



Improving access to the health care system for disadvantaged groups with the help of private health insurance in Portugal

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I Abstract

The world's population is ageing, and so is the Portuguese population. (Instituto Nacional de Estatística, 2022c) With an aging population, it is especially important to make sure that people age healthily and do not become a greater burden on the system.

This master thesis investigates the possibilities of supporting especially the disadvantaged, poor and old population with a private health insurance. The Portuguese market was analyzed to better understand the problem structure, and a benchmark analysis was performed to identify possible solutions. The result brought different solutions, which were investigated in more detail. The result shows that the problem can only be addressed by a combination of solutions. Attention has to be paid to the costs as well as to the revenue structure. The cost structure represents a larger solution potential, since more approaches were identified, and initiatives do already exist. More research needs to be done specifically on the revenue side. Especially with regards to legal regulations.

Key words: Health care, health care insurance, insurance, insurance policy, aging population

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II Abstrato (Português)

A população mundial está a envelhecer, tal como a população portuguesa. (Instituto Nacional de Estatística, 2022c) Com uma população envelhecida, é especialmente importante assegurar que as pessoas envelheçam saudavelmente e não se tornem um fardo maior para o sistema.

Esta tese de mestrado investiga as possibilidades de apoiar especialmente a população desfavorecida, pobre e idosa com um seguro de saúde privado. O mercado português foi analisado para melhor compreender a estrutura do problema, e foi realizada uma análise de referência para identificar possíveis soluções. O resultado trouxe diferentes soluções, que foram investigadas com mais detalhe. O resultado mostra que o problema só pode ser abordado através de uma combinação de soluções. Há que prestar atenção aos custos, bem como à estrutura de receitas. A estrutura de custos representa um potencial de solução maior, uma vez que foram identificadas mais abordagens e que já existem iniciativas. Mais investigação tem de ser feita especificamente no lado das receitas. Especialmente no que diz respeito aos regulamentos legais.

Palavras-chave: Cuidados de saúde, seguro de saúde, seguro, apólice de seguro, envelhecimento da população

Título: Melhorar o acesso ao sistema de saúde para grupos desfavorecidos com a ajuda de seguros de saúde privados em Portugal

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III List of Abbreviations

Abbreviation	Expression
EU	European Union
EU27	The 27 European countries (after the UK left the EU)
EU28	The 28 European countries (before the UK left the EU)
GDP	Gross domestic product
HMO	Health Maintenance Organization
NHS	National Health Service
OECD	Organisation for Economic Cooperation and Development
UK	United Kingdom
UNICEF	United Nations International Children's Fund
VHI	Voluntary private health insurance

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1. Introduction

“Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%.” (World Health Organization, 2022)

This phenomenon can also be seen in Portugal. With 22.4% of the population aged 65 or older, Portugal had the fourth-highest proportion of elderly people across the members of the European Union. (Eurostat, 2022c)

An increase in this fraction poses a major challenge to the health care system. The older people get, the more health care services they need. This trend results in an increase of costs for the government corporations (insurance and health providers) and the people.

An additional challenge to the aging population is the accessibility of health care services, especially for rural areas. In 2017 2.3% of the population of Portugal reported unmet needs for medical care with a higher proportion belonging to the low-income segment. Reasons have mainly been costs, distance and waiting time. In addition to accessibility challenges, the proportion of out-of-pocket payments exceeds the EU average by more than 10%. (OECD/European Observatory on Health Systems and Policies, 2019)

For the low-income segment of the Portuguese population that means a very high burden.

1.1 Research questions

This dissertation was developed in the context of a consulting project with AdvanceCare, a third-party management provider for insurances. Within the scope of the project and therefore this thesis, the goal is to find an insurance model for the Portuguese population that attracts elderly people, especially in the poorer population and at the same time being financially sustainable for every stakeholder.

To find a suitable model, the following research questions need to be answered:

1. What is the current state of the Portuguese health system, and how is it financed?
2. What other models and best practices are there on the market of health care insurances?
3. Is there a model that can be tailored to the Portuguese market?

1.2 Dissertation structure

There are four chapters in this thesis. The author starts by reviewing the scientific viewpoint on healthcare funding and the application of technology. A section on the methodology is then included to help the reader better comprehend how the relevant data was gathered. An analysis of the data is presented in the primary part, which is then followed by the findings, a suggestion, and the study's limitations.

2. Literature Review

2.1 Health care systems

A functional health care system is determined by two main questions:

1. How is the health care system financed?
2. And how are the services paid for?

2.1.1 Health financing models

The most crucial factor in a functioning health care system is the financing of that system. The way it is financed is crucial to whether people have access to the medical system.

According to Reid (2010) we can find four different models of health care financing:

- The Beveridge model,
- the Bismarck model,
- the national health insurance model
- and the out-of-pocket model.

In practice, most countries use a hybrid of these models. (Luk, 2020)

2.1.1.1 The Beveridge model

The Beveridge model describes a single-payer, tax-financed health care system in which “many (sometimes all) hospitals and clinics are owned by the government”. (Reid, 2010, p.18) In this system, medical care is like other public services, such as the fire department, so there are no bills for patients for such treatments. Although the government is the sole payer and most doctors are employed by the government, there can also be private doctors in such systems. Those doctors will then also be refunded by the government. (Reid, 2010) Eligibility for coverage of health care costs in the Beveridge model is based on citizenship or residency in the respective country. (Kutzin, 2011) In its origins, the Beveridge model “offered limited compensation and benefits in order to incite individuals to return quickly to the job market.” (Simonet, 2010, p.471) The system was developed in 1948 and named after the designer of the British National Health System, Lord William Beveridge, who was the Health Minister of Churchill. (Simonet, 2010; Reid, 2010)

2.1.1.2 The Bismarck model

The entitlement basis within the Bismarck Model, named after Prussian Chancellor Otto von Bismarck, the founder of this system, is based on contributions. In such a system, individuals are insured with independent insurance providers, that do not make any profits. The insurance

is normally financed through the wages of the insured. The amount is thereby divided between the employer and employee. (Reid, 2010; Kutzin, 2011)

Unlike the Beveridge model, doctors' offices and hospitals are mostly privately owned. Nevertheless, “tight regulations of medical services and fees gives the system much of the cost-control clout that the single-payer Beveridge Model [...] provides.” (Reid, 2010, p.17)

The pure Bismarck model is associated with health as a right from labor. (Kutzin, 2011)

2.1.1.3 The national health insurance model

This model combines aspects of the previous two systems. It is a single-payer, but multiplayer system – as with Beveridge, the government pays for health care, but the providers are private, as with Bismarck. (Reid, 2010) By removing financial barriers to access at the point of use, the national health insurance model seeks to achieve equity in the use of health care services for all people. (Kusi et al., 2015)

The government runs an insurance program that “collects monthly premiums and pays medical bills.” (Reid, 2010, p.18) Premiums are paid by both the company and the employee in Ghana, for example. Members must also renew their membership every year. (Ayanore et al., 2019)

By making payments dependent on the National Health Insurance, countries can “control costs by limiting the medical services they pay for or by making patients wait to be treated.” (Reid, 2010, p.19)

2.1.1.4 The out-of-pocket model

The last model identified by Reid is the out-of-pocket model. Although it is described as a model, it can be seen as the absence of any model. It basically works like any other service on the market. If you can pay for the service, you can use it – if not, you can't. (Reid, 2010)

This model is the most common in the world, since “only the developed, industrialized nations [...] have any established health care payment systems.” (Reid, 2010, p.19)

According to the World Health Organization (2018) this model “is the most regressive and inequitable way to fund the health system.”

The Portuguese health system is a mixture of the systems introduced above. On the one hand, we have the National Health System (NHS), which is similar to the Beveridge model. This system is accompanied by out-of-pocket payments for co-payments and private consultations, examinations, and pharmaceuticals. In addition, Portuguese people have the option to choose a voluntary private health insurance (VHI). The coverage of the VHI depends on the chosen plan.

Specific population groups, based on profession or trade, do also have a second layer of health insurance. The health care providers, especially for primary care, are mainly public owned, whereas other services are predominant private. (Simões et al., 2017)

2.1.2 Health care reimbursement models

How services are paid for depends on the reimbursement model selected.

Reimbursement models can be defined in two related dimensions:

1. Fixed and variable systems
2. And retrospective and prospective systems (Jegers et al., 2002)

2.1.2.1 Fixed and variable systems

The dimension of fixed and variable payments describes “the relationship between activities and payments.” (Jegers et al., 2002, p.257)

Reimbursement systems can be fixed on a micro and a macro level. At the micro level, for variable systems, this means an increase in provider income with each activity performed. In a fixed system, the income stays the same even if more activities were performed. Those mechanisms set incentives to either higher the amount of performed activities in a variable system and lower the amount in a fixed system. Providers either “minimise costs or [...] maximise earnings.” (Jegers et al., 2002, p. 258)

According to Rauner et al., fixed budgets are more efficient since the average Euros spent per quality of treatment is lower than with variable budgets. (2005)

On a macro level, the whole system of providers is regulated. In a fixed system, also called a closed system, providers are set a budget cap that results in penalties if exceeded. Whereas a variable system, open-end system, has no budget limits. (Jegers et al., 2002)

2.1.2.2 Retrospective and prospective systems

This dimension describes the provider’s revenue relatively to his expenses for offering the activity. (Ellis & McGuire, 1986)

In retrospective systems, the provider gets back all expenses he had for a specific service after providing it. In such systems, providers are likely to higher the number of services and use more expensive treatments rather than lower costs, as it implies higher revenues.

The opposite is prospective systems, in which the payment amount to the provider is set in advance. In these systems, providers are more likely to operate efficiently and cost-effectively because it means a larger profit stream. This risks underserved patients and treatment failures in favor of cost savings.

To mitigate these risks, mechanisms have been put in place to estimate the correct cost of treatments by looking at peer groups and deriving the approximate price. (Jegers et al., 2002)

2.1.2.3 The relation between the two systems

Understanding the incentives of a payment system for caregiver behavior requires understanding both the dimensions of retrospective/prospective and variable/fixed systems, and how they are related. While the first dimension describes revenues compared to costs, the second dimension describes revenues compared to activities performed.

Retrospective systems can be said to always be variable, and fixed systems can always be prospective, as long as these systems occur in the pure form. (Jegers et al., 2002)

Looking at the opposite sites of the dimensions, it's getting more complicated. Prospective systems and variable systems can both take on manifestations of the other dimension. In the case of Diagnosis-Related Group payments, for example, a system may also be variable but prospective. (Jegers et al., 2002)

2.2 Digitalization of healthcare

More and more areas of everyday life are being permanently affected by digitization. The healthcare sector is not exempt from this either. However, the question arises as to how patients and physicians face this development and what advantages, and disadvantages, telemedicine brings with it.

2.2.1 Acceptance of telehealth

Studies show that there is a general openness regarding digitalization in the healthcare sector. Hosseini et al. found that younger people are more open to digitization than older people. Likewise, people with a higher level of education have a more positive attitude toward digitization. However, those who are ill are less receptive to technological innovations. (2022)

Other studies indicate a high acceptance among patients and physicians. The quality of consultation outcomes was considered high in the majority of consultations through telemedicine. In most cases, the regular consultation could be replaced by telemedicine. (Yulzari et al., 2017; Wu et al., 2014; Seim et al., 2017; McCool & Davies, 2018)

Physicians also confirm more efficient inter-physician collaboration through telemedicine, which is characterized by faster treatments, better knowledge sharing and improved referral decisions. (Kohlert et al., 2017; Gilani et al., 2019; Gollnick et al., 2013)

2.2.2 Advantages of Telehealth

Telehealth comes with advantages for both sides, the medical staff and the patients. First, it can improve access to medical services through reduced logistical effort and time, even with staff shortage and especially for people with disabilities. (Hagge et al., 2020; Seim et al., 2017) As shown above, telemedicine can also improve interdisciplinary knowledge sharing and prevent unnecessary treatments. (Kohlert et al., 2017; Gilani et al., 2019; Gollnick et al., 2013) Improved communication and avoidance of unnecessary treatments also bring cost savings to the entire system. (Goldenberg & Wenig, 2002, Rutledge et al., 2017)

Other benefits may include shorter waiting times for specialists and the use of digital, anonymized image material for teaching purposes. (Hagge et al., 2020; Yulzari et al., 2017)

2.2.3 Barriers and limitations of telehealth

With all the benefits, telehealth also has a few barriers. The freedom of staying at home makes time the most important criteria. People could choose a doctor based on availability rather than quality and experience. Due to more first contacts, doctors no longer know the patient's history as well and cannot adapt their treatment accordingly. In addition, face-2-face consultations can be used to evaluate the overall impression of a person and to identify conspicuous features. This is not necessarily possible with telehealth. (Hagge et al., 2020)

One of the most important risks for telehealth is that no digital platform is completely safe from hackers. This could mean security breaches and therefore a leak of patient data. (Gajarawala & Pelkowski, 2021)

2.2.4 Considerations on the future of telehealth

For the continued development of telehealth to be successful, a few things need to be considered. These are “service selection, operational changes, technical infrastructure, staff engagement, patient outreach, financial considerations, and service evaluation and continuous improvement” (Haque, 2021, p.101) Provider need to select which services are scalable and needed. Additionally, due to the strategic changes, physicians maybe need less space and on the other hand, need to adapt the time schedule regarding on- and offline consultations. With the change of service offerings, physicians also need to take in consideration the different adaptation of patients and must also try to capture those for whom the adaptation is not so easy. An important point is the infrastructure, meaning the staff that needs to adapt to the new services and the technical equipment to offer the right services with high quality. Lastly, all these

services need to be constantly evaluated regarding financial sustainability and benefits. (Haque, 2021)

3 Methodology

This chapter describes the collection and evaluation of the used data. The analysis can be divided in three parts.

The first part deals with a market analysis of the Portuguese healthcare market and population trends, with a special focus on the elderly. The goal of this part is to gain a deeper understanding of the problem. For the analysis data from public reports of statistical institutes and governmental institutions, like Instituto Nacional de Estatística, Organisation for Economic Cooperation and Development (OECD) and World Bank were used. In addition, to gain a better understanding of older adults' coverage through private insurance, additional information was provided by the customer AdvanceCare.

In the second step, a benchmark analysis was performed. For the analysis, the author examined insurance models in countries with similar health systems, which include those proposed in a weekly meeting. Those countries are Spain, United Kingdom, Canada, and Norway. Particular attention was paid to specialized offers for elderly people. The author identified the insurances using search engines like Google. When doing the search, phrases like “health insurance for seniors” and the relevant country were used. The offers of the insurance companies were examined for age limit, range of offers and special features. The exact criteria can be found in **Appendix F**.

In a last step of the analysis, different solution layers, based on the benchmark analysis and discussions throughout the weekly meetings, have been defined. Further research has been conducted on the different layers. Reading through the literature and doing benchmark analyses allowed for the acquisition of the data required for the examination of the various levels. On websites like EBESCO and Google Scholar, the literature was looked up and gathered. Companies related to the subject were looked at for the benchmark assessments, and conclusions were reached. Public statistics from databases like Eurostat were also assessed.

4 Data analysis

4.1 Market analysis of Portugal

4.1.1 The Portuguese healthcare market

As outlined in Chapter 2, Portugal's health care system is a mix of a universal, tax-funded health care system supplemented by co-payments and optional private insurance.

Although Portugal's health spending has been steadily increasing since 2012, **Figure 1** shows that Portuguese health spending in 2020 was about 35% below the EU27 average. It is striking that the expenditure of the Portuguese government or for compulsory insurance is only slightly more than half of the EU27 average, whereas expenses for voluntary insurance or out-of-pocket expenses are 15% and 32% higher, respectively. Looking at the share of GDP, out-of-pocket expenses and expenditures for voluntary insurance are almost twice as high as the European average.

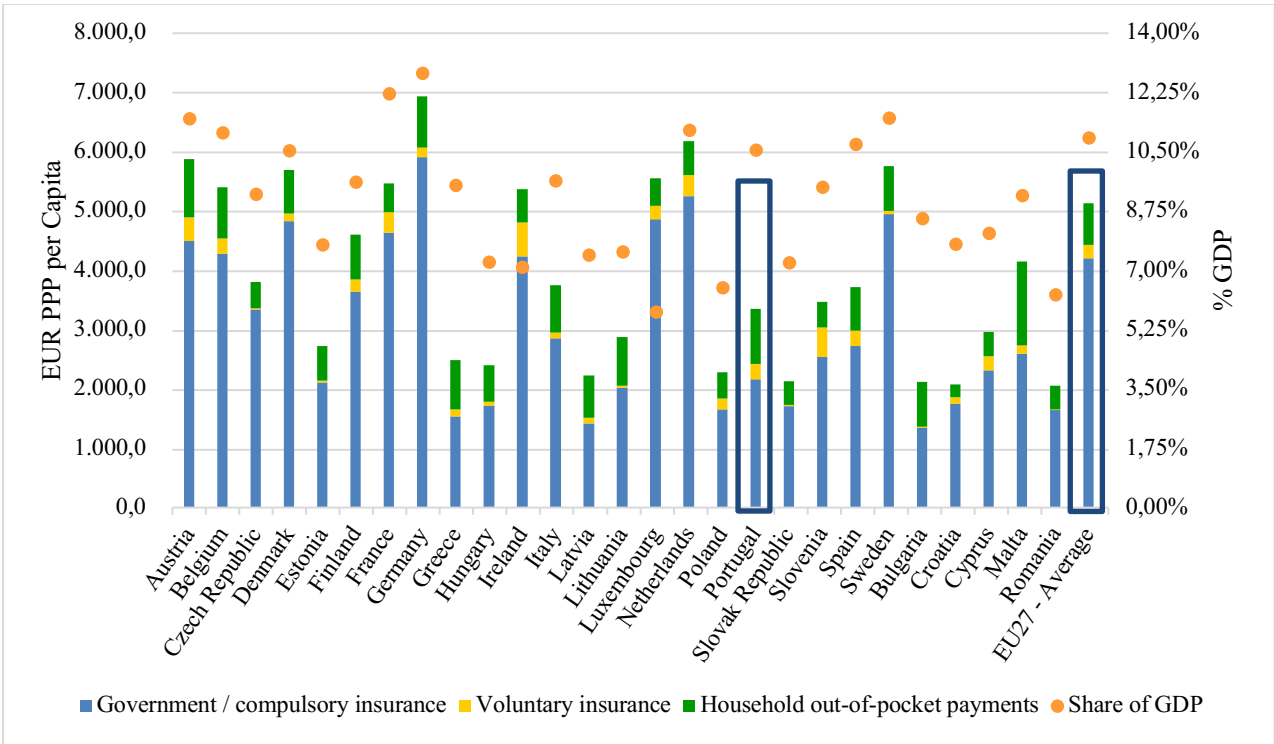


Figure 1 expenditure as share of the GDP in 2020 (except for Malta 2019)

Source: OECDa, 2022

Note: The EU average is weighted

Looking at **Figure 2** one can also see that the expenditure for outpatient care is almost fifty percent higher than the EU average and expenditures for inpatient care are about thirty percent lower than the EU average. It is also worth noting that Portugal's expenditure on outpatient care is almost twice as high as its expenditure on inpatient care. These figures suggest that people in Portugal go to the doctor more often than the European average without needing to. Those high numbers of expenditure on outpatient care can be explained by the type of health care financing that is used in Portugal. Portugal's tax-funded national health service incentivizes people to make appointments for even minor symptoms of illness, even if they have high co-payments.

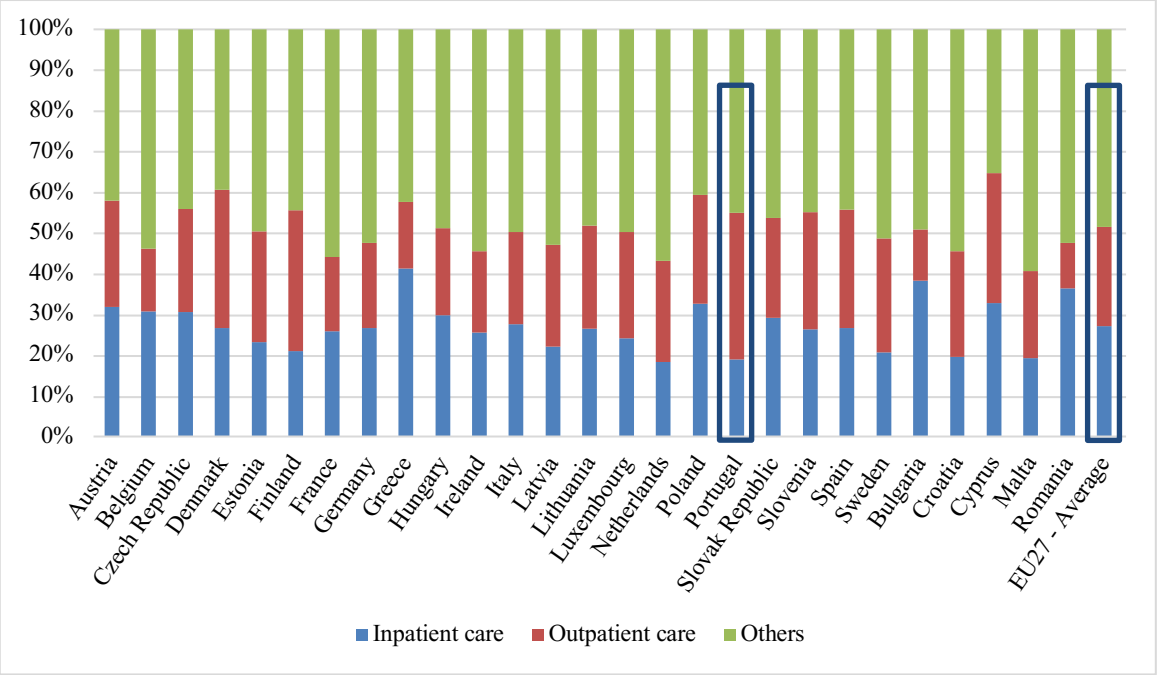


Figure 2 of health expenditure by type of care 2020 (except Malta 2019)

Source: OECDa, 2022

Figure 3 gives an overview of the perceived state of health by age range and level of education. Noticeable is that most people over 65 years and people with basic or no education perceive their state of health as bad or mediocre. This suggests that elderly people with low levels of education are particularly frequent users of the health care system. Considering the high out-of-pocket payments in Portugal, the ratio of health care expenditure to disposable income is particularly high for these groups.

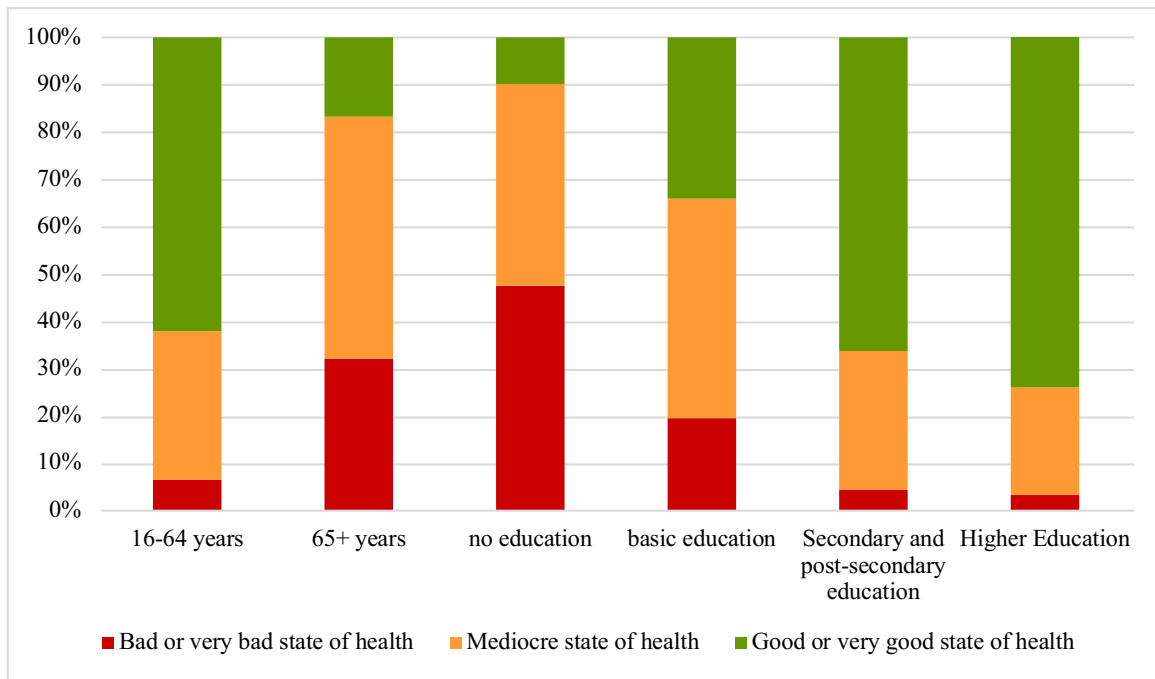


Figure 3 of health by age and education 2021 in Portugal

Source: Instituto Nacional de Estatística, 2022b

Taking a look at the geographic distribution of health centers, it is noticeable that they tend to be centered in the west of the country and in urban areas. (**Appendix A**)

4.1.2 Population development with focus on seniors

Looking at the life expectancy of people in Portugal at the age of 65 over time (**Figure 4**), a clear trend can be observed: The population is living longer and longer. The slump in life expectancy in the period 2019-2021 can be attributable to Covid-19.

Another observation in **Figure 4** is that the old-age dependency ratio, the ratio of people over 64 to the working population aged 15-64, is rising steadily. Since about 2005, the development has been steeper than in the European Union.

As people live longer and the number of people over 64 increases for every 100 people of working age, the health care system could face funding problems because there are fewer people paying taxes and more people needing health care services. This could also lead to higher out-of-pocket expenditures, placing an additional burden on the elderly and poorer populations.

Looking at the aging ratio by municipality, a geographic trend stands out. The population in the eastern and rural areas of Portugal in particular is comparatively older than the population in the other regions. In the oldest municipality, the ratio of young to old is 780 older people for every 100 young people. (**Appendix B**)

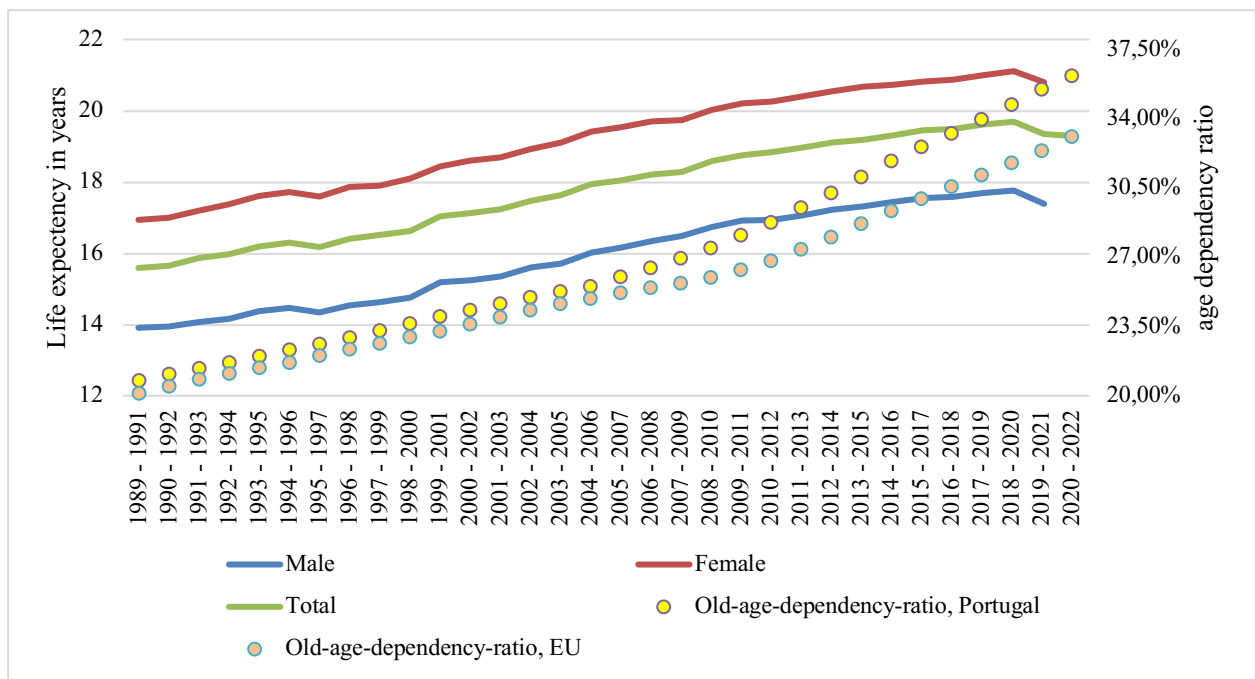


Figure 4 expectancy at 65 years and old-age dependency ratio over time

Source: Instituto Nacional de Estatística, 2022c and World Bank, 2019

4.1.3 The Portuguese Health Insurance market

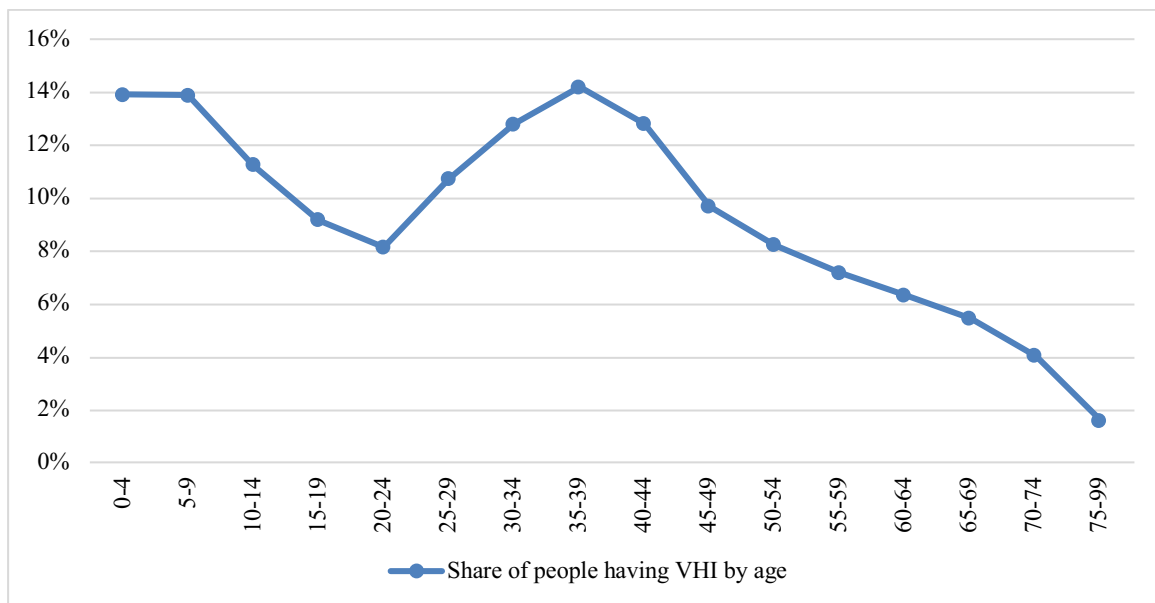


Figure 5 of Portuguese people having VHI by age

Source: Appendix C

As shown in **Figure 5**, the share of people having a kind of VHI is decreasing with age. While the highest percentages, 14%, are in the segments of 0-9 and 35-39, the percentages for seniors over 65 are less than 5.5%. In total, seniors aged older than 65 have a VHI-rate of 3.2%.

Looking at the offerings on the private health insurance market for senior people in Portugal, one can see that existing offerings do either have a lack in necessary service offerings or are only affordable at a relatively high price. (**Appendices D and E**)

The analysis of the Portuguese market has shown three key problems which define the need for a better health plan for elderly people. Firstly, the senior segment is growing with high numbers of chronic diseases and low purchasing power. Secondly, the NHS system has limited power to respond to this growing number of seniors, which most likely will be even harder in the future. Lastly, the private sector is struggling to develop products that meet the elderly needs at an affordable price.

4.2 Benchmark analysis

To have a benchmark for a possible solution, the author analyzed the countries Spain, United Kingdom, Canada, and Norway. Those countries are comparable to the Portuguese market as they are using health financing models like the Portuguese health care system.

Looking at the health insurances in these countries, we can see differences in all analyzed categories. Some analyzed insurances do have special offers for seniors, and others stand out with special features.

4.2.1 Spain

DKV Seguros and SegurCaixa Adeslas are two insurances that are providing health insurances specialized for seniors. Nevertheless, the maximum age for taking out the insurance is 75 years for DKV Seguros, as well as for Sanitas Seguros. While Adeslas does not indicate whether there is a maximum number of consultations, DKV and Sanitas each offer plans for unlimited consultations. Sanitas also offers plans with limited consultations and different co-payments. All three insurers offer both telephone and video consultations. In addition, Sanitas Seguros has a special digital plan that covers digital offerings and primary care. All three insurers also have specialists covered, with physician choice limited to one network. Each insurance company also offers plans in which pharmacies are reimbursed. A special feature of Sanitas is that policyholders get a discount depending on how they pay. (DKV Seguros, n.d.; Sanitas Seguros, n.d.; SegurCaixa Adeslas, n.d.)

4.2.2 United Kingdom

In England, it was found that each of the three insurers studied did not have a special offer for seniors. In addition, it was either not apparent or there was no age limit. Two of the three insurers offer both telephone and video consultations, with Aviva limiting the number of consultations in physical and digital form depending on the plan. Each of the insurance plans only covers services provided within a specific network. The size of the network may vary depending on the plan. In any case, the insured must also pay a co-payment. A special feature of Aviva is that they offer discounts for additionally insured persons. (Aviva, n.d.; Bupa, n.d.; The Exeter, n.d.)

4.2.3 Canada

All three insurers examined offer special plans for seniors. Again, two of the three insurers offer both telephone and video consultations. SureHealth, however, has set a maximum amount for the different types of consultations. All insurers also reimburse a portion of the cost of medications. It is also notable that all insurance plans include vision care. (Canada Life, n.d.; SureHealth, n.d.; Blue Cross, n.d.)

4.2.4 Norway

In Norway, private health insurance is not very common, so only one insurance company was analyzed. *If P&C* insurance does not offer a special plan for seniors and has a maximum contract age of 67. This insurance also offers video consultations and reimburses costs for medications. There is no co-payment by the insured. (If P&C Insurance, n.d.)

Summarizing, we see different approaches to reduce the costs of insurances by limiting the access to services and reduce them to networks that belong to the insurances. In addition, it is worth noting that almost every insurance company offers telehealth in the form of video or phone consultations. At this point, it is worth highlighting the Sanitas Seguros digital plan, which is reduced to Telehealth and basic coverage. Another observation is that the co-payment of the insured is used as a tool to reduce the use of services.

Although not quite as numerous, there are also approaches that use incentives to influence the income structure. For example, Sanitas uses discounts over time to retain policyholders, and Aviva uses discounts for additional policyholders to expand its customer base.

For more detailed information see **Appendix F**.

The benchmark analysis has shown that there are different options to target the problem stated in chapter 4.1. The opportunity space defined by the benchmark analysis will be analyzed deeper in the next chapter.

4.3 Opportunity space

Based on the benchmarks and considering the revenue structure of insurance companies, the author has defined the opportunity spaces at different layers from the insurance company’s perspective. These layers were discussed in the weekly meetings and were divided as follows:

Table 1 – The different opportunity layers

Cost reduction					Revenue increase		
Fewer consultations		Cheaper solutions		Alternative plans		Third party involvement	
Incentives to avoid unnecessary consultations	Gatekeeping	Telehealth	Reduction of services	Network solutions	Family model	NGO charity organizations /	Robin Hood Model

Source: Benchmark analysis and feedback AdvanceCare

In order to develop an insurance plan for seniors that is financially sustainable for both the insurance company and the insured, that is, not a loss to either party and profitable, one must look more closely at both sides of the costs and the revenue. Therefore, the possibilities to reduce costs and increase profits were investigated.

Cost reduction can be divided into two broad areas: fewer consultations and cheaper solutions. The increase in revenue, on the other hand, consists of only one sub-item, namely the contribution of a third party. In addition to those sides, there is the area of alternative plans, which can be seen as a hybrid between cost reduction and revenue increase.

4.3.1 Fewer consultations

Probably the most obvious way to reduce costs is to reduce the number of consultations. This study takes a closer look at two ways to achieve this goal. The first way is to give the insured an incentive not to go to the doctor as soon as they experience mild symptoms of illness. The second way is the so-called gatekeeping.

4.3.1.1 Incentives to avoid unnecessary consultations

In this case, incentives are set as external motivation. A person is extrinsically motivated when he does something as a means to achieve something else. (Ryan & Deci, 2000)

Incentives can be tangible or intangible. Intangible incentives would be praise, or thanks, for example. Material incentives could be rewards such as money or vouchers. In the case of health insurance, however, intangible incentives are very unlikely to work. Praise and recognition help to motivate someone to work, but not to use fewer consultations. To achieve this goal, the insurance company must resort to tangible incentives. These can be, as in the case of Sanitas Seguros, that the insured person gets a discount to boost specific payment methods. Another variant is, for example, the model of Deutsche Bahn or airlines. There, people can collect points with every trip and then convert them into material rewards such as a coffee grinder. (Deutsche Bahn AG, n.d.)

Sanitas Seguros is not the only health insurance that is using monetary incentives. The German health insurance company AOK even uses two different systems to promote the health of the insured and to avoid expensive treatments. Here, customers collect points with preventive care and fitness programs. They can then choose whether they prefer to be paid cash premiums or receive supplements for other health services instead. (AOK, n.d.)

Another option is the Aviva model. There, insured people have the option of seeing a general practitioner five times a year via teleconsultation. However, this model could also be modified so that every insured person has five free consultations and must pay for each additional one. This would create an incentive to see a doctor only when necessary, thus reducing unnecessary visits to the doctor.

4.3.1.2 Gatekeeping

“Gatekeeping in health-care system means patients can only access to secondary care with referral of primary care physicians.” (Ng et al., 2020, p.214)

Gatekeeping is another mechanism to reduce consultations, especially consultations with specialists. (Ng et al., 2020) In fact, the gatekeeper model already exists in Portugal. Here, the general practitioner acts as such a gatekeeper. Patients only have the option of seeing a specialist if they have been referred by a general practitioner. (Simões et al., 2017)

To find other models and opportunities, the author studied gatekeeping models and the role of nurses in other countries. In nine out of ten analyzed countries, the General practitioner acted as gatekeeper. (Anderson et al., 2022; Hilless et al., 2001; Olejaz et al., 2012; Keskimäki et al., 2019; Chevreur et al., 2015; Kroneman et al., 2016; French et al., 2001)

In four out of these cases, the gatekeeper can be bypassed by having patients pay the incurred amount themselves, either in full or at least a higher portion. (Hilless et al., 2001; Olejaz et al., 2012; Keskimäki et al., 2019; Chevreul et al., 2015)

Sweden also has a gatekeeping system, but it is not formal, and patients can consult specialists without a referral. It is interesting to note, however, that nurses in Sweden are usually the patient's first contact with the health care system. (Anders et al., 2012)

In the Netherlands, community nurses even provide home health care and assess the patient before coordinating patient care, although they do not act as gatekeeper. (Kroneman et al., 2016)

More detailed information can be found in **Appendix G**.

According to the research from ERI Economic Research Institute, the average salary of a nurse in Portugal is €15 per hour; the average salary of a medical doctor is €41 per hour. (n.d.-a; n.d.-c) According to these figures, it might make sense to leave the initial assessment of a patient to nurses, i.e., to use them as gatekeepers to reduce the costs of an initial consultation.

One could also take into consideration to partner with local pharmacies and municipalities. Rodrigous et al. found that pharmacies play an important role in the aging process and that they can be even better involved in the care of seniors. For example, many of the pharmacies also offer delivery services. (2022) This could thus also be linked to a checkup or gatekeeping.

Pharmacists in Portugal earn an average of €22 per hour, which would make them almost half as expensive as doctors. (ERI Economic Research Institute, n.d.-b)

In addition to using cheaper personnel in the health sector, there is also the possibility of entering into a partnership with the “União das Misericórdias Portuguesas”. The union was founded in 1976 and manages the various “Santas Casas de Misericórdia”. (União das Misericórdias Portuguesas, n.d.) These institutions' missions are to provide social aid and health treatment. Furthermore, the union has 387 representative offices dispersed around the country. (União das Misericórdias Portuguesas, 2022)

4.3.2 Cheaper solutions

Another way to cut costs is to use less expensive solutions. This can be new technologies that reduce costs, or reducing the coverage of different services. For example, you could offer insurance that covers only the most common diseases. In the case of new technologies, an increased use of telehealth would be an option.

4.3.2.1 Reduction of services

One of the easiest ways to cut costs is to reduce your insurance coverage. This could mean, for example, that only the most necessary or most frequent illnesses are covered. The most common diseases in people over 70 in Portugal are diseases of the sensory organs, lumbago and cervicalgia, depressive disorders, oral diseases, diabetes and cerebrovascular disorders. (Ministério da Saúde, 2018) Thus, an insurance plan should cover only these conditions.

Although the target group is specifically older, poor Portuguese people, this option makes perfect sense from the insurers' point of view, since the most common diseases are covered and the diseases that are not covered concern only a few individual cases. This means that the insurance company is spared possible high costs when such cases occur, and yet the target group is not disadvantaged.

4.3.2.2 Telehealth

However, reducing costs does not necessarily mean reducing the product portfolio. Alternatively, other, less expensive options can be used, such as Telehealth. Now that digitization has become indispensable, it is also being used more and more in medicine, as already described in section 2.2. In this context, it is particularly worth noting that Portugal introduced a National Strategic Telehealth Plan in 2019, which aims to support and advance the adoption of telehealth. (Brickwood, 2020)

Figure 6 shows that among those aged 65 to 75, a general trend is that fewer and fewer people have never used a computer. Although this trend can be observed in all countries, the proportion of people who have never used a computer is still high in Portugal and is almost 50% higher than the European average.

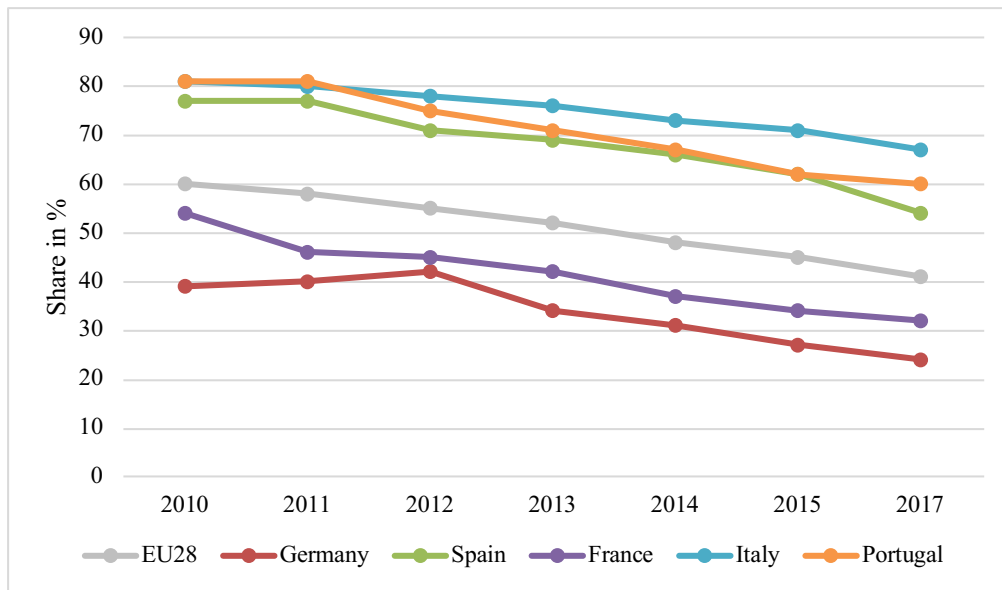


Figure 6 – Population never having used a computer, 65-75 years

Source: Eurostat, 2022a

Figure 7 shows that the same trend is observed in all income strata, although computer use is much higher in the fourth quartile than in the first, meaning that the usage of computers especially among the poorest 25% of the Portuguese population is low. This phenomenon can be explained, in case of doubt, by the fact that the less wealthy may not be able to afford computers. Those observations lead to the conclusion that it is more difficult to reach the target group of elderly and poor people.

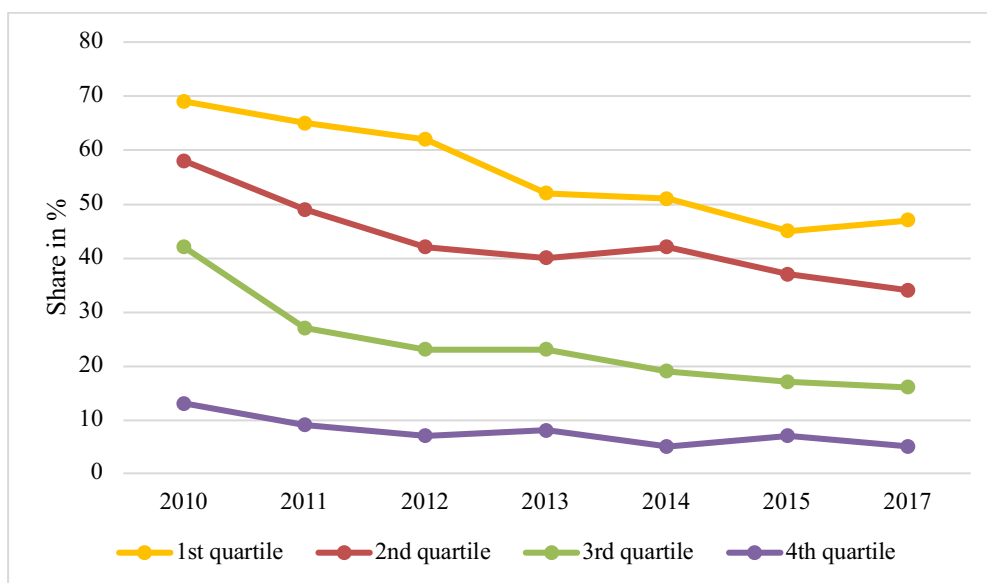


Figure 7 – Population never having used a computer in Portugal, by income

Source: Eurostat, 2022a

Figure 8 shows the evolution of Internet activities of Portuguese people aged 65 to 74 who used the Internet over the last three months before data collection. One can clearly see that the use of telephone and video calls has more than doubled over the last ten years. Most of the increase in this area shows up in 2020 and 2021, suggesting that this trend was supported by the Covid-19 pandemic. Similarly, it shows that the number of appointments booked with a doctor has also doubled within the last ten years.

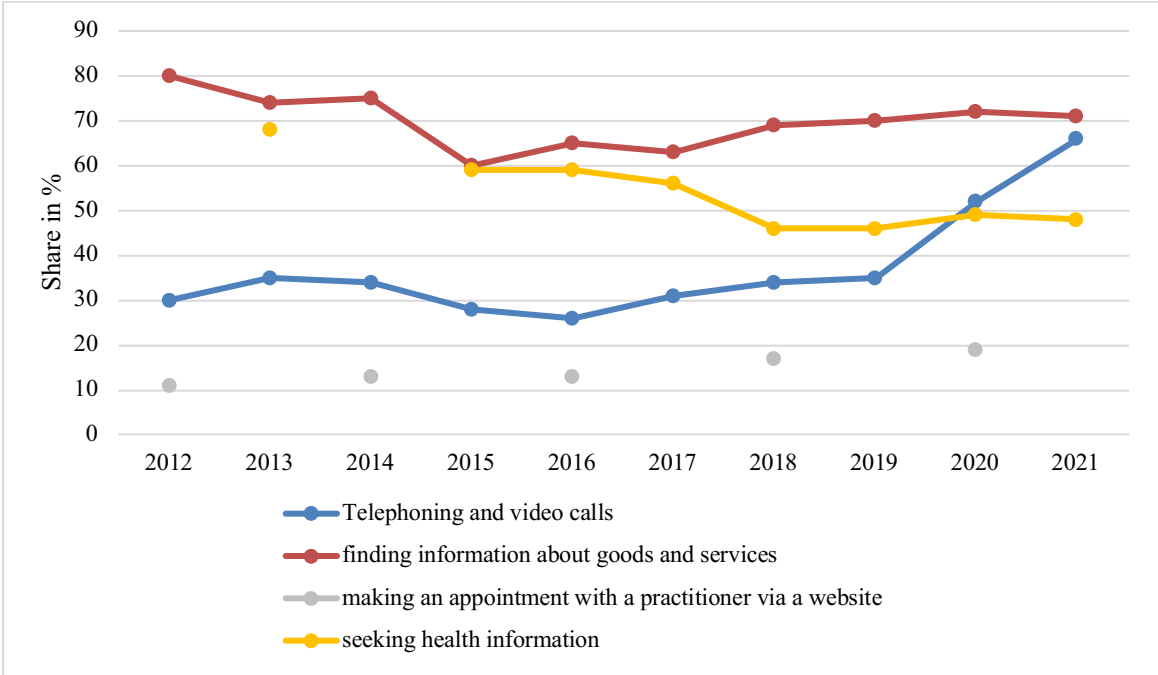


Figure 8 – Internet activities of Portuguese aged 65 to 74 years

Source: Eurostat,2022b

In addition, the Corona crisis has further encouraged the use of online consultations or consultations via telephone. According to Eurofound, 45% of Portuguese over 50 have used such services since the beginning of the pandemic. (Eurofound, 2021)

In addition to the positive trends toward the use of digital solutions, telehealth also comes alongside with cost savings. Cost-saving effects of telehealth consultations were analyzed in 16 studies. All studies have shown that telehealth saves costs, although only after a certain number of consultations. The savings were on a range of \$22 to \$429 per consultation. (**Appendix H**) Telehealth has cost saving effects especially in the areas of “productivity gains, reductions in secondary care use, emerging alternate funding models for care provision, and savings resulting from telementoring effects” (Snoswell et al., 2020, p.15)

In fact, a positive side effect of telemedicine consultations is that additional patient cost savings are achieved by saving on transportation costs. There were also fewer transportation costs due to emergency transfers. (Snoswell et al., 2020)

Even if telehealth results in overall cost savings, the costs to implement should be considered. Depending on the desired features, the software alone for a telehealth solution can cost \$30 to \$300+ per month per user. This does not include the cost of any hardware and training. (TrueNorth ITG, n.d.)

4.3.3 Alternative Insurance models

Alternative Insurance models can be seen as a hybrid section of cost savings and revenue increase. On the one hand, there are models that lead to cost reduction due to partnerships and other models increase the revenue due to additional members.

4.3.3.1 Network solutions

Another option to cut expenses is to create a network of healthcare providers.

Preferred Provider Organization and Health Maintenance Organization are two potential models for such network solutions.

A Health Maintenance Organization (HMO) is an insurance plan that only gives access to healthcare services contracted with the HMO. Patients are not covered if they seek care outside the network. (U.S. Centers for Medicare & Medicaid Services, n.d.-a)

The term “Preferred Provider Organization” refers to a type of insurance policy that permits out-of-network care. Patients who seek treatment outside the network must pay extra rates. (U.S. Centers for Medicare & Medicaid Services, n.d.-b)

Patients visited general practitioners, midlevel providers, and branch clinics more frequently than emergency rooms, according to research on how HMOs save money. This implied that they opted for less expensive services instead of more expensive ones. The study did discover that health maintenance organizations did not result in appreciable cost reductions. (Flood et al., 1998)

According to a study by D. G. Smith, cost reductions through Preferred Provider Organizations averaged 12%. These reductions did not really result from decreased expenditures per consultation, but rather from a decrease in use. (1997)

However, since provider networks are a characteristic of both Preferred Provider Organizations and Health Maintenance Organizations, it may be able to obtain the biggest savings through

effective talks with healthcare providers. Since the insured people obtain better pricing on the offer, the suppliers profit from this model by a guaranteed higher usage of their offer.

4.3.3.2 Family model

According to Ortaliza et al., 56% of all health care expenditures fall on individuals older than 55 years. (2020) To compensate for this, there is the potential of family insurance. In this concept, numerous people are covered, ideally of varied ages. Each covered person would have to pay an insurance premium, which is often cheaper than the premium for an insurance policy for each individual. On the other side, every insured person can use the entire insurance sum of the family. (Aiko General Insurance, n.d., Chola MS General Insurance, n.d., Niva Bupa, 2020) As a disadvantage, a single person could utilize the whole coverage sum alone and leaving no coverage for the other insured people.

The distinction to numerous individual insurances would also be that the insurance firm acquires several consumers with one insurance policy.

4.3.4 Third party involvement

It is also possible to use a third party to finance health insurance in addition to providing other insurance policies. This might take the form of either NGOs or charitable organizations, or it could take the form of private individuals using a so-called “Robin Hood Model.”

4.3.4.1 Non-governmental organizations and charity organizations

A charity organization is “an organization whose purpose is to give money, food, or help to those who need it, or to carry out activities such as medical research that will help people in need, and not to make a profit”. (Cambridge Dictionary, 2022a)

Non-governmental organizations, on the other hand, are defined as “an organization that tries to achieve social or political aims but is not controlled by a government”. (Cambridge Dictionary, 2022b) Consequently, all charities are also non-governmental organizations.

Since the purpose of these organizations is to help people in need, they could be a way to provide at least some funding for the health insurance for financially disadvantaged people, which is our target group.

According to the OECD, grants from private agencies and NGOs in the form of money, goods, or services that do not have to be paid amounted to USD 31.61 million in Portugal in 2020. (2022b)

However, since Portugal has the NHS system that already covers primary care costs, it is questionable to what extent NGOs are willing to finance additional insurance for the target group.

4.3.4.2 Robin Hood Model

In a system with the Robin Hood effect, “capital is redistributed to reduce inequality” (Louail et al., 2017, p.2) That means that wealthier are paying more according to their income and less wealthy people must pay less. This may be done in the context of health insurance by providing two distinct plans. One would be more expensive and so targeted at the section with greater wealth. There may be additional benefits, but there is also a fee to pay for the Robin Hood effect. The second policy may be more inexpensive thanks to this extra and is targeting the less wealthy population.

We assume that we want to have the same rate of people over 65 to have an VHI as for people between 25-64, namely 10.1%, and that 50% of the costs for the seniors are shifted to the people under 65. Therefore, we would need 166,381 thousand seniors to purchase the new policy. (**Appendix C**) Assuming a base premium of €320 per year, individuals under age 65 who have a VHI will have to pay about 15% higher premiums per year to cover half of the required premiums incurred by the additional seniors, which would be around €48 per year and insured or €4 per month on average.

However, the marketing of these variations presents the sole challenge. Humans require incentives to act charitably, since they are not often motivated by altruism. These can be monetary or material incentives, as was already mentioned in chapter 4.3.1.1.

Another option would be to make a donation as part of your income tax return. In Germany, for example, gifts are tax-deductible, so there is no financial loss for the giver and the charity organization gains extra financial resources through the donations. (UNICEF, n.d.)

Portugal has a similar regulation. Here, people can make donations to foundations, among others. If these fulfill a social purpose only, the donation is credited at 140% and is deductible at 25% of the total amount. (Ministry of Finance, 1999)

However, to implement this possibility, it is necessary to formulate a charitable purpose and, if necessary, to establish a foundation with the purpose of supporting the elderly.

5 Results

The research questions are addressed in this chapter, along with a summary of the analyses' findings.

The healthcare market in Portugal clearly has a problem for elderly and disadvantaged patients. The average age of the population is rising, as is the share of the elderly in the population. Furthermore, it is clear that Portugal has far higher co-payments for medical services than other European nations. These fundamental findings make it obvious that the co-payments themselves constitute the problem for the section under study. The target group has a higher demand for health services and subsequently needs to make more co-payments because most people with poor health belong to the segment of old and impoverished Portuguese people. Furthermore, the private insurance market is only offering products that are either relatively expensive or do not provide accurate coverage, so only a small percentage of older people have private insurance.

The three issues of an aging population with high numbers of chronic diseases, the NHS system that has limited power to respond and the private sector struggling to develop a product that meets the elderly needs at an affordable price are forming the issue that is meant to be solved. The senior market is being targeted especially in other insurance markets, according to a review of those markets. Incentives are created to utilize the healthcare system less frequently, and techniques are employed to cut expenditures as well. Based on this, different alternatives that may define an insurance policy that is financially viable for both the insurance company and the insured were looked into.

It became clear that there are numerous approaches to achieve a financial sustainable health care policy in terms of cost reductions. Telehealth is one of the most promising options. The general population is becoming more digitalized, and the senior population is also becoming more digitally literate thanks to the Covid-19 pandemic. The older and impoverished demographic segment once more showed deficits, but they are anticipated to gradually decline. This approach also offers cost savings per consultation because of the rise in digital literacy and the corresponding rise in the usage of telehealth applications. Current infrastructures could also be utilized with this solution. The development of such products is also supported by the Portuguese government.

Gatekeeping is an additional viable remedy. Even if this is already available, there are methods to provide it more affordably. This would include adding a step before the general practitioner consultation, where, for instance, a nurse or pharmacist would perform the first examination of the patient. Due to the professional practitioners' lower hourly salaries, the first consultation

expenses are reduced. Besides nurses and pharmacists, there is also the possibility of partnerships with the municipalities and the “União das Misericórdias Portuguesas”, which are on site and have a large network. Gatekeeping and telehealth are two methods that can be combined to further reduce costs.

Preferred Provider Organizations and Health Maintenance Organizations are two additional effective ways to cut costs. Both times, cost savings versus conventional insurance options were demonstrated. The mechanism used in Preferred Provider Organizations to charge an additional fee for certain consultations could also be used as an incentive to encourage patients to see their physician less often. In this situation, a set number of free consultations is necessary. By making online consultations more affordable than in-person consultations, this may also be utilized to further promote the telehealth alternative.

Reducing the range of covered services is also a reasonable option for insurances to consider, as the most common diseases could be covered and only a few customers have to pay for rather rare diseases, so no one is disadvantaged.

The analysis of alternative insurance models showed that family insurance can have positive effects. By taking out insurance where several people are insured at the same time, the insurance company receives more premiums with lower administrative burden. In addition, insured persons have the advantage that the sum of coverage can be used by every insured person under this policy. This means that elderly people who are likely to be more frequently and seriously ill can claim the entire sum insured available for all family members.

It became apparent that securing revenue while easing the burden on the insured was more difficult to accomplish. Non-governmental groups are an alternative, but it is unclear how much they would be willing to contribute to the healthcare system given the existence of a primary care-focused, tax-financed health care system.

The second option to increase revenues would be through a Robin Hood model. Two policies could be developed, one low-cost and one high-cost, with the high-cost policy partially financing the low-cost policy. The challenge, however, is to provide the right incentives for wealthier people to adopt the system. Another alternative to take advantage of the Robin Hood effect is to set up a foundation that can be financed by donations in the annual tax return and is used to finance the insurance plan for elderly and poor Portuguese people.

It turns out that a single solution is not sufficient to develop a financially sustainable insurance plan. It is necessary to attack this problem at different levels.

6 Recommendation

In order to facilitate the target group in the best possible way without imposing too high a financial burden on the insurance companies, a product based on a Preferred Provider Organization is recommended. Through this model, insured people still have the option to turn to other out-of-network healthcare providers, but at higher deductibles. In addition, a family insurance model is recommended, as it reduces costs for the target group while still allowing the insurance company to make enough profit. Furthermore, it is recommended to build especially on telemedicine, as it is becoming more and more accepted and widespread. This can also be promoted by setting incentives. For example, online consultations can be promoted through lower deductibles compared to in-person consultations or no additional costs at all. In general, however, the number of in-person consultations included should be limited to about 5 consultations per year and insured person. Any consultation beyond should be subject to high co-payments.

Gatekeeping is another recommended mechanism that should be incorporated into the product. Ideally, this would be linked to a partnership with União das Misericórdias Portuguesas or pharmacies, as they are already highly trusted and have a large network to fall back on. Alternatively, a digital consultation with a nurse can be used as the initial contact. In general, however, a visit to the doctor should still be possible as a first contact but made less attractive by high co-payments.

It is also recommended to reduce the covered services and diseases on the most essential ones. In this way, the insurance company does not have to pay any high costs that may be incurred in the event of a rare disease and yet offers sufficient protection for the insured.

On the revenue side, a Robin Hood model is recommended. This should be structured as a two-policy model. The policy for the wealthier or working population is increased by around €48 per year. Assuming the same rate of people over 65 who have a VHI as people under 65, and a base premium of €320, this would result in a cost savings of €160 per year per insured for seniors who take out additional insurance. Further research should also be conducted to determine whether establishing a foundation for the purpose of partially funding such health insurance is appropriate.

7 Limitations

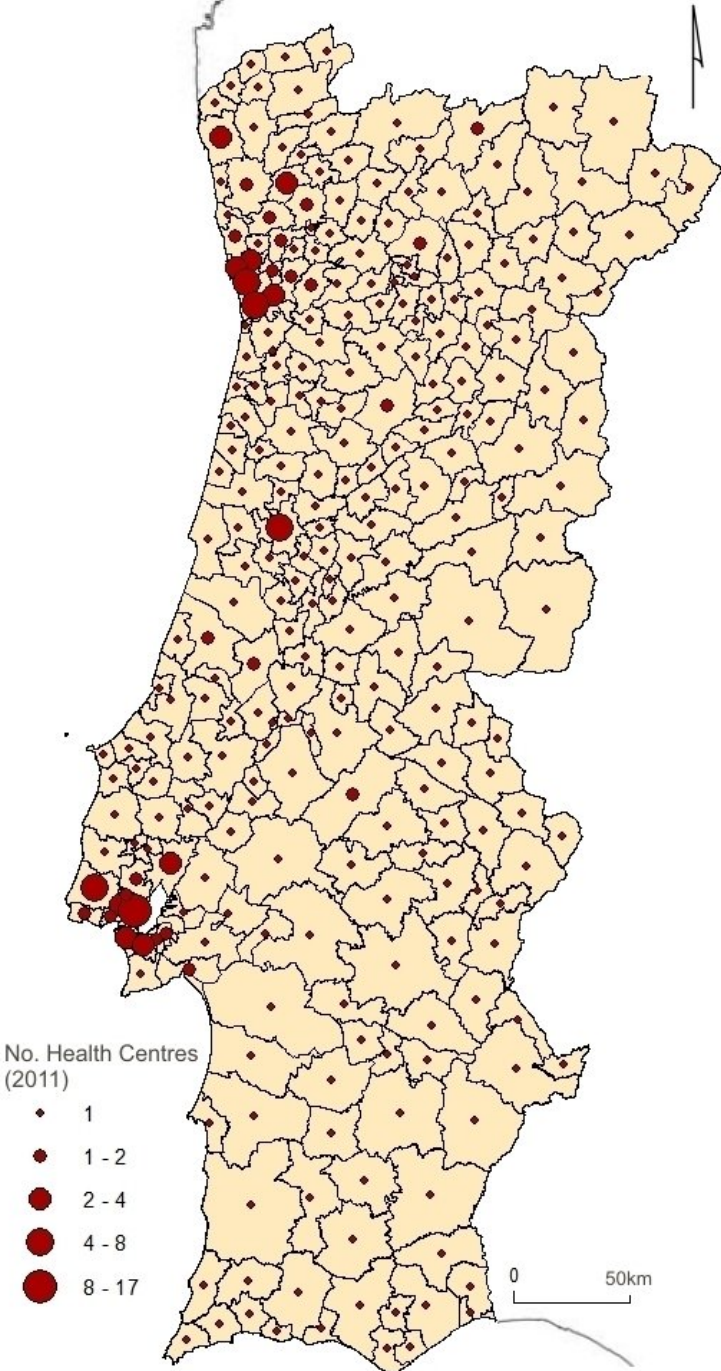
This study is not to be regarded as complete. It is limited in that various aspects of the work were not explored further due to focus setting and various barriers, for example, the language barrier. Topics that need further investigation and clarification are, for example, the willingness of charity organizations and NGOs to make additional payments into the health care system with an existing NHS base. In addition, the legal background of a Robin Hood model based on donations in the context of income tax returns needs to be clarified. Particularly with regard to the need to establish a foundation and the effort required to do so.

Furthermore, the focus was placed on the insurance perspective. It would be interesting to further elaborate on the perspective of the insured in terms of requirements and willingness to pay.

It should be noted that this work was done in the context of a consulting project with AdvanceCare and in weekly meetings the focus on certain topics was reconsidered and adjusted.

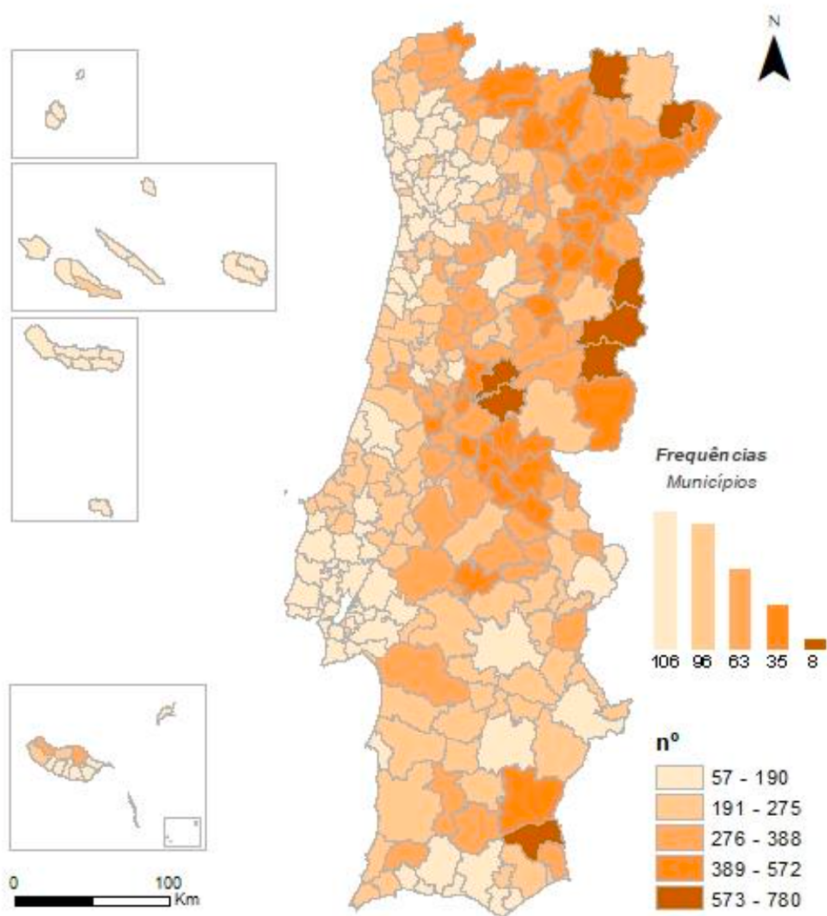
Appendices

Appendix A: Distribution of health centers in Portugal in 2011



Source: Vidal et al., 2018

Appendix B: Agingratio, 2021, Municipality



Source: Instituto Nacional de Estatística, 2021

Appendix C: VHI coverage by age

Age	Individual VHI 2018	Population 2021
0-4	56700	407594
5-9	60100	432694
10-14	55300	490900
15-19	48500	528190
20-24	45600	559897
25-29	58100	541861
30-34	71800	561085
35-39	91600	645232
40-44	97000	757622
45-49	77300	797793
50-54	61700	748929
55-59	53400	743288
60-64	44600	704342
65-69	35700	654094
70-74	23900	589932
75-99	18800	1179613
Total	900100	10343066

Source: data provided by AdvanceCare

Appendix D: Insurance offers on the Portuguese market by the competition

	ADV Ligth	ADV Valor Mais	Médis Vintage	Médis Vintage Plus	Multicare Activcare 1	Multicare Activcare 2	Multicare 60+ 1	Multicare 60+ 2
Preço	144€ <i>Flat</i>	480€ <i>Flat</i>	415€ <i>Flat</i>	617€ <i>Flat</i>	82€ <i>Flat</i>	180€ <i>Flat</i>	1.040€ <i>61 Anos</i>	1.546€ <i>61 Anos</i>
Subscrição	Mín. > 55 Máx NA	Mín. > 55 Máx NA	Mín. >=55 Máx 75	Mín. >=55 Máx 75	Mín. > 60 Máx NA	Mín. > 60 Máx NA	Mín. > 60 Máx 70	Mín. > 60 Máx 70
Idade Subscrição								
Idade Permanência	s/ Limite	s/ Limite	s/ Limite	s/ Limite	s/ Limite	s/ Limite	75	75
Pré-Existências	N.A.	N.A.	S.I.	S.I.	N.A.	N.A.	S.I.	S.I.
Quest. Médico	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	S.I.	S.I.
Internamento	N.A.	5.000€	2.500€	5.000€	N.A.	N.A.	50.000€	200.00€
Subsídio Diário	30€	N.A.	N.A.	N.A.	25€.	25€	N.A.	N.A.
Ambulatório	Acesso Rede	Acesso Rede	150€	250€	Acesso Rede	Acesso Rede	Acesso Rede	2.000€
Consultas	Acesso Rede	15€ (6)	50%	50%	Acesso Rede			
<i>Urgência</i>	Acesso Rede	Acesso Rede	50%	50%	Acesso Rede	Acesso Rede	40€ (2)	40€
<i>Programadas</i>	Acesso Rede	15€ (6)	50%	50%	Acesso Rede	15€ (6)	15€ (8)	15€
<i>Online</i>	2 Gratuitas	2 Gratuitas	N.A.	N.A.	N.A.	0€	0€	0€
<i>Domicilio</i>	15€	N.A.	N.A.	N.A.	N.A.	25€	25€	25€
Exames	Acesso Rede	Acesso Rede	50%	N.A.	Acesso Rede	Acesso Rede	Vários (2)	Vários
Medicina Dentária	N.A.	N.A.	N.A.	N.A.	Opcional	Opcional	Opcional	Opcional
Ort. Oculares	N.A.	N.A.	N.A.	N.A.	Acesso Rede	Acesso Rede	Acesso Rede	Acesso Rede
Serv. Assistência	Incluído	Incluído	Incluído	Incluído	Incluído	Incluído	Incluído	Incluído
Rede Bem-Estar	Incluído	Incluído	N.A.	N.A.	Acesso Rede	Acesso Rede	Acesso Rede	Acesso Rede
Doenças Graves	N.A.	N.A.	N.A.	Incluído	N.A.	N.A.	N.A.	N.A.

Source: data provided by AdvanceCare

Appendix E: Insurance offers on the Portuguese market by the competition with focus on assistance services

Serviços Assistência	55 MAIS	Médis VINTAGE	Multicare Activcare	Multicare 60+
Transporte não Urg.	Não Incluído	2 transportes por anuidade	Não Incluído	Não Incluído
Transporte Urgente	Incluído	Não Incluído	Incluído	Incluído
Envio Médico Domicílio	Incluído	Não Incluído	Incluído	Incluído
Enfermagem Domicílio	Light 175€ e Valor Mais 750€ por anuidade	5 utilizações por anuidade (Vintage); 10 utilizações por anuidade (Vintage Plus)	Incluído	Incluído
Exames Domicílio	Não Incluído	1 recolha por anuidade	Incluído	Incluído
Fisioterapia Domicílio	Não Incluído	5 sessões por anuidade (Vintage); 10 sessões por anuidade (Vintage Plus)	Não Incluído	Não Incluído
Limpeza Higiene	Light 5 dias e Valor Mais 7 dias por anuidade	5 dias p/ anuidade (Vintage); 10 dias p/ anuidade (Vintage Plus)	Não Incluído	Não Incluído
Alimentação	Light 5 dias e Valor Mais 7 dias por anuidade (alimentação a cargo PS)	Custo da alimentação a cargo da PS: 5 dias (Vintage); 10 dias (Vintage Plus)	Não Incluído	Não Incluído
Guarda Animais	Máx. 10 dias em caso hosp.	Não Incluído	Não Incluído	Não Incluído
Envio Medicamentos	Incluído	1 entrega por anuidade	Não Incluído	Não Incluído
Teleassistência	Linha de orientação médica & Serviço de informações médicas	Não Incluído	Não Incluído	Não Incluído
Check-up	Acesso a Valores Convencionados	Gratuito 1 Check-up por Anuidade	Não Incluído	Gratuito 1 Check-up por Anuidade

Source: data provided by AdvanceCare

Appendix F: Collecting data for benchmark analysis

	Insurance	Country	Special senior offer	Maximum age	Consultation limits	Telephone consultations	Video consultation	Specialists included	Dental policy	free choice of doctor	Reimbursement of pharmacy expenses	Co-payments	Special features
1	DKV seguros	Spain	yes	75	unlimited	24h	yes	all	yes	no (only with plan <i>mundisalud classic</i>)	no (only with plan <i>mundisalud classic</i>)	no (only with plan <i>integral classic</i>)	
2	Sanitas Seguros	Spain	no	75	unlimited available with special plan	24h	yes (special digital plan)	all	yes	List of doctors	50% of drugs	depends on the plan	discounts per year; Special digital plan
3	SegurCaja Adeslas	Spain	yes	n.a.	n.a.	yes	yes	yes, but with co-payments	optional	list of doctors	yes	yes, for special services	
4	Aviva	UK	no	n.a.	depends on health plan	yes	yes (5 consultations with GP per year)	depends on health plan	depends on health plan	no, list of doctors	only special drugs	optional excess to reduce premium (paid once a year)	discount if partner added
5	Bupa	UK	no	no age limit	n.a.	24/7	yes	yes, but with co-payments	special insurance	list of doctors	n.a.	depends on plan	

6	The Exeter	UK	no	n.a.	n.a.	n.a.	n.a.	depends on chosen plan	n.a.	list depends on chosen plan	n.a.	depending on chosen out-patient limit	
7	canadalife	CAN	yes	n.a.	n.a.	yes	yes	yes, but with copayments	optional	yes	85%	depends on chosen plan	vision care included
8	surehealth	CAN	yes	80	monetary limit	n.a.	n.a.	yes	yes	n.a.	depends on plan (up to 80%)	yes	vision care included
9	blue cross	CAN	yes	n.a.	n.a.	yes	yes	depends on plan	coverage of up to 80%	yes	depends on plan (up to 80%)	yes	vision care included
10	if insurance	NOR	no	67	n.a.	n.a.	yes	yes	n.a.	n.a.	yes	no	

Source: DKV Seguros, n.d.; Sanitas Seguros, n.d.; SegurCaixa Adeslas, n.d.; Aviva; Bupa, n.d.; The Exeter, n.d.; Canada Life, n.d.; SureHealth, n.d.; Blue Cross, n.d.; If P&C Insurance, n.d.

Appendix G: Gatekeeping and the role of nurses in eight selected countries

Country	Gatekeeping	Role of nurses
Australia	General practitioners act as gatekeepers for specialized services and hospitals. Gatekeepers can be bypassed if the patient pays the full amount out of pocket.	The nurse's role is growing, including providing restricted prescriptions for medications or diagnostic procedures, vaccines, reproductive health screenings, and health counseling. However, Medicare does not pay for nurse consultations.
Denmark	Patients can choose between two options, with gatekeeper or without gatekeeper. If they choose the gatekeeper, all costs are covered by the state; if they choose not to, they must pay a co-payment but no longer need a referral.	Health personnel are increasingly used by municipalities to deliver primary healthcare services.
England	The general practitioner acts as a gatekeeper and must prescribe a referral;	Nurse practitioners are used to take care of patients with minor health problems. Nurses are also allowed to prescribe medicine, except of controlled medication.
Finland	Specialist care requires a referral, but is often bypassed through hospital emergency department or private practitioners.	Nurses do coordinate processes, for example for minor acute health conditions, and offer appointments. They are also allowed to prescribe drugs for common diseases.
France	France is using a semi-gatekeeping model. Patients can choose if they use the pathway with a gatekeeper or “preferred doctor” who refers them to a specialist, or if they go directly to a specialist by choice. Bypassing the gatekeeping results in higher co-payments (30% --> 70%)	Besides assisting physicians, nurses perform home care and technical activities like injections.
Netherlands	General Practitioners act as gatekeepers for specialized services and hospitals.	District nurses are providing home nursing care and assess the needs of the patients. Afterwards they coordinate the care. Specific categories of nurses are also allowed to prescribe a limited scope of medicine.
New Zealand	The general practitioner acts as a gatekeeper and must prescribe a referral.	Nurses can prescribe in limited scope and can provide primary care services. That brings the advantage of greater budget control.
Sweden	Gatekeeping has no formal function. People can access specialized care independent of a referral.	District nurses are often times the first contact with the health care system. They have limited rights to prescribe pharmaceuticals and work under supervision of a physician.

Source: Anderson et al., 2022; Hilless et al., 2001; Olejaz et al., 2012; Keskimäki et al., 2019; Chevreul et al., 2015; Kroneman et al., 2016; French et al., 2001; Anders et al., 2012

Appendix H: Cost savings of Telehealth consultations compared to In-person consultations

Study	Cost savings of Telehealth consultations compared to In-person consultations
Kovács et al., 2017	Cost per examination for telehealth was less than in-person examination.
Buysse et al., 2008	Cost reduction for remote monitoring of \$233,958 per year.
Xu et al., 2008	Costs of \$108 per consultation for telehealth versus \$155 for in-person consultation when caseload >100 consultations per year; saving realized despite a patient-end pediatrician cost to telehealth.
Armstrong et al., 2007	Tele dermatology practice had an hourly operating cost of \$361 versus \$456 for conventional care
Smith et al., 2007	At caseload >774 cases/5 years, telehealth is cost savings compared with in-person; \$598,203 saved over 5 years.
Pare et al., 2006	Telehealth realizes \$361 in savings per patient or \$8566 total service cost savings compared with traditional in-home care program over 6-months (~\$13,713 per year).
Labiris et al., 2005	Cost per consultation for telehealth \$327 versus \$333 for conventional care.
Norum et al., 2005	At workload >9-12 patients, telehealth is less expensive when patient transport by air is required.
Scuffham et al., 2002	Teledentistry (\$233) is more expensive compared with outreach (\$156) but less expensive when compared to in-person care (\$662) per patient treated.
Bjørvig et al., 2002	At caseloads of >110, telehealth is cost saving. At workloads <110, telehealth is more expensive than conventional care; at very low workloads (n=20), telehealth is around 20 times more expensive than conventional care per consultation; at high workloads (n=200), telehealth costs around 67% of conventional care per consultation.
Harno et al., 2001	Telehealth was \$3954 (total service cost) less expensive than the traditional referral model.
Bergmo et al., 2000	At caseload >195 patients per year, telehealth (\$96,042.79) costs less than hybrid outreach/patient travel service as a whole (\$179,634.98), patient travel (\$333,568.03) or locally employed dermatologists (\$81,355.24); actual workload was 375 patients.
Harno et al., 2000	Telehealth is less expensive, with a saving of \$10,874 over 8 months for the service.
McCue et al., 1998	Net saving of \$22 per consultation using telemedicine.
McCue et al., 1997	Telehealth was cost saving realizing total service cost saving of \$24,352 over the 7-month study period (~\$21,700 per year) or cost per visit for telehealth (\$430) versus conventional care (\$835).

Source: Snoswell et al., 2020

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