), equal for all subscribers and defined in line with the minimum movement required of a healthy person. Annually, the insured must once again reach the threshold in order to maintain the discount consisting of a 10% reduction

in the portion of the annual premium. To take advantage of the discount, we use the support of App, wearables or other compatible devices (eg physical activity detectors, pedometers, etc.) that allow the recording of data relating to the physical activity of the insured.

“The latter is responsible for periodically (at least once a month) transferring the data on the company's platform which will convert them into “moves”, which represent the unit of measurement of daily physical activity. In the first 9 months of contract duration, the insured must accumulate 135 thousand moves to benefit from the discount. The following goals provide, for each year, 180 thousand.” (IVASS, 2016)

The digital health insurance works well if combined with innovative wireless devices (such as pressure gauges, glucometer, pulse oximeter, physical activity monitoring bracelet) that thanks to dedicated Apps allow the customer to:

- *“constantly monitor the lifestyle;*
- *receive medical advice and suggestions for healthy behavior;*
- *elaborate risk indexes related to the onset of the main cardiovascular and metabolic pathologies” (IVASS, 2016)*

2. Telemedicine and remote assistance

In Italy, many patients feel the need to be supported at all times in their “medical life”, especially in contexts familiar to them such as at home. This feeling is paving the way for *Telemedicine*, which allows the great advantage of moving medical information and not people.

This translates, in addition to a continuous assistance service for the patient, also into a containment of the costs related to the days of hospitalization and therefore to a huge saving.

Insurance companies are integrating healthcare coverage with innovative telemedicine services, such as *web medical record* and *Home Care* services, which guarantee the care and the monitoring of patients from home through the use of tablets and video camera.

Other examples are:

- *Life saving card*: it contains the main data such as allergies, blood type, user ID and password;
- *Video assistance service*: for hospital post-convalescence assistance in case of risky surgery or for chronically ill patients who intend to be treated at home;
- *Tele - pharmacology with medical SMS*: the service allows the insured, who is abroad, to know the local trade name of a drug or the corresponding active ingredient with a text message, a fax or an email;
- *Tele - multilingual medical prescription*: allows the insured, who is abroad and needs to take a drug (OTC), to receive a medical prescription in the local language by fax or e-mail;
- *Medic Eye*: in case of necessity, even urgently, the insured person has the possibility, in Italy or in the world, to speak in Italian with a doctor of the medical center, to be able to see and consult him through an internet consultation video.

3. *Development of the App technology*

Also with regard to healthcare apps, the new services offered by many companies exploit the ability to be effective at a distance and are often characterized by not being limited to the area of prevention alone.

An example of this is the service offered by an insurance company which, through the app, in addition to providing its insured with useful preventive tests (for hearing, sight, sleep, etc.), allows for discounts on diagnostic services (magnetic resonance, CAT and mammography) at numerous Italian health facilities.

The offer of another company provides that, with the help of the dedicated App, it is not necessary to contact the Operations Center to book a visit. The application in fact allows the customer to use the online booking service by entering the request for authorization of the service at the affiliated structure.

Other features of the App are:

- *“display of personal data and contracts*
- *notifications related to their own practices*
- *contacts with the company*

- *search for affiliated facilities (geo-location)*
- *status and details of their practices*
- *acquisition of medical and expense documentation*
- *inserting an online refund request” (IVASS, 2016)*

3.4 Offer’s Analysis of the main Italian players

As already anticipated, only one Italian out of 10 has purchased a health insurance policy.

The question arises easily in asking why only this small proportion buys healthcare services, comparing the Italian context as seen before, where private healthcare spending in 2018 exceeded € 37 billion (it is expected to reach 42 billion at the end of 2019 as analyzed in the research of *RBM- CENSIS* seen in the first chapter) and the number of Italians who pay “*out-of-pocket*” for health services has grown further (now they are 19.6 million).

The IVASS analysis reveals some trends that try to explain why many Italians, especially those in the most fragile income groups, resort to private spending to pay for treatment:

- erosion of the quality of the health service in its public and affiliated component;
- long waiting lists;
- use of “*intramoenia*”;
- less convenient healthcare tickets;
- growing role of private healthcare.

“In Italy, out-of-pocket spending covered by insurance instruments represents just 13.4% of the total private healthcare expenditure borne by citizens, compared to 43% in Germany, 65.8% in France and 76% of United States.” (IVASS, 2016)

Those who instead have a health insurance policy have expressed that they have purchased it

for reasons related to:

- “1. *reimbursement of health services performed in private facilities;*
2. *insurance coverage of the entire family unit;*
3. *possibility to cut performance times;*
4. *access to affiliated facilities;*
5. *possibility of choosing a wide range of care facilities”* (IVASS, 2016)

This huge private health care spending with factors as the increasing population aging and increasing of the life expectancy will no longer be sustainable in the long run and will progressively affect family budgets.

It is therefore of fundamental importance to seek "elsewhere" the sustainability of the health of Italians: insurance companies and banks in this critical, but also of opportunity, scenario could play a role of primary importance.

3.4.1 Some examples in the insurance & financial companies⁵¹

a. BNP Paribas Cardif

BNP Paribas Cardif is the insurance company of the BNP Paribas banking group, whose famous pay off is “*the bank for a changing world*”. The insurance company is present in over 35 countries distributed in three major regions: Europe, Latin America and Asia, ensuring more than 100 million customers.

The innovation that BNP Paribas Cardif is implementing is the creation of the so called *health corners* inside BNL agencies where customers can go into a private space to do analyzes on their own thanks to connected IoT apps and tools.

“Thanks to the startup D-Heart⁵², which BNP Paribas Cardif has selected in the

⁵¹ The data and information reported in this chapter and in the next one are taken from the websites of the Companies. Other material has been obtained from newspaper articles, online articles and market research.

path dedicated to young companies, when the user enters the health corner via an app, he visualizes a video to learn how to correctly put the electrodes and perform an electrocardiogram” - explains Veltri.

In this way, “preventive diagnoses are made with results that, if the client agrees, will be sent to a doctor who will provide the report in fifteen minutes. Not only. We decided to combine this activity with another identical one we do in Kenya: thanks to the collaboration with AMREF, for every corner opened in BNL we open one in Kenya, for every report made in BNL we make one free in Kenya. And the message we want to convey is this: we don't just make customer experience, but we want to allow a customer who has a cardiologist miles away to get real-time performance. Here is the change and the new role of insurance” - concludes Veltri.

b. Generali Italia SpA

The Trieste lion in partnership with HFarm of Roncade in 2017 launched the “*Generali Health & Welfare Accelerator*” program.

The program provided for the grounding of technological solutions by innovative startups engaged in the area of *digital health* that could then be incubated in the newly created Generali Welion, the lately company of the Generali Group for integrated welfare.

“*Generali Health & Welfare Accelerator*” is part of the strategy adopted by the Company also following the creation of the Innovation Park in Mogliano Veneto (Treviso), which aims to be the innovation hub of Generali Italia.

The results of the 4-month acceleration process have given rise to a series of digital projects and innovative devices for: helping patients to live better, doctors to stand by their clients and health professionals to adopt more efficient therapeutic processes.

In particular, four were the winning ideas:

1. Holey (Italy). 3D chalk.

⁵² D-Heart is a biomedical start-up founded in 2015 by Nicolò Briante and Niccolò Maurizi. The idea of this project follows a problem that actually happened to Maurizi at the age of sixteen when he suffered a myocardial infarction. Thanks to Briante's help, they created D-Heart, the first Electrocardiogram device for multi-branched smartphones that combines the ease of use required by the patient with the reliability of the ECG required by the doctor.

A startup that wants to revolutionize the design and production process of functional plasters and orthopedic braces. Holey is dedicated to the dynamic design of tailor-made solutions for patients from 3D limb scanning to device printing and brace application in about 5 minutes. The product is made with a hypoallergenic, water friendly, breathable, light and customizable plastic material;

2. *StayActive (Italy)*. Postural Coach.

It proposes a small device that can correct the incorrect posture. Once worn and calibrated through a dedicated app, StayActive is able to alert the user in case of incorrect posture, through a slight vibration that causes it to correct it;

3. *Knok (Portugal)*. Doctor within reach of the App.

It offers an app that allows the user to contact a doctor, chosen within the network of the professionals registered in Knok, the most suitable with respect to the geographical position and the type of health problem to be solved;

4. *Milo (United States)*. Clinical tests on the move.

It proposes an innovative solution that allows to carry out clinical tests of blood, urine and saliva and to report the results on the app in a few minutes. The steps are few and simple: after taking a sample and applying it to the appropriate test strip, approved by the FDA (the American Food and Drug Administration), it is sufficient to insert the latter in the Smart Meter, which in a few minutes analyzes and sends the results via Bluetooth to the app of the smartphone. The application records and archives the test results, which can be shared with a medical professional and obtain the diagnosis.

c. *Health Point Srl*

Health Point was born in 2017 and it represents an innovative reality in the dissemination of the Prevention culture.

It is part of Health Italia SpA company, an important reality in the world of supplementary healthcare and corporate welfare, Health Point Srl is led by long-term professionals and offers health care services in many ways, from the traditional one of the poly-centers specialist to the most innovative telemedicine services.

Health Point is able to deliver these services with innovative instruments and qualified personnel through two channels:

2. *The Health Points* are real shops located in significant points of different cities, centers dedicated to the promotion of Health, to prevention and wellness, with specialized staff.

In Health Points people can take advantage of top-level health services, as well as explore topics related to the sphere of health and learn about products and services related to the world of health and wellness.

Health Italy offers at its Health POINT:

a. *TELEMEDICINE*

Innovative and easy to use equipment to constantly monitor the parameters of the most important physiological functions. In a few gestures you can have all the benefits of a personalized and immediate check up. Telemedicine is the opportunity to carry out first-rate non-invasive examinations, which are useful for a healthy and recommended prevention;

b. *COSMETICS*

The skin is the largest organ of the body and protects all other organs. At the Health Points there are products rich in active ingredients, which do not contain harmful agents and are designed for different needs, depending on the type of skin, problems, age, etc.;

c. *NUTRACEUTICS*

It is essential to provide the body with all the nutrients necessary for its functioning. Also in this case the broad nutraceutical line of the health points takes into consideration a series of essential elements for the well-being of the person and his organism, evaluating specific needs based on age, lifestyle and possible problems to be tackled, creating a differentiated and customizable offer;

d. *GENETICS*

Predictive medicine is the most modern solution for knowing how to protect your health. A careful analysis of DNA, carried out according to

the parameters and the best international techniques, allows you to understand which controls to carry out to prevent pathologies or significantly reduce their influence. It will be possible to carry out tests for the evaluation of *dna-family* risk, the identification of a personalized lifestyle, the definition of a clinical surveillance program, and to evaluate the use of pharmacological and / or surgical measures. A consultant present at the Health Point will help you carry out the test and explain to you how to receive the results;

e. HYDRATION

Water is optimal for purifying and hydrating the body while maintaining the right level of mineral salts. It is recommended for everyone and recommended for people with hypertension and pregnant women;

f. PET

Health Italy has created an exclusive product line for all their needs because it knows how much attention our animal friends need. The Pet line in fact includes food supplements, with the right combination of specific nutrients for their daily needs, and other products essential to the well-being and hygiene of our Pet. We want them to be beautiful, healthy and happy with us.

3. *The Health Point Medical Care* is a network of multi-specialist medical centers that provide specialist visits, ultrasound scans, diagnostic investigations, physiotherapy with highly qualified medical personnel and cutting-edge equipment.

They are also supporting the Health Points during the reporting, the telemedicine and II level surveys.

The services offered at the partner facilities are carried out by specialized personnel with the aid of innovative instruments, capable of providing precise results and with better timing.

d. Allianz Portugal

In Portugal Allianz has introduced a new free online medical services, named Allianz Health.

Through Allianz Health, the company put at the client disposal a new set of medical services to help him or her taking the best medical decision.

Many are the services offered by this product⁵³:

- *Online Medical Appointment - 24 hour telephone consultation*

An Allianz medical team is available 24/7 to answer all your health concerns, refer you to a hospital or send a doctor to your home if needed! This screening service ensures the follow-up of your clinical situation, warns the hospital of your arrival and can even prescribe medication and tests.

- *Home Doctor*

With Allianz Health it can always be asked a doctor to have a visit at client home.

- *Traveler's query - consultation*

If a client is planning a trip to a distant destination, either inside or outside Europe, he or she can use the *Traveler Consultation* number completely free!

The Traveler's Consultation is a pre-trip medical advice, which includes individualized preventive measures adapted to the health of each person, advice and prescription of medication that must take for the trip, as well as the mandatory vaccinations of each holiday destination.

- *Online Medical Appointment - Guidance*

Through this service a client can ask questions and consult a team of GPs specializing in General and Family Medicine. The person can also attach files and images for review by medical staff. For example, exams or x-rays can be attached and the medical team will evaluate them.

The Allianz medical specialists can pass prescriptions, prescribe exams and make the Traveler's Consultation without leaving home.

- *Nutritional Guidance Service*

With the Nutrition Guidance Service the client can answer all the food and diet questions for all ages.

This service will help the customer gain healthy eating habits and get recommendations for specific situations: losing weight, food intolerances and allergies, eating appropriate to specific conditions (cholesterol, hypertension,

⁵³ For more visit: <https://www.allianz.pt/sinistros-e-assistencia/saude/medico-online>

diabetes, etc.), sports nutrition or about feeding your children.

- *Healthy Living Program*

Allianz Health has created for the client a specific program to reach the desired weight and have health-enhancing routines.

Enlist the help of a team of nutritionists who, based on an analysis of the client eating and health habits, provide him or her with detailed meals and exercise plan that meets the client goals.

Throughout the program clients will have at their disposal the support of the team of nutritionists, who will monitor the progress and will always be available to answer all the questions.

- *Healthy Habit Test*

The Healthy Habits Test has been designed by a medical team that specializes in prevention and provides all the information about cardiovascular risk and health status. As a result of this test, the client will have access to recommendations on diet and lifestyle so he or she can improve the quality of life.

- *Second Medical Opinion*

The goal of the service is to help the client make the right treatment decision to follow, with peace of mind and security. The diagnosis and treatment are analyzed, identifying alternative treatments and giving specific indications about the client's case.

e. AXA

The AXA Group is the leading insurance brand in the world and one of the main leaders in the insurance sector in protection and assistance fields; in Italy it has more than 4 million customer families.

AXA is now focusing on healthcare sector and doing so in an innovative way, focusing on acquisitions and mergers. Already in January 2018 it had purchased *Maestro Health*, based in Chicago, for 155 million euros. The acquisition was part of the strategic plan of the previous year to move from “*payer to partner*”. The so-called “*one stop shop*” was established with *Maestro Health* in the stipulation of health insurance from the time of subscription to the end. In this way a European company was able to penetrate the US market, leaving an important mark on the healthcare

sector.

AXA for this purpose, over the years, has provided annual budgets for acquisitions and mergers of about 1 billion euros to spend in investments, partnerships and innovative technologies.

Over the past 3 years, AXA has engaged in over 35 investment projects managed through its venture capital branch, AXA Strategic Ventures. In particular, it has increased its level of digital investment especially in favor of innovative start ups, such as *Floome*, which develops a device that measures alcohol concentration in blood, or *Chiron Health*, which provides dedicated telemedicine functionalities and software services.

Finally, in January 2018, he announced the reinsurance partnership with the American health insurance company *Oscar Health*⁵⁴, which has a strong technological component. The Company has among its economic objectives one billion dollars in revenue and the registration of 250,000 new members during the 2018.

The partnership between AXA and Oscar is also in line with the strategy of the American company to become *pay-to-partner* focusing on high-touch services, including telemedicine and “*Ask your porter*”, a feature in which there is at client disposal a team of health consultants;

f. Europ Assistance

The Europ Assistance Group is an insurance company among the world leaders in the private assistance sector. Founded in Paris in 1963, today it is specialized in offering insurance coverage in the Travel, Car, Home and Family, Health sectors and it is part of the Assicurazioni Generali group.

Its mission is equal to its payoff “*you live, we care*”; at the end of its 50th year it counted more than 300 million customers.

In May 2019, the company presented in its Milan office the new “*Care Manger*” service, developed following the research conducted by Lexis Research with the scientific contribution of Humanitas, entitled “*Smart Aging: over 65 and family*”

⁵⁴ Oscar Health Insurance is a technology-focused health insurance company founded in 2012 and based in New York City. It will be discussed more in the next chapter.

caregivers compared”⁵⁵.

The *Care Manger* is presented as that professional figure that has the task of supporting people over 65, active and non-active, through a series of assistance services, such as concierge services, transport, home assistance and much more.

In this way the benefits are twofold, the person over 65 through the help of his care manager is able to maintain a degree of autonomy and independence always counting on the support of this figure 24/7, and the family giver, the a familiar person who first took care of the elderly in all respects, is now lightened in the task and can also devote himself/herself to other things, such as hobbies, travel etc., having the security of being able to count on a trusted *Care Company* like Europ Assistance, recognized as a Healthcare facility since 2013.

“The Care Manager is a professional nurse with management, organization and orientation skills - explained Rocco Cantore Health Director - There are figures in place, in addition to the territorial Care Managers who know the regional Welfare”.

Lastly, Riccardo Torchio, Marketing Director of Europ Assistance Italia, explained that *Care Manager* will be available to Europ Assistance's business partner customers from the Insurance Companies in combination with their Home, Health and Accident, Life and Savings products; for the Banks that will be able to propose it as an element of differentiation in their product offer, for the Companies that will be able to insert it in their corporate Welfare platforms and for the Travel world in general.

⁵⁵ *Healthy, active in their free time, independent in financial management and economically able to meet their needs, take away some whim and also help the family: this is the self-portrait of Italian over 65s that emerges from Europ Assistance's research with the scientific contribution of Humanitas and made by Lexis Research.*

3.5. Initiatives undertaken by foreign players

In this paragraph we will analyze the product and service initiatives in the health care sector according to two types of suppliers: on the one hand we will see the Tech Giants which, aware of the difficulties in the health care sector, want to make their own contribution with their innovative offer and then, on the other hand, the “smaller” suppliers, which refer to the insurtech and startups companies.

Firstly, the offer of the Tech Giants is presented.

a. *Haven Healthcare*

What do a leader of the new economy (Amazon), a “battleship” of the old (Berkshire Hathaway) and an absolute protagonist of finance (JP Morgan Chase) together?

They disruptively face one of the most intractable problems of the American economy and society: the spiral of health care costs.

Haven Healthcare, the non-profit company that the three American heavyweights intend to set up, will have the explicit mission to reduce the care costs borne by employees of the three companies (equal to 1.2 million people on a global scale) and improve services. It will specifically focus on developing and adopting technologies that can increase transparency and simplify the enormous maze of US medical services.

In response to the news of the constitution of Haven, health care stocks shed billions in value. CVS Health, Walmart, Cardinal Health and Express Scripts were among those affected.

Atul Gawande, with more than 20 years of experience, he has been a surgeon at Brigham and Women’s Hospital and a professor at Harvard T.H. Chan School of Public Health and at Harvard Medical School, is the CEO of Haven.

As it can be read on the company website⁵⁶, Gawande describes the three guiding principles of Heaven:

- *We will be an advocate for the patient and an ally to anyone – clinicians, industry leaders, innovators, policymakers, and others – who makes patient care and costs better;*

⁵⁶ For more visit the website of the company: <https://havenhealthcare.com/>

- *We will create new solutions and work to change systems, technologies, contracts, policy, and whatever else is in the way of better health care;*
- *We will be relentless. We will insure our work has high impact and is sustainable. And we are committed to doing this work for the long-term.*

For the moment, the company is at its early stage, as it can also be seen from its corporate website, but seeing who are the founders, the step will be short so that a radical change will take place even at the level of American health care!

b. Apple

Not least is Apple that is showing interest in the health and wellbeing sectors and both Deloitte Monitor's and CB Insights' research are saying it.

It is CB Insights that has conducted a research at the beginning of 2019 on how Apple is moving within the health care arena and in particular with regard to *personal health data*, knowing how important data and information are in the current economy.

For a long time, Apple has included the “*Health and Wellness*” category among iPhone accessories on its website and now wants to go further.

Being aware of the importance of this sector at a global level (about 7 trillion dollars are spent in healthcare per year, almost 10% of global GDP), Apple does not want to fall behind.

With the release of the Apple Health Record and Apple Watch with a single-lead ECG, it's evident that Apple has officially entered the healthcare space.

At the moment Apple would be in the third phase of the figure 33, having therefore already launched on the market products belonging to Data Generation and Data Storage, then dealing with the development of applications, also through partnerships with third parties, as in the case of ResearchKit and CareKit; now, the next step would be to enter the fourth phase, that of real services, such as telemedicine.

Apple is building out an ecosystem on top of the health record, could they offer services?

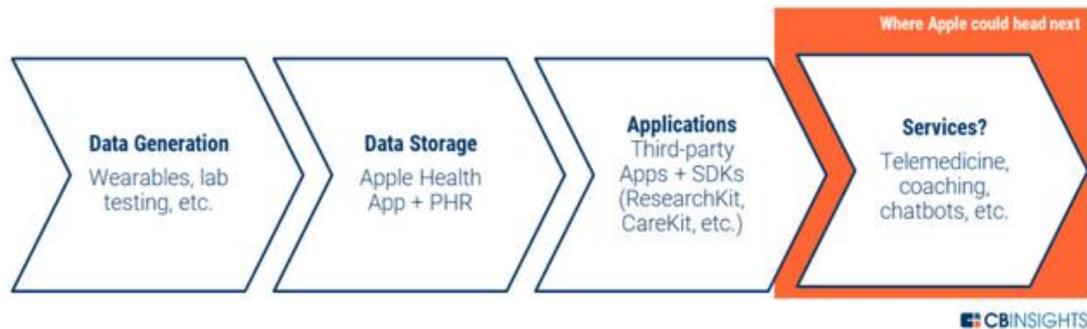


Figure 33. SOURCE: CB Insights, 2019 - Apple Is Going After The Healthcare Industry, Starting With Personal Health Data

One of the main reasons that Apple is pushing in this sector is the willingness to increase its customer base, thus going to differentiate itself from many of its competitors with a new and wider offer. In this way it would focus on high-margin hardware given the expense and attention that a sector such as healthcare requires, thus expanding its service offering through the App Store and Apple Cloud.

The goal of Apple is therefore to create an ecosystem that is always larger, made up of more and more customers and increasingly even heterogeneous products, thus increasing the retention and satisfaction rates (figure 34).

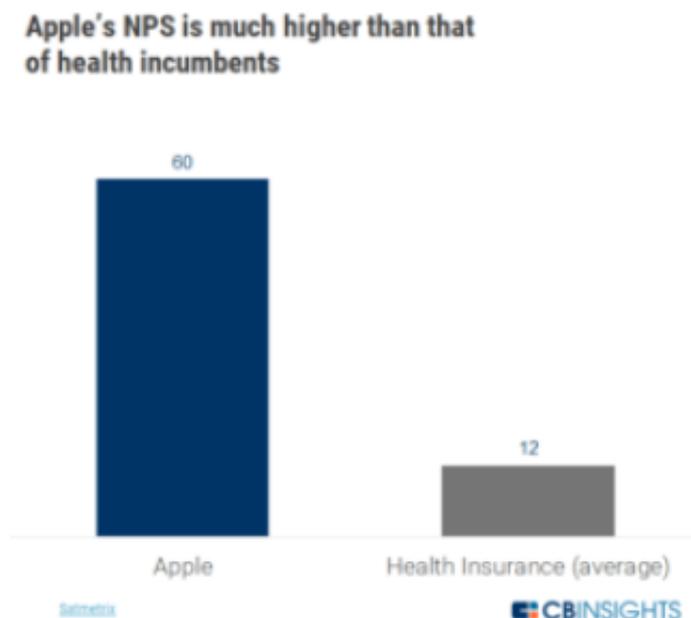


Figure 34. SOURCE: CB Insights, 2019 - Apple Is Going After The Healthcare Industry, Starting With Personal Health Data - NPS

CB Insights has in fact calculated approximately 86 million US iPhone owners, while the customer base of health institutions such as Anthem and UnitedHealthcare are 40 million and 50 million respectively.

Apple, with the strength of its brand, could very well become the new healthcare provider in America.

The company is also looking to develop better healthcare-specific sensors, as indicated by certain job postings.

Additionally, the iPhone camera quality can identify more granular details and new types of lights (ambient light sensor, dot projector) are enabling new machine vision use cases, in particular adapted for healthcare system.

The personal health record is the central pillar of Apple's healthcare strategy.

This was registered in the form of a patent in 2013, became effective in all respects thanks to the purchase of the personal health record from the startup Glimpse in 2016. Apple is trying through this app to bring together two difficult worlds: wellness and health with the more interactive world of technology and innovation. And he does it his way, trying to get people to take care of themselves in a regular and fun way.

The first page in the health app is to track and schedule, activities a person would check with some regularity. Creates a reason for people to engage with the app.

The second page for health data tracks and quantifies wellness metrics, including physical activity, mindfulness, nutrition, and sleep. In each of these areas, Apple suggests apps that it works with that can help monitor these activities (e.g. Headspace for mindfulness).

Figure 35 is a screenshot taken from CB Insights report about the functionalities of the app.

Apple combines wellness and health to make healthcare a more regular habit + check-in



Figure 35. SOURCE: CB Insights, 2019 - Apple Is Going After The Healthcare Industry, Starting With Personal Health Data – screenshot

We'll see how long it will take Apple to penetrate the American health market and who knows...worldwide.

c. Google

Apple could not be named without not mentioning Google. If Apple is unbeatable with its Apple Watch Series (coming the fifth in the series), Google, which up until now hasn't touched it at all, is looking for a foothold, through an acquisition, at a discounted price.

With forty million dollars, pennies for the Mountain View giant, it bought not so much its smartwatch sector from the American Fossil, which is a bit a laboratory of excellence and that remains well manned within the company, but a single line of products and innovations.

Big G took home the smartwatch technology and intellectual property, including in the agreement all the projects being developed at the moment by the fashion brand.

Why all this?

Behind there is much more than the Android Wear OS system.

There is indeed the new Fossil platform, not yet ready but very promising, a team of very good technicians and above all the DNA of another company, which had been

bought by Fossil in 2015 for 260 million dollars: Misfit⁵⁷.

The acquisition has a specific purpose: it is aimed at the launch of “*something that has never been done yet*” in the sector and that could pose a threat to Apple's smartwatches.

And surely this is needed to “put a spoke in the wheel” on the work of Apple that, year after year, is bringing the Apple Watch to be not only the best-selling watch on the planet, but also a huge business in terms of turnover (larger than that of the iPod, at the time, for instance) and a potential revolutionary tool for health and life.

Already today in America you can do an electrocardiogram and when technologies like 5G and sensors will be mature, who knows what else it can be done with a smartwatch.

The partnership that Google intends to create with Fossil would be good in this respect, time will be telling what will be the slice that Google will be able to take home and which will instead be of Fossil.

Perhaps the technology that does not yet exist on the market will come out with the launch of the Pixel Watch that Google intends to bring to the surface.

d. Oscar Health

Oscar Health Insurance is a technology-focused health insurance company founded in 2012 in New York. The company focuses on the health insurance industry through telemedicine, technological interfaces and transparent claims pricing systems.

The company was founded by Mario Schlosser, Josh Kushner, and Kevin Nazemi, after Schlosser and Kushner had found themselves directly confronted with the problems of American health care system (Schlosser for his wife's pregnancy, and Kushner for his sprained ankle). They named the company Oscar after Kushner's great-grandfather, in order to bring an added human element. In its first year, Oscar secured 16,000 members and in 2016 it had 145,000 members.

⁵⁷ Misfit is an American consumer electronics company founded in 2011 by Sonny Vu, Peter Tam Nguyen and John Sculley. It specializes in wearable technology that utilizes sensors and home automation products; Misfit's wearable activity trackers and count sleep, calories, and basic steps that can be synced to a mobile app on a compatible smartphone.

In November 2015, Misfit was acquired for \$260 million by Fossil Group.

Within their offer there are:

- Free Doctor on Call 24/7

See a doctor and get a prescription without going to the doctor. Oscar's Doctor on Call e-visits are free, unlimited, and available 24/7.

- Save on after-hours care

Skip the visit to urgent care just because it's the only thing open when your doctor's office isn't.

- No referrals, one less copay

Need a doctor? See a doctor. Oscar never requires a referral from your primary care doctor in order to see a specialist. Which means one less copay and one less visit.

87% of members say Oscar saves them time and money compared to other insurers and 90% of members would recommend the doctor they found through Oscar.

Oscar aims to launch Medicare Advantage plans in 2020 to offer a new kind of Medicare experience – affordable and easy to use.

e. Bright Health

Bright Health, co-founded in Minneapolis in 2016 by an insurance industry veteran, the former CEO of United Healthcare, Bob Sheehy, and two other health sector managers Kyle Roling and Tom Valdivia, upon raising \$ 81.5 million in venture capital.

What Bright Health does is, through Big Data, create customer centric insurance policies, customized on the customer's habits and lifestyle.

Bright Health also wants to leverage the user experience, offering the opportunity to live its health care with efficiency, simplicity and safety: it does so through an app that puts the patient in contact with specialists for a visit or for have an online consultation.

“There is a better way to improve health,” said Bob Sheehy, “We want to realign the relationship between insurance and customer, focusing on the consumer and reinventing a technology that simplifies the healthcare experience from start to finish.”

It recently completed an investment round from the world of US \$ 200 million venture capital, bringing the valuation of the startup to \$ 950 million (almost a unicorn).

Two drivers in particular explain the growth of Bright Health.

1. *Technology*: Bright Health is data-driven, meaning its mission is to improve people's customer experience with respect to the entire healthcare experience, leveraging data and digital as a whole. Placing the person and his preferences at the center uses the most emotional sphere, just go and visit the company's website where everything is colored and made of talking soft toys.

2. *The business model*: The company does not intend to substitute itself for brokers, but rather ally with them. Bright Health encourages users to use their brokers to better understand their choice of health insurance; on the other hand, it offers its brokers digital tools to better understand customer needs.

It builds its insurance proposal by relating to and allying with local health facilities: *Care Partner Health Plan Model* is the exclusive partnership with a health system in a specific geographical area so as to offer superior and integrated assistance that removes the friction traditionally existing between buyers and suppliers, ie insurance companies and health services. This report allows you to coordinate services and administration to optimize the consumer and patient experience.

f. *Clover Health*

Clover Health, founded in 2014 by Kris Gale and Vivek Garipalli, is a San Francisco-based healthcare company whose goal is to use data analysis and preventive care to improve health insurance for seniors and give customers who use private versions of Medicare a less expensive option. The company's technology recognizes when patients need medical treatment and then intervenes in their care with its own team of nurse practitioners and social workers to save money for both the member and the insurance company.

Clover Plans include:

- *Dental, Vision & Hearing: Most plans include routine dental, vision, and hearing exams for as little as \$0, plus allowances for glasses or contacts and hearing aids;*

- *24/7 Access to Doctors: If the client is not feeling well, he or she can speak to a board-certified doctor 24 hours a day, 7 days a week by phone, video call, or mobile app;*
- *Free Gym Membership: Clover plans include a free membership to 13,000 gyms and fitness centers including: YMCA, Bally Total Fitness, 24 Hour Fitness, and Curves;*
- *In-Home Care Visits: A Clover nurse can meet the client in his or her home, or wherever is most comfortable for the client, to perform checkups, conduct routine tests, and help the client in meeting his or her health goals;*
- *Mail Order Pharmacy: Save time (and often money) by having 100-day refills of prescriptions delivered directly to client home instead of making multiple trips to the pharmacy;*
- *Online Access: My Clover is a digital assistant that helps clients get the care they need. Log in with a smartphone or computer to look up benefits, find a doctor, and more.*

3.6 Opportunities and challenges for the future

In the previous paragraphs we have analyzed which are the main emerging trends in terms of technologies applicable in the healthcare world, going then to provide an overview of the Italian and foreign “*digital*” health offer of the main players.

At the traditional insurance and insurtech level, the offer largely covers most of the main needs that people are showing at a general level, even if technology understood in terms of “*innovation-driven healthcare*” (described in chapter 3.2) is not yet applicable to final products / services usable by a generalized target but only in structured areas such as large hospital facilities and medical research centers.

What, however, will be the most plausible scenario of health and technology areas, which, are well integrated in a ecosystem of people, data and goods?

In the following pages, the main challenges and opportunities that these two systems plan to intercept in the coming years will be highlighted.

According to the Deloitte Monitor report there are six key challenges that healthcare system will have to overcome in the next years.



Figure 36. SOURCE: 2018 Global health care outlook - The evolution of smart health care; Deloitte Monitor

1. *Creating a positive margin in an uncertain and changing health economy*

Hospitals and other health facilities are looking for new ways to create positive margins for their businesses.

There are many activities that set this goal: many organizations prefer to perform Merger & Acquisition with other small or large companies, Joint Ventures creating partnerships with structures that offer similar or complementary services to theirs. In particular, thanks to the JVs, “mobile health” services can be offered for people who frequently move abroad for work and / or study and in this way have access to approved health facilities that respect particular quality standards. In other cases, the structures, especially if they are research centers, prefer to monetize the property rights and the patents of their scientific discoveries, thus creating greater

positive margins from exploitation in investments and expansion of related activities.

Other health care organizations are pursuing new cost-cutting measures, such as developing alternative staffing models, shifting patients to *outpatient* services, and reducing administrative and supply costs.

In this way they try to capitalize margins not only on the healthcare offer, but also indirectly by focusing on *technological devices* connected to the well-being of the person, health information technology and training videos;

2. *Strategically moving from volume to value*

“Health care is continuing its transition from fee-for-service (FFS) reimbursement to outcomes - and value - based payment models.”

Moving from a volume system to one of value means that the government is implementing reforms on health issues, healthy lifestyles, the use of technology in health care, personal care and physical and mental well-being.

Deloitte Monitor reports two emblematic examples of how the governments of Japan and Singapore are taking on these challenges.

Figure 4. A continued shift from volume to value

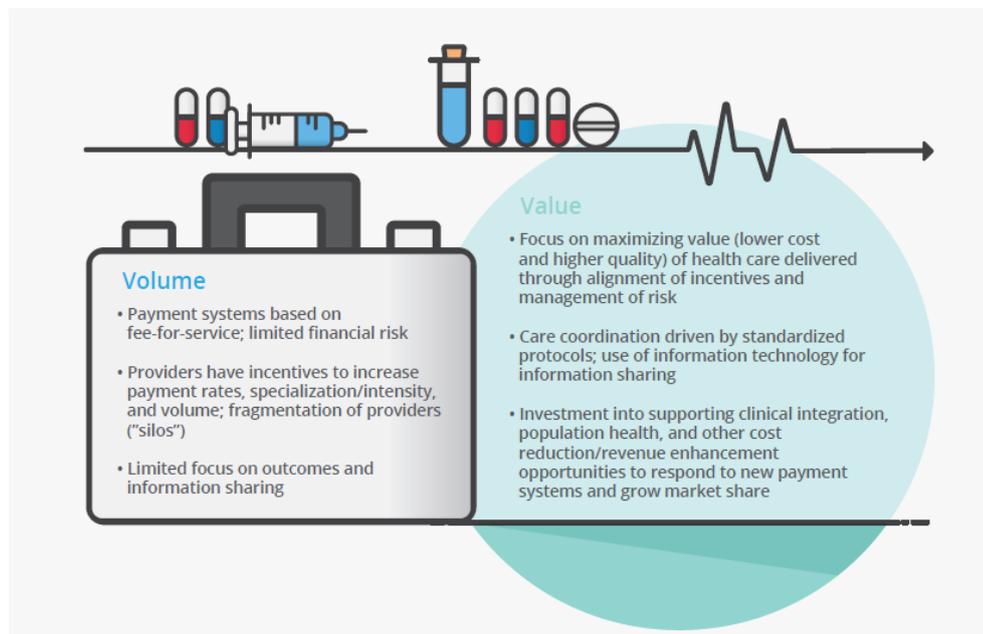


Figure 37. SOURCE: 2018 Global health care outlook - The evolution of smart health care; Deloitte Monitor - A continued shift from volume to value

The government of Japan, in particular, has established the “*Integrated Community Care System*” which combines within it a series of elements: health care, long-term care, housing and livelihood support services that are dedicated to the older population over 65 (remember that Japan is the country with the oldest population in the world, representing approximately 30% of the population) that can thus benefit from health care in these *communities*, thus moving from hospitals to places most dear to them.

The second example is the case of The Singapore Ministry of Health (MOH) that has categorized the nation’s top health care reform issues and trends into three broad shifts referred to as the “*3 beyonds*” moving: “*beyond the hospital to the community*”; “*beyond quality to value*” and “*beyond health care to health.*”

The MOH is focusing its productivity improvement projects in four areas to deliver quality care and better value :

- “*helping patients navigate the health care system more efficiently without compromising quality of care;*
- *automating labor-intensive activities to increase operational efficiency;*
- *streamlining workflows, expanding job roles, and upskilling health care staff to work more effectively and productively, and meet the needs of patients more holistically;*
- *and empowering patients, caregivers, and volunteers to self-serve and self-care.*”

(Deloitte Monitor, 2019)

The Institute of Medicine (IOM) calculated that roughly \$765 billion of US medical spending in 2009 was wasted in unnecessary services, high administrative and organizational costs, fraud and other expenses.

Around the world there are different programs aimed to reduce waste and low-value health care services, but for now it is still a huge problem to deal with.

Generally, there is a lack of consensus on how implementing the new and more efficient procedures or in consuming less, it is hard to arrange a new culture of a modern health care system.

All stakeholders should “*learn and teach*” about this new health care system, creating network around the medical staff and the patient family establishing better experience for both sides, embracing new technologies devices which are more efficient and using big and small data to improve medical techniques and treatments;

3. *Responding to health policy and complex regulations*

The increasing complexity of the health care market produces an increase in the complexity of the regulations and laws that govern this market, and sometimes it happens that even at national level there is no coherence between these two worlds. Indeed, it happens that the regulation sometimes lags behind healthcare and its scientific progress, yet these two spheres should move hand in hand.

Countries, around the world, are hugely different in health care regulation, even if some issues are quite similar: corruption and fraud as in the case of Brazil, high private healthcare costs as in China, complex regulatory environment in UK etc., are all situations common in different regions.

Governments are looking forward to improving their healthcare system as in the case of the aforementioned United Kingdom and its complex legislation system: there are national financial (NHS Improvement) and quality (Care Quality Commission) regulator which provide ongoing evaluation of performance against agreed-upon criteria and publish the findings. There are also professional group regulators and all organizations have to comply with financial and data protection regulations.

In health 4.0 era, “*digital health care (mobile health, wireless health, connected health, etc.) technology is delivering solutions to tackle the increasing need for better diagnostics and more personalized therapeutic tools. This is creating challenges for governments, health systems, and insurers, which must collect, analyze, and store more and more data, keeping also in mind the protection and the privacy of the people information*”. (Deloitte Monitor, 2019)

Three emerging trends are helping health care organizations mine insights from myriad data sources:

- *Cognitive computing*: Cognitive computing (machine learning, neural networks, deep learning, etc.) is a common technique for dealing with large

volumes of rapidly changing data. Having small and big data from different sources and in different formats (as from smartphone or Electronic health records, digitized or paper, in a particular language etc.) creates some issues in comparing them and provide correct diagnosis and treatments for the patient. In order to standardize the data and its storage location cognitive computing is able to “help” healthcare system in providing that “knowledge” that the human one is not helping enough the medical field;

- *Cloud-based, interoperable electronic health records:* different sources of data could be storage in a unique repository where both patient and medical staff can see it and add new one. Data could concern genetic, social, behavioral, lifestyle etc., and using it in a daily-care way it can be useful in improving the treatment of the patient and in taking better decisions about the cure;
- *Internet of Things (IoT):* in healthcare field is more used the term *Internet of Medical Things (IoMT)*, but independently of its name, IoT is refocusing the quality of the patient putting him or her “*at the center*” thanks to a series of smart and connected devices which are decreasing the organizational and administrative costs of healthcare facilities. It is hugely useful for chronically patients and elderly people who need treatments remotely in their homes and they use the fascinating world of telemedicine with cameras and video check-ups;

4. *Investing in exponential technologies to reduce costs, increase access, and improve care:*

Reduce costs to increase access and healthcare around the world, this should be one of the main focus of the majority of the worldwide governments. Technologies in healthcare field could bring an enormous potential, but to be applied at a generalized way their methods and results should cost less and less. Consider “*at the beginning in 1999, scientists spent five months and approximately USD \$300 million to generate the first initial “draft” of a human genome sequence. The cost to generate a human genome sequence is now less than USD \$1,000,79 and could eventually drop to less than USD \$1*”. (Deloitte Monitor, 2019)

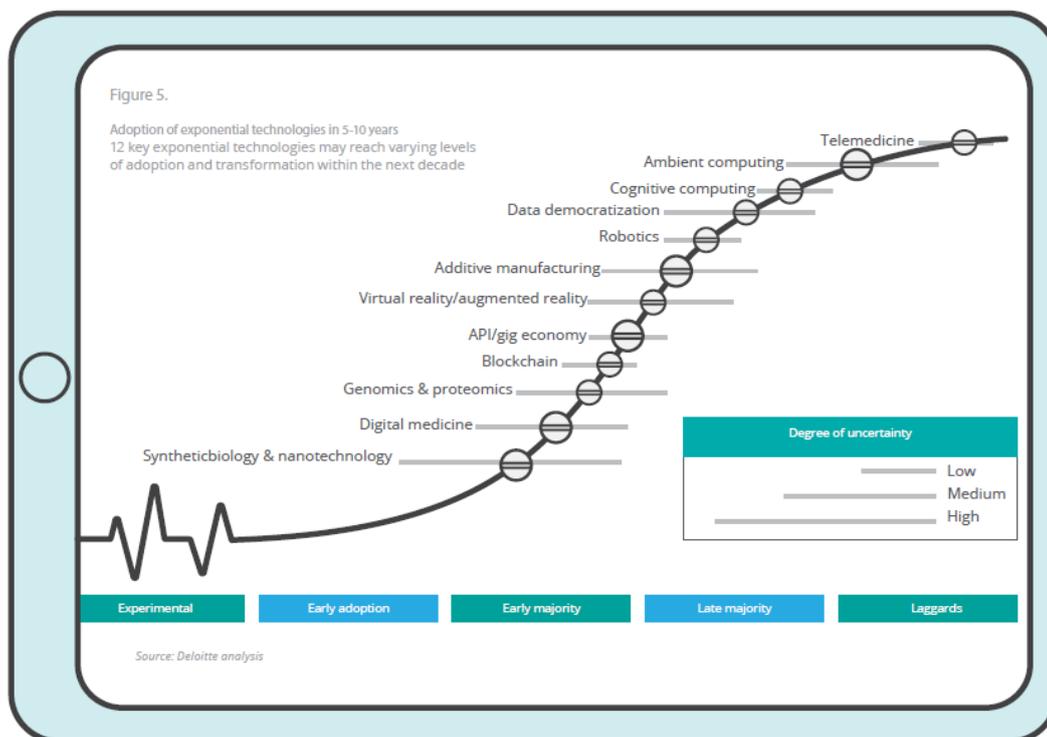


Figure 38. SOURCE: 2018 Global health care outlook - The evolution of smart health care; Deloitte Monitor - Adoption of 12 key exponential technologies in 5-10 years.

Many U.S. and European hospital executives plan to renovate or rebuild outdated infrastructure in order to prepare the field for the healthcare for the future.

In Japan, it sounds strange or even cool, there are already robots in use in hospital rooms in helping the elderly patients and in China Artificial Intelligence gives enormous added value to support imaging diagnosis in lung, ophthalmic and skin diseases.

There is also a rethinking on the flow of inpatient and outpatient to be treated inside and outside the hospital in a perspective of cost-cutting and transfer in other facilities those patients who can be cured elsewhere (home, private ambulatories etc.).

Demographic and economic trends will have an enormous impact on the construction of the “hospitals of the future”: more and more older population would increase the healthcare demand and the private health spending would be even more difficult to be sustained.

“For instance, spending on new hospital infrastructure in India is expected to reach USD \$200 billion by 2024, and China plans to add 89,000 new hospital beds by 2020” (Deloitte Monitor, 2019)

5. *Engaging with consumers and improving the patient experience:*

According to the Deloitte 2017 Survey of US Health Care Consumers, personalized care from their providers—including clear communication and sensitivity—is respondents’ top health care priority (see figure 39).

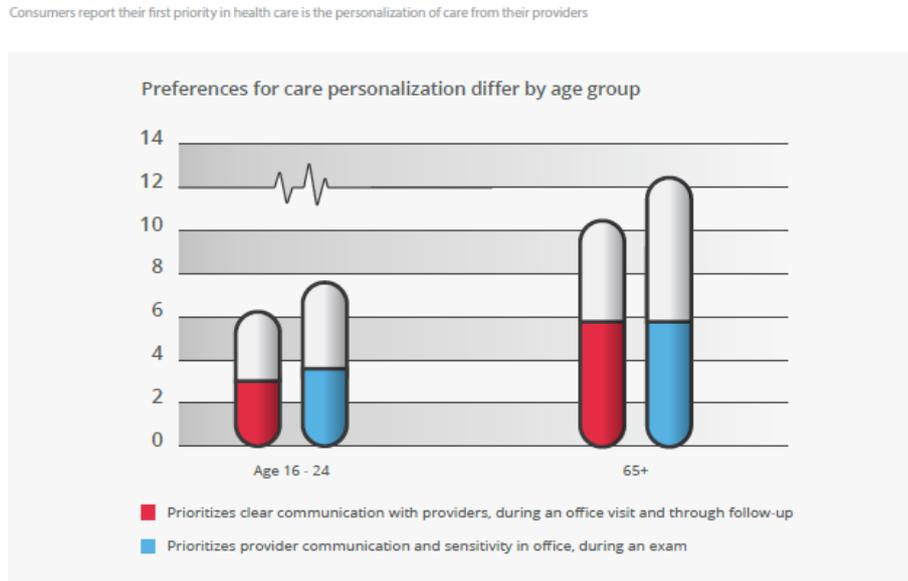


Figure 39. SOURCE: Deloitte 2017 Survey of U.S. Health Care Consumers – Consumers report their first priority in health care is the personalization of care from their providers

- *Leveraging social media to improve patient experience:* Social media offers health care organizations a potentially rich source of data to efficiently track consumer experiences and population health trends in real time, much more efficiently than current approaches;
- *Telehealth:* Telehealth provides a more convenient way for consumers to access care while potentially reducing office visits and travel time. This convenient care model has the potential to increase selfcare and prevent complications and ER visits;
- *Virtual reality/augmented reality:* VR/AR can engage patients in low-risk, artificially generated sensory experiences that could accelerate behavior change in a way that is safer, more convenient, and more accessible to the consumer.

6. *Shaping the workforce of the future:*

One of the main challenges is the workforce. In fact, having a professional, well-trained, attentive, efficient staff will be one of the main ally to play in an

increasingly technological context. This is however a double-edged sword, because while on the one hand the “*human touch*” is required, on the other hand it is also asked to automate and standardize all those activities that can be very well managed by machines, robots and technology. In this way there will be a rationalization of costs and therefore a closer approach to efficiency.

“ *Compounding the problem is a scarcity of leaders with strategic, next-generation skills to guide and support the transformation to becoming patient-centric, insight-driven, and value-focused organizations.*” (Deloitte Monitor, 2019)

At the “*Talks on Tomorrow*” event a further speaker took the floor to discuss the major challenges that the Italian healthcare context will face in the coming years.

Paolo Locatelli, scientific director of the *Digital Innovation Observatory* in healthcare at the Politecnico di Milano, stated that the scientific excellence that exists in Italy partly reflects some niche research centers and it will be their care transferring this knowledge outside to more generalized structures such as hospitals, medical facilities, medical clinics, etc.

It will then be necessary to have these structures provided of the infrastructure of goods and services in order to take advantage of this knowledge and in doing so it will be crucial moving research and practice at the same pace.

Not only, the people, even the older ones, are ready to welcome the era of health 4.0 with open arms, welcoming them into their homes.

In fact, many Italians are in favor of telemedicine and according to Locatelli there are numerous European projects in the field of home-based services through video-assistance (an example is the brand new “*Care Manger*” service of Europ Assistance already mentioned above).

On the one hand these future opportunities will increasingly see an *empowerment of the patient* and of his and his family's role within the “*medical experience*”, being part of the “team” of care cooperating together with the doctors, nurses etc., even simply through a culture more open and positive “to live healthy”, to provide truthful information on his health state and of the behavior adopted, on having greater awareness of his symptoms and on how to explain to doctors what he or she feels.

On the other hand, creating greater empowerment for the patient will also create greater *diversification* in the skills of the doctors and their medical knowledge, having more time and

resources to devote themselves to research projects, and therefore greater levels of innovation and scientific progress.

Both levers will ensure that over the years, despite the aging of the population and the increase in health care expenditure, there will still be sustainability if each of these stakeholders will work in the best ways to allow the things aforementioned to actually take place.

In order to start preparing the ground, we need to create *health culture* and immerse the stakeholders in the daily life of change, in the health 4.0 arena, that is already among us!

CHAPTER 4 – Generali Insurance Case Study

The fourth chapter is entirely dedicated to Immagina Benessere, one of the masterpiece of Linea Immagina of the insurance company Generali Italia SpA.

Immagina con Generali is the new product line family, that contains *high-valued services* and it focuses on people lifetime projects.

Linea Immagina wants to be a *lifetime partner* for its clients, supporting them in realizing their most wanted desires and goals; it includes two more products, *Immagina Strade Nuove* which concerns with mobility (of cars, bikes, car sharing, overboard etc.) and *Immagina Futuro* a saving product included in Life branch for those who wants a mid-long term investment plan.

In October a fourth product will be launched, *Immagina Adesso*, that concerns with family and person (Property and Casualty non motor area).

More than a simply product it will constitute a “*platform*”, in which four different modules could be aggregated according to clients’ preferences and needs for a total of more than 80 services in fields such as “*Home*”, “*Wellness (Accident branch)*”, “*Harmony (Legal)*” and “*Pet*”.

Immagina Benessere aims in supporting clients in reaching their lifetime goals at the utmost of their strength, health and well-being.

With Immagina Benessere customers can “walk” their lifetime paths without excessive worries, relying on Prevention, Assistance and Protection solutions, choosing and tailoring the combinations of services they most prefer.

In addition to the insurance service connected to the main event as an accident at work or an illness, there are many other services that can be integrated and that concern people's daily lives, their lifestyle and hobbies, home assistance and other types of pre-protection that can be useful for customers, even available in digital formats, such as smartphones, tablets and PCs.

4.1 Generali Italia Spa at a glance⁵⁸

Generali Italia is an Italian insurance company, part of the Assicurazioni Generali group, one of the world leaders in the field of personal protection, savings and pensions.

With more than 1,500 agencies and 2,000 agents and over 18,000 professionals, Generali Italia is committed to excellence in service and assistance to its customers, which in 2017 had over 6 million families and private customers.

To ensure easy, effective, innovative and fast answers and services, in the last few years the Company has simplified the brand and the sales networks, and enhanced the use of digital technology, recognizing its importance above all in a traditional sector such as the insurance one.

In November 2018, the three-year strategic plan 2019-2021 “*Leveraging strengths to accelerate growth*” was presented during the Investor Day in London, in which the Company aims to become “*life-time partner*” of its customers, through 3 pillars:

- 1) *Profitable growth*: through the strengthening of the brand at an European level, in particular on the Italian and German markets, and the development on emerging markets, in which Generali sees great opportunities, such as Asia and Latin America, focusing on specific market segments (akin employee benefits, SME etc.) and, starting from the solid European base, establish a global Asset management platform;
- 2) *Capital Management and financial optimization*: products in the Life sector will be increased, with low capital absorption, i.e. the so-called “*Capital Light*” and growth also of those in the Non-Life, Health and Protection sectors; the cost and the level of the debt will be reduced and will be increased the cash remittances, through the growth of cash generation of the operating entities;
- 3) *Innovation and digital transformation*: in order to really be a “*Life-time partner*” for the customers there will be a focus on full-service consultancy and actively present 24/7, a positive culture towards technology will be promoted, in particular for the phase of distribution and above all in the relationship between customer and agent, finally there will be a transformation aimed at simplifying processes and

⁵⁸ The data and information have been taken from the official website of Generali Group, within the Strategy section. For more visit: <https://www.generali.com/it/investors/investing-in-generali/strategy>

organization, through automation and artificial intelligence, in core activities and for the subscription of completely native digital policies.

All this will be possible through the synergistic help of three enablers: people, brand and sustainability.

4.2 Immagina Benessere: Business Model

In this section the business model of Immagina Benessere will be analyzed.

The formalization of the business model concerns a simplification of the Canvas Model⁵⁹ in which there are 9 drivers for creating and distributing the value, summarized here in 3 drivers:

1. *Offer* that refers to the value proposition of the product;
2. *Customers* in which there are the segmentation process, the relationship between Company and Client and channels of distribution;
3. *Infrastructure* in which we find key resources, strategic partnerships and key activities.

For reasons of privacy, we choose to omit the part relating to financial soundness and the structure of costs and revenues.

⁵⁹ Business Model Canvas is a strategic management and lean startup template for developing new or documenting existing business models proposed by Alexander Osterwalder around 2008. The model describes in a simple and visual way the logic with which an organization creates, distributes and captures value. Graphically it is a visual chart with nine elements describing a firm's or product's value proposition, infrastructure (key partners, key activities and key resources,) , customers (segmentation, relationships and channels), and finances (cost structure and revenue streams).

4.2.1 Main goals

Generali Italia in 2018 started to think about the creation of a new generation of *smart insurance* products in order to evolve its offer in a more diversified and value-added way, so *Linea Immagina* raised.

In fact, the company, with this new product line, wanted to overcome the traditional meaning of being an insurance company from a payer view to becoming a partner for its clients, a “*lifetime partner*” in Generali 2019-2021 Strategic Plan words.

In order to realize the three year plan strategy, some mindsets and procedures must changed and three main goals were set.

1. *Increasing connection with customers*: making their life easier through daily services and leading to an increase of the retention rate;
2. *Expansion of Generali business*: beyond traditional insurance areas, leading to a decreased customer price sensitivity;
3. *Helping Generali Agents*: to empower their sales approach focusing on the customer’s emotional aspects.

The three goals jointly have the unique scope of becoming “*lifetime partner*” of Italian families!

In doing so, in addition to the main protection coverage many services were included to support, assist, integrate, personalize the final product and create a unique version of it for that specific client with that specific needs and preferences.

The owner of the product development process is the structure of Marketing of Generali Italia which, with *Linea Immagina*, wanted to create an *ex novo* generation of insurance products that enable the company in having a *daily relationship* with its customers.

The new product’s core insurance component has to be customized, as we already mentioned, to personal needs, presented with a positive proposition and empowered with a wide range of services, in order to achieve a *customer centricity* view.

In particular, four categories of services raises:

- a. *Navigator services*: to provide quick useful information (eg. Personal dashboard, research tools) and to address the personal needs of the customer;
- b. *Prevention services*: to maintain a healthy lifestyle or drivestyle (also through services provided by the other two companies Generali Welion and Generali Jeniot);
- c. *Damage Limitation Service*: to mitigate the consequences of negative events (eg. direct assistance network, medical video consultancy);
- d. *Assistance services*: to provide the best recovery after a negative event (eg. medical care or a specialist sent directly to the customer's home).

These four categories of services will be better analyzed at page 134 in Immagina Benessere in figures 42 and 43.

4.2.2 Value proposition and Services Map

Immagina Benessere is therefore a high-service solution of the “Immagina con Generali” Line, which combines a variety of services, prevention and assistance alongside insurance cover of Accidents and Illness.

The delivery of the value proposition of Immagina Benessere will be sent from the company to the client through:

- A positive and B1 language proposition;
- Tailored to the person's needs;
- Transparent and clear;
- Built with Technical Excellence;
- Designed for everyday use;
- Life navigator;

- Quality driven touchpoints;
- Omnichannel view

Figure 40 shows the *Value Proposition* that the product intends to convey to the customer.



Figure 40. SOURCE: Life & Health Committee, Milan, 21st May 2019 - presentation of Marketing of Generali Italia – Value Proposition

As we had already anticipated in chapter “2.1.1 Focus on the offer side: how are the main Italian players behaving?” with regard to this product, Immagina Benessere consists of five solutions (figure 41):

1. **DEDICATED TO YOU - PREVENTION AND ASSISTANCE:** it is the insurance package from which the sales process starts and a continuous relationship is established between the Company and the Customer, becoming its partner in everyday life. There are part of the section:
 - Prevention and Assistance services - START (always present);
 - The guarantees of prevention and assistance designed specifically for specific targets according to certain characteristics of the customer (family, sportsman, traveler, senior, professional / entrepreneur);
 - The Health Prevention Program and Expense Reimbursement for high diagnostics.

Some examples of services in Prevention and Assistance – START are:

- Telephone medical advice, available 24 hours a day including holidays, which provides assistance for health-related issues by providing concrete recommendations;
 - The *second opinion* that allows you to have a second opinion from specialists on a diagnosis, or on a therapeutic path, simply with a phone call;
 - *My Clinic* services for the rapid assessment of first symptoms, medical video consultations and online medical records, all accessible from smartphone, tablet or desktop;
 - And also the physiotherapist directly at home, the availability of a family collaborator, etc
2. *INDEPENDENCE*: collects the “tools” aimed at helping the customer to maintain, as much as possible, his or her autonomy and independence, and therefore to be able to provide for himself/herself and his/her loved ones in the case of an important and unexpected event. It includes the guarantees of Permanent Invalidity and Annuity Life;
 3. *ACTIVE*: supports the customer so that he or she can always maintain his/her active lifestyle and continue to do the activities he/she wants even if "something" should happen, offering him/her useful “tools” for getting back into shape in the best way and in the shortest possible time. The guarantees include the Daily Allowance for Hospitalization and Recovery, Expense Reimbursement, Temporary Disability and Lump-sum Compensation;
 4. *CONTINUITY*: it allows the customer to continue his/her “Life Project” even if the most serious event should occur. Even if the topic is always delicate, it is useful for the Client to know how he/she will be present next to his/her family in the projects started even if the client is no more there. It includes the Death guarantee;
 5. *DEDICATED ESPECIALLY TO YOU*: offers a series of solutions designed and tailored according to the lifestyle, for those who have specific interests or activities, such as those who are passionate about sports or travel, those who dedicate themselves to a business activity or has a particular family situation. The customized packages collect guarantees and *ad hoc* clauses as well as the Legal Protection.

IMMAGINA BENESSERE

Product design: a completely customizable solution

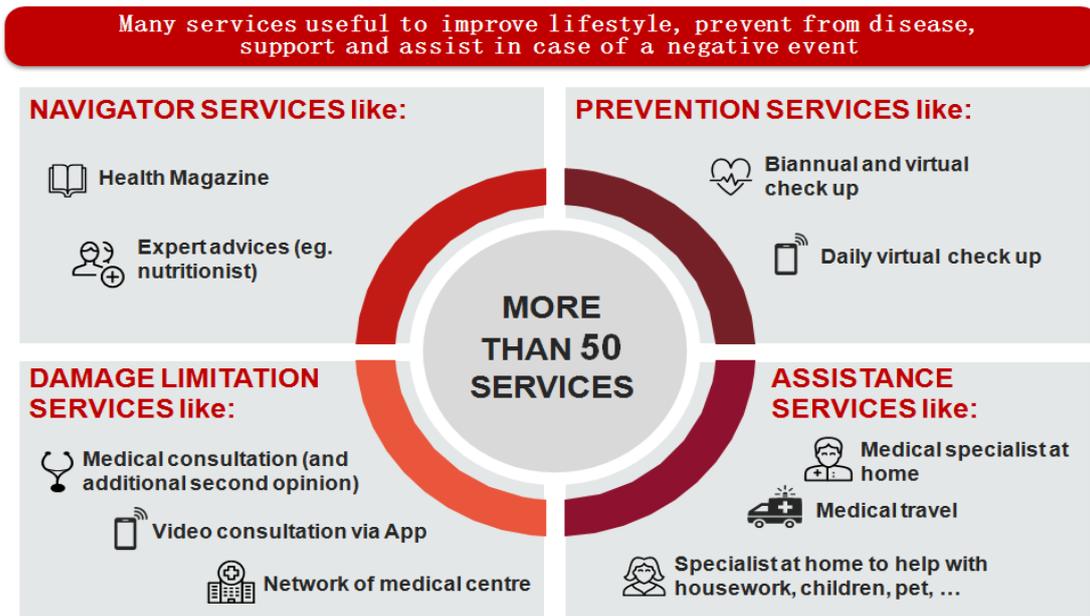
Guarantee always included
Including one of these
guarantees is mandatory



Figure 41. SOURCE: Life & Health Committee, Milan, 21st May 2019 - presentation of Marketing of Generali Italia – Product Design

Immagina Benessere a bit like the other products in the range (less for Immagina Futuro which is a product belonging to the Life branch) has within it a wide range of services, more than 50, configurable depending on the module chosen and on the peculiarities of the single customer.

They can be classified into 4 sections and are those already seen at the beginning of this chapter talking about the whole Immagina Line (see figure 42 and figure 43).



Confidential

Figure 42. SOURCE: Life & Health Committee, Milan, 21st May 2019 - presentation of Marketing of Generali Italia – Service's Map

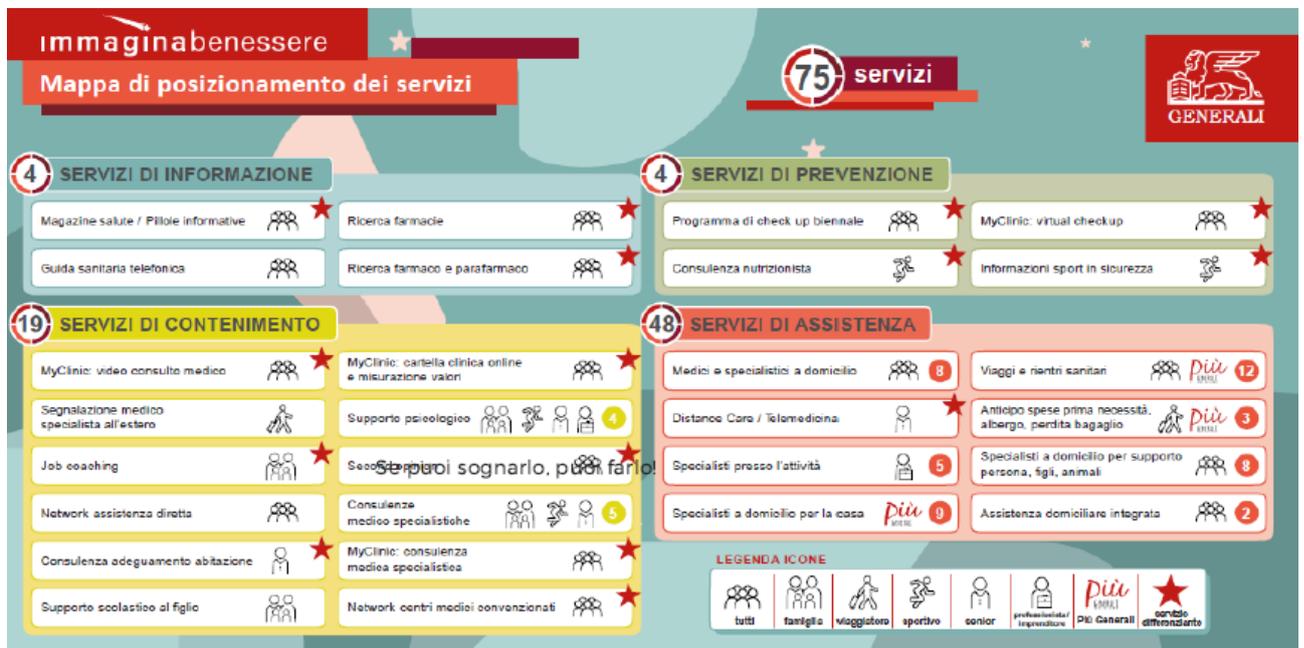


Figure 43. SOURCE: Generali Italia Spa - presentation of Marketing of Generali Italia – Service's Positioning Map

An example of customization of the module “Dedicated to you - Prevention and Assistance” and of “Dedicated especially to you” based on a specific lifestyle.

A father can choose to personalize his solution by choosing:

- a) *Dedicated to you, Prevention and Assistance - Family* offering services such as:
- school support that provides the injured child with a teacher at home to help him stay on par with the school program;
 - pediatric counseling;
 - the availability of a baby sitter directly at home;
 - accompanying the child to school if the parent is hospitalized;
 - the availability of a pet sitter.
- b) *Dedicated especially to you - Family* where you can activate covers related to the protection of the family environment such as:
- free of a sum of Permanent Disability and Reimbursement of Medical Injury Expenses for children up to 10 years;
 - compensation in the event of loss of the child's school year to be used eg. for private remedial lessons;
 - increase in the amount of daily allowance in the event of admission of both parents.

Immagina Benessere is characterized by a high content of services accessible via My Generali's App or Web, such as:

- the *Search pharmacies*, drug research and drug protection that allow you to quickly retrieve information on the pharmacies on duty or on the guide to the use of drugs;
- the *Health Magazine* and the *informative pills* provide useful advice on health, prevention and wellness;
- the search for *affiliated medical facilities* allows you to have qualified doctors at special rates.

To support the new commercial approach, in addition to always considering the “*Dedicated to you - Prevention and Assistance - START*” solution with *My Clinic* services accessible from smartphones, tablets and desktops, the content of Assistance guarantees has been enriched

with new services, tailored to suit the lifestyle of the people, which enhance and strengthen the customer's relationship with the Company at 360°.

The MyClinic section, accessible via My Generali's APP and Web, reserved for only Immagina Benessere customers, has been integrated into the Generali Italia customer area.

My Clinic collects prevention and daily support services, includes:

- the evaluation of the symptoms of illness with a guided tour at the end of which it is possible: to get an opinion, to become aware of what one must pay attention to, to have useful advice depending on the symptoms indicated but also to consult a doctor or call 112;
- medical consultation 24 hours a day, here you can request the telephone consultation that you need, of general medicine, even in a video call, or with a specialist, also via message;
- the section to easily bring with you, even while traveling, your digital medical record, with details of your medical history (eg interventions, allergies, hallucinations, reports) and your own measurements (eg blood pressure and blood glucose).

Still within the section “*Dedicated to you - Prevention and Assistance*”, the Health Prevention Program provides personalized check-up services combined with the cost guarantee for high diagnostics, this also includes activation in "direct assistance" as far as regards the booking, access and payment service for Generali Italia.

Also the Reimbursement of medical expenses from accident guarantee allows for physiotherapy and rehabilitative treatments to resort to medical facilities affiliated with “direct assistance”.

4.2.3 Customers

The customer cluster includes the segmentation phase, the relationship that is established between the parties and the distribution channels.

1. Starting by the *segmentation* of the potential customers to whom Immagina Benessere can be offered.

It has already been affirmed that Immagina Benessere is a highly modular solution and therefore configurable depending on the customer needs.

Given the five different modules, there is not a single and well-defined target market, but a broader one that can be described as follows:

- a. a retail customer, made up of both individuals and families who care about their well-being and their future. For example, the *Independence Module* provides reimbursements for a possible permanent disability due to work or illness and therefore is dedicated to the disabled person but also to his or her family;
 - b. over 18 years old and with financial availability given the payments of annual or infra-annual periodic premiums, which therefore have a job from which they receive an income (whether they are public/private employees or freelancers)
2. The *relationship* that Generali Italia wants to create with its customers is a relationship aimed at becoming daily and in the long run.

In fact, as has already been mentioned at the beginning of chapter four, among the objectives of the Company 2019-2021 Strategy there is that of becoming *lifetime partner* of its customers by being close to them in every moment of their lives.

Going therefore beyond the compensation of the claims but rather (as in this specific product) going to prevent and cure ex-ante the customer.

No longer to cure after there has been a manifestation of a disease, but to take care in advance, every day, with active and healthy lifestyles aimed at the prevention and improvement of physical and mental health.

3. Both the supply of the value proposition and the relationship between Customer and Company pass through the *distribution channel*.

Generali Italia uses the agency channel with more than 1,500 agencies throughout Italy to market its products.

The focus of the 19-21 Strategy is precisely to create a long-term relationship between the Customer and the Company through a consultancy by the Agent (which in this case represents the Company itself) at 360 degrees.

A consultancy that must be empathetic in the first place, aimed at creating trust and ensuring that the client feels assisted and supported not only in the pre and purchase phase but also in the post purchase moment, when the policy has already been signed

and paid.

That is to say that even after the purchase, the client feels “welcomed and pampered” by the agent and that every time he or she needs information and documentation about the policy he or she can count on the help of the agent.

In the next paragraph dedicated to the infrastructures through which the product is developed and distributed to the customer, we will discuss about the technology that appears to be a key resource in the Canvas Business Model.

4.2.4 Infrastructure

The infrastructure, that we have divided into key activities, key partnerships and key resources, is very important in the construction and marketing of the product.

In particular, an important element to consider and to be included among the key resources is the technology component.

In this case, technology can be divided into two parts of the product's lifecycle:

- a. at the time of its birth, when the product is created and configured by the agent with the client according to the customer's preferences until the policy is signed and sold;
- b. during the consumption of the product, that is when the customer actually uses the insurance policy, which can be a preventive dermatological or ophthalmological examination, a reimbursement of expenses for the physiotherapist following a fall from the stairs, or simply reading the *Health Magazine* available on the App MyGenerali.

Below are the two cases analyzed in detail. Let us first analyze the moment of birth, configuration and sale of Immagina Benessere.

The sales path of Immagina Benessere arises in the configuration phase with *customer profiling* through the simulator, which is the new digital web-based and adaptive tool for all mobile devices.

In this way, through the use of this tool, the best product solution is created step by step according to the specific needs of the customer.

The configuration responds quickly and fun to the customer's needs, showing the result in a simple and clear summary screen to understand.

Once the ideal configuration has been constructed, a key directs the user directly to SPRINT where he or she can finalize the negotiation by constructing a detailed estimate or proceeding with the policy tailored before.

The simulator returns an ideal configuration in five quick steps:

1. **WHO YOU ARE:** a quick and concise questionnaire, designed to be compiled informally and pleasantly with the client; it collects some basic information (eg age, composition of the family, city of residence). In this step there is also a moment of deepening of the client's emotional sphere with reference to his/her passions and plans for the future;
2. **ABOUT YOU:** in this step the client gets acquainted with his/her virtual guide at Immagina Benessere - a testimonial, represented photographically, that has personal and professional characteristics in which to reflect and find himself/herself. The testimonial is a narrative trick that supports the consultant in the path of commercial illustration of the solution, making it immediate and fun;
3. **WHAT YOU CAN CHOOSE:** the simulator returns the configuration best suited to the characteristics of the testimonial, and therefore, of the customer. A graphically pleasing and intuitive screen schematizes the coverage areas and the main groupings of guarantees, illustrating them with in-depth boxes through a simple and non-technical language. Consultant and client can then decide to enrich and further customize the solution by clicking on the “edit” button;
4. **YOUR SOLUTION:** A summary screen shows the solution built with the configurator and a button invites you to go to SPRINT to end the negotiation with quote and issue. In the event that the client wants to go into the details before having a quote developed, the consultant can send a summary of the configuration of Immagina Benessere seen in the simulator in real time;
5. **GO TO SPRINT:** a key directs the user directly to SPRINT where the information entered in the simulator will be transported. In just a few steps, SPRINT can then

finalize the negotiation by constructing a detailed estimate or proceeding with the purchase of the policy.

Secondly, we will see how the technological component manifests itself after the customer has purchased the product and he/she uses it. In this way some examples can be made to better highlight the technological components inherent in Immagina Benessere.

Module “*Dedicated to me - Assistance and Prevention*” of Immagina Benessere includes some technological characteristics that can be really *user-friendly* to the client.

Let's see two example: the first of the Start Assistance configuration and the second more personalized of the Senior Assistance configuration.

a) *Start Assistance - MyClinc services:*

Technological platform through which the Organizational Structure provides digital services of remote medical assistance in the event of an accident or illness.

The services can be accessed by downloading the MyGenerali App and accessing the personal area.

The main services include:

1. Self-assessment of symptoms (Virtual checkup)

Through the special section present in the MyGenerali App, the Insured may autonomously take advantage of a self-assessment program that will help him / her understand his / her symptoms and indicate probable causes and possible behaviors to be implemented;

2. Video medical consultation

By accessing the appropriate section inside the MyGenerali App, the Insured may request a:

- *General medical consultation 24 hours* a day with the doctors of the Organizational Structure, through voice call or video call. The Insured will have 10 total consultations available;

- *Specialist consultation* with specialist doctors of the Organizational Structure (eg. Orthopedic, Pediatrician, Cardiologist, Gynecologist, Nutritionist) through voice call or written request. The Insured will have 10 total consultations available;

3. Online medical record

Through the special section in the MY GENERALI App, the Insured can file all data on his previous and current health, attach exam results and reports, and access it independently at any time. The Insured may also share their data with the doctor during the consultation. In case of need, the Insured will have the possibility to translate the automatically uploaded medical data into the available languages.

b) Senior Assistance - Distance care / Telemedicine:

In the event of hospitalization due to an accident of at least 5 days with surgery or at least 10 days without surgery, the Organizational Structure, upon written request of the Insured's doctor, will organize and manage the sending of specialized technical personnel for the installation at the home of the Insured of an audio-visual communication system and transmission of clinical data (*distance care*), used by trained operators who assist the Insured, directly supporting their expenses up to a maximum of 30 days after resignation from the medical institution.

Regarding the other two infrastructure drivers, key activities and key partners, Immagina Benessere does not present major new elements.

Generali Italia has an excellent network of strategic partners such as Jeniot, Welion, Europ Assistance etc., which are also the means through which certain Immagina Benessere services are provided.

While as far as the key activities are concerned, it is the function of Customer Experience and Processes that have information on how concretely Immagina Benessere “moves” from inside the Company to the outside of it.

To conclude the theme of the Business Model, the delivery of the value of Immagina Benessere is summarized below; a value that starts from the Company arriving to the Customer, through the Agents channel.

- a) The Company, through the Marketing function, wanted to create a new family of insurance products that were not exclusively insurance but that went beyond, flanking the customer at any time during the day, supporting him/her in the realization of his or her own life projects. Health is a topic very much heard today by

Italian families and finding private solutions that integrate those offered by public health is considered by many an enormous advantage.

Generali wanted to become “lifetime partner” of its customers through modular and customizable solutions thanks to the use of technology which in this case is manifested throughout the entire lifecycle of the product, from the zero purchase moment to the use phase.

In this way, Generali's value is to be a partner for its customers, no longer just a simple insurance company but a support for families and individuals who buy its products;

- b) The Agents are the gear through which Generali Italia works and are an unimaginable resource for the Company.

They are in fact the true face of Generali because the customer does not come into contact with the staff of the management offices but with the agents. These must be at their best, just as they must be able to best explain the characteristics of the product once they have understood which is the best policy for the client.

In fact, first of all, the agent has a “conversation” with the customer to better understand what he or she needs, achieving in this way a complete “customer centricity” experience.

The value for the Agents is to become their own lifetime partners of their clients, because the consulting role they take is strategic for the Company and in doing so they must put the customer's needs at the center and dedicate their support, assistance and empathy to them;

- c) Finally, customers. If in the past people thought of insurance as something to do (by force) to prevent and reduce risks in the event of illness, an accident, etc., now customers have had a better relationship with insurance companies, especially with those that inspire them confidence and transparency.

The client of Generali in this case is a customer who knows he/she can count on a trusted, solid and long-term partner.

The customers know that always have someone available to support them and that in case of need it offers assistance and resolution to their problems.

The value that is offered to the customer is to be assisted and supported in different moments and circumstances of life. Moments that do not always have to be bad or negative, but purely events of prevention, care, well-being, information etc.

4.2.5 Some examples of Customer Journeys

Finally, in conclusion of this chapter, two examples of customer journeys will be presented, to offer an overview of which services are activated in real situations, which could happen to each of us.

Customer Journey 1

The Rossi family is composed by: dad Mario who works as a mechanic, mom Erika who works in a bank, Eleonora who is 8 years old and loves dancing, Federico who is 12 and has a passion for the guitar and then Licia, the house keeper (actually is a dog!).

The family spends many weekends in the house in the mountains and when it can and if the savings allow it they make a jump either to the sea or to some art cities.

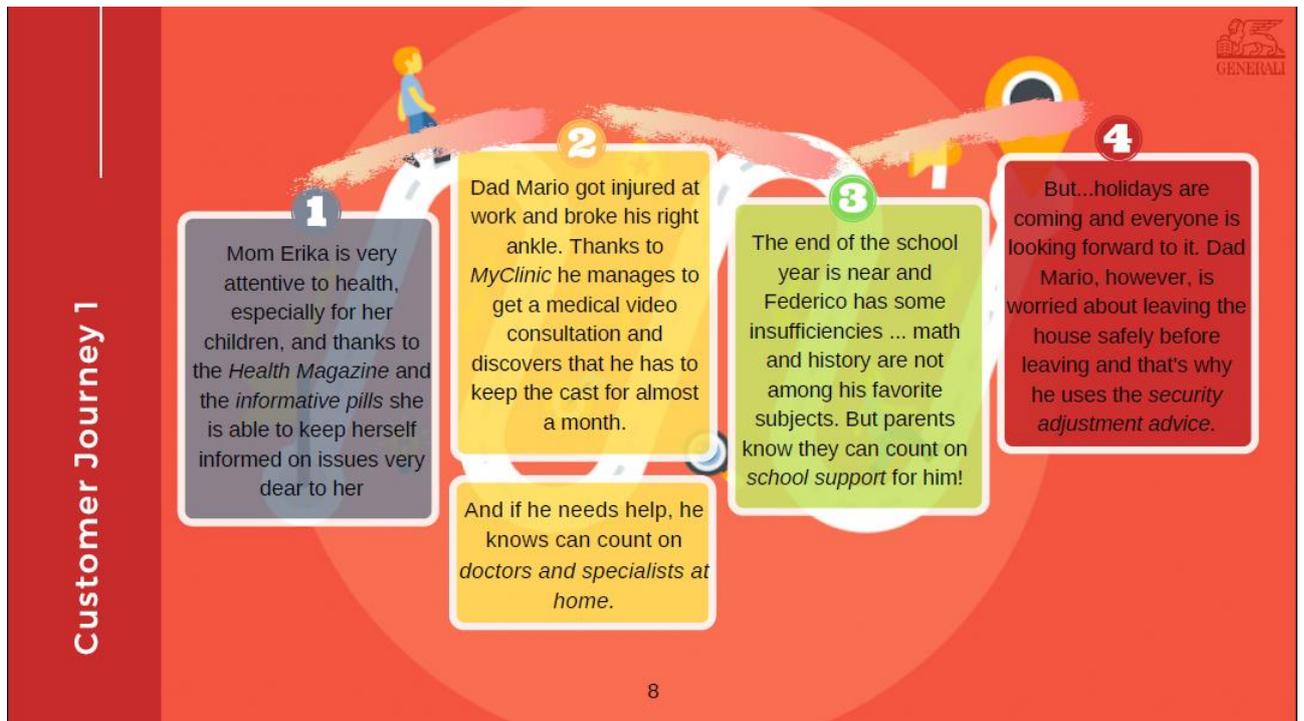


Figure 44. SOURCE: My elaboration on Generali Italia material – Customer Journey 1

Customer Journey 2

Elena is 53 years old and lives just outside Milan with her dog Simba. In her life she runs a small bar that makes excellent breakfasts but also amazing happy hours. The work, though demanding, does not deny her to keep active and being a sport enthusiast who loves trekking, yoga and swimming. She loves outdoors activities and when work allows her she goes to practice yoga by the sea side or to walk on the shores of Lake Como.

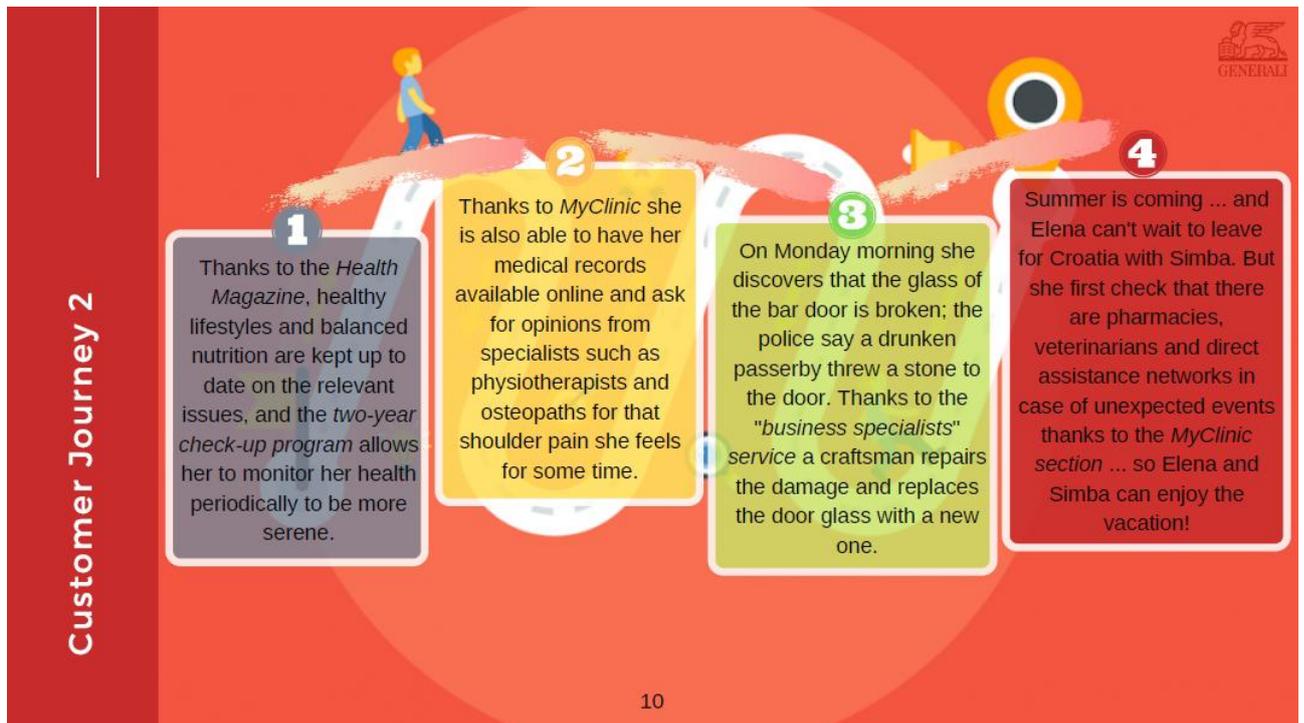


Figure 45. SOURCE: My elaboration on Generali Italia material – Customer Journey 2

Conclusion

During the writing of this work we tried to give evidence of how technology is contributing to the improvement of health care. A contribution that follows two directives:

1. firstly, at the level of research centers and well-equipped infrastructures with machinery and hardware that are able to bring together data, knowledge and innovation;
2. secondly, in a more local and generalized way thanks to the offer of insurance and financial institutions, and above all insurtech and start-up companies that are increasingly committed to making healthcare more accessible, democratic, easy and “fun” through their innovativeness.

It must be said, however, that much work has yet to be done.

Research and theory must be grounded and effectively made concrete to create new value for all the stakeholder of the network.

They have to somehow get out of research centers and hospitals and get into the homes of patients, especially those who are chronic, elderly and who want to be treated in the places most dear to them and close to their families.

Technological progress, as has been analyzed, is not the result only of the big giants like Google and Amazon, but above all of those small, dynamic and flexible companies constituted by young people and by those who in the past have tried on their skin what it means to have problems with the enormous chaos of the public health sector.

Many partnerships between small start-ups and big tech giants have already been launched and these will only increase in the future.

Even better if in this ecosystem of health and technology will be included the people, not only doctors and staff, but the patient and his/her family, so that even in this painful context, the person is placed at the *center* of everything.

The centrality of the person is no longer limited only to purchase and marketing issues, but to every daily activity that a person is faced with.

Health, diseases, preventive visits have become relevant topics in an increasingly frenetic and turbulent context like the current one, where sometimes people forget to rest and take moments of relaxation for themselves.

Taking care of yourself and the loved ones must be a central point, an activity to be done with perseverance and ex-ante in order not to risk having to face illnesses or situations that could be treated beforehand.

The centrality of the patient, secondly, must also be understood by the doctors and the staff, who must have in mind the importance of that moment for the sick person, who finds himself (herself) facing a difficult situation for which he (she) does not been prepared.

Only in this way, with the people at the center, health and technology, can both progress in a better society.

Then, we saw in the fourth chapter how a traditional insurance company is implementing its “*Life-time Partner*” strategy, to change its role from being a payer, to a more empathic, social and close company to its customers; and technology is a very useful means of getting closer to people.

Immagina Benessere is not just an insurance policy, but a tool for prevention, care and assistance to the person; to make people improve their state of health and carry them in the manifestation of a negative event. All this thanks to the integration of services aimed at both health area and technology field.

There are three themes to work on in the coming years:

- Creation of *networks* among *people*, *medical staff* (hospital) and *data*: in drafting this work we have focused a lot on the relevance of creating and managing networks among these actors, only in this way the “*patient centrality*” will be achieved;
- *Technological progress*: in the long run, technology will become increasingly democratic and affordable for many, even for the elderly. The next few years will be crucial for the evolution of technologies such as big data and artificial intelligence that will bridge the gaps for wastes and inefficiencies within hospitals;
- *Cooperation* and *collaboration* between different *stakeholders*: the governments of each nation will drive the whole evolution of the health care system, but these will need help from multiple other actors, such as hospitals and research centers, universities, banking, insurance and financial institutions, as well as, and above all, of the individuals, the single individuals

who find themselves facing problems related to their own health and that of their loved ones every day.

These are the three drivers that each of us should focus on.

The road to having a democratic, right and efficient health care system for everyone is long, and it is not certain that it will ever be feasible for all the countries around the world in the same equal way.

We are well aware of how much it proves to implement and above all respect the same rules in the same country, even more difficult to do it globally.

For the moment it can be said, whether they are research centers where the “health care of the future” has already arrived, whether they are small or large, new or old companies, each of these stakeholders is contributing to a better health care system for all of us!

Bibliography

- 1) IX Rapporto RBM-Censis sulla Sanità Pubblica, Privata e Intermediata, Welfare Day, 2019
- 2) Aaron Antonovsky, *Health, Stress and Coping*, San Francisco, Jossey-Bass Publishers, 1979
- 3) Aaron Antonovsky, *Unraveling the mystery of Health. How people manage stress and stay well*, San Francisco, Jossey-Bass Publishers, 1987
- 4) Aldo Piperno, “*La previdenza sanitaria integrativa configurazione, dimensione, effetti e implicazioni di policy*”, 2017
- 5) Alessandro Seppilli, *L’educazione sanitaria nella difesa della salute. Relazione alla I Conferenza di Educazione Sanitaria. Educazione sanitaria* (1966); 11: 339-62
- 6) Allied Business Intelligence - ABI Research, “*Internet of Everything Market Research*”, 2014
- 7) Andrea Battista; Rossella Vignoletti, “*L’Assicurazione nell’Era Digitale*”, MFC Editore, 2018
- 8) ANIA, *Trends in quarterly non-life premiums*, Year V - No. 17 June 2019
- 9) Deloitte Monitor, “*2018 Global Health care Outlook - The evolution of smart health care*”, World Industry Outlook, Healthcare and Pharmaceuticals, The Economic Intelligence Unit, 2019
- 10) Herbert Freudenberger, Géraldine Richelson, *Burn out: the high cost of high achievement. what it is and how to survive it*. Bantam Books (1980)
- 11) Innovation Team, Gruppo MBS Consulting, “*Trends in non life premiums IV quarter 2018*”, 2019
- 12) IVASS, *Analisi trend prodotti assicurativi - Le nuove polizze sulla salute: La Digital Health Insurance*, a cura del: Servizio Tutela del Consumatore - Divisione Prodotti e Pratiche di vendita (18 Ottobre 2016)
- 13) Juliet Schor; Connor J., Fitzmaurice “*Collaborating and Connecting: The emergence of the sharing economy*,” 2014
- 14) Juliet Schor, “*Debating the Sharing Economy*”, 2014

- 15) Luigi Farenga, *“Manual of private insurance law”*, G. Giappichelli, ESN 9788892103498, March 2019
- 16) MBS Consulting, *“Osservatorio sul bilancio di welfare delle famiglie italiane”*, novembre 2017
- 17) Melanie Swan, *“Blockchain: Blueprint for a New Economy”*, O'Reilly Media, ISBN 1491920491, 2015
- 18) Rob Galbraith, *“The End of Insurance As We Know It: How Millennials, Insurtech, and Venture Capital Will Disrupt the Ecosystem”*, 2019
- 19) Roberto Anzanello, QUADERNO ANSI n°5/2017 *“La logica dei tre pilastri della sanità”*, 2017
- 20) WHO. *Ottawa Chart for Health Promotion. First international conference on health promotion*. Ottawa, November 21, 1986. trad. ital. in: *la salute umana* 1988; 92:15-8

Sitography

- 1) <https://www.allianz.it/>
- 2) <https://www.apple.com/it/>
- 3) <https://www.axa.it/>
- 4) <http://www.bnpparibascardif.it/>
- 5) <https://brighthouseplan.com/>
- 6) <https://www.cloverhealth.com/en/>
- 7) <https://www.europassistance.it/>
- 8) <https://www.generali.it/generaliit/home.do>
- 9) <https://havenhealthcare.com/>
- 10) <https://www.healthitalia.it/>
- 11) <https://www.hioscar.com/about>
- 12) <https://www.intesasanpaoloassicura.com/>
- 13) <https://www.rbmsalute.it/>
- 14) <https://www.unipolsai.it/>
- 15) “10 Emerging Trends in Healthcare Technology for 2019 and Beyond”, Syberscribe, 2019, for the full article: <https://www.syberscribe.com.au/blog/10-emerging-trends-healthcare-technology-2019-beyond/>
- 16) “FDA approves pill with sensor that digitally tracks if patients have ingested their medication”, 2019, for the article see FDA website: <https://www.fda.gov/news-events/press-announcements/fda-approves-pill-sensor-digitally-tracks-if-patients-have-ingested-their-medication>
- 17) Market Research Report, Transparency Market Research, “Global Digital Health Market 2017 – 2025”, (2017). For more visit: <http://healthstandards.com/blog/2017/10/25/digital-health-trends-2025/>
- 18) Nate Lord, “What is Cyber Security? Definition, Best Practices & More”, 2019, link to the article: <https://digitalguardian.com/blog/what-cyber-security>

- 19) *State of Health in the EU - Companion Report 2017*, for more ec.europa.eu/health/state
- 20) The Economist, “*The world’s most valuable resource is no longer oil, but data*”, print edition 6th May 2017, link of the article: <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>
- 21) *World Health Organization Constitution*, for more <https://www.who.int/about/who-we-are/constitution>
- 22) *World Insurance Report 2019*, published by Capgemini in collaboration with EFMA, <https://worldinsurancereport.com/>