

CASE STUDY

Open Access



# Effectiveness of an incentives package to attract and retain physicians to underserved areas: a case study from Portugal

Sara Alidina<sup>1,2\*</sup> , Jesus Cortes<sup>2</sup>  and Inês Fronteira<sup>2</sup> 

## Abstract

**Background** Physician shortages in underserved areas constitute a common challenge for governments and policy-makers worldwide, including in European countries.

The health sector in Portugal is characterized by geographical asymmetries in the distribution of physicians and the difficulty in retaining these professionals in certain areas of the country. In 2015, the Portuguese government created an incentive package to attract and retain physicians in underserved areas. In this case study, we describe the process that led to the creation of the incentives package, its main features, and the physicians that have benefited from it, and assess the effectiveness in terms of retention of physicians in the National Health Service (NHS) and the underserved areas.

**Case presentation** Decree-Law no. 101/2015, published on 4 June, established the terms and conditions for awarding financial and non-financial incentives for physicians who work in underserved areas. It has been a fundamental instrument for attracting and retaining professionals to areas of geographical need, especially in the inner territories, seeking to fill needs and reduce asymmetries in the distribution of resources. In 2017 and 2021, the incentives package was reviewed to meet NHS demands and physicians' expectations.

**Conclusions** The incentives package implemented in Portugal effectively deployed physicians to underserved areas. The several amendments to the package led to a 14-fold increase in physicians benefiting from the incentives and a 59% retention rate of these physicians in the same underserved health institution. However, the difference between the retention levels of physicians under the incentives package and those not covered is minimal.

The financial and non-financial incentives need to be reviewed to better suit physicians' needs and expectations, as well as those of the NHS.

**Keywords** Health workforce, Physicians, Retention, Attraction, Policies, Underserved areas

## Background

All countries in the World are currently dealing with various challenges related to the health and care workforce (HWF). This jeopardizes the main goal of health systems: to ensure Universal Health Coverage (UHC): *“There is growing recognition that the progressive realization of universal health coverage (UHC) is dependent on a sufficient, equitably distributed and well-performing health workforce”* [1].

\*Correspondence:

Sara Alidina  
sara.alidina@gmail.com

<sup>1</sup> Central Administration of the Health System, Public Institute, Lisbon, Portugal

<sup>2</sup> NOVA National School of Public Health, Public Health Research Center, Comprehensive Health Research Center, CHRC, REAL, CCAL, Nova University Lisbon, Lisbon, Portugal



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

The Bucharest Declaration highlights the HWF as the backbone of health systems and calls on governments to pay a special attention to attracting and retaining health and care workers in rural, remote, and other underserved areas as a key intervention area to overcome shortages and uneven distribution and one of the major workforces challenges that national health systems face [2]. As a result, UHC can only be accomplished if the attraction and retention issues are effectively addressed [3], especially in rural areas and socio-economically challenged urban areas that are less well staffed [4]. Among the ten actions proposed by WHO Europe to strengthen the HWF is the development of strategies to attract and retain health and care workers in underserved areas [5]. WHO Europe defines underserved geographical areas as rural, remote, or poor urban zones [5].

Recent systematic reviews revealed that the majority of the studies on medical deserts are from Australia, New Zealand, and North America which reflects the size and maturity of the challenges related to medical deserts in such large countries and geographical settings. Only a small percentage of the studies address medical deserts in European countries [6].

According to the OECD Health at a Glance, some countries like France, Czechia, and Spain have sought to address medical deserts through policies based on financial incentives, health service redesign, and digital solutions [7].

In France, for instance, successive governments have implemented various initiatives to address the growing shortage or complete absence of General Practitioners in certain regions such as the creation of multidisciplinary health homes, allowing General Practitioners and other primary care providers to work in the same location, thereby mitigating the challenges associated with solo practice. However, despite these efforts and the provision of various financial incentives for physicians to set up their practices in underserved areas, the measures do not seem to have been sufficient to resolve the issue [7].

Czechia, on the other hand, is trying to overcome this challenge by identifying what are the main motivating factors for young General Practitioners to work in rural areas [8] and Spain is trying to map their driving factors and approaches to eliminate or mitigate medical deserts in the country. Initiatives focusing on encouraging medical staff to work in rural and other sparsely populated areas which involve local training for medical students in rural areas; investing in rural health centers infrastructure; building local strategic alliances between neighboring health centers are being implemented to overcome the accessibility to medical care in rural areas in this country [9].

Nevertheless, longitudinal studies measuring the impact of factors contributing to HWF issues in medical deserts as well as interventional studies evaluating the effectiveness of approaches to mitigate HWF issues in medical deserts seem to be scarce.

The particularly high density of physicians in capital regions reflects the concentration of specialized services and physicians' preferences to practice in capitals. This is the case in Austria, Croatia, Czechia, Denmark, Hungary, Greece, Poland, Portugal, Romania, and the Slovak Republic [7].

WHO's Regional Office for Europe highlighted the severity of this challenge in its European Programme of Work 2020–2025 referring that it is a priority to support Member States to reach a fairer distribution of the health workforce and address shortages [10].

Many countries are trying to overcome shortages and uneven distribution through regulatory measures (i.e., legislative, administrative, legal, or policy instruments) that include, among others, revision and expansion of the scope of practice, creation of different cadres, compulsory service requirements, or bonding schemes. [11] Similarly, some of the measures proposed feature financial incentives (i.e., fiscal benefits such as monetary bonuses or in-kind benefits) [6], despite some literature suggesting that financial incentives, although attractive, are not enough to attract and retain health and care professionals in underserved and remote areas [12]. Factors, such as schooling for children, employment opportunities for spouses, or opportunities for career advancement, seem to play an important role in the equation [11].

Faced with an important imbalance in the distribution of physicians in mainland Portugal, with a higher density of these professionals on the coastline and in metropolitan areas, in 2015, the Portuguese Government introduced an incentives package to attract and retain physicians in underserved areas, ensure access to health services throughout the territory, and address the NHS's commitment to UHC.

As a result, we believe that the Portuguese case might reflect many others in the EU both a national and sub-national level. Additionally, as one of the authors (SA) was currently working in an Agency under the Ministry of Health, responsible for addressing medical shortages and monitoring the implementation of the Incentives Package, we sought to provide a "real-life" example of a policy addressing medical deserts.

In this paper, we answer to the following research question: What was the effectiveness of the incentives package implemented in Portugal in 2015 in terms of attraction and retention of physicians in underserved areas? The aim of this case study is to describe the process that led to the creation of this incentives package and its main

features, as well as the physicians that benefited from it and its effectiveness in retaining physicians in underserved areas.

## Methodology

The case study methodology was applied to provide an in-depth study about an incentives package policy implemented in 2015 in Portugal to attract and retain physicians to underserved areas. Given the complex nature of this issue, the case study approach allows an exploitation between the policy, its adherence according to the specific Portuguese context and the reflection of factors that may contribute or not to the effectiveness of this policy.

Document analysis was the research method used for examining and interpreting the existing documents [13]. Data collection and analysis for this case study included official documents on the incentive package and data on the uptake and effectiveness of the package.

The case study design allowed for a rich mix of both qualitative and quantitative analyses, providing a comprehensive understanding of the phenomena under investigation.

Data on financial incentives were collected from the national health human resources information system (RHS), an information system for processing salaries for all NHS workers. These data were collected in a spreadsheet and analysis was made in a spreadsheet to count the number of physicians that benefited from the financial incentive per year and per region as per gender, age group, nationality, medical specialty, and region of the underserved position. Data about the institution were categorized into five regions, data about physicians' age were categorized into four age groups, and data about physician's nationality were categorized into four nationality groups. Data presented in this paper pertain to the entire population of physicians benefiting from the Incentives Package.

As the non-financial incentives were not recorded in the RHS, we sent, via email, to all health institutions, a structured Excel sheet for them to provide further information on non-financial incentives used by physicians during the year 2023.

This study has been authorized by the Central Administration of the Health System, Public Institute (supplemental material 1).

## Case presentation

Portugal is a small country with an aging population (life expectancy of 81.5 years) of around 10 million inhabitants and a considerable chronic disease burden (44% of the population report a longstanding illness or health problem). In 2021, the prevalence of diabetes was among the highest in OECD countries. The government spends

10.6% of GDP on health, above the OECD average, and the country has a universal and centralized NHS health system, covering all citizens, funded through general taxation, which co-exists with a growing private health sector [14]. In 2023, 31% of the population had voluntary health insurance, and 55% had a voluntary health insurance, a health plan, or a health subsystem (double coverage) [15].

Despite having a ratio of practicing physicians above the OECD average (5.6 vs. 3.7 per 1,000 inhabitants, respectively), Portugal's statistics includes all physicians licensed to practice, leading to a substantial overestimation when compared to what is reported by other EU countries, which consider only practicing physicians [16]. Also, this number includes retired physicians and those who might have emigrated to other countries but have kept their license in the country. [7].

The country faces significant imbalances in the distribution of physicians, with the highest densities being registered on the coastline, in the municipalities of Porto and Lisbon, and in Coimbra, which is in the Center region of the territory. The country's Northeast and South regions are the most deprived and systematically present difficulties in attracting and retaining medical physicians [17]. This territory imbalance is causing accessibility risks for populations that are settled out of Lisbon or North regions [16]. Additionally, even in great metropolitan areas like Lisbon, some constraints have been reported in attracting physicians to work in the NHS [18].

This is explained by the fact that individuals without an assigned General Practitioner are primarily concentrated in Lisbon region. In 2022, 2.9% of Portugal's population experienced unmet needs for medical care, due to either excessive costs, travel distance, or waiting times. This proportion was higher than both the EU average (2.2%) and Portugal's rate in 2019 (1.7%) [16].

The proportion of the Portuguese NHS user base without an assigned General Practitioner doubled from 7.5 to 15%, which corresponds to over 1.5 million individuals. The main reason behind this increase can be attributed to the inadequate capacity of the NHS to attract and retain newly trained General Practitioners and to compensate for the attrition of General Practitioners retiring in recent years [16].

In 2015, the government highlighted the negative impact of this scenario, recognizing that citizens were "forced to travel to health establishments far from their homes to receive the care they need, with the consequent financial impact on the National Health Service" and presented an incentive package to "promote an adequate rationalization of existing professionals, to minimize regional asymmetries, through the creation of incentives that guarantee the correction of these asymmetries" [19].

At the time, underserved areas were defined jointly by the Ministries of Finance, Public Administration, and Health at the beginning of each year. Since 2017, the definition of underserved areas became a joint responsibility of the Ministries of Finance and Health and is based on the per-capita GDP of the underserved region, the density of physicians per inhabitant in health services in comparison to similar institutions, levels of delivery of services, productivity, and access, geographical distance to other health services, and training capacity of the health services [20]. The underserved areas and vacancies (i.e., a maximum cap) are defined yearly per hospital, per medical specialty, per primary care unit, and public health unit.

#### **The 2015 incentive package**

The first package to attract and retain physicians to underserved areas was defined in 2015 and established the terms and conditions for granting financial and non-financial incentives for future settlement in underserved regions (Decree-Law no. 101/2015, of 4th June) [21].

Under this package, physicians who accepted a 5 year contract in an underserved area received a reallocation and transport fee corresponding to €753 and an additional gross €1000 incentive (approx. between 37 and 55% increase monthly salary) for the first 6 months, then €500 for the next six months (approx. between 18 and 28% increase in monthly salary) and €250 per month for the remaining 4 years (approx. between 9 and 14% increase in monthly salary). In total, the financial incentive amounted to €21,000 over 5 years. After the 5th year, the financial incentive ceased, and physicians were paid the same remuneration as their colleagues in non-underserved areas.

In addition to the financial incentives, the package featured a series of non-financial incentives targeting the physician's family and paid leaves. These included the transfer of children within the public system to schools located in the underserved area; simplification of the process of transfer to the underserved area in case the partner/spouse was a civil servant; up to 5 days of paid leave for settlement; two additional paid days of annual leave to the standard of 22 paid days of annual leave during the first five years of the contract, the possibility of taking at least 11 days at the same time as the spouse, and a two-fold increase in the maximum duration of leave without loss of pay for the physician's own education and training purposes (from 15 to 30 working days).

The physician hired in an underserved area was not obliged to remain in the position for the following 5 years. Nevertheless, a break of contract at the physician's request had some penalties, namely, the reimbursement of the placement incentive: 75% of the amount paid

in the first 6 months of the contract (maximum of 3750 euros), and 25% if more than 6 months had elapsed since the date of placement (250 euros per month worked). After 1 year of placement, the amount to be paid by the physician for the second and subsequent years was computed according to  $6000 \cdot N/48$ , where N was the number of months remaining to complete 5 years of the incentive. Also, physicians who ceased their duties under this initiative were prevented from benefiting from the incentive scheme for underserved areas for 5 years.

#### **The 2017 and 2021 revisions of the incentives package**

The 2015 incentives package did not have the expected impact, with low adherence rates being registered. In 2015, only ten physicians adhered to the incentive package and were placed in underserved areas [22].

As a result, the government decided to review the incentives package to increase its attractiveness and thus facilitate the deployment and retention of physicians in underserved areas. Accordingly, in 2017, an amendment to the incentives package for underserved deployment and retention of physicians was made, which introduced significant changes.

Various non-financial incentives were added to those established in 2015. Spouses or partners of physicians under the incentives package were given priority in the event of a tie in the final ranking lists of candidates in public service recruitment competitions in the underserved area. Also, for the spouse or partner who were public sector workers serving in the underserved area, it was possible to remain in the position for the time the physician remained in the underserved position.

Two additional days of annual leave were offered, while the physician remained in the underserved area, and one more day was added per period of 5 years of work in the underserved area.

Physicians hired under the incentives package had the right to enjoy their annual leave at the same time as their spouse or partner and the possibility of taking 11 of those days during school breaks, annual leave of their partners/spouse, or any other member of the household.

Also, opportunities for career advancement were introduced in the package, with physicians entitled to participate for a maximum of 15 paid days (including transport and allowances) per year in research and continuous professional development activities in a health service of their choice in the country. In addition, those under the incentives package who applied to senior positions were given priority in the case of a tie in the public service recruitment competition.

In the 2017 amendment, the financial incentives were also reviewed, and the time frame was reduced from 5 to 3 years. The incentive was defined as a supplement

of 40% of the monthly salary before taxes of an assistant physician (currently set at approximately 1312 euros [23, 24] to be paid for 3 years. Reimbursements or penalties in the case of a break of contract by the physician before the end of the period were eliminated.

More recently, in 2021, another amendment was made to extend the time frame of the incentives package from 3 to 6 years. (Fig. 1).

**Vacancies**

There are no available registries on the number of vacancies opened in underserved areas in 2015. Since 2016 [25–28], a joint Ministries of Health and Finance memorandum has defined the number of vacancies yearly [29–35]. Until 2023, the vacancies were defined in three areas (hospital, general practice, and public health); within each region, the underserved health services were identified, as well as the maximum cap of vacancies to be open each year. In the case of the hospital area, the most deprived medical specialties were also defined. With the creation of Local Health Units (LHU) in 2024, which gathered under the same administration hospitals, primary health centers, and public health services, the vacancies are now defined for each LHU, with some vacancies in general practice and/or public health besides hospital specialties [36] (Fig. 2).

Underserved vacancies represent around 11% of all vacancies opened through formal recruitment procedures. The number of vacancies in underserved areas was stable in 2017 and 2018, but from 2019 to 2022, the

number of vacancies increased on average by 10%. In 2023, the rate of vacancies increased 26%.

**Physicians’ profile**

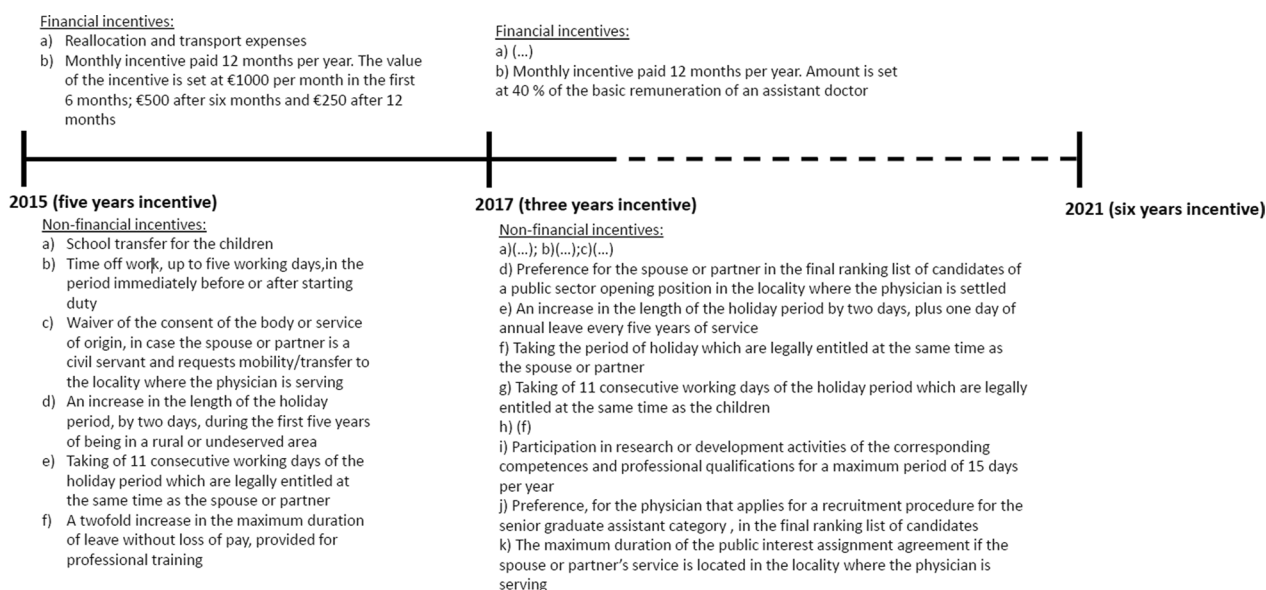
From 2015 to 2023, 934 physicians were deployed to underserved areas under the incentives package. Considering the number of physicians who entered the NHS in 2015, this number represents 21% of the total admissions of physicians to the NHS.

Physicians were mainly women of Portuguese nationality, between 30 and 39 years of age, and General Practitioners were placed in underserved areas in the Lisbon and Tagus Valley or the Center regions (Table 1).

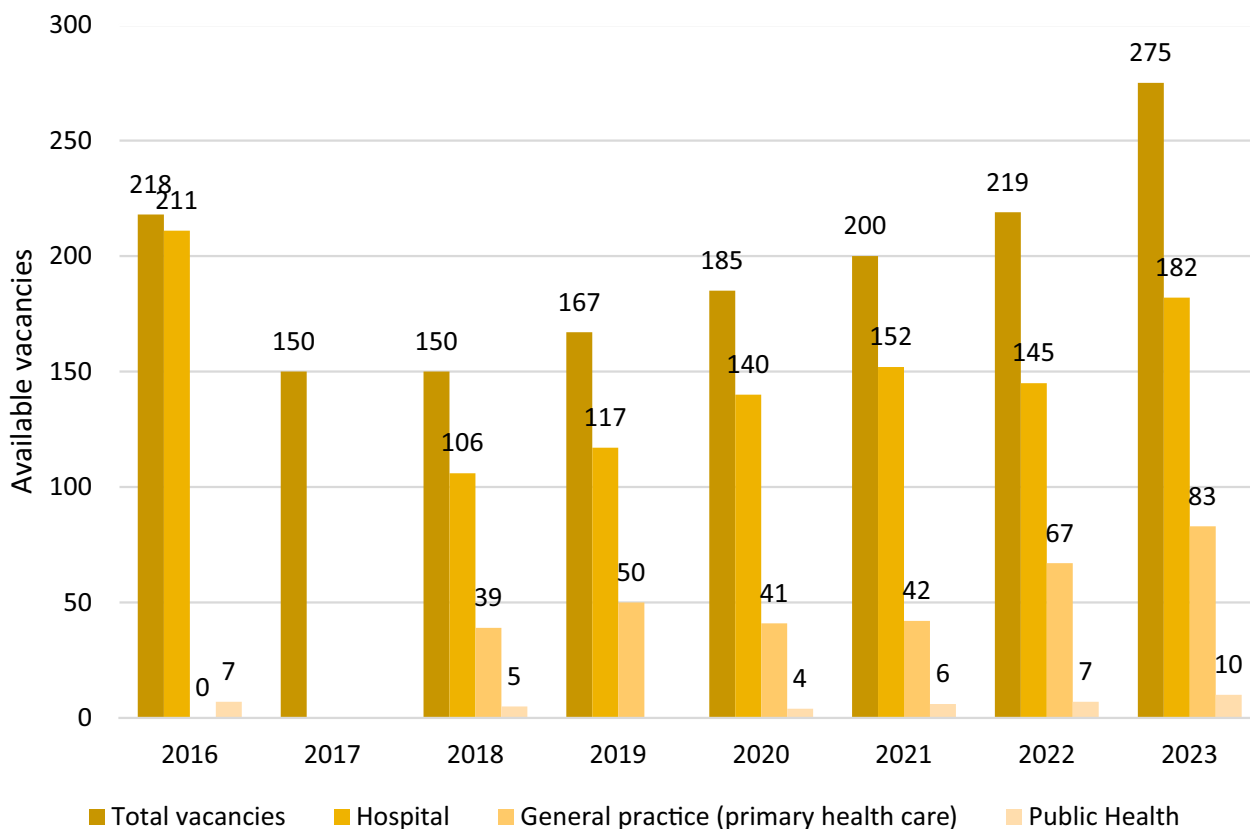
**Uptake of the incentives package**

In 2015, the uptake of the package was quite low, but in 2017, there was a marked increase in the number of physicians (from 10 to 127, likely due to the 2017 amendment to the initial package). In 2018, the number of physicians under the package peaked at 178, followed by a steep decrease until 2020, when it halved. Since 2021, the number of physicians under the incentives package seems to have steadily increased, likely in response to the extension of the financial incentives from 3 to 6 years from the 2021 amendment (Fig. 3).

The uptake of vacancies in underserved areas varied greatly since 2016. In 2017, the uptake reached its highest (85%), although in 2018, the uptake of underserved positions surpassed the number of vacancies defined for that year. This had mainly to do with the fact that some of the vacancies not fulfilled in 2017 were “transferred” to



**Fig. 1** Incentives package timeline. Governmental Memorandums. Figure created by the authors



**Fig. 2** Evolution of the number of vacancies for underserved areas between 2016 and 2023. Governmental Memorandums. Figure created by the authors

the following year, enabling underserved services to hire “extra” physicians.

After a timid rise in the uptake of vacancies in 2021, the percentage of positions filled in underserved areas is decreasing. In 2022 and 2023, only 53% of the vacancies were filled (Fig. 4). In December 2023, 505 physicians benefitted from the financial incentives.

The uptake of vacancies in underserved areas by medical specialty has varied over the years; however comparing the three main specialities uptaken by physicians, we can observe that General Practitioners are the ones that throughout the years benefitted more from the incentives package. Internal medicine physicians’ uptake of the underserved areas was higher in 2016 (39%) and Anaesthesiology physicians had a timid rise in 2020 and 2021 (12 and 10%, respectively) (Fig. 5).

**Non-financial incentives**

As the financial incentives part of the package is “automatic”, the non-financial incentives, except extra days of paid annual leave, are not. In 2023, the uptake of the non-financial incentives varied greatly. The non-financial incentive related to annual leave paid days was the most

relevant, with 83% of physicians benefiting from this measure. All other benefits were used by less than 20% of physicians under the incentives package (Table 2).

**Effectiveness of the incentives package**

The effectiveness of the incentives package for the deployment and retention of physicians in underserved areas is measured by the number of physicians who have benefited from the package and are still practicing in the same underserved health institution. In Fig. 6, this number is depicted by the gray line representing the number of physicians who benefited from the financial incentives each year still practicing in NHS in the same underserved health institution.

Of the 934 physicians who benefited from the incentives package throughout the years, 703 still practice in the same underserved health institution, corresponding to a retention rate of 75% and an attrition rate (loss) of 25%.

Physicians deployed to underserved areas within the incentives package in 2015, 2016, and 2017 have reached the legal cap for receiving the financial incentives (6 years). The overall retention rate of physicians

**Table 1** Social and demographic characteristics of physicians that have benefited from the incentives package for deployment and retention in underserved areas between 2015 and 2023 (N = 934)

Characteristics	N	%
Gender		
Male	318	34
Female	616	66
Age group		
30–39 years	746	80
40–49 years	114	12
50–59 years	47	5
60–69 years	27	3
Nationality		
Portuguese	854	91
Non-European Union	33	4
Other European Union	29	3
Portuguese-speaking African Countries	18	2
Medical specialty		
General Practice (Primary health care)	271	29
Internal Medicine	154	16
Anaesthesiology	66	7
Other specialties <sup>a</sup>	443	48
Region of underserved position		
Alentejo	179	19
Algarve	141	15
Center	206	22
Lisbon and Tagus Valley	299	32
North	109	12

Central Administration of the Health System, Public Institute, 2024. Table created by the authors

<sup>a</sup> Include all other hospital specialties and Public Health speciality

in underserved areas in this period was 59%, i.e., 59% of the physicians that benefited from the incentives package in these 3 years are still practicing in the NHS in the same underserved NHS institution in December 2023, which indicates a good degree of success of this package. It is worth noticing that although these physicians do not receive the financial incentives of the package if they remain in an underserved post, they are entitled to the non-financial incentives.

However, when comparing the retention rate of physicians who were in the same underserved institutions during 2015, 2016, and 2017 but not benefiting from the incentives package, 65% of the total of these physicians were in the same underserved institution in December 2023, which leads to a conclusion that the difference between both is negligible.

An additional way of measuring the effectiveness of this package is by analyzing the average duration of financial incentives for physicians who are no longer

benefiting from the financial incentive. For all years considered, there was a gap between the average number of years that physicians benefited from this type of incentive and the legal time they were entitled to it, revealing that some left the underserved post earlier than expected. This gap was higher in 2015 and 2016 (1 and 1.4 years, respectively). During this time, the financial incentive decreased greatly between the first six months, the first year, and the remaining four years. The 2017 amendment that reduced the duration of the economic incentive from 5 to 3 years but increased the monthly amount received seems to have increased retention time. On the other hand, an analysis of the gap between legal entitlement to the financial incentive and use of that financial incentive after 2020 and considering the 2021 amendment extending the benefit up to 6 years leads to thinking that this extension is yet to prove its effectiveness in terms of retention time. (Fig. 7).

## Discussion and conclusions

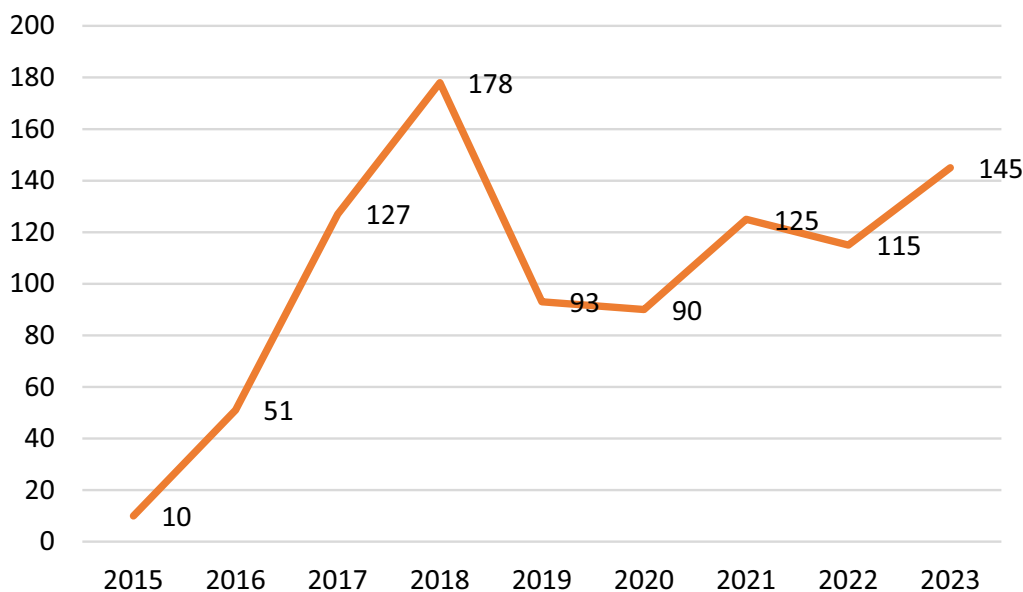
Uneven distribution of health and care workers, alongside increasing shortages, is observed in many countries, including Europe, and threatens universal health coverage. The shortages of physicians often go beyond the overall number and relate more specifically to certain categories and/or their geographic distribution. In many countries, the main concern about the shortage of physicians has been General Practitioners, particularly in rural and remote areas, contributing to medical deserts [7]. Reducing geographical imbalances through better health workforce distribution and retention is thus fundamental for increasing access and coverage and achieving better health outcomes while raising awareness of the problems of equity, efficiency, and effectiveness in health [37].

Medical deserts are usually characterized by a lack of equipment, supplies, and appropriate facilities but also by higher workloads, professional isolation, and a lack of continuous professional development or career advancement opportunities, among other factors [38, 39].

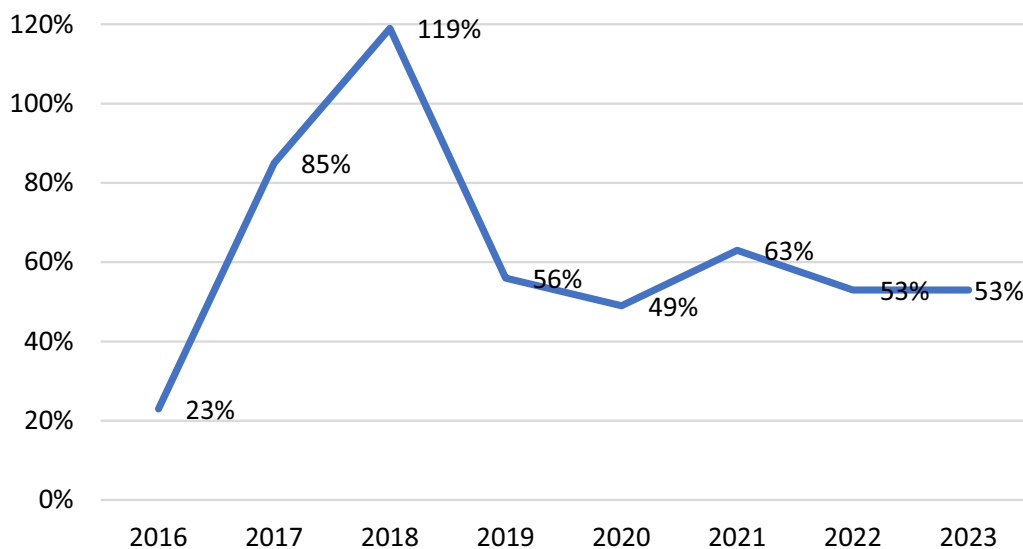
The most recent policy documents focusing on this specific occupational group advocate for developing evidence-informed strategies [5], which point to existing knowledge gaps to what works and what does not work to retain physicians in underserved, “desert” areas.

This case study analyzes and assesses the effectiveness (i.e., the retention success) of an incentives package for the retention of physicians in underserved areas, implemented in 2015 in Portugal, a small Western European country with an aging population and facing the maldistribution of physicians.

The incentives package under consideration includes financial and non-financial incentives. Economic incentives, whereby physicians receive a payment link to



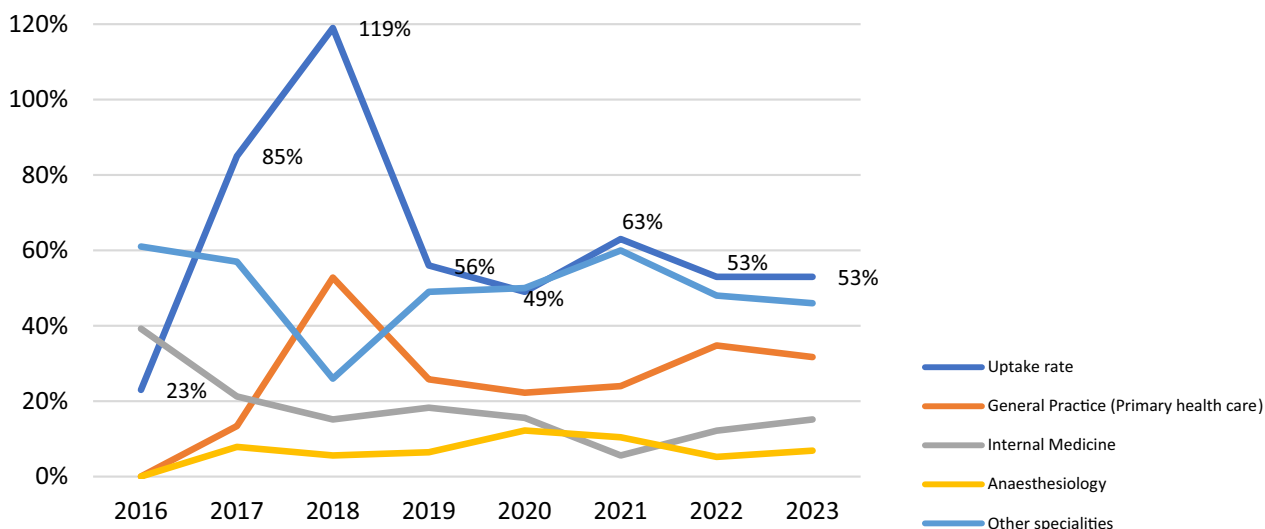
**Fig. 3** Distribution of physicians that started the incentives package per year. Central Administration of the Health System, Public Institute, 2024. Figure created by the authors



**Fig. 4** Evolution of the uptake of underserved vacancies between 2016 and 2023. Central Administration of the Health System, Public Institute, 2024; Uptake is computed by dividing the number of vacancies filled by physicians by the total of vacancies defined by the Governmental Memorandum. Figure created by the authors

a commitment to practice in an area, are known for improving retention and indirectly contribute to the retention of other health professionals (e.g., by reducing the workload). Nevertheless, some studies have demonstrated that non-financial incentives and other factors, such as altruism, living conditions, and work–life balance, are also important to retain physicians and other professionals [40].

This case study revealed that the incentives package introduced in 2015 and the amendments applied in 2017 and 2021 led to a 14-fold increase in physicians in underserved areas. Even after the financial incentives had ceased, more than half of the physicians still practice in the same underserved health institution. However, compared with retention rates of physicians working in the same institution but not under the incentives package,



**Fig. 5** Evolution of the uptake of underserved vacancies between 2016 and 2023 by medical specialty (see also supplemental material 2). Central Administration of the Health System, Public Institute, 2024. Figure created by the authors

the difference between the retention levels is minimal. This stresses that economic incentives are important drivers to attract professionals to underserved areas. However, they might lose relevance as years go by, to retain these professionals in underserved areas.

The choice of practice location is complex. Unattractiveness of places to live and work is the root of an unequal distribution of physicians across regions and areas. The mode of employment and payment for physicians set the frame for their options for location choices and while incomes for General Practitioners in rural regions are higher than those in urban regions in some countries, it may not be sufficient compensation as they work for longer hours and in generally more difficult working conditions [4]. The difficult working conditions for health workers in remote, rural areas (e.g., long hours, large patient lists, solitude, and lack of peers’ support) interferes with the location choices of the health workforce and strongly contribute to medical desertification [9].

We noted a low usage rates of non-financial incentives in the package, where the only significant usage seems to be extra days of annual paid leave.

The nature of the incentives might explain the low usage of non-financial incentives. These directly target the physicians (e.g., extra days of paid annual leave, extra-paid days for continuous professional development, and additional days of paid professional training) and indirectly their household, mainly their spouse or partner if civil servants. In the first case, it might be difficult for physicians working in underserved areas to use extra-paid days, since high demands and workload usually characterize underserved regions.

On the contrary, using paid annual leave days is mandatory and automatized under Portuguese law, i.e., the physician does not have to ask for it. In the case of incentives targeting the physicians’ household and partners or spouses, incentives are only usable under very specific conditions, and such situations might not be expressive. Data on the uptake of these non-financial incentives further stress the need to review them considering the sociodemographic characteristics of physicians and their social, cultural, and economic understanding of work, among other factors.

Nevertheless, including financial and non-financial incentives under the same package highlights the need for comprehensiveness and flexibility in designing and implementing attraction and retention strategies. Assessment of the impact and effectiveness of such a strategy is crucial to guarantee that the incentives are appealing and adjusted to local circumstances and contexts. In the case under analysis, subsequent amendments to the original package set in 2015 seem to respond to a felt need to bridge NHS needs and physicians’ expectations further.

After 5 or 6 years in an underserved area, the financial incentives cease, corresponding to an effective loss of monthly income. Although it was impossible to understand the real impact of this feature of the incentive package, we might wonder if this can explain the attrition of 41% of physicians in the underserved areas in 2015, 2016, and 2017 or if it impacted the turnover within underserved posts. A study concluded that multiple factors indirectly contribute to job satisfaction in rural areas, including manageable workload, support, and the perception of a valued profession [41].

**Table 2** Usage of non-financial incentives of the incentives package in 2023 (N= 125)

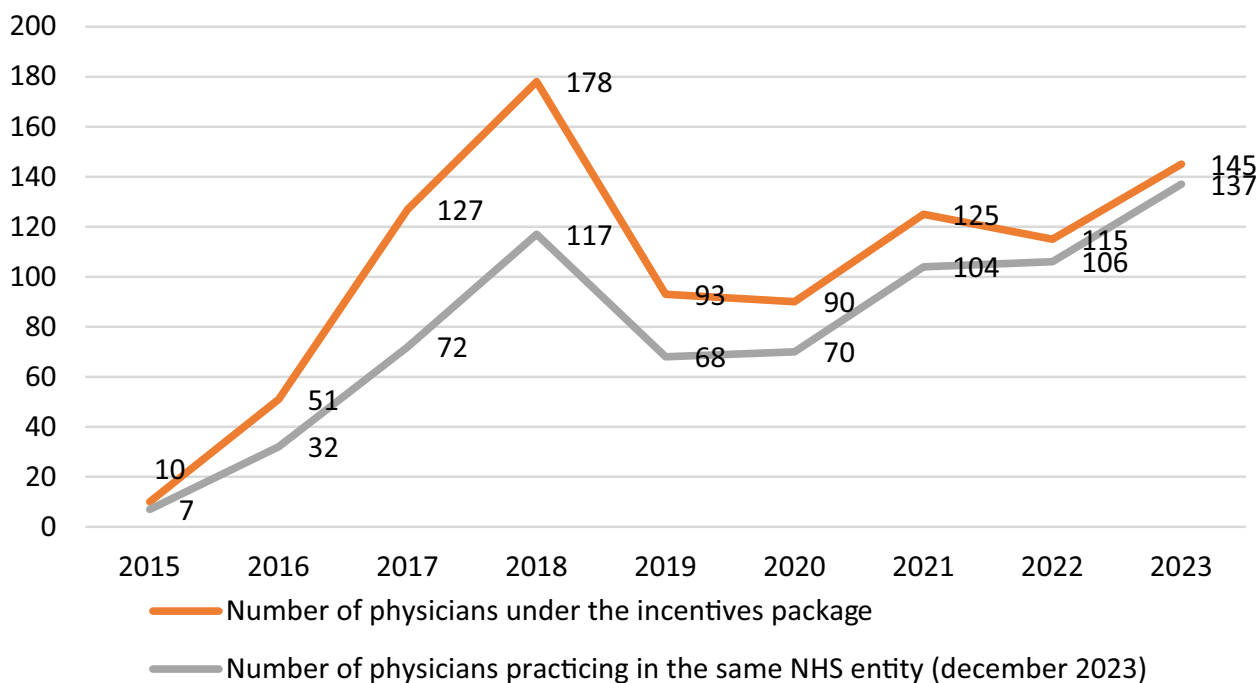
Non-financial incentives	N	(%)
Guaranteed school transfers for the children		
Used	3	2
Not used	122	98
Time off work (up to 5 working days) before or after starting a job in an underserved area		
Used	22	18
Not used	103	82
Exemption from the consent of the organization or service of origin in situations where the physician's spouse or partner requests mobility to a public service or organization in the locality where the doctor is posted		
Used	3	2
Not used	122	98
Preference for spouse or partner in the final ranking list of candidates, in case of equal ranking, in a recruitment procedure to fill a post in a public service institution in the underserved area where the physician is posted		
Used	3	2
Not used	122	98
Two extra days of paid annual leave during deployment in underserved areas and an extra day of paid leave per five years of work in underserved area		
Used	104	83
Not used	21	17
Annual leave at the same time as spouse/partner		
Used	18	14
Not used	107	86
Eleven consecutive working days of annual leave during the school holidays of the children, partner/spouse, or other member of the household yearly leave		
Used	16	13
Not used	109	87
Up until 30 days of paid leave for professional training		
Used	6	5
Not used	119	95
Up to 15 days of paid leave per year to engage in research and continuous professional development activities		
Used	11	9
Not used	114	91
Preference to physicians posted in an underserved area, in the recruitment procedure for the senior graduate assistant, in the final ranking list of candidates, in case of tie		
Used	3	2
Not used	122	98
Extension of spouse/partner position in underserved area until it covers the duration of the physician assignment period in the underserved area		
Used	3	2
Not used	122	98

Central Administration of the Health System, Public Institute, 2024. Table created by the authors

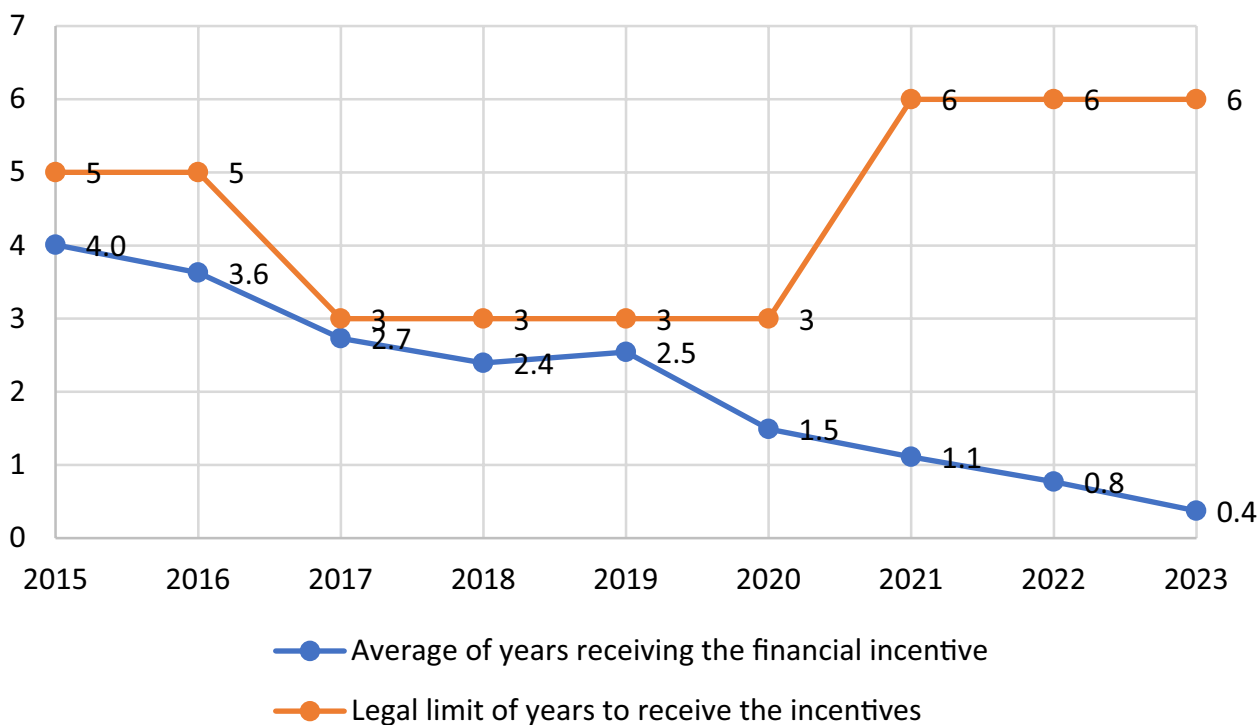
The shortage of physicians is not only related to their insufficient number but to the unwillingness of these professionals to work in certain areas [42], so it is essential to improve research to meet better the needs and expectations of professionals, patients, and health services managers. It is also important to understand individual and professional factors that influence the choice of local of practice and possible interventions to increase retention. Further studies addressing educational and professional pathways, expectations toward professional life, including continuous professional development,

career advancement, work–life balance, and values, and how these influence physicians' choices are needed to address shortages and imbalances and provide evidence-informed policymaking.

Additionally, it is important to recognize that attraction and retention issues are not exclusive to physicians and that there is usually a shortage of other health professionals in underserved areas. No incentive package targeted other health professionals, although the same imbalances can be described for nurses. Recent publications refers that the Portuguese National Health



**Fig. 6** Distribution of physicians that started the incentives package (orange line) and of physicians still in the vacancy (gray line) per year at the start of the incentives package. Central Administration of the Health System, Public Institute, 2024. Figure created by the authors



**Fig. 7** Comparison between the legal limit of years for financial incentives (orange line) and average years of duration (blue line). Central Administration of the Health System, Public Institute, 2024. Figure created by the authors

Service is encountering challenges in overall retention of General Practitioners but also in nurses, as relatively low pay, stressful working conditions, and limited career growth prospects are impacting the attractiveness of the nursing profession and working in the public sector. The number of nursing graduates in Portugal declined sharply and has remained around 30% below the EU average and a significant number of nurses choose to emigrate to countries offering better pay and benefits [16].

Spain is implementing intermediate solutions implemented involving advanced nursing practices in remote areas without medical professionals, which may represent a promising strategy to address medical deserts in Spain.

Also, it might be relevant to address interventions to attract and retain nurses or other health care professionals as Portugal NHS is emphasizing multidisciplinary teams, in primary care area, but also in hospital area.

Attracting and retaining physicians in underserved areas is a complex challenge that should be approached from diverse viewpoints and should comprise a broader understanding that the attraction and retention of one specific group often depend on the attraction and retention of other professional groups. Incentive packages are relevant and should be tailored. However, macro-social and economic factors should also be considered when retaining physicians.

As a limitation of the study, it is important to mention that the main data source regarding financial incentives is a national health human resources information system responsible for processing salaries and managing human resources in the National Health Service (NHS) institutions. Through this system, health institutions can register data retroactively, which means that in the present year, health institutions can still register data from the 2023 year or previous years.

### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12960-025-00999-0>.

Supplementary Material 1.

Supplementary Material 2.

### Acknowledgements

The authors acknowledge Central Administration of the Health System, Public Institute for supporting this work. Fundação para a Ciência e Tecnologia, I.P. national support through CHRC (UIDP/04923/2020).

### Author contributions

SA and IF designed the study. SA wrote the first version and reviewed the subsequent versions. IF is responsible for scientific guidance of the paper and writing and reviewing subsequent versions. JG reviewed subsequent versions of the paper. All authors approved the final version of the paper.

### Funding

Not applicable.

### Availability of data and materials

No datasets were generated or analysed during the current study.

### Declarations

#### Ethics approval and consent to participate

Not applicable.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

Received: 5 July 2024 Accepted: 2 June 2025

Published online: 10 July 2025

### References

- Cometto G, Buchan J, Dussault G. Developing the health workforce for universal health coverage. *Bull World Health Organ*. 2020;98(2):109–16.
- World Health Organisation ER. Bucharest declaration on the health and care workforce high-level regional meeting on health and care workforce in Europe: time to act. Geneva: WHO; 2023.
- WHO. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas. Geneva: WHO; 2021. p. 1–104.
- Ono T, Schoenstein M, Buchan J. Geographic imbalances in doctor supply and policy responses. *OECD health working papers no 69*. 2014. 69.
- WHO Regional Office for Europe. Health and care workforce in Europe: time to act. Geneva: WHO; 2022. p. 1–205.
- Flinterman LE, González-González AI, Seils L, et al. Characteristics of medical deserts and approaches to mitigate their health workforce issues: a scoping review of empirical studies in western countries. *Int J Health Pol Manag*. 2023;12(1):1–16. <https://doi.org/10.34172/ijhpm.2023.74547>.
- OECD, European Commission. Health at a glance: Europe 2024: state of health in the EU cycle. Paris: OECD Publishing; 2024.
- Javorská K, Halata D, Štolfa J, Pfeiferová M. What are the main motivating factors for young general practitioner trainees to work in rural areas in the Czech Republic? *Eur J Gen Pract*. 2022;28(1):200–2. <https://doi.org/10.1080/13814788.2022.2094913.PMID:35796616;PMCID:PMC9272938>.
- Dubas-Jakóbczyk K, Gonzalez AI, Domagala A, Astier-Peña MP, Vicente VC, Planet AG, Quadrado A, Serrano RM, Abellán IS, Ramos A, Ballester M, Seils L, Dan S, Flinterman L, Likić R, Batenburg R. Medical deserts in Spain-Insights from an international project. *Int J Health Plann Manage*. 2024;39(3):708–21. <https://doi.org/10.1002/hpm.3782>.
- WHO Regional Office for Europe. United action for better health in Europe, draft European programme of work, 2020–2025. Copenhagen: WHO Regional Office for Europe; 2020.
- Esu EB, Chibuzor M, Aquaisua E, Udoh E, Sam O, Okoroafor S, et al. Interventions for improving attraction and retention of health workers in rural and underserved areas: a systematic review of systematic reviews. *J Public Health (United Kingdom)*. 2021;43:154–66.
- Rafferty AM, Sermeus W BL. Recruitment and retention of the health workforce in Europe: European Commission. 2015. 1–54(7)
- Bowen GA. Document analysis as a qualitative research method. *Qual Res J*. 2009;9(2):27–40.
- OECD. Health at a glance 2023: OECD indicators. Paris: OECD Publishing; 2023.
- Observatório dos Seguros de Saúde. 2024. <https://observatorioseguros.aude.pt/>.
- OECD/European Observatory on Health Systems and Policies. Portugal: country health profile 2023, state of health in the EU. Paris: OECD Publishing; 2023.

17. Isabel C, Veiga P. Geographic distribution of physicians in Portugal. *Eur J Health Econ*. 2010;11(4):383–93.
18. Falta de médicos de família agrava-se em vários agrupamentos de Lisboa e Vale do Tejo. 2024. <https://observador.pt/2023/09/07/falta-de-medicos-de-familia-agrava-se-em-varios-agrupamentos-de-lisboa-e-vale-do-tejo/>.
19. Ministério da Saúde. Decreto-Lei n.º 101/2015, de 4 de junho. Estabelece os termos e as condições da atribuição de incentivos à mobilidade geográfica para zonas carenciadas de trabalhadores médicos com contrato de trabalho por tempo indeterminado. *Diário da república* n.º 108/2015, Série I de 2015-06-04. 2015; 3604–5.
20. Receitas no âmbito do PVE. *Diário da república*. 2017 Jan 27;20.
21. *Diário da República*. Decreto-Lei n.º 101/2015, de 4 de junho. 2020.
22. Decreto-Lei n.º 15\_2017 - *Diário da república* n.º 20\_2017, Série I de 2017-01-27 (1).
23. Despacho n.º 1788-B/2017. Despacho n.º 1788-B/2017. *Diário da República I* Série N.º 41, Ministério das Finanças e da Saúde. 2017;(6):3532-(6).
24. Direção-Geral da Saúde (DGS). Gabinete do secretário de estado adjunto e da educação. *Diário da república*. 2015; 2(187): 96–103.
25. Finanças PC, Saúde E. Despacho no.5039-A/2021 (Internet), de 18 de maio, 1o Suplemento, Série II de 2021-05-18, páginas 1–9. <https://diariodarepublica.pt/dr/detalhe/despacho/5039-a-2021-163648379>. Accessed 5 Jul 2024.
26. Finanças PC, Saúde E. Despacho no. 7654-D/2020 (internet), de 4 de Agosto, páginas 7.14. *Diário da República*, 2.ª série. p. 163–70. <https://diariodarepublica.pt/dr/detalhe/despacho/7654-e-2020-139563965>.
27. Despacho no.5104-E/2023 (internet). *Diário da República* no. 84/2022. 3 suplemento, Série II de 2023-02-05, páginas 4–10. <https://diariodarepublica.pt/dr/detalhe/despacho/5104-e-2023-212553268>.
28. Despacho n. 5775-B/2022 ( Internet). *Diário da República* n.91/2022, 1o Suplemento, Série II de 2022-05-11, páginas 4–10. <https://diariodarepublica.pt/dr/detalhe/despacho/5775/b-2022-183350840>.
29. Hospitalar Barreiro Montijo C, E Centro Hospitalar de Trás -os -Montes Alto Douro EP, E Centro Hospitalar da Cova da Beira EP, E Centro Hospitalar do Médio Tejo EP, Hospitalar do Algarve C, E Hospital do Espírito Santo de Évora EP, et al. 3532-(7) Cirurgia geral hematologia clínica medicina interna medicina nuclear.
30. Saúde PC. *Diário da República*, 2.ª série. [www.dre.pt](http://www.dre.pt)
31. Despacho no. 5767-B/2016 (Internet). *Diário da República* no. 82/2016, Série II de 2016-04-28. <http://balcaovirtual.cm>.
32. *Diário da República* no.119/2019 SI de 2019 06 25,. Despacho no.5854-A/2019 (Internet). <https://filesdiariodarepublica.pt/2s/2016/04/08200002/0000600008.pdf>.
33. Distrital da Figueira da Foz H, E Hospital Distrital de Santarém EP, Hospitalar de Trás -os -Montes Alto Douro C, E Centro Hospitalar da Cova da Beira EP, E Centro Hospitalar do Médio Tejo EP, E Centro Hospitalar do Oeste Centro Hospitalar Leiria EP, et al. *Diário da República*, 2.ª série-N.º 143–26 de julho de 2018 Cirurgia maxilo-facial Cirurgia Plástica e Reconstructiva Medicina Física e Reabilitação.
34. Local de Saúde da Guarda U, E Centro Hospitalar Barreiro Montijo EP, E Centro Hospitalar Garcia de Orta EP, E Centro Hospitalar do Médio Tejo EP, E Centro Hospitalar do Oeste EP, E Hospital Distrital de Santarém EP, et al. *Diário da república*, 2.ª série PARTE C unidade local de saúde do nordeste unidade local de saúde do nordeste.
35. Finanças e saúde. Gabinete do secretário de estado do tesouro e gabinete do secretário de estado da saúde. Despacho no 3397/2024. Vol. 2a série, *Diário da república*. 2024. p. 1–8.
36. Gabinete do Secretário de Estado do Tesouro, Gabinete do Secretário de Estado da Saúde. Despacho n.º 3397/2024. de 28 de março. *Diário da república* n.º 63/2024, Série II de 2024-03-28. 2024;1–8.
37. Kelly C, Hulme C, Farragher T, Clarke G. Are differences in travel time or distance to healthcare for adults in global north countries associated with an impact on health outcomes? A systematic review. <http://bmjopen.bmj.com/>.
38. Seils L, Flinterman LE, Bes J, Ballester M, Dan S, Domagała A, et al. Characteristics of medical deserts and approaches to mitigate them: a scoping review. *Rur Remote Health*. 2023;23(1):8090.
39. Lucas-Gabrielli V, Chevillard G. “medical deserts” and accessibility to care: What are we talking about? *Med Sci (Paris)*. 2018;34(6–7):599–603.
40. Bärnighausen T, Bloom DE. Designing financial-incentive programmes for return of medical service in underserved areas: seven management functions. *Hum Resour Health*. 2009. <https://doi.org/10.1186/1478-4491-7-52>.
41. Bes JM, Flinterman LE, González AI, Batenburg RS. Recruitment and retention of general practitioners in European medical deserts: a systematic review. *Rural Remote Health*. 2023;23(1):7477. <https://doi.org/10.22605/RRH7477>.
42. de Oliveira APC, Dussault G, Craveiro I. Challenges and strategies to improve the availability and geographic accessibility of physicians in Portugal. *Hum Resour Health*. 2017;15(1):24.

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Sara Alidina** is part of the Department of Human Resources Management for Health in the Central Administration of the Health System, Public Institute.

**Jesus Cortes** has a PhD in Global Public Health from the National School of Public Health.

**Inês Fronteira** is an associate professor at the Department of Health Policy and Management of the National School of Public Health—NOVA University of Lisbon. IF is also the Editor-in-Chief of the HRH journal.