Ref. Ares(2024)1667308 - 04/03/2024

OASES

Promoting evidence-based reforms on medical deserts

D6.3 - Reports on pilot studies

04/03/2024

Co-funded by
the Health Programme
of the European Union

OASES Promoting evidence-based reforms on medical deserts

D6.3 - Reports on pilot studies

Project title	prOmoting evidence-bASed rEformS on medical deserts
Acronym	OASES
Number	101018341
Call identifier	**HP-PJ-2020-2**
Topic	PJ-01-2020-2 Support to reforms in health workforce field - Initiatives on medical deserts (Heading 1.2.1.1 of the AWP 2020)
Starting date	01/03/2021
Duration in months	36
Website	http://www.oasesproject.eu/
Work package	6
Lead author	Monica-Georgiana Brînzac (UBB)
Contributors	**Cyprus** Kyriaki Anastasiou (INHWE), Matteo Vezzosi (INHWE) **Finland** Timo Sinervo (THL), Elina Kärkkäinen (THL), Moona Huhtakangas (THL), Visa Väisänen (THL) **France** Véronique Lucas-Gabrielli (IRDES), Julien Mousques (IRDES-EHESP), Arnaud Besson (EHESP), Guillaume Chevillard (IRDES) **Hungary** László Galambos (SU), Szilvia Ádám (SU), Zoltán Tóth (SU), Gergely Marosi (SU), Zoltán Cserháti (SU)

Co-funded by the Health Programme of the European Union

	Italy Stella Lanzi (AGENAS), Giovanni Baglio (AGENAS), Erica Eugeni (AGENAS), Marcello Cuomo (AGENAS), Danilo Catania (AGENAS), Emma Guagneli (AGENAS), Federica Vitello (AGENAS), Chiara De Marchi (AGENAS), Roberta De Blasiis (AGENAS), Alessia Carbone (AGENAS), Alessandra Cese (AGENAS), Giorgia Duranti (AGENAS), Elisa Guglielmi (AGENAS), Lisa Baldini (AGENAS), Aldo Rosano (Istituto Nazionale per l'Analisi delle Politiche Pubbliche), Roberto Blaco (independent expert), Alessandra Burgio (Istituto Nazionale di Statistica), Chiara Marinacci (Regione Lazio), Mirko Di Martino (Regione Lazio) **Republic of Moldova** Sergiu Otgon (NPHA), Liliana Buzdugan (NPHA) **Romania** Marius-Ionuț Ungureanu (UBB), Andrei Rus (UBB), Elena Bozdog (UBB), Răzvan Chereches (UBB), Cătălin Baba (UBB)
Peer reviewers	
Version	4.0
Due date	30.11.2023
Submission date	04.03.2024
Dissemination level of this deliverable	Public

Keywords

Medical desert, medically underserved areas, health workforce

Proprietary rights

This document contains information that is proprietary to the OASES consortium. Neither this document nor the information contained herein shall be used, duplicated or communicated by any means to any third party, in whole or parts, except with the prior written consent of the OASES consortium.

Disclaimer

The content of this document represents the views of the author only and is his/her sole responsibility; it cannot be considered to reflect the views of the European Commission and/or the European Health and Digital Executive Agency or any other body of the European Union. The European Commission and the Agency do not accept any responsibility for any use that may be made of the information it contains.

OASES Promoting evidence-based reforms on medical deserts

Table of Contents

1. Executive summary

In our quest to understand and confront the challenge of medical deserts, a series of pilot studies unfolded across seven diverse countries – Cyprus, Finland, France, Hungary, Italy, Republic of Moldova, and Romania. These endeavours aimed not only to identify the contours of the problem but also to forge strategies that could transform these healthcare deserts into well-served regions. This document provides an account of how the pilot studies were carried out and of the results they produced, followed by recommendations on how to mitigate medical deserts.

The studies unearthed a critical lesson on the pivotal role of data quality. As we delved into multiple statistical databases, discrepancies surfaced, emphasizing the need for a nuanced approach and the convergence of diverse data sources. This underscored the significance of triangulation, building on already existing data, continuing with consensus building and finishing with qualitative validation, ensuring a more holistic grasp of the complexities at play. The use of triangulation in the pilot studies was not just a methodological choice; it was a strategic approach to address the intricate nature of medical deserts. It aimed to ensure that the analysis was not one-dimensional but rather multidimensional, capturing the richness and diversity of the data and providing a more holistic understanding of the complexities inherent in the phenomenon of medical deserts.

Across these varied landscapes, the studies revealed the omnipresence of medical deserts, underscoring their pervasive nature. We identified medical deserts, recognizing that each country faced a unique manifestation of this challenge.

However, effective strategies necessitate more than just collaboration; they require effective communication. Stakeholders, primarily reliant on professional information channels, faced a gap in awareness regarding recent policy actions and mitigation steps, which was partially addressed on the short time by the pilot studies.

Extending beyond immediate interventions, stakeholders emphasized the need to recruit specialists, broadening the scope of primary care. This strategic move, they believed, held the key to improving care efficiency and quality in the long run.

Concluding our exploration, the document recognized the inherent complexity of mitigating medical deserts. It acknowledged the challenging terrain policymakers and stakeholders navigate and highlighted ongoing initiatives, programs, financial supports, and regulations in motion. The document's parting wisdom reminded us that time is a crucial element in the equation; success and

transformation of deserted areas into well-served regions demand a patient and persistent commitment to the cause. In essence, the narrative woven through these studies emphasizes not just the challenges, but the resilience and adaptability required to script a transformative healthcare future.

2. Objectives

The objectives of the pilot studies were as follows:

- To create an overview of medical deserts in the seven countries (Cyprus, Finland, France, Hungary, Italy, Republic of Moldova, and Romania) involved in the project;
- To assess and characterize medical desert in the seven countries (at national and/or regional level) and the mitigation strategies in place and/or planned;
- To facilitate consensus regarding mitigation strategies targeting medical deserts among stakeholders in each of the seven countries;
- To provide evidence-based recommendations to mitigate medical deserts in the seven countries in the consortium.

3. Framework of the pilot studies

The OASES project implemented pilot studies to mitigate medical deserts in the seven consortium countries (Cyprus, Finland, France, Hungary, Italy, Republic of Moldova, and Romania).

The pilot studies entailed a consensus-building exercise carried out through the Delphi modified methodology, consisting of several rounds of online disseminated questionnaires and virtual or in-person meeting(s) per country with the relevant stakeholders identified in each country. Consensus was defined as an agreement of 80% of each national sample[1]. The results of the consensus building-exercises are reported in the following pages, along with accounts of measurements carried out in pilot studies sites. Each OASES country has decided to implement the pilot studies as per the table below. France implemented an atypical pilot study, that involved an in-depth policy analysis and a qualitative study in the Bourgogne Franche-Comté (BFC) region. The decisions have been made based on their profile and their national and/or local needs (as reflected in Country Health Profiles, national data and reports).

[1] For more detailed information about the framework that guided pilot studies, please see Deliverable 6.1 "Framework for Pilot studies" (https://oasesproject.eu/wp-content/uploads/2022/05/D18-Framework-for-pilot-studies_6.1.pdf)

Country	Cyprus	Finland	France	Hungary	Italy	Republic of Moldova	Romania
Implementation level	National	National	National BFC region	National	National	National	North-West Region

Table 1. Sites of implementation of the pilot studies

The pilot studies sites offer a good representation at European level in terms of diversity and representativity, as, from a geographical standpoint, representativeness is ensured. From a socio-economic perspective, the countries included offer a wide variety, involving worse-off, well-off and middle range countries, with higher and lower life expectancies, higher and lower GDPs per capita, different cultures and different health systems and health expenditure.

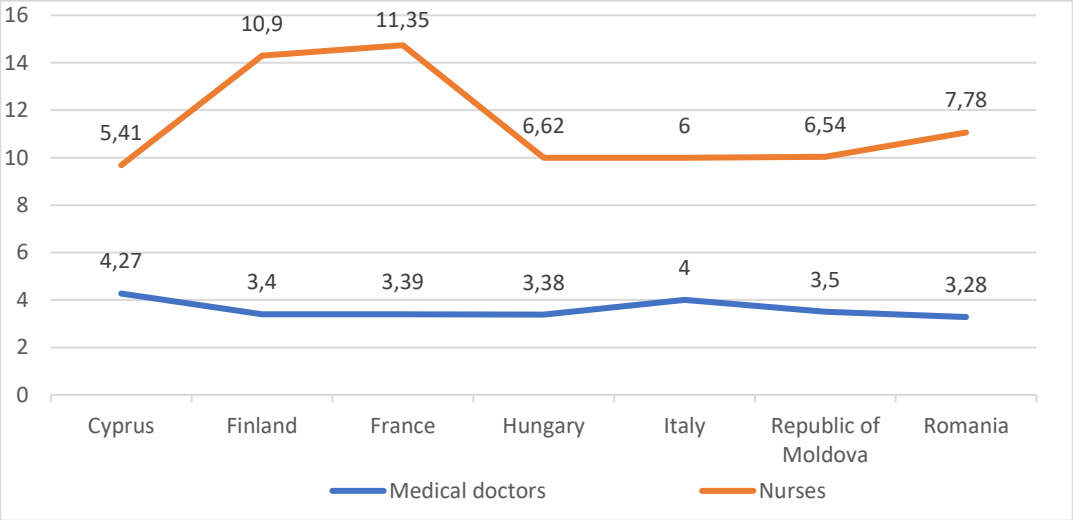


Figure 1. Number of medical doctors and nurses per 1 000 inhabitants in the OASES countries (OECD and European Observatory on Health Systems and Policies, 2021b, 2021d, 2021c, 2021a; OECD & European Observatory on Health Systems and Policies, 2021b, 2021a; World Health Organization Regional Office for Europe, 2016)

In terms of the health system, the majority of the countries involved have fewer medical doctors than the European average, but with quite different occupancy rates of hospital beds. Numerous differences were identified: for example, Cyprus, which is the first ranking country in terms of practicing medical doctors per 1 000 inhabitants among the OASES countries, but the last in the number of practicing nurses per 1 000 inhabitants. France is the first ranking country in the number of practicing nurses per 1 000 inhabitants. Hungary has the highest rate of routine vaccination within

the OASES consortium, while, in terms of practicing medical doctors, is the sixth per 1 000 inhabitants and the fourth for practicing nurses per 1 000 inhabitants. There are discrepancies in the number of beds as well, as France has 393 000 beds and Cyprus has 2 747 beds, a number 143 times smaller, while the population of France is 75 times bigger than the Cyprus population.

In all the existing differences many similarities are present, which are crucial for the comparability and replication of the results. For example, in spite of being different, Romania and the Republic of Moldova are similar in terms of culture and health systems, France and Italy are similar in population and unemployment, and in the differences in the number of medical doctors per 1 000 inhabitants when compared to the EU average.

The table below summarizes the main indicators investigated in the consortium countries. Data is collected from national databases, reports and international databases, such as Eurostat, and it refers to the practising human resources in health.

Country	Cyprus	Finland	France	Hungary	Italy	Republic of Moldova	Romania
National - doctors	5 122	18 831	227 946	33 078	238 688	12 394	63 303
National - nurses	4 778	60 202	764 260	64 695	362 061	23 187	150 251
Local - doctors	-	-	-	-	34 880 20 531	-	8 688
Local – nurses	-	-	-	-	43 971 25 899	-	18 745
National -Doctors/ 1 000 inhabitants	4,27	3,4	3,39	3,38	4	3.5	3,28
National - Nurses/1 000 inhabitants	5,41	10,9	11,35	6,62	6	6.54	7,78
Local - Doctors/1 000 inhabitants	-	-	-	-	6.1 5.1	-	3,4
Local - Nurses/ 1 000 inhabitants	-	-	-	-	7.69 6.43	-	7,34
National - Number of beds	2 747	29 542	393 000	69 150	207 572	17 168	144 027
Local - Number of beds	-	-	-	-	20 714 12 392	-	19 914

Table 2. Summary of the number of human resources in health and number of beds in the OASES countries (OECD and European Observatory on Health Systems and Policies, 2021b, 2021d, 2021c, 2021a; OECD & European Observatory on Health Systems and Policies, 2021b, 2021a; World Health Organization Regional Office for Europe, 2016)

4. Country profiles

4.1. Cyprus

4.1.1. Status quo of the health system in Cyprus

Figure 2: Number of practising physicians per 1.000 inhabitants (SEPEN Project, 2020a)

Figure 3: Number of practising nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020a)

Cyprus, a south-eastern European country, presented in the above image, is the leader of WP3 - *Evaluation of the project* in the OASES project and one of the countries in which a pilot study was implemented.

Demographic factors	Cyprus	EU
Population	904 705	446 735 291
Share of population over age 65 (%)	16.5	21.1
Fertility rate in 2021	1.4	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	32 349	35 219
Relative poverty rate	13.9	16.5
Unemployment rate (%)	6.8	6.2

Table 3. Demographic and socioeconomic context in Cyprus (OECD/European Observatory on Health Systems and Policies, 2023a)

The demographic factors present a Cypriot population of 904 705 people, representing approximately 0.20% of the total European population. People over the age of 65 represent 16.5% of the population, which is close to the EU rate of 20.6%, and the fertility rate is 1.4%, being below the EU median of 1.5% by 0.1%. As for the socioeconomic factors, the GDP per capita is 32 349 EUR, which compared to the EU rate of 35 219 EUR is lower by approximately 3 000 EUR. The poverty rate of 13.9% is below the EU median of 16.5%, but the rate of unemployment is 6.8%, which is above the EU average of 6.2% by 0.6%.

Despite the prevalence of risk factors, such as smoking, which is considerably higher than the EU average, Cypriots have good health outcomes and are among the healthiest in the EU. The life expectancy is of 81.7 years, which is above the EU level by approximately 1.6 years, as shown in Figure 4.

There has been a dramatic shift from private to public spending as a share of total current health expenditure. The public share of health spending has increased substantially since the introduction of the General Healthcare System in 2019: from 42 % in 2018 to 85.3 % in 2021.

Some of this is due to a fall in out-of-pocket spending, as coverage was extended to the whole population, but spending on supplementary voluntary health insurance (VHI) has also decreased as trust in the new healthcare system has grown.

As total spending per capita in Cyprus is comparatively low, the relative spend by activity is also below the EU average in almost all areas. The higher spending on inpatient care is a reflection of increased spending for COVID-19 care. Spending on prevention is among the lowest in the EU, at

just EUR 59 per capita in 2020 (or 2.2 % of health spending). Similarly, spending on long-term care is very low.

Consequently, public spending on dental care is low, and out-of-pocket spending on dental care accounts for almost a third of all out-of-pocket expenditure. Out-of-pocket spending has fallen considerably with the extension of coverage and increased availability of health providers under the new General Healthcare System. In 2019, out-of-pocket spending was 34 % – more than double the 15 % EU average.

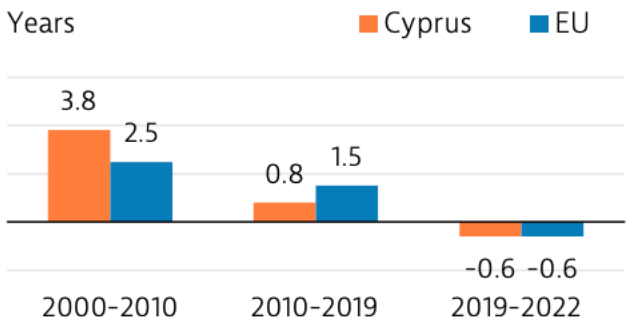


Figure 4. Life expectancy at birth in Cyprus (OECD/European Observatory on Health Systems and Policies, 2023a)

Cyprus implemented the pilot studies at a national level.

In Cyprus, the density of doctors is 5 per 1 000 population, which is slightly above the EU average, while the density of nurses is also around 5 per 1 000 population, which is well below the EU average. The number of doctors practising in Cyprus has more than doubled since 2000, while the number of nurses working in the system has not expanded at the same rate. Moreover, there are serious workforce imbalances between the public and private sectors, as doctors primarily work in the private sector and nurses in the public sector.

Since 2020, Cyprus offers universal coverage through the new integrated General Healthcare System to all legal residents, Cypriot and EU residents, refugees, and asylum claimants, as well as third country nationals having permanent residence position, including their dependents. The provided package includes primary, outpatient and inpatient care, and the financing is assured by state funds and contributions taxed through incomes, pensions and wages. As for the healthcare spendings, Cyprus spends less than the majority of the EU countries. Out of the government budget, only 8% is directed towards health, compared with the average of 14% at the EU level. Similarly, in 2021, from a per capita perspective, 2 291 EUR were directed towards health, which, compared to the EU average of 3 319 EUR, is lower by approximately 1 000 EUR. The spendings on prevention

are below the EU level, and in 2019, 41% was directed towards outpatient care which is above the EU average of 30%. Thus, at the EU level, Cyprus is among the countries with the highest spendings. Likewise, 18% was spent on pharmaceuticals, being equal to the EU average of 18%, but considering the per capita basis, it means under 332 EUR, namely half the EU average. The long-term care sector has also low funding levels, meaning only 4.2% (OECD & European Observatory on Health Systems and Policies, 2021, OECD/European Observatory on Health Systems and Policies, 2023)).

The influenza vaccine uptake among people aged over 65 years was 26% in 2019, which, compared to the EU average of 42%, is lower by approximately 16%. Moreover, the difference in influenza vaccine uptake is even higher when it comes to the WHO target of 75%, implying a difference of 49%. Nonetheless, during the COVID-19 pandemic, the Ministry of Health acquired more seasonal flu vaccines compared to the standard numbers for 2020, meaning 55 000 in 2018, 85 000 in 2019, and the latest number is 100 000. Among children, vaccination is complimentary in health centres or public hospitals. Likewise, health visitors are tasked with checking, at the beginning of every school year, if pupils are up to date with their vaccinations. Children's rates of vaccination for diphtheria, tetanus and pertussis are 99% and 97% for hepatitis B, which are good compared to the EU level. Moreover, the vaccination coverage for measles, mumps and rubella is 86% for the first dose and 88% for the second dose (OECD & European Observatory on Health Systems and Policies, 2021).

According to the annual EU-SILC survey, unmet needs for medical care in Cyprus are very low. Unmet needs for medical care are very low, but they are higher for dental care. The main reported driver of unmet medical needs was the long waiting times in the old public system. Unmet needs for dental care are also low, although the socioeconomic inequalities are wider, and financial barriers were reported as the main issue. The data from two waves of Eurofound2 surveys show that access to services was maintained through the COVID-19 pandemic, and unmet needs remained relatively low in both 2021 and 2022 (10-11%). As in several other EU countries, many Cypriots reported unmet needs for mental healthcare, specifically during the pandemic. According to a Europe-wide survey carried out in spring 2021 and spring 2022, 11% of Cypriots reported unmet needs for healthcare, of which 30 % were related to mental healthcare.

Cyprus is poorer in terms of GDP per capita and more unemployed when compared to the European average, but less poor, in terms of relative poverty rate, with a higher life expectancy and with one of the lowest European health expenditures, in spite of the modest health expenditure.

4.1.2. Pilot study methodology

The pilot study consists of consensus-building exercises conducted in Cyprus, employing the Delphi methodology. The Delphi methodology encompasses both quantitative consensus, achieved through two survey rounds, and qualitative consensus, established through a single stakeholder meeting. The involved stakeholders, representatives of the Ministry of Health, Health Insurance Organizations, European University Cyprus, General Practitioner, Nea Polikliniki Faneromenis, Breast Center, Former Deputy Minister of Social Welfare, University of Nicosia Medical School, Evangelismos General Hospital, German Oncology Center in Limassol, Nicosia General Hospital, Paphos General Hospital, American Medical Centre/ American Heart Institute (Nicosia), Mediterranean Hospital of Cyprus, State Health Services Organisation, who demonstrated their interest in participation, engaged in a multi-stage process. Initially, they received successive rounds of questionnaires designed to address key aspects, including identification of medical desert areas in their respective countries, rationale behind selections, past policy implementations, preferred approaches for mitigation, and suitable policies for the future. These questionnaires, tailored by work package coordinators, were adapted to suit each country's context. Respondents dedicated approximately 10 minutes per survey. Stakeholders were influential figures within the healthcare sector and held pivotal roles in national policymaking. A total of 22 participants responded the first round of the questionnaire, while 9 answered the second questionnaire.

In order to achieve quantitative consensus, a dedicated meeting was convened for Cyprus. This session, which lasted about one hour, facilitated the in-depth exploration and refinement of the aforementioned topics, such as identification of medical desert areas, policy interventions, preferred mitigation strategies, and potential future policies. Additionally, this meeting investigated prior methodologies employed for mitigating medical deserts. Presented below is an exhaustive exposition of the subjects deliberated upon by the stakeholders during the meeting. The identification of these topics emanated from a meticulous analysis of the interview transcript. Furthermore, the annex of this report contains the outcomes from both the initial and secondary rounds of the questionnaires.

4.1.3. Pilot study outcomes

In the view of the medical deserts phenomenon, how healthcare services are delivered and the need for effective workforce distribution are key elements of national policies aiming to mitigate desertification and achieve a more efficient and ramified provision of in-country services.

For Cyprus, medical deserts often refer to areas with limited access to specialised medical care and emergency services. In such context stakeholders have identified the emergency department, particularly concerning accidents and trauma, as a fitting example of medical desert. This report explores the challenges and potential solutions discussed by local stakeholders in Cyprus to address medical deserts in the country.

The special geographical nature of the island contributes to the challenges faced by the emergency department. The lack of coordination and expertise in handling severe medical issues, including brain injuries, poses significant hurdles for public emergency facilities. Furthermore, minor health issues, such as gastroenteritis, contribute to overcrowding in the emergency department. Patients with minor problems often experience long waiting times, leading to the accumulation of cases.

The following flagged initiatives are examples of contributing factors and approaches to mitigate medical deserts in Cyprus. While each initiative independently plays a distinct role, collective implementation can be more likely effective in creating of a more equitable, accessible, and robust healthcare system within the country, ultimately mitigating health disparities and fostering improved overall well-being.

General Healthcare System (GESY)

The implementation of the General Healthcare System (GESY) in Cyprus represents a significant effort to address healthcare disparities and mitigate the existence of medical deserts in the country. The GESY system is designed to provide universal healthcare coverage, ensuring that all legal residents of Cyprus have access to essential healthcare services, regardless of their geographic location.

Key features of GESY that contribute to mitigating medical deserts in Cyprus include:

1. Primary Healthcare Centers (PHCs): GESY establishes a network of primary healthcare centers strategically located across the country. These centers serve as the frontline for healthcare services, providing residents in both urban and rural areas with access to essential primary care, preventive

services, and early diagnosis. By establishing these centers, GESY aims to reduce the impact of medical deserts by ensuring that individuals in underserved regions have a nearby point of entry into the healthcare system.

2. Comprehensive Coverage: GESY encompasses a wide range of healthcare services, including outpatient care, specialist consultations, diagnostic tests, and prescription medications. This comprehensive coverage is instrumental in addressing medical deserts by offering residents access to a broad spectrum of healthcare resources, thus reducing the need for individuals to travel long distances to receive necessary medical attention.

3. Contributory System: The contributory nature of GESY ensures that healthcare funding is distributed across the population based on income. This approach promotes financial sustainability and allows for the equitable allocation of resources, irrespective of geographic location. By establishing a fair and inclusive funding mechanism, GESY works to alleviate the healthcare disparities that can contribute to the formation of medical deserts in certain regions.

4. Electronic Health Record (EHR): The implementation of an electronic health record system within GESY enhances coordination and continuity of care. This is particularly beneficial in regions with limited healthcare infrastructure, as it facilitates the seamless sharing of patient information among healthcare providers. The EHR system supports efficient and effective healthcare delivery, even in areas traditionally characterised by medical deserts.

In summary, the GESY system in Cyprus is a comprehensive and inclusive healthcare initiative that aims to mitigate medical deserts by establishing accessible primary healthcare centers, providing comprehensive coverage, implementing a fair contributory system, and leveraging technology to enhance healthcare delivery. By addressing these key aspects, GESY works towards ensuring that healthcare services are accessible to all residents, regardless of their geographic location, thereby contributing to a more equitable healthcare landscape in Cyprus.

National Strategies

The healthcare landscape in Cyprus has significantly evolved with the implementation of the General Healthcare System (GESY). While GESY focuses on healthcare service delivery, this section explores its interconnectedness with two key national strategies – the National Strategy for Children's Rights in the Health System and the Cyprus Strategy for Safety and Health at Work.

Although these strategies may not explicitly address medical deserts, they play crucial roles in promoting overall health. The discussion also touches upon other potential strategies, including telehealth, community health programs, and healthcare professional training, contributing to a more equitable and robust healthcare system in Cyprus.

National Strategy for Children's Rights in the Health System

The national strategy for children's rights in the health system likely aims to ensure that all children in Cyprus have equal access to high-quality healthcare services. While not specifically targeting medical deserts, this strategy contributes to creating a more equitable healthcare landscape, ensuring that children, regardless of their geographic location, receive appropriate and timely medical attention. By prioritising children's rights to healthcare, the strategy indirectly addresses potential disparities in healthcare access for the younger population. Accessible and child-friendly healthcare services may contribute to early detection and intervention, preventing health issues from becoming more severe, especially in areas that may be considered medically underserved.

Cyprus Strategy for Safety and Health at Work

The strategy for safety and health at work is primarily concerned with creating a safe and healthy working environment for all employees in Cyprus. While not directly related to medical deserts, a healthy workforce contributes to overall community well-being. A focus on occupational health and safety may result in a reduced burden on healthcare resources, freeing up capacity for addressing healthcare needs in areas that are traditionally underserved. Healthy workers are more likely to contribute productively to society, potentially alleviating economic disparities that could impact healthcare access.

Other Potential Strategies

Telehealth and Technology Integration: Implementing telehealth and technology solutions plays a crucial role in bridging gaps in healthcare access, especially in remote or underserved areas. Virtual consultations and remote monitoring provide medical services to individuals facing geographical barriers.

Community Health Programs: Community-based health initiatives target specific regions with limited healthcare infrastructure. Mobile health clinics and outreach programs bring healthcare services directly to populations in need, further addressing potential medical deserts.

Training and Recruitment of Healthcare Professionals

Strategies focused on training and recruiting healthcare professionals contribute to addressing shortages in specific geographic areas. Incentivizing healthcare professionals to work in underserved regions enhances local healthcare capacity.

However, the success of this integration hinges on ensuring universal access, regardless of an individual's financial capacity. Charging for services without reimbursement could create barriers, particularly for those in medical deserts, potentially compromising the intended improvements in healthcare accessibility. To address this concern, it is essential to adopt a model similar to the existing GESY system, where users pay small amounts for medical services. Importantly, the right to health services should not be contingent on the payment of contributions. This aligns with the vision of the GESY system, ensuring equal access to all medical services for residents, irrespective of income. By incorporating a fee structure that is affordable and inclusive, the integration of private emergency clinics can effectively contribute to the broader goal of universal healthcare access.

4.1.4. Medical deserts mitigation strategies

4.1.4.1. Potential Solutions for Emergency Care

To alleviate the strain on public emergency facilities and enhance patient care, stakeholders have proposed several potential solutions:

a. Inclusion of Private Clinics: Integrating private clinics into the emergency treatment sector could help alleviate the burden on public hospitals. This move might involve creating partnerships between public and private healthcare providers to better manage patient inflow.

b. Hospital Specialisation: Stakeholders suggest distinguishing hospitals based on the severity of medical conditions they handle. Public hospitals, along with specific private hospitals, could focus on treating severe life-threatening issues. Other private hospitals or doctor clinics could manage less severe, minor health problems, thereby distributing the patient load more efficiently.

c. Walk-in Centres and Doctors on Call: Implementing walk-in centres and doctor-on-call services might offer alternative options for patients with minor health issues. This approach could help redirect non-emergency cases away from overcrowded emergency departments.

d. Improving Access and Time Access: Enhancing access to healthcare in emergencies could involve including private hospitals in emergency care provision, offering patients more options for medical assistance.

4.1.4.2. Improving Paediatric Emergency Services:

One critical area of concern is the lack of a dedicated emergency department at the Makarios hospital. Currently, paediatric cases are assessed in the adult hospital of Nicosia before referral to Makarios for admission. To address this, stakeholders emphasise the urgent need to create an emergency department specifically tailored to paediatric care at the Makarios hospital. Additionally, there is a demand for certain specialised healthcare professionals catering to children's health needs.

4.1.4.3. Coordinating Health Data Collection and Evaluation:

A lack of coordination regarding health data collection and evaluation poses a challenge for healthcare management in Cyprus. Though some information is available from the statistical service and GESY's IT system, there is no connectivity between them. To address this issue, stakeholders propose establishing an independent body responsible for health data management. This independent entity would streamline data collection, evaluation, and decision-making, potentially reducing bureaucracy.

4.1.4.4. Rural Areas and Isolated Villages:

Medical deserts are also prevalent in rural areas and isolated villages with few citizens. Residents in these areas face challenges related to accessing acute care hospitals, leading to increased risks of death during long ambulance rides. Additionally, they lack access to basic healthcare needs, such as physical therapists, nurses, and pharmacists.

To address this issue, stakeholders propose the following:

a. In-Home Visits: Developing a plan for in-home visits by healthcare professionals could ensure that medical care reaches those in remote areas.

b. At-Home Nursing Care and Outpatient Treatment: Providing at-home nursing care and outpatient treatment options can alleviate the burden on acute care hospitals and improve healthcare access for rural residents.

c. Financial Considerations: Financial constraints play a significant role in perpetuating medical deserts in rural areas. Addressing financial barriers and providing subsidies or incentives to healthcare professionals serving in remote regions could improve healthcare accessibility.

4.1.5 Lessons learned

The exploration of medical deserts in Cyprus and the challenges faced by the emergency department has highlighted several valuable lessons for healthcare providers, policymakers, and stakeholders. These lessons should guide future efforts to address the critical issue of limited access to specialized medical care and emergency services in the country.

Recognition of Varied Challenges: It is essential to recognize that medical deserts manifest in various forms, from overcrowded emergency departments in urban areas to the lack of healthcare access in rural and isolated villages. Understanding the diverse challenges faced by different regions is crucial in tailoring effective solutions.

Public-Private Collaboration: The inclusion of private clinics in the emergency care sector presents a promising solution to alleviate the burden on public hospitals. Lessons from this approach highlight the potential benefits of public-private partnerships in healthcare, emphasizing the importance of collaboration between these sectors.

Specialization and Resource Allocation: Hospital specialization and distinguishing healthcare facilities based on the severity of medical conditions can lead to a more efficient allocation of resources. This lesson underscores the importance of optimizing assets for specific healthcare needs and streamlining patient care delivery.

Alternative Care Access: The implementation of walk-in centers and doctor-on-call services offers alternatives for patients with minor health issues. These alternatives can divert non-emergency cases from overcrowded emergency departments, promoting more efficient healthcare service delivery.

Pediatric Care Prioritization: The lack of a dedicated pediatric emergency department at Makarios hospital highlights the urgency of prioritizing specialized care for children. This lesson emphasizes

the need for specialized healthcare facilities and professionals tailored to the unique healthcare needs of pediatric patients.

Health Data Coordination: Inadequate coordination in health data collection and evaluation underscores the necessity of creating a centralized and interconnected system for health data management. Conversely, streamlined data collection and analysis can lead to more informed decision-making and reduced administrative hurdles.

Innovative Solutions for Rural Areas: The challenges faced by rural, isolated areas underscore the importance of innovative approaches to healthcare access, such as in-home visits and at-home nursing care and reflects the need for tailored healthcare services for remote communities.

Financial Barriers: Financial constraints play a significant role in perpetuating medical desertification of rural areas. Addressing these barriers through subsidies and incentives for healthcare professionals serving in remote regions can raise the level of healthcare accessibility and equity.

Collaborative Efforts: Identified, proposed countermeasures aim to underline the importance of collaborative efforts involving government agencies, healthcare providers, and users. These collaborative approaches are essential to building a robust and accessible in-country healthcare system.

In conclusion, addressing medical deserts in Cyprus requires a multifaceted approach that considers both the immediate challenges and possible solutions discussed in this report. Raised awareness and lessons that can be learned from comparing national cases should serve as foundation for future initiatives aimed at ensuring equitable and comprehensive healthcare services for all.

4.2. Finland

4.2.1. Status quo of the health system in Finland

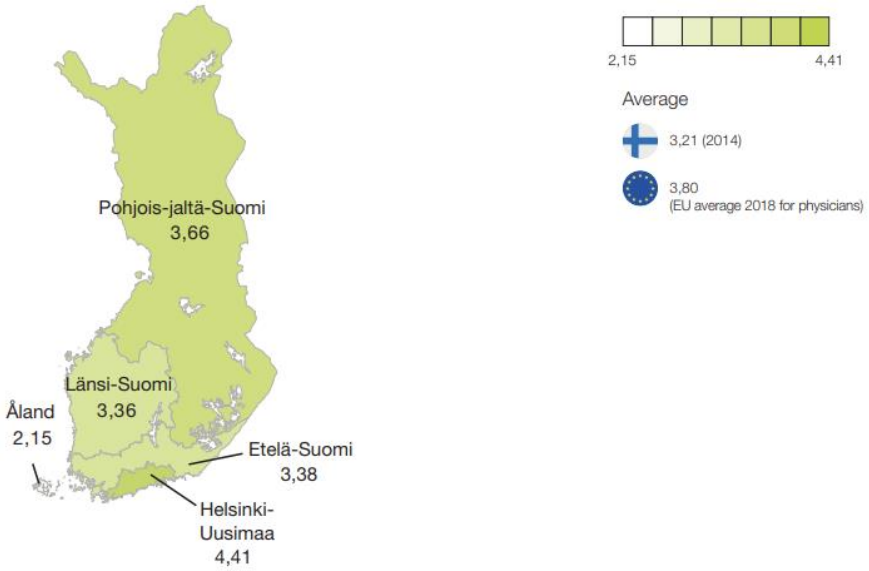


Figure 5. Number of practising physicians per 1.000 inhabitants (SEPEN Project, 2020b)

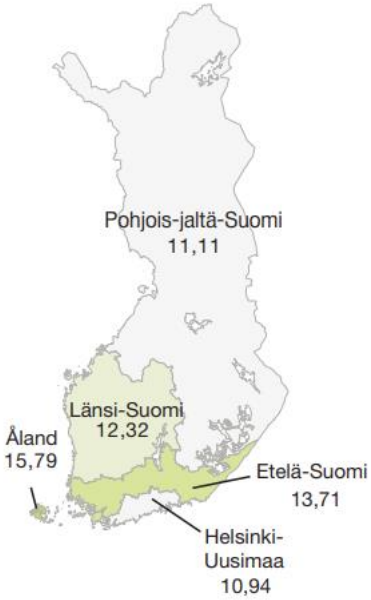


Figure 6. Number of practising nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020b)

Finland, a country in northern Europe, presented in the above image, is the leader of WP5 - *Analysis and sustainability* in the OASES project and one of the countries in which a pilot study was implemented.

Demographic factors	Finland	EU
Population	5 525 292	447 319 916
Share of population over age 65 (%)	22.3	20.6
Fertility rate	1.3	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	33 949	29 801
Relative poverty rate	11.6	16.5
Unemployment rate (%)	7.8	7.1

Table 4. Demographic and socioeconomic context in Finland (OECD/European Observatory on Health Systems and Policies, 2023b)

The Finnish population consists of 5 525 292 people, covering approximately 1.2% of the total European population. People over the age of 65 represent 22.3% of the total Finnish population, and the fertility rate is 1.3%, which is close to the EU level of 1.5%. From a socioeconomic point of view, the GDP per capita is above the EU limit, meaning 33 949 EUR in Finland, compared to 29 801 EUR at the EU level, implying a difference of more than 4 000 EUR. The poverty rate is 11.6%, being below the EU limit of 16.5%, however, on the contrary, the unemployment rate of 7.8% is above the EU median of 7.1% by 0.7%.

Finland is the richest country in the consortium by GDP per capita, while being slightly over the European average of unemployment. The health spending in Finland is just above the European average.

About 80 % of spending came from public sources compared to the 81 % average across the EU.

Over 40 % of current health spending goes towards outpatient care. The other big spending categories are inpatient care (22 %), long-term care (18 %) and pharmaceuticals and medical devices (13 %). As in many other countries, spending on prevention increased during the pandemic. Prevention expenditure accounted for about 5 % of overall health spending in 2021 – up from about 4 % before the pandemic.

Public spending on health in Finland started to grow at a higher rate of 4 % in 2019, and increased further by nearly 5 % in 2020 and nearly 11 % in 2021. Public funding accounted for 80 % of total health spending in 2021, which is slightly lower than the EU average of 81 % and much lower than

in all other Nordic countries (where the share is over 85 %). Most of the private spending is paid directly out of pocket by households. A large proportion of OOP spending in Finland goes to pay for pharmaceuticals (27 %) and dental care (14 %).

Finland has fewer doctors (3.6) and far more nurses (18.9) per 1 000 population than the EU averages. There are notable regional variations in the distribution of doctors, with the northern districts recording lower ratios (fewer than 2 doctors per 1 000 population) than the southern districts. Since the early 2000s, the shortage of doctors prompted policies to encourage task shifting from doctors to nurses, with nurses taking on tasks such as prescribing, consultations in primary care and more advanced roles in hospital care.

While the number of nurses continued to increase between 2010 and 2020, the demand for nursing care has also gone up, and the shortage of nurses has increased in recent years. According to the national Occupational Barometer, in the first half of 2022 there were on average 8 051 open vacancies for registered nurses and 15 495 for practical nurses (Ministry of Economic Affairs and Employment, 2022).

Training more doctors and nurses is crucial to replace the large numbers who are expected to retire in the coming decade, but it is equally important to retain nurses and other health workers in the profession.

At the national level, Finland had, in 2019, a number of 18 139 specialized care beds, 6 519 primary care beds, 4 884 public nursing homes beds, with an occupancy of 100%, according to a methodology that is based on hospital days - use of care in year/365 days.

The vaccination rate for children is 93-98% depending on the vaccination (Finnish vaccination program).

The Finnish health system has gone through a major health and social care reform, implemented from January 2023. The responsibility for organizing health care, social care, and rescue services was transferred from municipalities to self-governing wellbeing services counties. All permanent citizens in Finland are entitled to these publicly financed (tax-funded) and provided services.

The services, including primary and specialized health care, social care and rescue services, are now arranged by the 22 wellbeing services counties including the city of Helsinki, the Helsinki area hospital district, and collaborative areas. The services are either self-provided or outsourced to private providers. The funding for the wellbeing services counties is received from the central

government based on a formula that takes into account the demographics and morbidity of the counties (Holster, Haula & Korajoki, 2022).

In addition to the services provided by the wellbeing services counties, other parallel healthcare provision channels exist in Finland, which cause fragmentation to the health system. Firstly, occupational health care offers preventive and often also curative primary health care services for most employees (Holster, Nguyen & Häkkinen 2022). It is funded by employers and employees. Since access to it depends on employment status, occupational health care has been criticized for its overall inequity implications (Keskimäki 2019, 105). Occupational health care is accessed much faster and without user fees compared to public services, and consequently, even though employed people tend to have lower healthcare needs, they use on average more health services, the majority of which are in occupational health care (Manderbacka et al. 2017; Holster, Nguyen & Häkkinen 2022). Secondly, private health care can be accessed with private insurance or significant out of pocket costs. Thirdly, students in higher education are provided healthcare through Finnish Student Health Service.

Long waiting times have been an issue in public primary care, and the proportion of people who reported unmet medical care needs (6.5 %) was nearly three times the EU average (2.2 %) in 2022, and even greater than the shares in other Nordic countries except Iceland. There is a wide income gap in reported unmet medical care needs in Finland: people in the lowest income quintile (9.7 %) were more than twice as likely to report unmet medical care needs in 2022 as those in the highest quintile (4.7 %). Most of these unmet medical care needs were due to waiting times. The COVID-19 pandemic increased unmet needs for healthcare, at least in part because of temporary disruptions to services. Based on the Eurofound Living, working and COVID-19 survey, the share of Finns who reported some unmet healthcare needs (including not only medical care but also dental care, mental health services and other services) went up from 15 % to 25 % between spring 2021 and spring 2022 – a much greater increase than the EU average.

As described in table 5, many Finns get their ambulatory healthcare services from occupational care, as it accounts for 30 percent of the total consultations in 2022. Nurses' role in Finnish healthcare is remarkable: in public health centres, nurses' appointments account for 52% of the consultations, whereas in occupational care the consultations are mostly delivered by doctors (68%). This suggests that doctors take care of simpler tasks in occupational care than in public health centres. Occupational healthcare has been criticized of potentially attracting physicians to shift away from

public primary care services to occupational care (Keskimäki 2019, 105) leading to shortages in the sector.

Remote appointments are a notable part of the Finnish health care since nearly half of all appointments were remote appointments: 42% in public health centre appointments, and 55% in occupational care (table 5).

	Ambulatory consultations delivered 2022			
	Public health centre, face to face appointments	Public health centre, remote appointments	Occupational health care, face to face appointments	Occupational health care, remote appointments
Doctors	5 520 731	2 028 649	2 493 967	3 079 788
Nurses	4 724 106	5 373 223	1 030 385	1 319 261
Other health care professionals	937 420	703 033	178 636	74 525
Total	11 182 257	8 104 905	3 702 988	4 473 574

Table 5. Ambulatory consultations delivered in 2022 in Finland.

4.2.2. Pilot study methodology

A Finnish medical desert indicator was developed. The goal of the indicator was to describe the accessibility and availability of Finnish primary health care. Previously, similar indicators have been composed based on the supply, demand, and accessibility of general practitioners. However, due to the health centre-based care system (multiprofessional personnel and strong role of registered nurses in the services) and limitations of national data, the indicator was built using different parameters.

Aggregated municipality-level data on the number of ambulatory physician and nurse consultations was used, using both physical (face to face) and remote visits (telehealth). In addition, visits to occupational healthcare were included. Home visits and other contact methods were excluded. Lastly, to measure accessibility to care, the average travel distance by car to the nearest primary health care center was used (year 2017).

To account for the different care needs of the municipalities' residents, the number of visits (per 1000 population) were adjusted using the Finnish health expenditure index (named here care needs index), which is used for determining the funding for the new wellbeing services counties.

The indicator was calculated using the following formula:

Indicator = care supply per 1000 population * care needs index * standardized travel time distance

The indicator values for each municipality were standardized in relation to the mean indicator value of all municipalities. Higher values represent better care availability and/or accessibility, and lower values represent lower care availability and/or accessibility. Descriptive statistics and map figures were used to display the results of the indicator.

The consensus building exercise consisted of three rounds of online surveys and one online meeting. The goal for the surveys and the meeting was to achieve a shared understanding of the root causes and possible mitigation strategies of medical deserts in the context of primary health care. The surveys were delivered via Webropol email links. The meeting was held via Microsoft Teams video call, lasting a little over one hour.

Twelve experts from different organizations in relation to health and social care services and/or their workforce were asked to participate in the consensus building exercise. Eight experts participated in the first survey, seven in the second and third survey, and five in the meeting. The experts were from the Ministry of social affairs and health, Development and Administration centre for ELY Centres (the Centres for Economic Development, Transport and the Environment) and TE Offices (Employment and Economic Development Offices), three wellbeing services counties, Local Government and County Employers KT, and The Finnish Medical Association.

The first survey was qualitative, and the other two surveys were quantitative with questions and answer options obtained from the analysis of the first survey. After each round, the questions were modified to reflect the previous round. A question was kept in the survey until it reached the consensus rate of 80%.

The surveys had questions about in which areas do medical deserts occur; because of what factors these areas have services or staff availability problems; what the most central means are to address the challenges of medical deserts; and what actions have previously been taken at the national and local level to address the challenges of medical deserts.

After completing all the surveys, a consensus was found for three out of four questions. In those questions, one response in each got at least 80% consensus rate. In the remaining question, the

highest consensus rate was 57%. Because of the lack of consensus, other most popular responses are discussed as well in the reporting of the pilot study outcomes.

4.2.3. Pilot study outcomes

In the consensus building exercise, the definition selected by the stakeholders of the term medical desert was "areas where it is difficult for the population to access services or there is a lack of competent health personnel in the area". According to the experts, *geographic prevalence of medical deserts is twofold*; medical deserts are prevalent *both in the areas of large cities and in remote areas or areas with scattered population* (86% consensus).

The factors leading to medical deserts were also discussed. The most evident reason is *aging population and its consequences to increasing service needs*, which all experts agreed on with 100% consensus rate. In addition to aging population, also the increase of mental health issues of young people was discussed as a reason to increase service needs. Another factor contributing to medical deserts is *a difficulty in recruiting professionals to small municipalities* (71% consensus). Furthermore, it was discussed that the barriers that prevent employment in remote areas stems from the matters of family and life situation, which make working in bigger centres and cities more desirable. On the other hand, if employment options are ample, as there are enough of them in the social and health sector, some workplaces will inevitably go without, contributing to medical deserts also in bigger cities and within cities – weakening the organization of work and working conditions and further worsening the situation.

The key statistics, aggregated to the municipality-level, related to the Finnish medical desert indicator can be seen below in Table 6. There was high variance in all measures. There were on average 2613 physical (face-to-face) consultations per 1000 population in the municipalities, divided nearly equally between nurse and physician visits. For telehealth, on average 1843 remote visits were conducted per 1000 population, majority of them by nurses.

Travel time to the nearest primary healthcare center (by car) was on average slightly under 10 minutes, being at shortest just over two minutes, and at longest over 40 minutes. The care needs of the municipalities, as measured by the care needs index, varied from 0.80 to 1.42 (meaning 1.00). In other words, some municipalities had nearly 40% higher calculated care needs of healthcare, when accounting for demographics and morbidity. The standardized indicator value, representing

the relative accessibility/availability of primary care, ranged from -2.00 to 6.79, with a median of -0.09. When accounting for telehealth, the variance was -2.49 to 4.02, with a median of -0.11. As the values are in relation to the other municipalities, they cannot be interpreted alone. However, the differences between municipalities were at best multiple standard deviations. Consequently, it can be concluded that significant regional differences exist in the availability and/or accessibility of care in Finland.

Medical desert indicator values of municipalities (Finland)				
	Mean	**Median**	**SD**	**Min/max**
Physician physical visits (per 1000)	1356	1361	350	441 – 3250
Physician telehealth visits (per 1000)	602	592	254	119 – 1440
Nurse physical visits (per 1000)	1257	1183	452	576 – 3925
Nurse telehealth visits (per 1000)	1241	1057	836	61– 5333
Care needs index	1.00	0.99	0.08	0.80 – 1.42
Travel time (minutes)	9.5	8.8	3.8	2.2 – 40.6
Standardized indicator value (only physical visits)	0.00	-0.09	1.00	-2.00 – 6.79
Standardized indicator value (incl. telehealth)	0.00	-0.11	1.00	-2.49 – 4.02

Table 6. Key statistics of the medical desert indicator built based on national health register data aggregated to the municipality from year 2022.

The indicator values by municipality can be seen on a map of Finland below (Figure 7). In the map, green areas represent better than average care availability and/or accessibility. In other words, in these areas either the use of healthcare was high (in relation to its demographics and morbidity), or the travel time to nearest primary care center was low, or both. The reverse description applies to the red areas.

First, examining the left map with physical visits only, the medical deserts in Finland seem to be concentrated in the rural north, eastern Finland, and the western coast. On the contrary, the overall care availability and/or accessibility appears to be better in southern Finland. Next, when including the remote visits (telehealth), the situation improves noticeably in some areas. Especially the area in the eastern middle of Finland (Kainuu), known for its telehealth use, improved significantly. Next, some of the larger cities shifted slightly towards the positive, indicating that the use of telehealth services is common among the healthier working population.

In the future, the risk factors for medical deserts in Finland can be examined using statistical methods. For this purpose, newer data should be utilized, as the start of the new wellbeing services counties might significantly alter the service provision and/or the service networks in the following years.

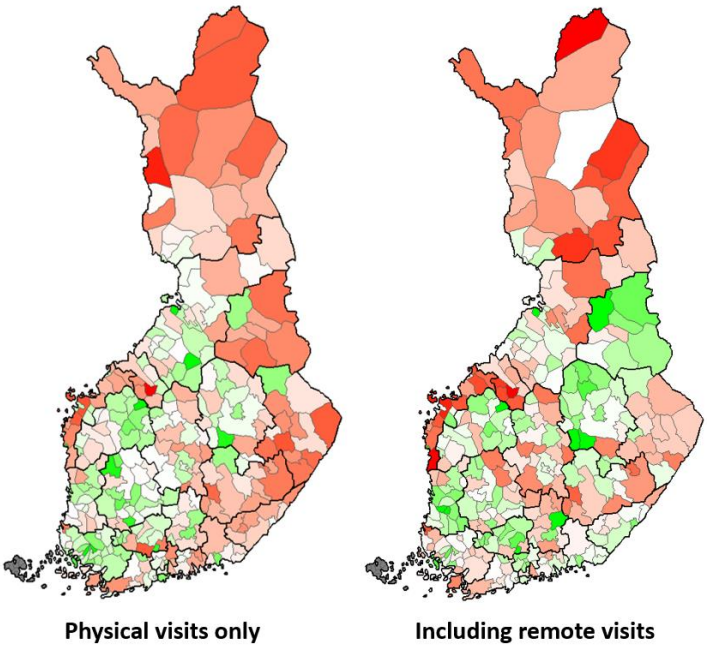


Figure 7. Maps of medical desert indicator values. (Green = better care availability/accessibility. Red = worse care availability/accessibility)

The medical desert indicator created has some distinct strengths. Firstly, the indicator is first of its kind in Finland. It allows the examination of potential areas with poor availability or accessibility to primary care services, based on comprehensive national health register data. Examining the regional differences in medical deserts can help establish potential risk factors for poor availability and accessibility of primary care services. In addition, as the indicator uses national health register data, subsequent longitudinal analysis and following trends is possible.

The data was modified to suit the intricacies of the Finnish healthcare system. Physical face-to-face visits and remote visits (telehealth) from both physicians and nurses were included. In addition, visits from occupational health care were included due to its frequent use among the working population. However, it is important to note that the level of occupational health care use varies significantly when comparing larger cities and rural areas. The data were adjusted for the population care needs, which reduces the effect of regional differences in morbidity and demographics.

However, the indicator also has some weaknesses. As information on the supply/demand of care resources (amount of care workforce per 1 000 population in each municipality) is not available in Finland, occurred visit data had to be used. While it was adjusted for care needs of the population, the data might not fully or accurately describe the availability of care services in the Finnish social and healthcare centres. For example, the indicator cannot account for unmet care needs. Next, the indicator was calculated separately for each municipality. This might affect the results (edge-effects), for example in the case of residents seeking care from neighboring municipalities (although using services of other municipalities is very rare). In addition, the smallest municipalities might have a large variance in visits year by year, which can skew the results.

Lastly, as it is often the case with register data, regional differences in documentation practices, care provision or care models used, and the proportion of empty or erroneous data can significantly affect the results. The distances to the nearest health center were from year 2018, as no newer data was available. Consequently, if new health centers have been established or some have been shut down, the average travel distances in that municipality might be inaccurate. We know, however, that there are relatively low number of changes in the service network during 2018 - 2022. As such, the results should not be interpreted on a single municipality basis, but rather the focus should be on trends, such as rural areas, municipalities with larger cities, and the coastal area.

In measuring medical deserts, taking into account the peculiarities of the Finnish service system was seen as important. We used the primary care visits of both medical doctors and registered nurses in our analysis. Also, psychiatric nurses and physiotherapists work in health centres and have their appointments, which might be included in the measurement of medical deserts. In Finland it was essential to include occupational health care in the measurement, as it provides 42% of primary care doctors' visits (table 7). Especially in large cities the role of occupational health care is significant. Remote visits became more common during the Covid-19 pandemic and they have to be taken into account in measuring medical deserts. Remote visits may help the rural areas significantly as the doctors may live somewhere else and provide services all over the country. In rural areas the clients are typically older than in densely populated areas and the care needs of the patients are higher, which is why care needs should also be taken into account.

In Finland there have been many previous initiatives targeting medical deserts, even though it has not always been their primary focus.

A big change in practice in Finland is the health and social care reform implemented by January 2023, when health care, social care and rescue services were transferred to wellbeing services counties. The goals of the national reform were to establish stronger and larger service purchasers, increase the effectiveness of care, contain the rising costs and shorten waiting times in primary care (multi-professional health and social care centres). To reach these goals, the reform aims to develop care integration (multi-professional work especially in primary care and a case manager or care guidance), e-health services, e-consultations and transportable services.

Primary health care and primary level social services are developed in a large national government-led Future Health and Social Services Centres programme, with implementation projects in all wellbeing services counties (Finnish Government 2022a; Koivisto & Muurinen 2023). The programme has five goals: improve equal and timely access to and continuity of services; shift the focus of activities to preventive and proactive work; raise quality service and effectiveness; ensure the multidisciplinary and interoperable nature of services; and curb the growth of expenditure. Digitalisation has a cross-cutting part in the implementation of the objectives, and additionally, the programme aims at improving client-oriented approach by expanding evening and weekend service times and opening new low-threshold service points (Finnish Government 2022a).

Sustainable Growth Programme for Finland 2022-2025 is another national programme implemented in all wellbeing services counties. The goals related to medical deserts are strengthening the availability and cost-efficiency of social and health care services, including fastening access to care; discharging the social and health care treatment, rehabilitation and service debt caused by the Covid-19 pandemic; increasing the adoption of new digital solutions; and promoting regional, social and gender equality (THL 2023; Innokylä 2023). Results from the programmes can be obtained later (Koivisto & Muurinen 2023) but these plans will have a positive impact on medical deserts if implemented successfully.

There have also been national development programmes on organizing seamless reception at health centres and the care of chronically ill patients.

There are several innovative medical desert mitigation model initiatives in place, such as doctors' remote consultations (consultations for nurses, who have a physical appointment with the client, providing guidance on what should be done in the situation of the patient), mobile acute care units (to avoid an unnecessary visit to urgent care and to avoid hospitalizations, acute care unit has a digital connection to the hospital if needed), and mobile care units. There are models of doctor-

nurse pairs, team care models, multi-professional teams and segmentation of clients, as well as different digital services and remote appointments. For example, a systematic “Good Reception” (Hyvä vastaanotto) coaching has been implemented for care facilities and teams with a goal of improving their operations to fasten and improving access to care, which will be part of the Future Health and Social Services Centres programme as well (Finnish government 2022b). Also, a report of a continuity of care, which includes an idea of personal doctors and nurses, has been conducted in 2022 (Eskola et al. 2022). Along the report, pilots are being executed in Northern Ostrobothnia and Lapland regions with promising results in the quality of care and future cost savings (Yle, 2023a). Yet another national level action has been made to mitigate medical deserts by previous Finnish government: a *Roadmap for 2022–2027 Ensuring the sufficiency and availability of healthcare and social welfare personnel*. It includes solutions to meeting the labour needs of healthcare and social welfare by the year 2027. According to the roadmap and experts’ viewpoints in the first survey, some additional initiatives have been carried out during the last few years which have effects on targeting medical deserts, as described below.

Initiatives exist in relation to increasing the number of health and care workforce. An increase in the training of professionals in the health and social services sector has been achieved during the years 2019-2023 – especially with reference to the training of practical nurses, nurses and care assistants. Reports have been conducted about the need for personnel and the reasons for the labour shortage in the health and social sector. The media campaign targets young individuals and those with a background in social and health sectors, whether actively employed or not. Its objective is to enhance the appeal of pursuing education and employment in the health and social sector in the future.

Employment in health and care sector have been also eased. Workforce immigration have been eased via projects at various universities of applied sciences that have goals in organizing the qualification training for nurses coming from abroad. One expert described that national wage enhancements have been somewhat useful in regard to medical deserts. Another expert mentioned organization level and employee marketing as some employees have been talking about the possibilities the area offers (for example Lapland) or emphasizing training and development opportunities offered by the workplace (for example one day a week to develop skills).

4.2.4. Medical deserts mitigation strategies

Medical desert mitigation strategies were identified at national and organizational level, and they are summarized in table 7.

	Mitigation strategy	Consensus rate
National level	** Securing sufficient funding for the training of health and social care professionals	86%, 6 responses
	Streamlining labour immigration and utilizing it more than currently	71%, 5 responses
	More flexible staffing levels (the ratio between the staff and the patients)	57%, 4 responses
Organizational level	Focusing the work of professionals on tasks that match their education and skills	57%, 4 responses
	Reconsidering the division of work between professionals and job descriptions	57%, 4 responses
	Promoting service availability with digital, take-home and mobile services	57%, 4 responses

Table 7. Medical deserts mitigation strategies identified in the consensus building exercise. Sufficient consensus (>80%) marked with **

At national level, the experts found the best consensus (86%) for *securing sufficient funding for the training of health and social care professionals*. The numbers relating to the training of new professionals sparked discussion at the meeting as well, and investing into training was seen important in order to fill the positions of doctors and nurses. As a certain qualification is required for the health and social care sector, this has an impact on staff recruitment and the need of increasing the number of training amounts. In the discussion, it was noted also that it is not only a question of funding. It is difficult to fill the training positions. The image of health care has weakened and at the same time the age groups of young people have decreased in size. Additionally, an identified action linked to the funding theme, *increasing the total funding of the health and social sector*, got 43% consensus rate with 3 responses – perhaps reflecting a perceived need for wider investment to the health system. However, sufficient funding for the training of professionals was judged more important than the increased funding for the whole system, possibly underlining the experts' view on the need for new health and social workforce.

Second strategy for mitigating medical deserts is *streamlining labor immigration and utilizing it more than currently* (71% consensus). As pointed out in the meeting, compensating for the retirement of the health and care workforce has not been sufficient when the demand and need for professionals has grown to a greater extent. Attaining care workforce from abroad is quite a shared vision in the public discussion in Finland, and the need for workforce has widely been identified. However, there are some obstacles in the placement of foreign labor in the labor market. Outside EU the education may differ from European education, and for registered nurses updating education to Finnish conditions has not been systematic.

Third national level action is more flexible staffing levels (the ratio between the staff and the patients) which got 57% consensus among the experts. This sparked discussion in the meeting about the fact that no national level staffing levels exist in primary health care in the same way they do exist in certain social care services (in assisted living with 24/7 services there is a minimum staffing ratio in the law). In Finland, health and social care, however, form an entity in terms of workforce planning and resourcing, and one sector has effects on another. Flexible staffing in elderly care would mean a possibility of using less trained staff (which is a practice in many other countries) and taking into account technology as well as case mix of clients in staffing levels. It was speculated that if the staffing levels pull workforce to assisted living from elsewhere, for example from primary health care, more loose staffing levels perhaps might be a feasible action to be able to fill the jobs in primary care sector. A related action is making personnel eligibility criteria more flexible, which got 43% consensus rate (3 responses) in the survey. This could be a way to get more workforce into the field if, for example, certain education is not needed.

At organisational level a variety of mitigation actions were suggested, and the best consensus (57%) was found for three actions. It is noteworthy that there are some overlaps in the actions the responders were able to choose, and to some extent did choose, which might have affected failure to reach better consensus. Thus, as suggested in the consensus building meeting by the experts, it could be beneficial to examine the actions as wider clusters.

One cluster that got strong support from the experts in the meeting was about the roles of professionals and task-shifting. *Focusing the work of professionals on tasks that match their education and skills*, and *reconsidering the division of work between professionals and job descriptions* are the actions that got the best consensus among the experts. Also, the action of *increasing the number of assistive staff*, which was selected by one responder, is linked to these

themes. In the meeting the experts talked about the importance of enabling more flexible division of labour and getting the right professionals in the right place. This cluster is strongly related to the development of efficacy, which was a prevalent theme in the discussion. New ways to organize work may increase efficacy in a way which doesn't increase care workers job demands or stress.

Another cluster is about digital services. That theme is present in the action that got the most consensus: *promoting service availability with digital, take-home and mobile services*, as well as in *utilizing digitalization and increasing and developing the use of digital health and social services*, which was selected by one responder. It was pointed out in the meeting that remote services have eased the availability of services in some wellbeing services counties, but the patients' interests must be assessed when increasing the proportion of remote services. It's also important to get more information on the specific tasks and on the clients for which clients digital services are suitable.

Additional actions that each got 29% consensus (2 responses) are actions linked to the effective use of resources. Firstly, *additional resources should be directed to primary care services.* Secondly, *private and third sector resources should be utilized and cooperation with public sector should be developed.* Thirdly, *health and social services should be prioritized based on effectiveness.*

4.2.5 Lessons learned

From Finland's pilot study, multiple lessons can be learned. Medical deserts are a complex phenomenon, and a topic that attracts interest. According to experts, medical deserts are located in both rural and urban areas in Finland, and a medical desert indicator was also developed to examine the geographical distribution of services. Statistical measures revealed that there are significant regional differences in the availability and accessibility of services – allowing the preliminary identification of the medical deserts within the country. The use of telehealth shows, by the created medical desert indicator, to be able to increase service availability. Thus, telehealth could be used as one tool to ease the situation in areas with poorer service availability.

To identify national and organisational level mitigation strategies, which aim to increase the health and care professionals and alter the way services are delivered, national experts were consulted. The experts were identified through a pool of experts participating in a working group creating the *Roadmap for 2022–2027 Ensuring the sufficiency and availability of healthcare and social welfare personnel*. Since the roadmap included a wide range of activities and the viewpoints from the experts were diverse as well, that might have contributed to the difficulty of finding consensus

about the most central ways to mitigate medical deserts. Also, as the participant number was quite small in the surveys and in the meeting (7-8 and 5), it made achieving the 80% consensus rate difficult – hence the reporting of some actions with less than 80% consensus to get more insight on the phenomena.

Moreover, it should be noted that the actions suggested in the pilot study do not represent a comprehensive list of actions to mitigate medical deserts in Finland since they are focused on primary health care only. As described in section 4.2.1., Finland has multiple parallel healthcare systems including occupational health care (funded by employers and employees, provided often by private enterprises) and private care. Work in occupational and private care might be more lucrative, less stressful, and more flexible (Koponen & Tynkkynen 2023). Consequently, if private service providers attract care workforce from public primary care services, the parallel systems directly affect the shortage of doctors in primary health care, especially in larger cities with a larger proportion of the population using parallel healthcare services. One expert pointed out the need for critically examining the entire service system and its structures, including private service providers and their resources, in order to achieve better quality and equality of care for all.

Another factor contributing to the availability, but also the cost, of workforce in the health and care sector, is temporary agency work, which was also mentioned once in the surveys. It has received attention in the public discussion lately and is a topic for a newly started government-led report with a goal of forming an understanding of the topic and planning actions to decrease its use (Finnish government 2023). Though not properly studied yet, it is reported that doctors and nurses in the public sector are increasingly being hired through workforce rental companies at higher expenses compared to the employee being hired directly, contributing to overall higher expenditures to the wellbeing services counties, who are already burdened with tight budgets (e.g., Yle, 2023b). Rental workforce is also argued to cause issues to the quality, safety and continuity of care (e.g., Yle, 2023b).

To conclude, the results of the pilot study should not be read as a comprehensive list of actions, but more to provide a direction for the future. The results of the pilot study in Finland's primary health care are a useful starting point to guide the work towards mitigating the medical deserts. The data constraints meant that survey and consultations data had to be used, which enabled accounting for population care needs, parallel healthcare systems, and telehealth use. Importantly, as the results

show, national data constraints and varying care systems need to be taken into account in future analysis of medical deserts. Especially telehealth, a potential key tool for increasing accessibility of services, must be considered. By developing the measurement of medical deserts and refining the mitigating actions further and thus using relevant and insightful information, the medical deserts could gradually start blooming.

4.3. France

4.3.1. Status quo of the health system in France

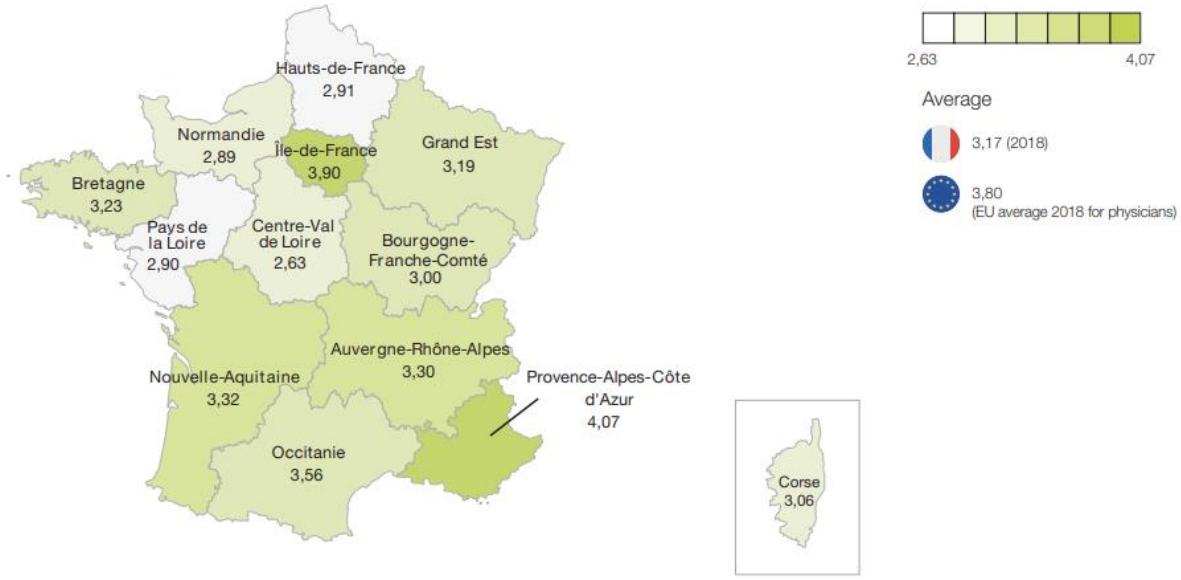


Figure 8. Number of practicing physicians per 1.000 inhabitants (SEPEN Project, 2020c)

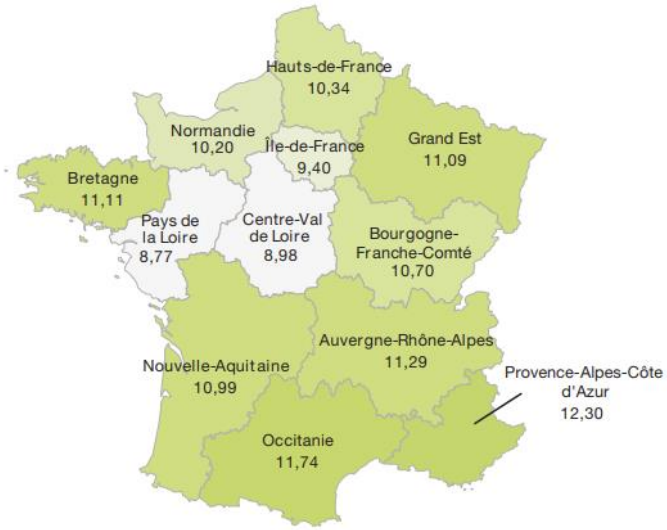


Figure 9. Number of professionally active nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020c)

France, a country in Western Europe, presented in the above image, is the leader of WP4 – *Methodology* in the OASES project. As a set of national and local measures are already implemented to improve the situation of medically disadvantaged areas, rather than setting up pilot studies,

already existing experiments are documented. As far as possible, elements of the design, implementation and evaluation processes are reported.

Demographic factors	France	EU
Population	67 871 925	446 735 291
Share of population over age 65 (%)	21	21.1
Fertility rate	1.8	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	35 769	35 219
Relative poverty rate (%)	15.6	16.5
Unemployment rate (%)	7.3	6.2

Table 8. Demographic and socioeconomic context in France (OECD/European Observatory on Health Systems and Policies, 2023c)

The French population covers a mid-year estimate of 67 871 925 people. Out of these, 21% is represented by people over the age of 65, being close to the EU median of 21.1%. In 2021, the fertility rate was 1.8%, which is above the EU average of 1.5% by 0.3%. The socioeconomic factors present a GDP per capita of 35 769 EUR, being close the EU median, with a difference of 500 EUR. Nonetheless, the unemployment rate is above the EU average by 1.1%, and the poverty rate is 15.6%, which is below the average of 16.5% at the EU level.

Since 2010, life expectancy has noticeably decreased because of the increased mortality rates from influenza, pneumonia and other respiratory diseases among older people. Nonetheless, in 2022, it was 81.6, above the EU average by almost 1.5 years, but it decreased by 0.7 months because of the COVID-19 pandemic. For many years, health spending, both per capita and in terms of share of the GDP, have been higher in France compared to the EU level. More specifically, in 2021, 12.3% of GDP was allocated to health spending, being along with Germany, the highest share in the EU. Likewise, health spending per capita was 4 200 EUR in 2021, being the second highest at the EU level (OECD/European Observatory on Health Systems and Policies, 2023c).

The French healthcare system is organized as a social insurance system, having a traditionally considerable role of the State in organising the health system and managing its operating conditions. Starting with the year 2000, and with the introduction of mandatory insurance, the

population is not compulsorily covered by the statutory health insurance system. Complementary services coverage is provided by private health insurance if those are not provided by the public system. Both the public and private insurance coverage restrain the out-of-pocket health expenditure, since France has the lowest rate of out-of-pocket health expenditure, respectively 9.3% compared to the EU average of 15.4%. The French health insurance system covers the whole population based on residence through different compulsory schemes. The main fund (National Health Insurance Fund of salaried workers, CNAMTS) covers 92% of the population, and the National Health Insurance Fund of farmers covers 7%. Other small funds (specific to certain professional categories, such as the national railway company) cover the remaining 1%. In addition, there is a 100% state-funded scheme that allows irregular immigrants to access a certain basket of benefits for essential care. Almost the entire population (95%) has supplementary health insurance, which is mainly used to cover co-payments and out-of-pocket expenses for health products and services that are poorly reimbursed by health insurance, such as glasses and dental care.

At the national level, France had 227 946 medical doctors and 764 260 nurses in 2021. In 2015 France had 43 134 dentists, 73 427 pharmacists, 23 541 midwives. In 2021 per 1 000 inhabitants France had 3,39 medical doctors, 11,35 nurses, 0,64 dentists, 1.09 pharmacists and 0,64 dentists.

At the national level, France had in 2019 a number of 393 000 beds, including general hospitals (medicine, surgery, obstetrics and dentistry), follow-up and rehabilitation care hospital, mental health care hospital and long-term care unit, with an occupancy of beds of 82.5%.

The rate of vaccination in France can be assessed using mandatory vaccinations in early childhood. There are 11, but the oldest are diphtheria, tetanus, polio, pertussis, and measles. At age 2, 98% of children were vaccinated for diphtheria, tetanus, polio and pertussis (DTPCoq in French) in 2010 and 90% for measles in 2011 (Fontenau, Guthmann & Lévy-Bruhl, 2013).

In addition, vaccination coverage can also be assessed with influenza vaccination for older people. During the 2010–2011 influenza season, the vaccination rate for persons of this age group suffering from chronic illnesses (most frequently cardiac disease and diabetes) was 71%, while it fell to 57.8% among those who were not chronically ill (Guthmann, Fonteneau & Lévy-Bruhl, 2012).

There have been some medical desert mitigation strategies implemented in France that are documented in detail in the next part (4.3.2).

The French population covers 15% of the total European population, being richer than the average European, while more unemployed. The higher life expectancy might be explained by one of the highest health spending in the EU.

In spite of this, the number of medical doctors is lower than the European average of 2017 by almost 1,51 medical doctors, however, the occupancy of beds is above the 80% rate. At consortium level, France is the fifth country in terms of number of medical doctors per 1 000 inhabitants and the first country in terms of nurses per 1 000 inhabitants.

The vaccination rates are high, as in 2013 the rates were higher than 90% for all the routine vaccines. France is amongst the only consortium countries in which different medical desert mitigation strategies were implemented.

4.3.2. Pilot study methodology

The French health care system has historically been described as a non-hierarchical professional model 'characterized by the absence of an explicit global project for primary care, but also by the absence of a population-based and territorial organization of ambulatory care' (Bourgueil et al, 2009). Nonetheless, since 2004, GPs have taken on a major position in the coordination of care with registration and referral of patients.

The definition of primary health care in France is more recent and comes from the "Hospital, Patients, Health Territories Act" (HPST, 2009) and its implementation at the level of local territories through the regional plans which organize ambulatory care. Primary care is defined in a functional way by taking up the traditional functions of primary care without explicitly naming professionals other than the GP. It refers rather to structural changes in the health system (Law on the modernisation of our health system 2016, law of 24 July 2019, Ma santé 2022) which aim to strengthen and better design local care by encouraging health actors to get together in order to improve access and coordination of care.

This work presents the measures deployed in France to improve access to primary care providers focusing on national measures including evaluation materials for one part, and major local measures for the other part.

4.3.3. Pilot study outcomes

Overview of the measures deployed to improve access to primary care providers

To tackle medical desertification and improve access to care, the public authorities (State, National Health Insurance and local authorities) have gradually deployed several responses aimed at doctors/ future doctors (Chevillard et al., 2019; Jedat et al., 2022; Polton et al., 2021) and other primary care professions. These solutions take place over different timeframes and can be grouped into four types of response which we return to in a non-exhaustive manner (Table 9):

(i) Education

(ii) increase the number of GPs practicing

(iii) improve the geographical distribution of health workers (HW) by recruiting, attracting and retaining them in medically underserved areas (MUA)

(iv) alleviate GPs workload and/or reorganize primary care delivery

Type of measures		French State	National Health Insurance	Local authorities (RHA[2]/Municipalities)
Education		Increase the number of medical students		Increase the number of medical students
		Ambulatory internship in MUA; 4th year of internship in MUAs		
Increase the number of doctors practicing		Job-retirement cumulation		Recruitment of foreign-trained doctors
Improve the geographical distribution	GPs: Zoning and financial incentives	Tax exemptions; scholarship; Territorial contract.	Installation contracts	Financial assistance for transport, accommodation, and practice

[2] Regional health agency.

	Others HWs: Zoning and regulation of installation or financial incentives	Limitation of installation in overserved areas for nurses, physiotherapists, speech therapists, dentists, midwives. Financial incentives to encourage practice in underserved areas		
Reorganize primary care delivery	Improve working conditions	Primary care teams (PCTs)		
		Primary care health centers, salaried exercise		
	Health workers	advanced practice nurses, Asalee nurses	Coordinate exercise, skill-mix	
	Administrative job		medical assistant	
			E-health	
	Territorial organization	Communautés professionnelles territoriales de santé (CPTS)		

Table 9 - Measures deployed in France to improve access to primary care providers

4.3.4. Medical deserts mitigation strategies

4.3.4.1. National measures

A. Education

Only the overall supply of doctors had been regulated since 1971 (with the introduction of the numerus clausus setting the number of doctors trained each year) and the issue of territorial distribution had not been addressed.

In the 2000s, concerns began to be raised about the future decline in the number of physicians and their uneven geographical distribution. Regional planning for GPs which are in France free to settle where they want began in the mid-2000s. The numerus clausus was gradually increased and regionalized in 2012 to raise the number of students trained in the regions with a shortage of physicians. Nonetheless, this measure had a limited and mixed effect because “the fidelity of

physicians to their place of training is obviously not total and, above all, varies greatly from one region to another" (Cardoux and Daudigny, 2017).

More recently, under the reform of medical studies that began in 2017, an additional year of teaching at the end of the training is planned for GPs from the start of the 2023 academic year. This additional year is intended to provide students with the opportunity to practice independently under the supervision of a University Internship mentor and to encourage future practitioners to practice in different geographical contexts.

B. Increase the number of GPs practicing

Another response is to increase the number of doctors or short-term caregivers. For this, the State offers the possibility of combining employment with retirement, which allows physicians in practice to continue working after their retirement and to combine their income from self-employment and retirement. This makes it possible to rely on this large stock of physicians.

C. Targeting areas for policy support and improve the geographical distribution of health workers

A zoning policy was introduced in 2005 to encourage GPs to set up practice in areas identified as being underpopulated. Other primary healthcare professions like midwives, dentists and some medical auxiliaries will be targeted a few years later, due to their uneven territorial distribution despite more promising demographic trends (Legendre 2021).

At the same time, **territorial development zoning** targets priority territories that are socio-economically deprived, both in urban and rural areas. In these areas, health workers benefit from installation aid in addition to that deployed in the zoning policy of health workers.

For its part, the **physician zoning** defines areas identified as having insufficient healthcare provision or difficulties in accessing healthcare. The zoning currently in place was defined in 2021 and follows three previous versions (2005, 2012 and 2018). In 2021, a common methodological approach based on Local Potential Accessibility (decree of 1st October 2021) is used to set the maximum proportion of the regional population that lives in an underserved area. Within this limit, the regional health agency (RHA) defines priority intervention area called "Zones d'Intervention Prioritaire" (ZIP) as the less provided (based on the level of the APL and other indicators). All types of supportive measures are applicable: those provided by the National Health Insurance Fund, the State and local

authorities. RHA may choose to select other areas to define complementary action areas called “zones d’action complémentaire" (ZAC), which are areas a bit less affected by the physician shortage, but which require measures to prevent situation from deteriorating further. For these zones, the measures provided by the National Health Insurance Fund cannot be used. Some RHA also define some attention areas called "zones de vigilance" (ZV) for which only RHA regional intervention funds can be used. ZIP and ZAC correspond on average to around 66% of the French population, 27 % in ZIP and 39 % in ZAC with significant variations between regions (Pham and al., 2023).

These zoning policies are driven at national level, defined by the regional health agency (RHA), but in fact have a cross-functional dimension. They ultimately benefit healthcare professionals and municipalities in which there are installations. Also, in the regional health conference, the representant of municipalities participate in drawing up these zoning plans in conjunction with actors such as the regional union of health professions and representants of health care users. Each RHA can modify its regional decree as soon as the local situation requires it, by requalifying areas to adjust the aid according to needs.

Definition of zoning was made too for midwives, dentists, nurses, physiotherapists and speech therapists from 2012 on the same process: a national methodology to define them applied by RHA after concertation with local actors of professionals, health insurance and municipalities. The main difference concerns nurses for which zoning supports not only incentive measures for underserved but limitation of installation too following the principle of one departure for one installation in overserved areas. In that way, a nurse can only move in if the RHA allows it. She must present a "succession certificate" drawn up by the nurse whose activity she takes over in order to ensure the continuity of patient care. Compliance with these conditions allows nurses to have their activity reimbursed for their patients at the rates agreed with health insurance.

1.C.1. Zoning and financial incentives for GPs

The financial incentives of the national level come from the national state and the national health insurance.

In 2005, the law LDTR (loi de développement des territoires ruraux) offers tax exemptions to GPs and others health workers working or settling in priority area called ZRR (zone de revitalisation

rurale). For instance, there is exemption from income tax for 5 years, with a degressivity rate then. There is also an exemption from employer contributions (e.g. for hiring a medical secretary).

In 2010, the national state offers scholarship (1 200€ / month) for medical students. In return, the student undertakes to practice first in a medically underserved area for the duration of the scholarship. In 2013, the national state creates a territorial GP contract. It guaranteed minimum incomes (3 640€/month) and improved social protection of GPs (e.g. maternity leave) practicing in medically underserved areas. It is now replaced by the first exercise contract.

Since 2007, NHI offers financial incentives to GPs practicing or settling in medically underserved areas. Since,NHI recalibrates slowly these financial incentives. First, in 2007, the NHI gives an increase of fees of 20% for GPs in MUA. In 2010, the increase of fees was capped at 100 000€ per year. In 2016, the NHI and the representatives of the GPs agreed to recalibrate the financial incentives in several types of contracts. A first contract is the installation assistance contract. It offers 50 000 € in 2 years for a GPs settling in a MUA. In return the GPs must stay 5 years in MUA, to participate in the permanence of care, and to practice a liberal activity at least 2,5 days. Then there exists a "transition contract". It concerns doctors who prepare for their cessation of activity by welcoming and supporting a newly established doctor. The financial aid is 10% of annual fees, capped at €20,000. In return, the GPs has to support for 3 years the newly established. There is also "territorial solidarity contract". It promotes the punctual exercise of doctor in MUA with an annual aid of 25% of the fees for the activity in MUA, capped at 50 000 € per year. In return GPs must practice at least 10 days a year, in a MUA.

1.C.2. Zoning and financial incentives for nurses

The geographical distribution of self-employed nurses is regulated since 2012 with a double system: a limitation of the number of installations in overserved areas and financial incentive to attract nurses in underserved areas. In the other areas, there are no regulation or incentives. These areas are elaborated with several actors of different scales. The RHA defined the different type of areas in collaboration with Local Health Insurance Fund (CPAM) and local municipalities, using indicators of spatial accessibility to nurses (Order of 25 November 2011, Order of 10 January 2020). The NHI delivers financial incentives for the nurses practicing in underserved areas. The RHA gives the agreement for the installation in overserved areas.

The nurses who settle in underserved areas will benefit from financial incentives. In 2012, a first incentive contract was signed with the NHI. It is intended for the equipment of the practice or other professional investment and amounts to a maximum amount of 3,000 euros per year for three years. In return, the professional undertakes to carry out at least 2/3 of his activity in the under-resourced area at least for the duration of his contract, to call on a replacement to guarantee the continuity of care, the remote transmission of acts, participation in public health objectives. In 2019, an amendment to the agreement between health insurance and private nurses provides for the implementation of 3 incentive contracts which will replace the previous one. All these contracts are tri-partite between the nurse, the RHA and the local NHI.

- **The nursing installation assistance contract** (CAII): the amount of financial aid for this contract is €27,500 over 5 years. It is non-renewable and to this amount is added €150 per month if you agree to welcome a nursing student in your practice for an end-of-study internship. In return, the nurse must stay 5 years in the underserved area, justify a liberal activity of at least 50% in this area by having an annual fee of at least 10 000 € the first year and 30 000 the following years, and finally, practice in a group (nurses, primary care teams or CPTS).
- The aid **contract for the first nursing installation** (Capii): the amount of financial aid is €37,500 over 5 years. It is non-renewable and can benefit from an additional €150 per month if the nurse agrees to host a nursing student on an internship. The commitments to be respected are the same as above.
- The nursing **maintenance assistance contract** (Cami) concerns self-employed nurses already established in very under-resourced areas. The financial aid is €3,000 per year with a renewable 3-year contract. As with previous contracts, €150 per month can be added for hosting a nursing student. The commitments to be respected are the same as above with the exception of the commitment period which is 3 years.

A research demonstrates a positive impact of the regulation of installation for nurses between 2006 and 2016, in a context of an increasing number of nurses (Duchaine et al., 2022). Limiting installation of nurses in overserved areas of nurses has a positive impact estimated at – 25,5 nurses per 100 000 people and -18,8 young nurses compared to similar areas without limitation. Financial incentives in underserved areas have positive but lower impact estimated at + 4,3 nurses and +4,2 young nurses.

All things considered, there is a decrease of geographical imbalances of nurses in the whole territory and especially for young nurses.

D. Reorganize primary care delivery

1.D.1. Improve working conditions

For years, self-employed GPs working in primary care in France have worked in solo practices and were paid mostly through fee-for-services. However, thanks to behavioral change new preferences emerge for young and newly trained GPs that end with an attraction for group practice (80% of young GPs settled in group). Thus, the percentage of GPs practicing in group practice has constantly increased since the 90's, rising from 43% to 54% between 1998 and 2010, from 50% to 69% between 2010 and 2022 [Audric, 2004; Baudier et al., 2010; Chaput et al., 2019; Bergeat et al., 2022]. In parallel, if GPs were still mainly paid through fee-for-services (78%), there is an increasing mix of their payments, with approximately 17% of per capita corresponding to the adjusted compensations for their GP gatekeeper role and other lump sum payments.

That being said, the average size of the group is relatively small and most of them are monodisciplinary compared to what observed in other advanced health care systems. In order to support multiprofessionnal group practice including GPs, paramedics and others, France (the State and the National Health Insurance) has encouraged different forms of Primary Care Teams (PCT).

The policy mainly focuses on healthcare centers (*centres de santé*), where centers are mostly paid by fee-for-services but professionals are salaried by the centers, and multidisciplinary group practices (*maisons de santé pluriprofessionnelles*, MSP), that combine on the same location or not, at least two GPs and one other health professional, knowing that these different self-employed primary care professionals remain mostly by fee-for services (Cassou et al. 2023; Bergeat et al., 2022). It is estimated that average MSP is composed of 17 professionals including 4.5 FTE GPs (for 5000 registered patients), 2.4 other medical professionals (e.g. pharmacist, midwives, dentists, other specialists), 8.6 nonmedical health professionals (including nurses, physiotherapists), and 0.6 other professionals. Health professionals working in MSPs must define a health project which demonstrates the presence of coordination and being accredited by a Regional Health Agency, and the MSP is required a specific legal status (*société interprofessionnelle de soins ambulatoires, SISA*) in order to be able to receive specific direct financial transfers form the NHI (see below).

The policy combined financial support for the investment (in order to build and/or renew and set up new PCT), mostly thanks to state financial co-funding, plus a new type of agreement between PCT representatives and the NHI, giving rights to an additional collective payment from the NHI at the PCT practice level (add-on payment) to support integration and coordination between professionals and in return for a set of commitments. This add-on payment has been tested since 2010 with pilot MSPs (*expérimentation des nouveaux modes de rémuneration*, ENMR) and generalized for all voluntary MSPs since 2015 (*Accord Conventionnel Interprofessionnel*, ACI). The add-on payment is based on three kinds of targets: the enhancement of accessibility for patients (e.g., extended opening hours, opening hours without requested appointments), multiprofessional coordination and cooperation (time dedicated to coordination, multiprofessional care guidelines, etc.), and information sharing (accredited electronic health records). Depending on the target, this add-on payment also depends on the total number of registered patients of all GPs involved in the MSP. Overall, the NHI dedicated 125,4 million euros only for the year 2022 to this policy. On average, MSP received 72,415€ in 2022. To our knowledge (based on preliminary results from an Irdes survey called EFOP), a part of this payment is often used to recruit external nonhealthcare professionals (full-time or part-time) in charge of organizing the coordination, to cover investments or to individually compensate health care professionals for the time spent for cooperation and skill-mix protocols.

Altogether, these policies supported the exponential development of MSP, with more than 2000 MSP in 2022, compared to fewer than 20 in 2008, for 25% of GPs practicing in an MSP, and 1755 of MSP that beneficiate from the ACI contract. The dynamic should continue because the Ministry of Health announced in June 2023 a new plan in order to reach 4,000 PCTs in 2027.

On the evaluation side, mainly based on surveys or quasi-experimental design research (difference-in-differences), it has been shown that MSP is attractive for young GPs and contribute to efficiency gains both at the intensive and extensive margins, and then contribute significantly to the attraction and retention of GPs but also to their productive efficiency that help to reduce the overall and geographically localized imbalance between the supply and the demand.

Recent surveys on GPs have shown that group practice, including MSP, significantly improve the working conditions of GPs (Biais et al., 2022). The probability for a GPs to consider being satisfied by their balance or equilibrium between professional and personal life is significantly greater for those working in MSP (adjusted OR: 1.55) compared to other types of practice. And this is mainly

due to low weekly working hours, larger holiday weeks per year, but also greater flexibility to arrange their week and greater possibility to have complementary activity to the self-employed one. Also GPs experimenting a switch between standard practice to MSP increase significantly their revenue and income [Cassou et al., 2020].

At the extensive margin, it has been shown that, thanks to the attractiveness of MSP for young GPs and the specific localization of MSP, mainly (61% of them in 2020) in suburban and rural fringes underserved with the lowest level of accessibility regarding primary care, it has been estimated over the period 2004-2017 that the settlement of MSPs has a positive impact on the attraction of young GPs' [Chevillard and Mousquès, 2021]. Suburban areas that experiment PCTs settlement over the period are much more attractive to young doctors than their counterfactual, helping to curb the scarcity of GPs (DiD estimates around + 4.1 to 4.4 young GPs per 100,000 inhabitants). Rural fringes that experiment MSP settlements are also more attractive to young GPs, but the scarcity of GPs remains worrying (DiD estimates around + 3. 4 young GPs per 100,000 inhabitants).

At the intensive margins, it has been estimated that GPs in MSP increased their patient list more rapidly than control GPs (+10% increase) without increasing their provision of services (number of visits and drug prescriptions) more rapidly [Cassou et al., 2023]. It has also been shown that this effect is exclusively driven by the team component of MSP and is not the consequences of the add-on payment they could beneficiate [Loussouarn et al., 2023].

At the end, MSP proves to be efficient to improve the accessibility to general medicine in primary care. Also, during the Covid-19 crisis, health professionals working in MSP appeared to demonstrate more resilience in assuring continuity of care, with higher rates of remote consultations and patient follow-up procedures than traditional practices (Zaytseva et al., 2022).

1.D.2. Scope and roles of professionals

The French health system has historically been physician centered. However, the scope and roles given to other health care profession, paramedics (to date especially nurses) and allied health professionals (medical assistant), have been increasing in recent years both to meet the needs of an ageing population and to save medical time.

Inter-professional cooperation, skill-mix and task shifting between GPs and nurses has been slowly encouraged in the past 20 years. In the primary care sector, a pilot project has been set up since 2004 to improve care for patients with chronic conditions, the so-called *Action de santé libérale en*

équipe (Asalée) pilot and the *infirmière Asalée* (IA). Currently, the Asalée pilot consists of a not-for-profit meso-tier organization, supported by the state (Social Security Department) and the NHI, who enrolled GPs and hired IA to collaborate with them. The state and the NHI defined ex-ante the FTE of newly enrolled advanced nurses (Ans) and, indirectly, the number of GPs enrolled for a given period. Public financing partly or wholly covered the investment and operational costs, especially nurses' salaries, and payments for coordination made to GPs (in addition to fee-for-service (FFS) and other prospective fees). Note that GPs' participation in the Asalée pilot was and has remained voluntary, but it implies the participation of the whole GPs' practice, IA are selected, hired, trained, and paid by the nonprofit organization Asalée to work in one or more practices with one or several GPs. The pilot program allowed the GPs to cooperate with IA, who carried out activities that are usually, but not systematically, undertaken by GPs (screening, health education, technical procedures) (Fournier et al., 2018) (Afrite et al., 2019). More than 700 nurses and 3,000 GPs are enrolled in the pilot to date. Evaluation research based on quasi-experimental design on this pilot shows that it is both effective to generate productive efficiency gains through increased GPs patient list and increased quality of care through process of care indicators for type 2 diabetes patient (Gilles de La Londe et al., 2023; Loussouarn et al., 2020).

An advanced nurse practice position (*Infirmier en pratique avancée,* IPA), broadening nurses' responsibilities and facilitating task shifting, was introduced in 2019. The advanced nurses can follow up and screen patients with a list of common chronic conditions (such as diabetes and Alzheimer's disease), and from 2021 onwards patients with cancer, chronic renal disease, or mental disorders. They will also be able to specialize and work in emergency wards from 2022 onwards. Advanced nurses can renew medical prescriptions for their patients (Public Health Code on July 20, 2018). However, they can only see patients referred by a physician with whom they previously signed a formal agreement, which limits their autonomy and the attractiveness of this new profession. The advanced nurse training is designed for experienced nurses (at least three years of professional experience) and requires four additional semesters of full-time studies, equivalent of a master's degree. Yet, their wages/tariffs are barely higher than those of regular nurses, and the fact that both these nurses and physicians are self-employed and are paid by FFS creates competition where physicians may be reluctant to delegate certain tasks. The first 63 advanced nurses were graduated in 2019, and in 2023, it estimated that 1700 advanced nurses are graduates. However, not all of them get a position as advanced nurse (AN) in hospital and much more in ambulatory care

(it is estimated that only 122 ANs are practicing in primary care in 2022). Recently it has been decided to expand the scope of responsibilities of AN with a possibility of direct patient access to their services.

In addition, to support the primary care workforce, a new health profession, named 'medical assistant', was created in 2019. Medical assistants can be hired by self-employed physicians (with financial aid from the SHI) to assist with administrative tasks and care coordination. These positions are open to both people with a health professional background (such as nurses or nursing aides) and those without (such as medical secretaries) (CNAM, 2019 et 2022; Rojouan, 2023). Medical assistants take over administrative tasks, organisation and coordination tasks and/or some tasks in preparation of the consultation (e.g. filling medical records, taking blood pressure, etc.). Providing that they follow appropriate training, this role can be ensured by nurses, carers, medical secretaries, etc. The medical assistants are salaried, but part of/total salary can be covered by public financial support. The financial aid ranges from € 12 000 to € 36 000 for the first year, decreases in the second and stabilizes in the third and subsequent years (from € 7 000 to € 21 000). By 2022, 3,122 medical assistant contracts were signed mainly by GPs (80%) or physicians working in underserved medical areas (around 50%).

1.D.3. E-Health

There has also been heavy investment in eHealth in France, with both a national strategy for digital health, whose main focuses are developing and implementing infrastructures and a national strategy for eHealth, which aims to improve access through telemedicine. For this last point more specifically, teleconsultations with physicians have been reimbursed by the SHI as normal consultations under specific conditions (i.e., within recommended gatekeeping care pathways) since 2018. Nonetheless, the use of teleconsultation is considered now a permanent but relatively infrequent practice despite a significant increase of it during the COVID-19 pandemic period.

1.D.4. Territorial organization

Act no. 2016-41 of 26 January 2016 on the modernization of our healthcare system establishes that "healthcare professionals may decide to form a territorial professional healthcare community" (CPTS). CPTSs correspond to a group (in the same place or not) of healthcare professionals and medical-social stakeholders who put together a healthcare project.

They are characterized by a "population-based" approach because professionals are involved in caring for the whole population of a given area. For that purpose, the health project defines the way in which these professionals wish to organize themselves collectively to respond to common problems: access to a general practitioner, organization of unscheduled care, city-hospital coordination, home care.

The Health System Transformation Act of 24 July 2019 and the Interprofessional Conventional Agreement (ACI) signed on 20 June 2019 between national health Insurance and the physician organizations have strengthened the role of CPTS as operators in structuring local provision. According to the national federation of CPTS, France is covered in March 2023 by 803 CPTS at various stages of development.

2. Local measures

Since 2005, local authority (municipalities, intermunicipalities, county), closely linked with regional health agencies (RHA, *Agences régionale de santé*) as well as health care professional or physician representatives at the county or regional level as county councils of physicians (*conseil départemental de l'ordre des médecin*s) and regional union of health care professionals (union régionale des professionnels de santé), growingly set up policies to attract and retain physicians, and notably regarding GPs (Polton et al., 2021).

The identification and description of these policies are not an easy task due to lack of specific registry (or information system) and systematic evaluation process. A recent research project has tried to census what kinds of policies are implemented at the local authority level (Jedat et al., 2022). This research points out policies that mainly target:

- medical students and GPs substitutes, with incentives in direction of the improvement of their living or practicing condition, to take into account of cost for transportation and/or accommodation with remote practice),
- foreign-trained doctors, to attract them in remote areas (e.g. recruiting firm, French classes)
- The first year of installation or location, with incentives to reduce opportunity cost related to investment (e.g. zero interest loan), running cost (e.g. reduced practice rent), remuneration (e.g. bonus)
- The practice condition, with co-investment incentives in the infrastructure to build new PCT or to transform existing practices in PCT.

Belonging with the WP6 of the OASES project, we have run a qualitative study between February and October 2023 that aims to describe closely and analyzed these kinds of policies based on semi-directive interviews with above-mention category of stakeholders at the regional and county council level.

We focus on the *Bourgogne Franche-Comté* (BFC) since it is a larger region with different types of territories or living areas, with various levels or urbanization or rurality, some experimenting large health care delivery imbalance between the supply and the demand and others not, and with various issues related to the attraction or retention of health care professionals. Also by choosing one region it is easier to have an exhaustive overview from the type of stakeholders regarding medical desert, its determinants and the policies that help to solve the problem.

4.3.5 Lessons learned

From these interviews we are able to identify the following dimensions of analysis relative to each category of measure implemented.

(1) The targeted health care profession.

Most of the interventions and policies focus on physicians, and primarily on GPs, but other health care professions (HCP) are also considered notably allied health care professions (e.g. nurses, physiotherapists). The policy mainly focuses on country trained HCP but could also consider foreign-trained HCP (in/out EU). While the flow of foreign-trained doctor is relatively small overall, they are not so modest in certain areas and rural fringes, where foreign doctors are more likely to set up practice than their French-trained counterparts (Chevillard et al., 2023). This policy consists both in supporting French medical students foreign-trained, helping foreign-trained physician outside EU to get the authorization from county councils of physicians and attracting EU foreign-trained physicians.

(2) The context and issues that should be taken into account but that cannot be directly addressed, or with difficulty, by health policies at the local level.

Geographical distance between initial medical education training and some student rural living areas and/or internship position. Stigma regarding certain areas (rural remote) could also be entertained by the faculty of medicine members and faculty internal policy that disregard internship position in rural areas that ends with vacancy rural internship position. Finally, the attractiveness of

living areas in terms of amenities and commodities (including environmental amenities, transportation, service), demography, occupation, and employment, that are a key determinant for physician location decision, are mostly of concern of the territory development policy at the regional and national level much more than the health and health care policy at the local level.

(3) The main determinants of the attraction or retention that are taken into account by the intervention or policy, or on which the intervention is grounded on.

Local authority, regional health agencies, county councils of physicians and regional union of health care professionals mainly focus on the following determinant of location/attraction and retention:

- Territorial of origin: targeting their support policy during initial education to "local" students
- Initial education experience and living conditions: focusing on studying condition and increasing the frequency and the quality of experience with rural internship position
- Building professional/personal project: a follow-up of the education and the future professional and personal (family consideration) project of supported student, to identify everything that could be put in place to support a location in the county.
- Practice condition: supporting practicing condition in line with actual preferences (group practices)

(4) New trends in local policy or /measure to attract and retain health care professionals.

Measure and policy could be classified depending on:

- When it occurred: before and during initial education, just after initial education (postgraduate)
- The category/type of intervention
- The expected time frame of the impact: short, medium or long term
- The evaluation of the impact or at least the follow-up of its implementation

Historically, local authority focuses on scholarship against years of commitment once graduated (around 500€ by month) for health profession students, on financial incentives in case of location in remote areas (depending on underserved area zoning qualification), on financial and other support for building PCTs. Since mid-2010s, local authority diversified their strategy to attract and retain GPs in multiple directions. The following measures are emblematic of a change in the way local authority intervenes.

Initial education measure new trends

At the initial education stage and in addition to scholarship, local authority growingly supports students with internships far away from the medicine faculty, based on assistance for renting, improved transportation and financial assistance in case of additional transportation cost. Numerous policies at the initiative of the county authorities focus on initial education policy that in addition could target local students, i.e. targeting student depending on their territory, or type of territory, of origin (notably at the time of their primary and secondary school). It mainly consists in giving scholarship during short- or long-term time frame against years of commitment once graduated. Moreover, a follow-up of the education and the future professional and personal (family consideration) project including location takes place with and during the scholarship. It helps to identify everything that could be put in place to support a location in the county once graduated. For one county in BFC it represents 30 scholarship contracts by year and currently 16 observed location/maintain once postgraduate for only one departure.

A very recent and emergent policy from the county council try to increase the percentage of local students that embrace medicine and other health profession studies, based in 3-year experiment with delocalized location of medical education from medicine faculty. It helps to increase the proximity to the original living place (and to reduce costs for education). It concerns specifically the first year of training (before the selection process).

Also, County Council authorities try to take into account the remoteness of certain rural internship positions by giving support for short term renting at no or low cost and/or additional transportation cost (from/to the Medical University).

Postgraduate measure new trends

Another very recent and emergent policy from all the actors at the local level (county council, regional health agencies, county councils of physicians, regional union of health care professionals) coordinates themselves to implementing usual financial incentives national incentives for underserved areas based on opportunistic rotating zoning (very under, under and intermediately served). BFC region experiments this rotating zoning every 6 months to anticipate and increase future installation projects.

While local authority keeps going with the policy to support co-investment for PCT or RHA contract to partly covered running cost, local authority also now consider that in case of incapacity to cover

the demand at the local level, it is adequate to directly or indirectly, for a or short-lived or transitory practices (in case of future installation project but intermediate imbalance), so called *cabinet éphémère*, but also on the medium and long term, to run Health Care Centers and paid health care professionals by salary (including retired physicians that return to work with a control workload) and/or to create short-lived practices with income guarantee of health care professionals.

Also, it appears that more and more both territory development policies and medical services policy strategy are linked in order to focus on specific places with centrality of services including health care services.

4.4. Hungary

4.4.1. Status quo of the health system in Hungary

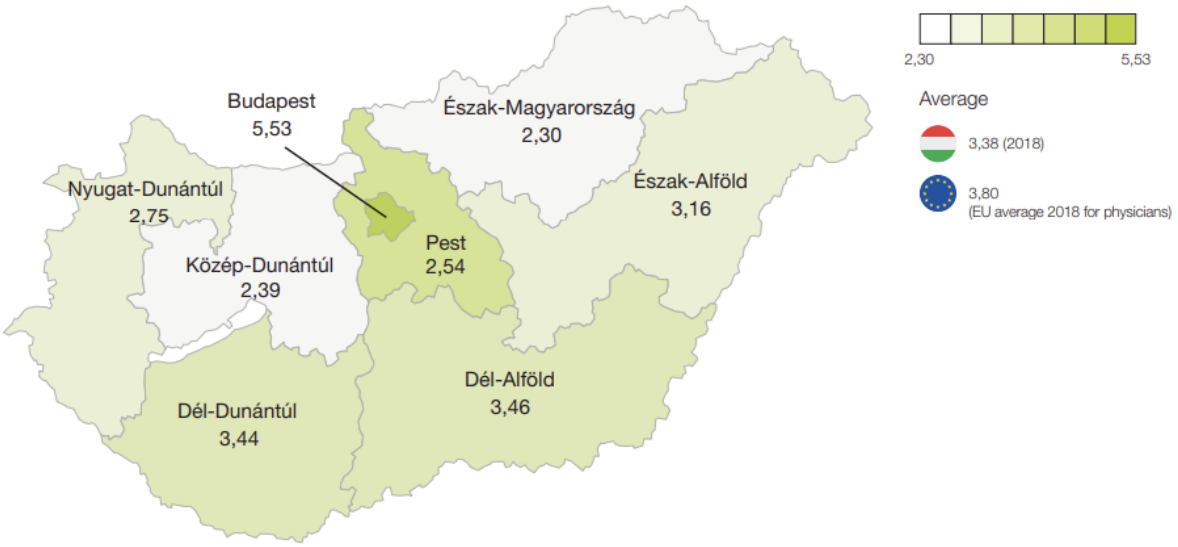


Figure 10. Number of practising physicians per 1.000 inhabitants (SEPEN Project, 2020d)

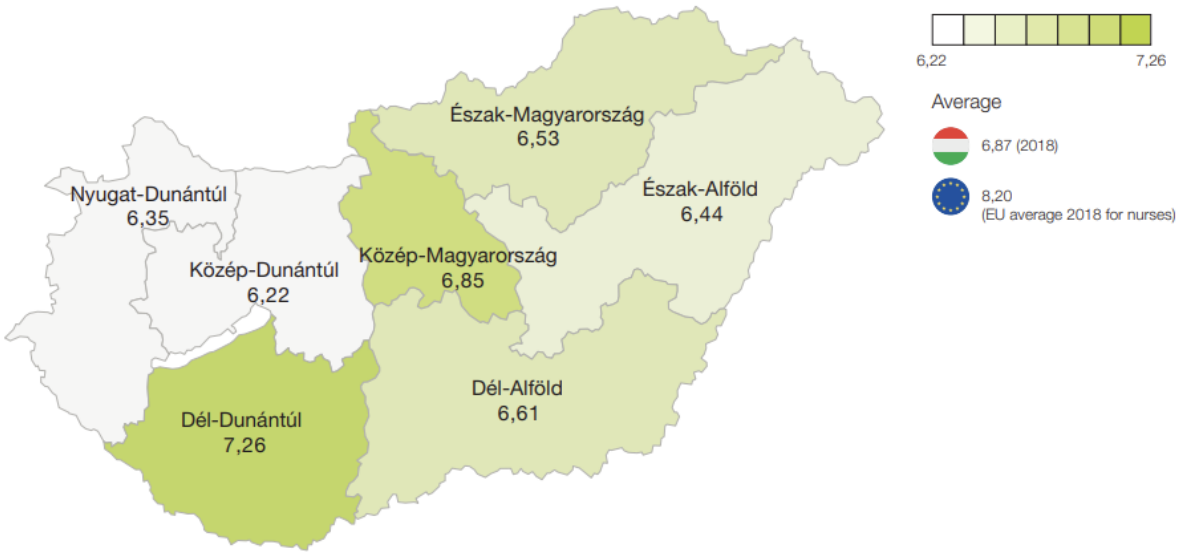


Figure 11. Number of practising nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020d)

Hungary, a country situated in central Europe, presented in the above image, is the leader of WP2-*Dissemination of the project* of the OASES project and one of the countries in which the pilot studies was implemented.

Demographic factors	Hungary	EU
Population	9 689 010	446 735 291
Share of population over age 65 (%)	20.5	21.1
Fertility rate	1.6	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	27 259	35 219
Relative poverty rate	12.1	16.5
Unemployment rate (%)	3.6	6.2

Table 10. Demographic and socioeconomic context in Hungary (OECD/European Observatory on Health Systems and Policies, 2023d)

The demographic factors compared to the EU average presented a Hungarian population of 9 689 010 people, covering approximately 2% of the European population in 2019. People over the age of 65 represented 20.5% of the population, which was close to the EU average of 21.1%, and the fertility rate was 1.6%, which was above the EU limit of 1.5%. As for the socioeconomic factors, the GDP per capita was 27 259 EUR, with a difference of approximately 7.900 EUR compared to the EU average of 35 219 EUR. The poverty and unemployment rates were below the EU median. Specifically, the poverty rate was 12.1% in Hungary, whereas at the EU level it was 16.5%, and the unemployment rate was 3.6% compared to 6.2% in the EU (see Table 10).

The life expectancy was among the lowest in the EU, yet between 2010 and 2019 it increased steadily by almost two years. Nonetheless, life expectancy was highly affected by the worldwide COVID-19 pandemic, as in 2020 it decreased by 10 months, roughly the same decrease as the EU average. Thus, in 2020 it remained below the EU median, as a Hungarian lived almost five years less. Behavioural risk factors are accountable for 50% of all deaths, as there are high levels of alcohol consumption in adults. Hungary is one of the countries in Europe with the highest level of routine immunization, 99% in 2019 (OECD & European Observatory on Health Systems and Policies, 2021b). In the Hungarian healthcare system, the services are mostly financed by social security insurance, there is a single health insurance fund (dental care is partly included in public services), and the system is highly centralised. This shows similarities to the Bismarck model, although the public health services are partly tax-financed. At the same time, the share of private health care is increasing. Health care is directed by the Ministry of Interior. Besides being in charge of the

education, culture, social affairs and sports, the Ministry has power for regulating the financial aspects, regulating the benefits package and implementing regulations and determining strategic directions.

In 2021, Hungary allocated 7.4% of its GDP towards healthcare, compared to the EU average of 11.0%. Following a notable annual growth rate of 11.9% in current health expenditure between 2019 and 2020, this rate decelerated to 7.7% in 2020-21. Hungary's healthcare spending per capita, adjusted for purchasing power differences, stands at EUR 1,866, less than half of the EU average. Public financing for health in Hungary has seen incremental growth over the past decade, reaching 72.5% in 2021, in contrast to the EU average of 81.1%. Consequently, out-of-pocket (OOP) payments by households were substantial, reaching 25% that same year, compared to the EU average of 15%. Outpatient medical care, pharmaceuticals, medical devices, and dental care primarily drove OOP spending.

In 2021, Hungary allocated approximately one third (31%) of its healthcare spending to inpatient care, exceeding the EU average of 28%. Outpatient care received 29% of the expenditure, aligning with the EU average. Despite Hungary's relatively low total health expenditure, outpatient pharmaceuticals and medical devices, whose prices tend to harmonize within the single market, absorbed 25% of health spending, significantly higher than the EU average of 18%. Conversely, only 4% of Hungary's spending was allocated to long-term care (LTC), contrasting sharply with the EU average of 16%.

At the national level, Hungary reported to the OECD 32 026 medical doctors, 51 171 nurses, 6 894 dentists, 7 905 pharmacists and 2 288 midwives in 2021. At the national level, Hungary had 65 887 beds in 2021 (OECD, 2023).

Hungarian team implemented the pilot study at national level considering the available data of government authorities from the year 2022. For this reason, demographic and socioeconomic data were updated by the data of Hungarian Central Statistical Office *(KSH)* (Table 11). Hungary has a population of 9 603 634 people. People over the age of 65 represent 20,6% of the population, and the fertility rate is 1,52%. As for the socioeconomic factors, the GDP per capita was 27 037 EUR, the poverty rate was 13,0%, and the unemployment rate was 3,6% in 2022. The life expectancy was 75,84 years in 2022 (KSH, 2023 a,b,c,d).

Demographic factors	Hungary
Population	9 603 634
Share of population over age 65 (%)	20,6
Fertility rate	1,52
Socioeconomic factors	
GDP per capita (EUR PPP)	27 037
Relative poverty rate (%)	13,0
Unemployment rate (%)	3,6

Table 11. Demographic and socioeconomic context in Hungary in the year 2022 (KSH, 2023a,b,c,d)

4.4.2. Pilot study methodology

The concept of medical desert has not been used (neither in literature, nor in policy documents) in Hungary yet, but a shortage can be detected in different professional groups of the health workforce (ÁEEK, 2019). Despite Hungarian literature had not applied the phrase of medical desert, issues of health inequalities and the accessibility to health services are examined topics in health geography (E.g. Uzzoli, 2016; Uzzoli et al., 2020), and studies dealt with these topics in primary care as well (Bálint, 2019, 2021; Pál et al., 2022; Papp, 2021).

In this pilot study we focused on the investigation of medical deserts in primary care, specifically GPs, general paediatricians and mixed practices (in the mixed practices, GPs provide services for both adult and child populations). Underserved areas in primary care, vacant practices and the high ages of the general practitioners and general paediatricians, moreover the distance and travel time to healthcare providers are current topics both in literature and in public debates as well, therefore we chose these issues to elaborate.

Primary care (GPs, general paediatricians and mixed) practices are monitored continuously by the National Health Insurance Fund and the National Directorate General for Hospitals. The list of vacant (NEAK, 2023) and permanently vacant GP practices (OKFŐ, 2023b) are published and updated regularly. In addition, GKI Economic Research Co. (a private company) creates a bi-annual report about vacant and permanently vacant practices in primary care. According to their report, 687 (about 11% of total) vacant GP practices were found in September 2022 (GKI, 2022). Literature often regards the vacant and permanently vacant practices as deserted areas, because the permanently vacant ones can be found in deprived (rural) areas (Bálint, 2019, 2021). (After half a year of vacancy,

the practices are regarded as permanently vacant ones.) However, in these practices care has to be provided as well, but the problem is to provide replacement from other GP practices. At the same time, in replaced practices accessing care could be more difficult as in many cases patients have to see the doctor in the neighbouring settlement or the substitute doctor cannot offer enough appointments to cover all the needs. Moreover, the care is deteriorated by the replacement in the replaced and in the regular practices as well as it increases the work overload of GPs (GKI, 2023). Thus, vacant and permanently vacant practices are a current topic of literature and public debates. However, since in the vacant practices care must also be provided, only the number or the share of vacant practices can distort the picture on real accessibility to primary care services. In order to describe a more sophisticated status of primary care it was worthwhile to analyse it even further by the locally registered social security numbers of the patients in the filled and in the vacant practices. International trends suggest that European countries are characterised by ageing societies. The ageing of the population of medical doctors can potentially contribute to the development of medical deserts in various ways. They can retire or their availability may be limited, which influences the availability of the service. As literature highlights the ideal age distribution for GPs ends at 64, although the actual age distribution shows that a significant number of GPs are working in primary care beyond the age of 65 in Hungary (Papp, 2021). Their participation has become increasingly salient over the past decade and the aging of the GPs' workforce is even more striking when we look at the number of GPs aged 70 or older (Papp, 2021). Thus, the age of primary care doctors is another relevant topic that had to be examined.

Following the quantitative methodology of the OASES project created by WP4 (D4.1) (Lucas-Gabrielli et al., 2022), we tried to calculate distance and travel time to the nearest primary care unit at district level to identify the possible medical deserts in Hungary.

Last years' policy actions and mitigation strategies have been sorting these problems out. On the one hand, from the last few years, GPs Clusters have been created. The GPs Cluster is a network of collaborating primary care practices where at least five GP practices work together and provides not only the traditional, acute, emergency and chronic cares, but preventive services and health promotion interventions as well (Ádány et al., 2013). The cooperation can be formalised in different levels: Collegial GPs Cluster and Closely Cooperation GPs Cluster (with three options of contractual status: Integrated GPs Cluster, United GPs Cluster and Consortium of GPs Clusters) (see Government Decree on GPs Clusters. No. 53/2021 – *53/2021. (II. 9.) Korm. rendelet a praxisközösségekről*).

On the other hand, from 2020, collegial professional leaders support GP practices at county and national level in primary care. There is a national collegial professional leader for GPs, one for the general paediatricians and one for the primary care dentists, and there are collegial professional leaders in every county for the aforementioned professionals, and the system of collegial professional leaders was extended to district level in January 2023 (OKFŐ, 2023a). The new network of territorial collegial professional leaders will make the operation of primary care practices and the communication between the different levels of primary care and health system even easier (the aforementioned Government Decree on GPs Clusters. No. 53/2021 and the Decree of Ministry of Health. No. 4/2000 – https://net.jogtar.hu/jogszabaly?docid=a2100053.kor*4/2000. (II. 25.) EüM rendelet a háziorvosi, házi gyermekorvosi és fogorvosi tevékenységről* – regulate their competences).

Our pilot study was implemented at national level. We used GP practices as the units of analysis, and we explored deserted areas at district level by examining all the 174 districts of the country. We created maps to show desertification results in the whole country. We were curious if there were districts where difficulties emerge accessing primary care services, and if there were, we would try to identify closely related medically deserted areas. We examined and mapped the accessibility of the practices by travel time, same for vacant practices, age and number of primary care doctors per 10,000 locally registered social security numbers of the patients, and GPs Clusters at district level. Hungarian studies applied different measures and indicators before – e.g. deprivation index, socio-economic and economic development indicators and settlement hierarchy – on primary care and GP practices describing inequalities and anomalies to accessibility (Bálint, 2019, 2021; Papp, 2021; Pál et al., 2022). In the analysis we used a publicly not available dataset of primary care practices from the National Health Insurance Fund (NEAK) (data refers to the end of December 2022, annual service data refers to 2022) supplemented by a publicly available dataset on permanently vacant GP practices of the National Directorate General for Hospitals (OKFŐ) and by publicly available databases of Census 2022 on the districts and demography from the Hungarian Central Statistical Office *(KSH)*.

In the pilot project we implemented a consensus building exercise between the stakeholders of Hungarian primary care using the Delphi method (Brînzac et al., 2023). According to this methodology we needed to reach an 80% consensus on the main questions from the stakeholders

of specific topics in different rounds of questionnaires. After achieving that, we organised a personal meeting with a number of respondents.

The list of stakeholders was compiled from different levels of primary care system. We listed the names from different government institutions and civil organisations that represented the general practitioners and the healthcare workers. We were able to reach the National Directorate General for Hospitals (OKFŐ), collegial professional leaders of primary care and the county organisations of the Hungarian Chamber of Nurses and Allied Health Professionals but ordinary general practitioners were also recruited by snowball sampling and from a Facebook group of GPs. We arranged two rounds of surveys among them. Our online questionnaires were created using Google Forms and the questions were posed in Hungarian language.

In the first round we applied 15 (mostly) open-ended questions in the questionnaire about the medical deserts and the implemented policies for desertification.

Our questions focused on three broad themes:

1. Are there areas in Hungary where medical deserts can be found and if so, which regions are they typical of?
2. Have measures been taken to mitigate medical deserts? If so, which ones?
3. Respondents' views on necessary mitigation strategies for medical desertification.

We received 70 completed questionnaires. Those completing the questionnaire work in patient care, as well as those who are involved in decision making alongside this role. According to 93.1% of the respondents, Hungary has some areas that based on this exercise can be definitely called deserted areas. This question was applied as an exclusion criterion to follow the next section of the questionnaire (those, who answered there are no medical deserts in Hungary, were excluded from the further questions). Due to the open-ended questions, we were unable to achieve 80% consistency of responses in the areas of measures and mitigation, so the responses were aggregated and grouped into topics (E.g. infrastructural support for practices) and were then asked as closed-ended questions in the second round.

In the second round, 41 completed questionnaires were returned, and the minimum criterion (80%) was reached in the following topics:

- 87.8% of the respondents labelled that there are medical deserts in Borsod-Abaúj-Zemplén county.

- 87.8% responded that we can label medically deserted areas by the numbers of the vacant GP practices.
- 95.1% responded that they can get information about medical deserts in the countryside from professional information channels.
- 85% responded that financing practices (e.g. financial subsidies, subsidies for equipment) can be regarded as a measure for mitigating medical deserts at local level.

We did not reach a consensus of 80% here but 71% of the respondents found the creation of GPs Clusters as a mitigation measure.

After two rounds of the survey, we organised an online meeting with the stakeholders. We invited all the respondents (those who according to the questions seem to deem medical deserts can be a relevant problem in Hungary) and created a Doodle form offering appointments, but we received only a few responses, so we could finally organise a meeting with five stakeholders. However, we were able to represent three levels of primary care as an executive officer from the National Directorate General for Hospitals, a collegial professional leader of GPs, a collegial professional leader of general paediatricians and two GPs joined our meeting. The meeting was moderated by the principles of focus groups (Letenyei, 2005). A semi-structured interview schedule was prepared, consisting of three thematic blocks. The meeting lasted nearly one and a half hours and focused on the results of the survey (the reached consensus in certain topics), the previously implemented measures targeting medical desertification, and the experiences and (best) practices of GPs Clusters (and the use of them as mitigation strategies).

The report of the meeting was anonymised by using the names of professions or positions of the participants without referring to their real identity. We managed to summarise the gathered information on mitigation strategies into four main topics: 1. creation and experiences of GPs Clusters, 2. competence and broadening the GP's scope of practice, 3. collegial leadership systems, 4. other incentives for handling human resource problems. The conclusions and results of the meeting can be found in the section of "medical deserts mitigation strategies".

4.4.3. Pilot study outcomes

We applied the phenomenon of medical desert in the pilot study as a synonym of the phrase of a (medically) underserved area. Due to literature and the findings from the consensus building

exercise where we intended to specify the features of the medical deserts by the stakeholders, we would define medical deserts by the characteristics of medically underserved areas. We define medical deserts as medically underserved areas where the access to healthcare services is limited based on a variety of factors. Considered factors were: the age of general practitioners, shortage of human resources, unequal access to care, the number of vacant primary care practices, reduced office hours in the replaced practices, the distance to the care providers, the low number of GPs Clusters, and the disadvantaged status of the settlements. We tried to apply most of these features as indicators to identify the medically deserted areas in Hungarian primary care.

Following the methodology created by WP4, first we used distance and travel time from the nearest primary care unit for identification of possible medical deserts. Since literature and the consensus building process suggests that several other factors may also contribute to the genesis and the persistence of medical deserts, as a second step, we included additional indicators (such as vacant GP practices, unequal distribution, age of primary care doctors, policy and regulatory factors) in the mapping. In the analysis we did not count on Budapest because the health system is more flexible in the capital: e.g. in the vacant practices the replacement can be carried out more easily and the secondary care services are accessible more easily as well.

Distance and travel time

The distance individuals travel to access healthcare services can be a significant barrier, especially for those having limited public transport options. We examined the GP offices by travel time at district level. According to the methodology created in OASES project (D4.1) (Lucas-Gabrielli et al., 2022) we took into account the travel time on the road, by car and used the following weights to calculate the maximal travel time to the nearest primary care unit in the districts:

- 1 -> if the travel is less than 10 min,
- 0.667 -> if the travel time is between 10 and 15 min,
- 0.33 -> if the travel is between 15 and 20 min,
- 0 -> if the travel is more than 20 min.

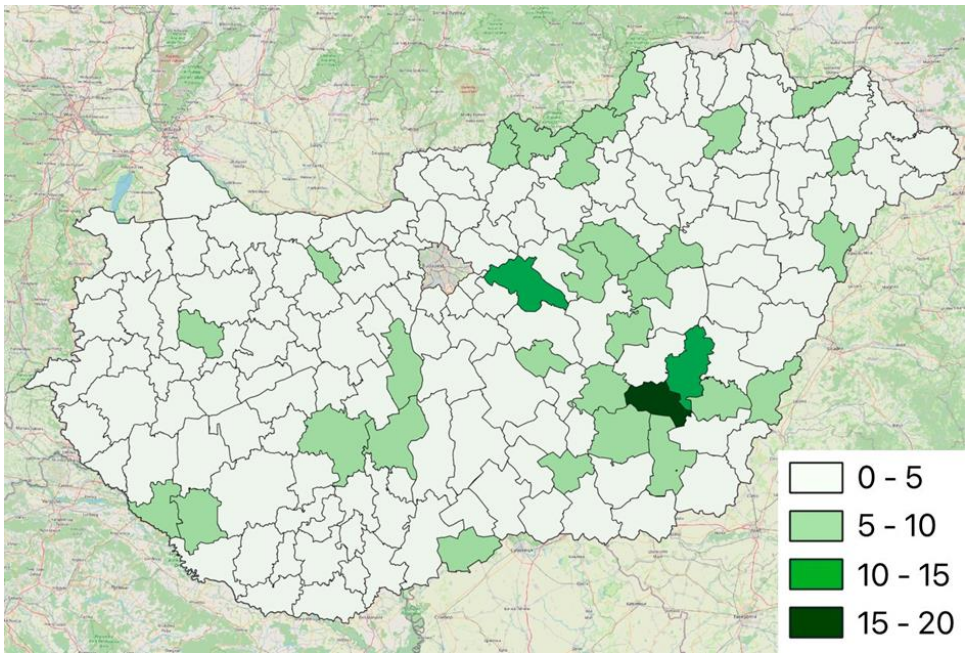
Travel times were calculated based on the assumption that the primary care system was designed to ensure primary care services were available locally everywhere. The current system differs only in the sense that not all the practices are filled. In these vacant practices substitute doctors provide care, usually in fewer service hours. Applying the OASES methodology, we have found that GP

offices can be reached by car within 5 minutes in almost all the districts of Hungary. A 5-minute travel time means that a practice is accessible within 4 kilometres (by road) at a speed of 50 km/h. We concluded that almost all the filled practices are reachable by car within 5 minutes. 5 minutes is equivalent to 5 kilometres if you drive at the speed limit of 50 km/h. If it is 10 minutes, there is a primary care doctor within 10 kilometres that you can reach. If we examine how much travel time needed to reach a filled practice, only two districts were found where a (little bit) longer (more than 10 but less than 15 minutes) travel time can be counted on to reach a filled practice. However, the practice was defined as the practice to which the accessible GPs office belongs. Since we did not know who the substitute doctors in vacant practices are, how often they substitute, or what percentage of their time they spend in the substituted practices, we considered that non-realistic worst-case scenario, in which there is no care available in vacant, substituted practices. Moreover, travelling by car is not relevant in some areas, as some people – especially older people and people in the socio-economically deprived areas – can only rely on public transportation. This can also distort the actual travel times, but following the methodology (of WP4), we took into account only accessibility by car.

Vacant practices

As the number of vacant practices can be regarded as an indicator to identify medical deserts due to literature and the stakeholders, we mapped the share of those permanently vacant practices that are vacant for more than half but less than ten years at district level. However, as we mentioned before, in the vacant practices care has to also be provided, so only the number or the share of vacant practices can distort the picture on real availability and accessibility to primary care services. Therefore, in order to describe a more sophisticated status of primary care, we did not only count the vacant practices but took into account the locally registered social security numbers of the patients in the filled and in the vacant practices at district level. The colour scale on Map 1 indicates the share of permanently vacant practices. The figure includes all types of practices (adult GP practices, paediatric GP practices and mixed practices). Places marked in white represents the fewest share of vacant practices, while the share of vacant practices is highest in the black (District of Szarvas) and dark green coloured districts (Districts of Gyomaendrőd and Nagykáta). It means there are no registered social security numbers in more than 10% of the practices in these districts (for more than half but less than ten years). However, it does not seem a high share, especially

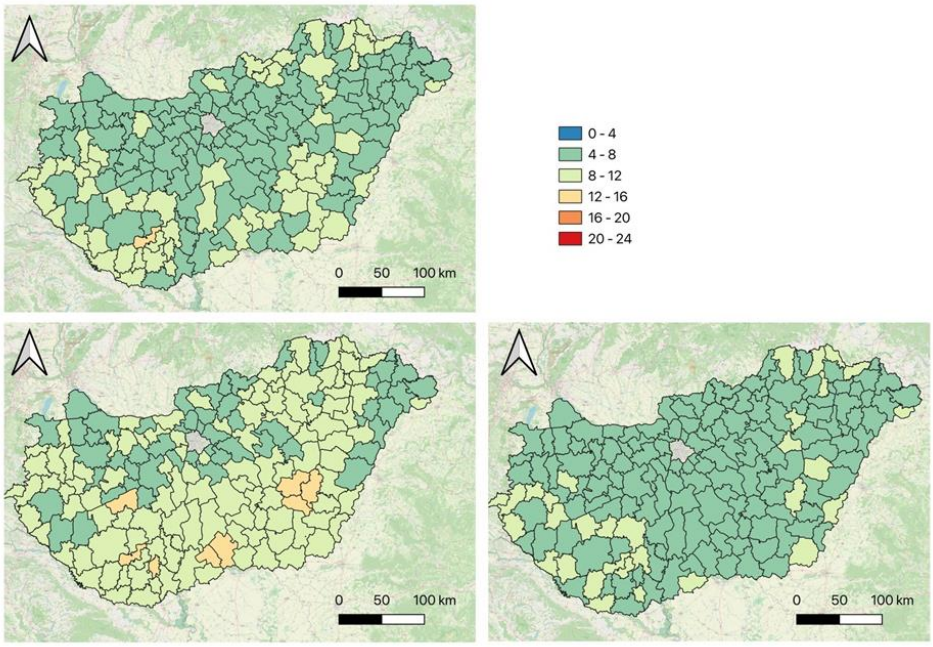
taking to consideration all the districts. This provides a much more authentic picture on availability of primary care services than simply saying that 10-11% of the practices are vacant in the country.



Map 1. Share (%) of permanently vacant primary care practices (for more than half but less than 10 years) considering the locally registered social security numbers of the patients in the practices at district level

(Un)equal distribution

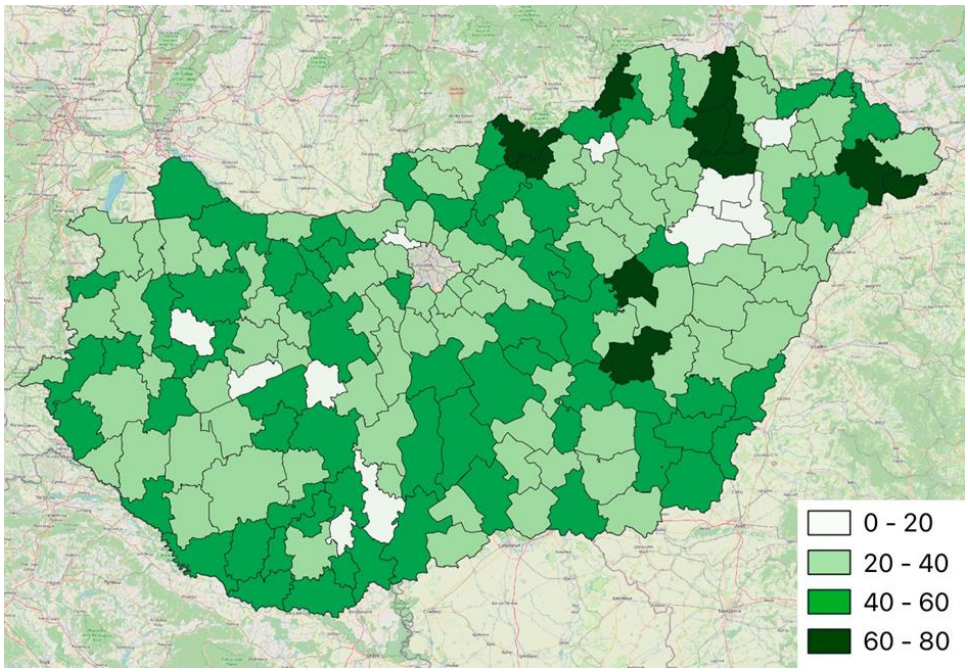
Even if there is an adequate number of healthcare professionals at national or regional level, their uneven distribution across different areas can result in medical deserts. However, if we take into consideration the number of primary doctors per 10,000 locally registered patients (locally registered social security numbers) in the districts (instead of the number of primary doctors per 10,000 residents), it also shows us a more equal distribution of them. In this regard we can count on 4–12 primary care doctors per 10,000 locally registered patients in almost all (light and dark green coloured) districts (Map 2).



Map 2. Number of primary doctors per 10,000 locally registered social security numbers of the patients (1. in all types of practices, 2. in paediatric and mixed practices, 3. in adult GP and mixed practices) at district level

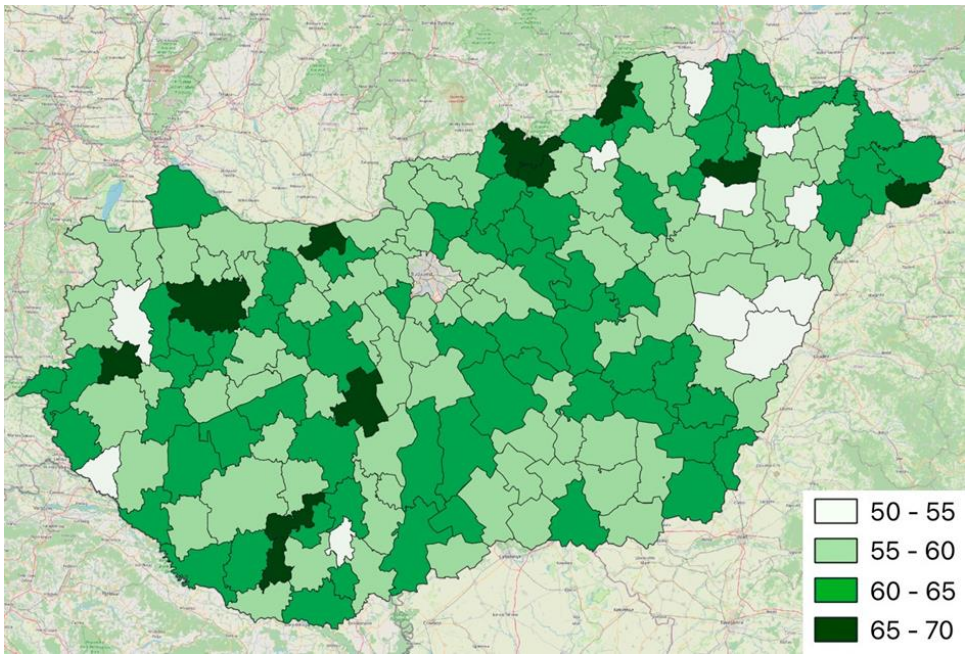
Age of primary care doctors

As it was mentioned before, the ageing of the population of medical doctors can potentially contribute to the development of medical deserts, we also looked at the age and average age of primary care doctors. Map 3 shows us the share of primary care doctors aged 65 or older. We can see that almost all the districts have a stock of primary care doctors in which at least 20–40% of the doctors are aged 65 or older. Eleven (black coloured) districts can be found where 60–80% percent of primary care doctors are older than 65 years (Districts of Salgótarján, Bátonyterenye, Putnok, Gönc, Szerencs, Tokaj, Tiszavasvári, Mátészalka, Csenger, Kunhegyes, Mezőtúr).



Map 3. Share (%) of primary care doctors aged 65 or older in the filled practices at district level

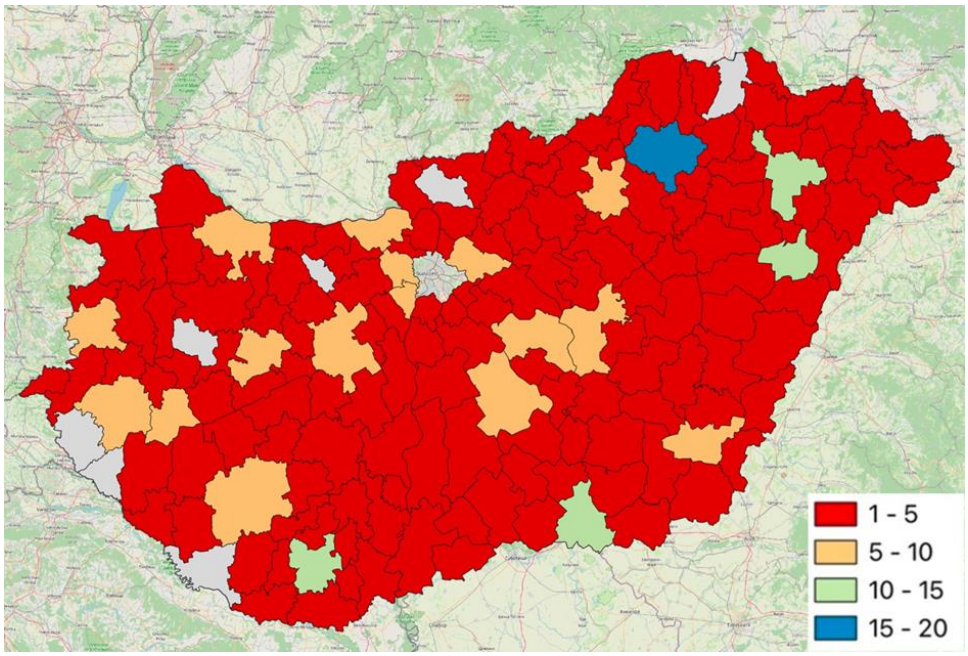
Map 4 depicts the average age of primary care doctors. The average age is over 50 years in all the districts and in eleven (black coloured) districts the average age of primary care doctors is over 65 years (Districts of Salgótarján, Bátonyterenye, Putnok, Tiszavasvári, Csenger, and in *Dunántúl*: Districts of Tata, Sárbogárd, Szentlőrinc, Hegyhát, Pápa, Vasvári). These results highlight the problem of ageing population of primary care doctors. In the near future by their retirement, without adequate mitigation strategies, the availability of primary care services can deteriorate heavily in around half of all the districts.



Map 4. Average age of primary care doctors in the filled practices at district level

Policy and regulatory factors

Government programmes and incentives to encourage healthcare professionals to work in underserved areas can mitigate medical deserts. Professionals who entered into GPs Clusters are more likely to commit to modern standards. The low share of practices participating in Closely Cooperation GPs clusters is also a possible indicator of desertification. The topic of GPs clusters was highlighted in the consensus building process therefore we pictured the Closely Cooperation GPs Clusters at district level (Map 5). In the Districts of Rétság, Oroszlány, Devecser, Lenti, Letenye, and Barcs (grey coloured) there are no Closely Cooperation GPs Clusters and in the blue coloured District of Miskolc have been established the most Closely Cooperation GPs Clusters. It has to be noted that the population of the districts are different, and in some smaller ones, 1-2 GPs Clusters can cover all the practices, and GPs Clusters can stretch across the borders of districts, therefore in the map some GPs Clusters can be counted into two different districts as well. Moreover, in some cases incorrect street names or street numbers made the geocoding process and the portrayal of GPs Clusters in the districts more difficult.



Map 5. Number of Closely Cooperation GPs Clusters at district level

Weaknesses and limitations of the applied indicators

We have to note that several limitations were identified in the applied datasets or during the analysis: 1. The population of certain counties in Hungary has changed drastically between 2011 and 2022, with both increases and decreases. However, for population density, the capital city remains in the lead. 2. Regarding Budapest, maps have not been created, as it cannot be interpreted in the same way as the systems in operation in the districts. In the capital city, significantly more GPs are available within 10 minutes if the given practice needs to be replaced for any reason and in general secondary care services are also accessible within this time span. 3. In some cases, we received incorrect street names or street numbers that made the geocoding process more difficult. It influenced the geocoding process and the portrayal of the number of GPs Clusters at district level. 4. We were not able to access data on the office hours in the filled and (by replacement) in the vacant practices and the data on the substitute GPs in the vacant practices. We could not judge to what extent the services are available in these cases, but we tried to sort this problem out by calculating the locally registered social security numbers of the patients in the case of vacant practices and in the case of the number of primary doctors per 10,000 locally registered patients.

Results of the analysis

The vacant and permanently vacant practices are monitored regularly (GKI, 2022, 2023) and the stakeholders mentioned the number of vacant practices as an indicator to identify medical deserts, but in the vacant practices the primary care services have to be carried out by replacement. Since we were not able to access to the replacement data of vacant practices, we try to calculate on the locally registered social security numbers of the patients in the filled and in the vacant ones. If we take into account them the number of primary doctors per 10,000 locally registered patients shows us an equal distribution by contrast to the vacant practices. Presumably, the patients who belong to vacant practices take the services in the large cities instead of the replaced practices onsite. Besides the high average age and the high share of primary care doctors aged 65 and older can be detected as a risk for the availability of appropriate primary care services in the near future. Whereas we can identify inequalities and anomalies in certain respects, but we can only speak about relative difficulties accessing primary care services and closely related deserted areas cannot be depicted, neither by the travel time, nor by the distribution of primary care doctors.

Previous initiatives targeting medical deserts

In the last few years numerous actions (change in legislation, financial incentives, projects, model programmes) have been implemented in primary care. However, stakeholders highlighted a few mitigation strategies in the consensus building exercise. We summarise below those initiatives and programmes that have been referred by them.

GPs Clusters

GPs Cluster model (Ádány et al., 2013) was introduced and piloted between 2013 and 2017 with the financial support of the Swiss-Hungarian Cooperation Programme. The pilot took place in socially and economically deprived areas of the two most disadvantaged regions of the country (North-Hungary and the North Great Plain – *Észak-Alföld*) (Ádány et al., 2013). In the chosen regions, the number of vacant GPs practices was reasonably high. Twenty-four GPs from sixteen settlements in the aforementioned regions formed four GPs Clusters (Dózsa & Papp, 2017).

The aim of the Model Programme was to strengthen preventive services into primary care, complement the one-physician/one-nurse model with the opportunity of cooperation, providing new services to improve the general health status of the target population and reduce the social

inequalities in health (Ádány et al., 2013). In the programme, a new health workforce model was also tested. In addition to the traditional one-physician/one-nurse setup, other health professionals were involved in primary care offering a broader scale of services. The GPs Clusters included the following professionals: GPC coordinating general practitioner (GP), GPs and General Paediatricians, nurses working in GP practices, community nurses, public health coordinators (as a new function), community public health nurses (health visitors), dieticians, physiotherapist and health psychologists (Dózsa & Papp, 2017). Health mediators from the local Roma community also supported the GPs clusters (Ádány et al., 2013). The new services were organised into the following units:

- health promotion activities in different settings (coordinated by public health coordinators);
- coordinated actions of the traditionally independent health visitor services;
- health status assessment of inhabitants (mainly carried out by the public health professionals and community nurses);
- lifestyle counselling (provided by public health professionals, dieticians, physiotherapists, health psychologists);
- medical risk assessment (provided by GPs);
- chronic care-rehabilitation (provided by GPs, practice nurses, dieticians, physiotherapists, health psychologists) (Ádány et al., 2013).

The Model Programme offered broadened services in patient care, promoted teamwork and resulted in GPs being able to concentrate on their own medical tasks by the lower workload (Papp, 2017). The aim of the programme was also to give methodological suggestions and recommendations to improve primary care services at national level (Ádány et al., 2013).

In the frame of the “Three Generations for Health Programme”, the Ministry of Human Resources announced a tender in 2019 for creating new GPs Clusters. In rounds of the programme, 143 new GPs Clusters were established from 800 GP practices with dedicated budgets. New preventive and health development services have become easier to access for nearly one million people by the Programme (GOKVI, 2023). Activities included promotion of physical activity and healthy eating, cardiovascular risk assessment for the age group 40-65 years, minimal intervention for smoking cessation, individualised care for patients with vascular disease, improving health literacy of patients and increasing collaboration between primary care and secondary outpatient care (GOKVI,

2023). The commitments were fulfilled adequately by the GPs Clusters although the programme had to be modified several times due to the COVID-19 pandemic. Therefore, the activities were implemented in a longer period of time. However, this situation provided an opportunity to create new communication channels and introduce telemedicine services (GOKVI, 2023).

In 2021, the Government Decree on GPs Clusters (No. 53/2021) was implemented in order to create a framework for establishing GPs Clusters at national level. GP practices which entered into GPs clusters received additional financial support to increase the wages of primary care physicians. The National Directorate General for Hospitals is in charge of registration for new clusters.

Attila Naszlady Programme for Health Development

One of the current non-governmental mitigation programmes to address medical desertification in primary care is the Attila Naszlady Programme for Health Development *(Naszlady Attila Egészségfejlesztési Program).* The programme is carried out by the Hungarian Charity Service of the Order of Malta *(the Malteses)*. The Naszlady Programme focuses on the emerging settlements in the rural areas and provides telemedicine care to the population whom healthcare is difficult to access. The Emerging Settlements *(Felzárkózó Települések)* programme defined 300 most deprived settlements to develop and by 2023 178 emerging settlements were developed by a complex programme (see Felzárkózó Települések – fete.hu, 2023). Vacant practices can be found in these target areas, moreover there are no practices of general paediatricians (care services for children are provided by "mixed" GP practices). The programme has a stock of 160 health professionals. Nurses work in the field, while medical doctors join the visits remotely.

In the telemedicine services the physician-patient distance can be overcome by infocommunication tools. The telemedicine appointments take place at the so-called Health Points in the settlements (the Malteses make 5 Health Points work in 35 emerging settlements). The human resources and the equipment are delivered by "mobile health centres" which mean highly equipped buses for health visits. The telemedicine appointments are available one day every week or fortnightly. The appointments happen in real time by virtual log in of the doctor (by digital medical devices, e.g. digital stethoscope). Thus, telemedicine can be interpreted as an *"extended hand of the doctor"*.

Their main activities for adults include screening, treatment and care of cardiovascular diseases and diabetes; care of other chronic diseases (by distance monitoring), laboratory tests; care of acute, non-emergent conditions; counselling on health conditions; and management of patient pathways.

The main activities for children are: care of acute cases (upper respiratory and gastrointestinal infections); general health check and regular screenings; icterus screening in the first weeks or months; anaemia screening.

The Malteses have their own brand that can attract health professionals into this programme. Flexible employment practices are applied for medical doctors which enables work-life balance for physicians with young children. They cannot perform personal appointments, but they can log in to a virtual appointment from home three hours a day by telemedicine.

4.4.4. Medical deserts mitigation strategies

The aforementioned initiatives (in the previous subchapter, i.e. GPs Clusters, Three Generations for Health Programme and Attila Naszlady Programme for Health Development) were also referred by stakeholders in the questionnaires or in the focus group discussion. Focus group participants highlighted the role of GPs Clusters and additionally mentioned the following measures as mitigation strategies: collegial professional leader system at county level, the need for extension of competences for GP practices and making primary care attractive to young professionals. We summarised the experiences and the expectations gathered from stakeholders about these potential measures and strategies and with respect to the qualitative feature of focus groups, quotations from stakeholders are inserted to illustrate our findings.

1. **Creation and experiences of GPs Clusters**

GPs Clusters were a key topic in the meeting as we find it as a mitigation measure based on the feedback of the participants. The Government Decree of 2021 on GPs Clusters created a framework for new clusters, although it mostly outlines only the frames of them. Creating GPs Clusters can be regarded as a possible mitigation strategy, but their outcomes cannot be seen yet.

"*As professionals, we consider the Government Decree of 2021 on GPs Clusters to be a milestone. It was a major change in the life of primary care, even if the cooperation that we professionally expect from GPs Clusters could not really fully develop. (…) It has not yet really brought results in the elimination of deserts. (…) So, Government Decree on GPs Clusters only laid the foundations for an organisational structure, (...) the ideas have not yet come to effect, neither in terms of the transformation of district boundaries, nor in terms of the development of the GPs Clusters'*

organisational structure, which we expect from it. So, the practical implementation of these things is still ongoing" (collegial professional leader of GPs).

Nevertheless, GPs Clusters have been created, although their planned functions are not realised yet in all aspects. However, it has to be also emphasised that this kind of structure can help the communication between the isolated GPs.

"We are aware of the existence of GPs Clusters, and we are members of a GPs Cluster ourselves. (…) The formation of GPs Clusters has forced us, isolated general practitioners working side by side, to communicate with each other, in a good sense. (…) And I think this is also a very valuable part of this system. Another message from me is that patience and building up the system step by step is what we all have to do now" (GP from Budapest).

We asked the stakeholders whether they have experience with additional health professionals (e.g. dietician, physiotherapist) are employed in the clusters. In case of the necessary funding in certain projects or programmes (e.g. Three Generations for Health Programme) hiring new health professionals can be feasible and can be popular for the patients as well.

"I was the consortium leader of the Three G GPs Cluster (Three Generations for Health Programme)*, and it worked very well. So, positive examples need to be used, but I really think the biggest barrier to this is funding. Because when we had extra professionals, so I had a dietician, a psychologist, and a physiotherapist, they were very popular with children and adults as well, because it was a mixed GPs Cluster. Everyone loved it, and it was very, very good to work together in this GPs Cluster. But this, the option that we could hire these employees, is still there, these GPs Clusters exist, it is all a funding issue" (collegial professional leader of general paediatricians).*

2. Competence and broadening the GP's scope of practice

Broadening of competencies is about effective management and better utilisation of existing health workers within their legislated competence of practice (see El-Jardali et al., 2007). Primary care could take over certain tasks from secondary care. It could bring services closer to patients' homes and alleviate desertification, especially in areas where secondary care is difficult to access. Participants found that the expertise is there, although the legislation and the agreement of different stakeholders are missing. Different interests amongst different groups of professionals can cause conflicting situations here as well.

On the other hand, there are also steps that do not require additional funding, but could be implemented within the framework of simple extensions of competences. Here, only policy decisions are needed, as well as mobilising professional lobbies, which is not easy in many cases either" (collegial professional leader of GPs).

"Different levels of the healthcare system may have conflicting interests in certain aspects. (…) It is rare that interests point in the same direction at different levels, and then we somehow have to overcome that. So, if we put the task sharing between medical and nursing tasks on the table, there may also be conflicts of interest and different beliefs" (GP and project manager).

"There are health care services in primary and secondary schools at the level of paediatric general practice and mixed practice general practice, and there are medical tasks there. There is a parallel provision of care, so in practice, we do the same thing at school as in the practice. So, the parallels should be eliminated" (collegial professional leader of general paediatricians).

Cooperation and the improvement of the communication between the different professions and levels of the healthcare system can help the processes.

"We should start and strengthen our relationships with related professions in this construction, so that there is as much support from related professions as possible to bring as many tasks to the level of primary care" (collegial professional leader of GPs).

Moreover, the empowerment of primary care and this kind of task-shifting can be beneficial to secondary care as well.

"We are in constant dialogue with certain professional medical groups who are open to this, for example pulmonologists, psychiatrists, and diabetologists. They have proven to be open to this, and there is also a demand from the secondary care to relieve themselves of burdens in many areas that could actually be better managed by a form of care that is close to the population. So, these are the routine care cases, of which there are many, but which are of low complexity" (executive officer of National Directorate General for Hospitals).

Nevertheless, the strict limits of the professional competence of GPs can be one of the main reasons for the unattractive primary care and the medical desertification in primary care.

"In my opinion, the desertification contributes very, very significantly to the above, beyond the limits of competences (…) if we don't do anything with the whole system, if we only slightly expand the, the areas of competence, we could already achieve great results in terms of making small oases grow out of the desert. (...) And this extension of the competences is also a key question in terms of attracting young people to the profession. The profession of general practitioner will be much more popular if colleagues feel that they can do much more onsite, regardless of any financial, structural, or numerical factors" (collegial professional leader of GPs).

In conclusion the extension of competences for GPs (overcoming the controversies between the medical profession) can be fruitful for the funder, for the healthcare system and above all for the patients.

"Both the funder and the decision-maker need to understand that the expansion of certain competences, even if it has consequences, may not be so bad overall. It is certainly not bad for the patient, and it may not be bad for the funder either" (collegial professional leader of GPs).

3. Collegial leadership systems

In the survey, 95% of the stakeholders marked the professional information channels as a relevant communication form in primary care. In terms of mitigation measures and strategies, they were not aware of several measures had taken. It suggested some discrepancies in the information flow. We intended to explore this phenomenon with the participants in the focus group meeting. The stakeholders agreed with us in this respect but mentioned an innovative solution to this kind of problem, namely the role and function of the collegial professional leaders.

"It seems like a gap is opening up between what the people working in the field see (…) For some reason, they are not represented here. Therefore, the collegial professional leaders are supposed to fill this gap, and they are making extraordinary efforts to do so" (executive officer of National Directorate General for Hospitals).

The collegial professional leaders (of GPs, general paediatricians and dentist) function at county level and they were able to create such cooperation and relationships in the healthcare system and in the public administration that did exist before.

"Nonetheless, I believe that the unquestionable outcome of the past three years of operation is that there are those players, those colleagues, at the county level who have found relationships with all levels of the healthcare system, including ambulatory and inpatient care institutions, as well as health authorities, financiers (…) and even with those responsible for territorial administration, county government commissioners, local care organisers, and stakeholders. These are relationships that did not exist in the past" (collegial professional leader of GPs).

Besides the condition of the assignment for collegial professional leaders is they have to be a practising physician. That can make efficient communication, cooperation and channelling the interests possible.

"I would like to emphasise only one very important virtue that I think should be preserved for the future. This is the fact that each collegial leader has to be a practising doctor. In my opinion, this is a virtue of this system that I have not been able to identify anything similar to in recent times at this level of state administration, or even at the level of hospital management" (collegial professional leader of GPs).

Above all the efficient territorial collegial leadership can be a tool for mitigating the medical desertification as well by managing the communication between the levels of the healthcare and managing the patient pathways. There was a consensus about it between the stakeholders.

"We can respond appropriately at the level of communication by building a territorial leadership system. This, I think, can already mean a lot, because if we talk about a deserting health area, then it does not necessarily mean only whether there is a doctor or what the care is like, but whether the given practising doctors are in touch with each other at all. Is there a proper exchange of experience about the difficulties of the area and the patient pathways? Of course, the great advantage of primary care after the change of system was the emergence of independent health care providers, but it also brought with it the fact that colleagues were isolated, and I think that the construction of a collegial leadership system at the territorial level can help a lot in this. (…) I think this could also have a major impact on the eradication of desertification" (collegial professional leader of GPs).

4. Other incentives for handling human resource problems

The aforementioned actions make cooperation and patient care easier which contributes to the mitigation of medical desertification. However, additional efforts are needed to recruit young physicians and to make primary care professions attractive.

"There are still other levels or circles of this problem. One of them is the problems of human resources, which would definitely need to be addressed. So, the ageing population structure, the fact that primary care is not attractive, and is becoming less and less attractive to young people. The number of permanently vacant practices is increasing, which of course does not mean a desert of care in itself, because even in a permanently vacant district care is provided by replacement or somehow, but it is still an indicator that the popularity of this field is declining" (executive officer of National Directorate General for Hospitals).

Scholarships and different incentives exist as well aiming to attract young colleagues. Participants highlighted that the reshaping and renewal of the scholarship system would give an additional incentive to the recruitment of young professionals.

"The most important question, and the most important thing is that as many children as possible continue to be cared for by family doctors, is the solution to the succession issue. (…) Therefore, it would be extremely important to create an appropriate scholarship system so that these colleagues work in the care of infants and general paediatricians after graduation, after obtaining their specialisation "There are scholarship systems at certain municipal levels, there is also a scholarship system at the national level, but the care of general paediatricians should be made even more attractive" (collegial professional leader of general paediatricians).

On the other hand, we cannot only speak about the shortage of physicians but shortage of healthcare workers. The employment of advanced practice nurses (APN) with extended competences can be a significant step forward to mitigate health professional shortages by shifting tasks from GPs to them.

"The issue of APNs, it is essential to bring them into the system, but the number of other healthcare professionals with lower levels of qualification also needs to be increased in primary care" (collegial professional leader of GPs).

"There is a training programme called community nurse with extended competences (APN – advanced practice nurse). There are such professionals, and the opportunities resulting from this are also underutilised in some respects, and this also leads back to the topic of competences" (GP and project manager).

4.4.5 Lessons learned

In the last section some conclusive remarks are drawn from the experiences of the pilot process. We highlight our observations concerning the data collection and analysis, and we summarise our findings as well.

1. In our study, we worked using several statistical databases, in some cases discrepancies occurred between the content of different databases. It draws the attention to the significance of data quality and the need for triangulation between different datasets.
2. There were mixed results on where medical deserts can be found in Hungary. While the focus group study indicated Borsod-Abaúj-Zemplén county as affected by medical desertification, the statistical data did not confirm it. We can identify inequalities and anomalies in certain respects, but we can only speak about relative difficulties accessing primary care services and closely related deserted areas cannot be depicted.
3. Though the vacant and permanently vacant practices are monitored regularly, and the stakeholders mentioned the number of vacant practices as an indicator to identify medical deserts, in the vacant practices the primary care services are carried out by replacement. Besides that, if we take account of the (locally registered) social security numbers of the patients in primary care practices, the number of primary doctors per 10,000 locally registered patients, shows us an equal distribution of them by contrast to the vacant practices. Perhaps we would have made a more accurate analysis of the accessibility if we had got access data on the list of substitute doctors and their office hours in the replaced practices. This problem should be examined in further research.
4. The high average age and the high share of primary care doctors aged 65 and older can be detected as a high risk for the availability of appropriate primary care services in the near future.

5. More actions and programmes were implemented in order to create GPs Clusters, so establishing them can be regarded as the main mitigation strategy from the last few years. The Government Decree of 2021 on GPs Clusters on GPs Clusters created a framework for new clusters, although it mostly outlines only the frames of them, and their outcomes cannot be seen yet. In order to employ new professionals, clusters' funding is needed to be established.
6. We noted that stakeholders mainly follow professional information channels as main sources of professional information including the issue of medical deserts. Several mitigation steps and policy actions that were carried out recently have not been mentioned by them in the questionnaires, we found that based on the lack of information they did not even have the knowledge about those actions.
7. The new system of territorial collegial professional leaders can sort this problem out by making the communication better at local level. Collegial professional leaders (at county level) have already established better working communication channels towards policy makers that can support handling the challenges of medical desertification. However, the establishment of effective communication towards practising doctors is not yet completed.
8. Stakeholders emphasised the need for an extension of primary care, including the recruitment of new specialists with an extended competence of practice in primary care practices. This could provide a new direction for primary care that would significantly improve the efficiency and quality of care.

In summary, we can say that solving the human resource problems and improving the quality and the efficiency of primary care are difficult tasks for both the policy makers and the stakeholders as well. However, a number of initiatives, programmes, financial subsidies and regulations were implemented with the aim to handle these problems. By all means, it seems to us based on the pilot results, time is needed for these actions to succeed and make oases in the deserts.

4.5. Italy

4.5.1. Status quo of the health system in Italy

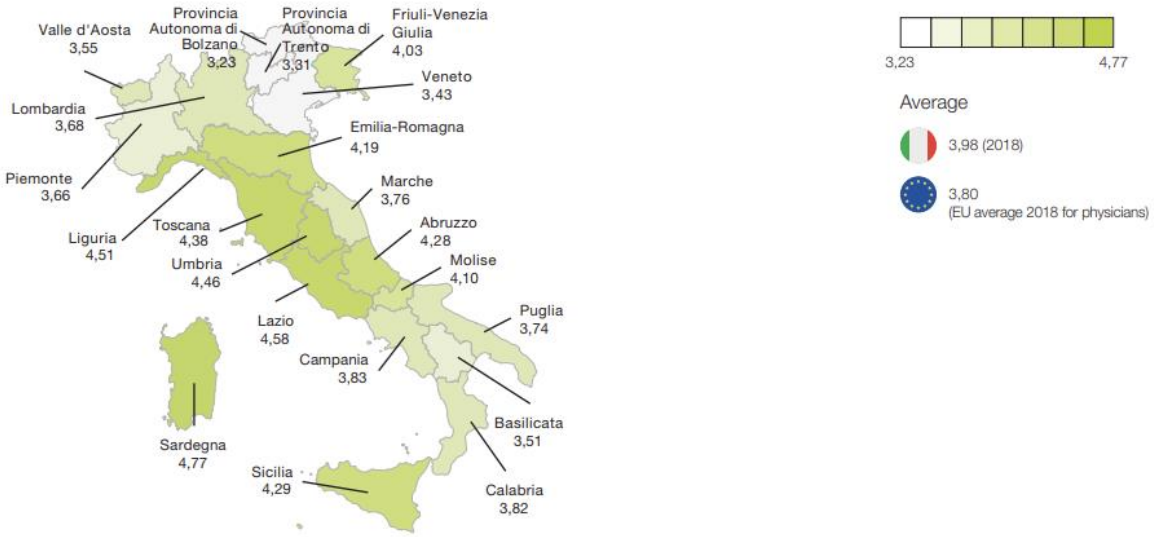


Figure 12. Number of practising physicians per 1.000 inhabitants (SEPEN Project, 2020f)

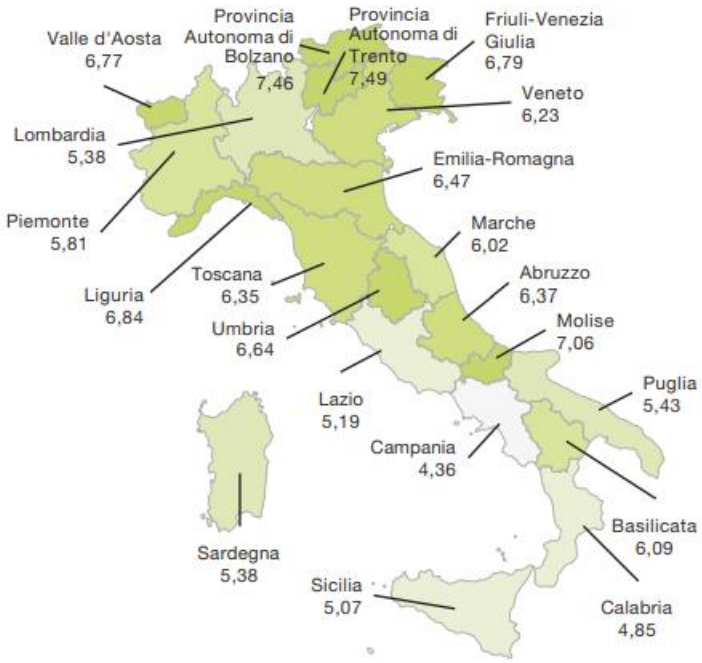


Figure 13. Number of practising nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020f)

Italy, a southern-central European country, is one of the countries in which the pilot studies was implemented and coordinator of the project.

Demographic factors	Italy	EU
Population	59 030 133	446 735 291
Share of population over age 65 (%)	23.8	21.1
Fertility rate	1.3	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	33 669	35 219
Relative poverty rate (%)	20.1	16.5
Unemployment rate (%)	8.1	6.2

Table 11. Demographic and socioeconomic context in Italy (OECD/European Observatory on Health Systems and Policies, 2023e)

Italy comprises more than 10% of the total European population, with a mid-year estimate of 59 030 133 people, out of which 23.8% are over the age of 65 years, a rate higher than the EU average. However, the fertility rate is lower when compared to the EU average, but only by 0.2 points. The socioeconomic factors present a GDP of 33 669 EUR, approximatively 2 000 EUR lower than the European median, which is confirmed by the relative poverty rate of 20%, with 4% higher than the average, and by the unemployment rate, that is with 2% bigger than the EU average – 8.1% (OECD/European Observatory on Health Systems and Policies, 2023e)

A major healthcare reform in 1978 transformed Italy's social security system – which, at the time, had around 100 different health insurance funds and highly varied scope of services – into a centrally run state healthcare service. Further reforms in the 1990s and early 2000s decentralized this system once again. Since then, the regions have been responsible for local healthcare provision, absorbing a large share of funding.

The Health Ministry, which functions as a point of liaison and orientation, has the task of defining healthcare principles, framework conditions and a required level of care for all the regions. This includes guidelines and legislation regarding digital health. The regions are required to comply with the Ministry's defined guidelines and level of care. However, they are completely autonomous, free to organize and administer their regional systems.

The pilot study was implemented at the national level, in the whole of Italy.

At the national level, Italy had 242 721 practising medical doctors in 2021, of which: general practitioners are 40 250, general paediatricians are 7 022, cardiologists are 14 319. Furthermore, in 2021 Italy had 367 378 professionally active nurses, 49 721 practising dentists, 75 910 practising pharmacists in 2021, 16 907 practising midwives.

At the national level per 10 000 inhabitants, Italy had 41,05 medical doctors/10 000 inhabitants practicing in 2021, with 6,81 general practitioners/10 000 inhabitants practicing in 2021, 1,19 general paediatricians/10 000 inhabitants practicing in 2021 and 2,42 cardiologists/10 000 inhabitants practicing in 2021. In addition, Italy had 62,13 nurses/10 000 inhabitants practising in 2021, 8,41 practising dentists/10 000 inhabitants in 2021, 12,84 practising pharmacists/10 000 inhabitants in 2021, 2,86 midwives/10 000 inhabitants in 2021 (ISTAT Statistics[3]).

At the national level, Italy had 619 357 practising caring personnel, namely personal care workers, with a density of 104,7 practising caring personnel (personal care workers)/10 000 inhabitants in 2021, and 64 736 practising physiotherapists in 2021, as to say 10,9 physiotherapists/10 000 inhabitants. (OECD Statistics[4]).

In 2021, Italy had 4.1 practising doctors per 1 000 population – a density on a par with the EU average and an increase from 3.8 doctors per 1 000 population in 2010, and an estimated 6.2 nurses per 1 000 population – a density approximately one quarter below the EU average.

Although the density of doctors in Italy aligns with the EU average, the increasing demand for care from an increasingly old and multimorbid population results in several regions facing shortages of physicians, which vary significantly in their severity across specialties. Concerns surrounding the availability of GPs and medical professionals are exacerbated by their ageing profile, which stands out as one of the most senior in Europe. With more than 55 % of doctors over the age of 55, over a quarter will reach retirement age by 2027.

The density of nurses also has been gradually increasing over the last decade, but at 6.2 per 1000 population it remains notably lower than the EU average of 8.5 per 1 000 in 2021.

At the national level, Italy had over 214 000 ordinary hospitalisation beds and 20 159 day hospital beds, with a private supply of 20,5% for ordinary hospitalization beds and of 16,2% for day hospital beds (Ministry of Health, 2022[5]).

[3] Data extracted on 1 March 2024, see website http://dati.istat.it/Index.aspx?DataSetCode=DCIS_PERS_SANIT
[4] Data extracted on 1 March 2024, see website https://stats.oecd.org/index.aspx?queryid=30176
[5] National Healthcare System – Statistical Yearbook, available on https://www.salute.gov.it/portale/documentazione/p6_2_2_1.jsp?lingua=italiano&id=3299

Number of hospital beds and % of private supply in Italy	
Ordinary hospitalization beds	**214 000**
% private supply (ordinary)	**20,5%**
Day hospital beds	**20 159**
% private supply (day hospital)	**16,2%**

Table 12. Number of hospital beds and % of private supply in Italy

The Italian health system is characterised by a decentralised, regionally based national health service (NHS). The central government channels general tax revenues for publicly financed health care, defines the benefits package (known as “livelli essenziali di assistenza”, “essential levels of care”) and exercises overall stewardship. Each region is responsible for the organisation and delivery of health services through local health units and public and accredited private hospitals. The health service covers all citizens and legal foreign residents. Coverage is automatic and universal, and care is generally free for hospital and medical services. Irregular immigrants have been entitled to access urgent and essential services since 1998. In 2021, Italy’s health expenditure accounted for 9.4 % of GDP, a lower proportion than the EU average of 11 %. When measured per capita, Italy’s spending on health stood at EUR 2 792 in 2021 – an amount nearly one third lower than the EU average. Between 2019 and 2021, government health spending surged by 8.3 % in real terms, while private health expenditure experienced a decline of over 1 %, reflecting disruptions in non-COVID-19 elective care provided by private providers and shifts in patient healthcare-seeking behaviour during the first two years of the pandemic. As a result, the proportion of health expenditure financed through private sources – of which 90 % consisted of out-of-pocket (OOP) spending by households – fell from 26.3 % in 2019 to 24.5 % in 2021. This proportion was nevertheless higher than the EU average of 18.9 %.

Preliminary expenditure data for 2022 shows a notable year-on-year decline, with health spending per capita returning to a level approximately 2.6 % above its 2019 level. This decline results from a significant reduction in OOP expenditure (-6 %) and a more moderate decline in government health expenditure (-3.5 %), with the latter likely reflecting lower COVID-19-related expenses compared to 2021. Expenditure on pharmaceuticals and medical devices accounted for a fifth of Italy’s total health spending – a larger proportion than the EU average, yet still 20% below the EU average in

per capita terms. Approximately two thirds of all pharmaceutical spending in 2021 was absorbed by consumption in hospital settings – one of the highest percentages among EU countries (AIFA, 2022). The composition of Italy's OOP expenditure by specific function also diverges significantly from the EU average. Notably, 45 % of total OOP spending in Italy is directed to outpatient medical care. While this figure encompasses spending on dental care as well, it nevertheless remains considerably higher than the combined average proportion of outpatient medical care (20 %) and dental care spending (10 %) in the EU. Outpatient pharmaceuticals also absorb an above-average share of total OOP spending at 29 %. Over 90 % of Italy's OOP expenditure on health reflects direct payments for over-the-counter pharmaceuticals and (non-referred) outpatient consultations, which patients purchase to gain faster access to medical specialists. Following sizeable reductions during the years of the sovereign debt crisis, Italy's government expenditure on health returned to growth in 2014, increasing at an average annual rate of 0.5% until 2019 – a rate below Italy's average annual GDP growth rate of 1 % during the same period. The COVID-19 pandemic disrupted this trend, as spending on health from public sources soared by over 5.2 % in 2020 alongside a massive 9 % decline in the country's GDP. As GDP rebounded by 7 % in 2021, publicly financed health spending growth decelerated to 2.9 %. In 2021, public health spending increases were mostly driven by sustained rises in COVID-19-related expenditure, including vaccines, COVID-19 tests and greater staff expenses – as well as a significant recovery of non-COVID-19 care activity within NHS hospitals.

In 2022, 1.8 % of the Italian population reported experiencing unmet needs for medical care due to either excessive costs, travel distance or waiting times. This proportion was slightly lower than the EU average of 2.2 %, and equal to Italy's pre-pandemic rate from 2019. A greater proportion of women reported unmet medical care needs, with cost being the primary reason for both genders. Among individuals in the lowest income quintile, 3.3 % reported unmet medical care needs compared to only 0.7 % among those in the highest income group. While this gap was slightly wider than the EU average, it had decreased by over 50 % compared to 2019, driven by a reduction in individuals in the lowest income quintile reporting unmet needs due to cost. Similarly, only 1.6 % of Italians reported experiencing unmet needs for dental care – a proportion that was less than half the EU average and lower than the 2.7 % reported in 2019. As with medical care, the main determinant of unmet dental care needs was their cost, reflecting Italy's limited public coverage for dental care services. As in most other EU countries, a significant number of individuals in Italy experienced unmet healthcare needs during the COVID-19 pandemic, including needs specific to

mental healthcare. Findings from a European-wide survey conducted during the second and third years of the pandemic revealed that, of the 15 % of Italians who reported unmet healthcare needs, 16 % specifically indicated unmet needs pertaining to mental healthcare services – a sizeable proportion, which was nevertheless lower than the average across EU countries(OECD/European Observatory on Health Systems and Policies, 2023e).

A national vaccination plan was approved in January 2017, harmonising a single national schedule that was previously a combination of 20 different regional schedules. The plan sets targets for vaccine coverage, but also outlines actions to reduce disparities between regions. Despite this step forward, vaccine hesitancy continues to be an issue owing to the action of various groups in Italian society that question the efficacy, safety and need for vaccinations.

- Poliomyelitis, diphtheria, tetanus, pertussis among children aged 2: 94%.
- Measles, among children aged 2: 92,7%.
- Hepatitis B, among children aged 2: 94%.
- Influenza, among people aged 65 and over: 56,7%.[6]

Italy is among the highest populated countries in the European Union, as its population comprises approximately 10% of the population of the European Union, a situation that might change as Italy's older population is above the EU average.

In terms of vaccination, the routine immunization scheme covers more than 93% of the population with all the vaccines, while, as far as the anti-COVID-19 vaccine is concerned, 85% of the population is covered with at least one dose.

4.5.2. Pilot study methodology

4.5.2.1. Medical desert measurement

For the measurement, a broad definition of medical desert has been adopted, which refers to contexts in which there are critical issues in the dialectic between health needs, demand and supply. Hence, not only contexts in which health services or professionals are lacking, but also situations in which quality is poor or inequalities in the use of and/or access to services are found; in other words, areas in which services are hard-to-reach. A specific matrix was developed (Figure 14), in which three dimensions characterising the provision of care (availability, quality, accessibility), identified on the

[6] Vaccination coverage 2022. Source: Ministry of Health, last update: 11 July 2023.

basis of the WHO framework, are further declined according to two different perspectives: that of the territory, understood as a mere geographical space on which the services insist; and that of the population, as the bearer of health needs.

The matrix thus outlined makes it possible to highlight six areas. The first has to do with 'presence', understood as the overall endowment of care resources in a given territory, which then becomes 'coverage' when it is related to the population and its demographic and epidemiological characteristics.

On the quality front, the area of 'performance' is identified, with reference to the production function (and thus the providers), and the 'protection' function, in relation to the level of care guaranteed to a specific target population (e.g. those residing in a region, province or a Local Health Unit).

With regard to accessibility, there is the area of 'usability', understood as the ability of services to be reachable, as they are homogeneously distributed throughout the territory, and usable by different types of patients; and finally, 'equity', considered in terms of equality in treatment and outcomes between different population groups (e.g. inequalities by gender, citizenship, socio-economic status).

	AVAILABILITY	QUALITY	ACCESSIBILITY
TERRITORY (supply in a given area)	*Presence* *(Are there health services/professionals? What are their characteristics?)*	*Performance* *(Do they achieve adequate levels of quality in the production function?)*	*Usability* *(Are they easy to reach/use for a wide range of patients?)*
POPULATION (supply in relation to health demand)	*Coverage* *(Are they tailored to what is needed?)*	*Protection* *(Do they ensure health protection to the resident population?)*	*Equity* *(Do they guarantee equality in access to treatment and outcomes?)*

Figure 14. Conceptual matrix for the description of health deserts.

For each of the areas included in the matrix, specific indicators have been identified to be read in a synoptic key.

Evaluations of hospital activity use data from the Italian National Outcomes Evaluation Programme (PNE) and are based on the use of nationally available current information flows.

The PNE represents a permanent observatory on the performance and quality of healthcare services. This is carried out through comparative analysis of processes and outcomes of the Italian hospitals, in

the context of the National Health Service (NHS), ensuring data with high territorial coverage, temporal continuity and systematicity. The PNE also produces epidemiological evidence about the correlation between hospital volumes and health outcomes and detects critical aspects which may be managed through specific interventions (e.g. clinical audit programmes) aimed at improving the overall quality of care.

The PNE analyses data from around 1400 Italian hospitals and currently calculates 195 indicators, of which 170 relating to hospital care (66 processes/outcomes, 88 volumes, 16 hospitalisations), and 25 relating to territorial care, indirectly measured by intercepting those hospital admissions that would be potentially "avoidable" if there were adequate primary care at the territorial healthcare level (this is the so-called avoidable hospitalisation).

Each indicator was calculated using the Hospital Discharge Records (acronym in Italian: SDO) and the National Tax Registry (NTR), according to a detailed operative protocol based on standard outline, available on the PNE institutional website. SDOs are routinely collected by the Hospital Information System (HIS) and contain patient demographic information (gender, age), admission and discharge dates, up to 5 discharge diagnoses (International Classification of Disease, 9th Revision, Clinical Modification [ICD-9-CM]), medical procedures or surgical interventions (up to 6), and status at discharge (alive, dead, transferred to another hospital). In addition, the NTR was used to collect information regarding vital status and out-of-hospital deaths. HIS records were linked with NTR records using deterministic record-linkage.

For the calculation of the remaining indicators, data on currently active doctors in Italy, provided by IQVIA Solutions Italy S.r.l, were used, with particular reference to the following variables:

- Gender
-Year of birth (cluster)
- Up to 3 specializations/professional, specifying main activity
- Affiliation with the National Health Service
- Type of affiliation structure
- Department name
- Full address (street, house number, postcode, province, region, Geo XY coordinates).

The results described further below are to be intended as a simulation exercise on nationally available data, in the perspective of a set that can be used for the assessment of the Italian territory.

4.5.3. Pilot study outcomes

AVAILABILITY INDICATORS

Area	Indicator name	Minimal level of aggregation	Type of professional	Calculation specifications	Weight
Presence	1) Percentage of health professionals aged ≥65 years	Local Health Unit/province	1.1) General practitioners	Restriction: age ≥25 yrs.	0.11
			1.2) General paediatricians	Restriction: age ≥27 yrs.	0.11
			1.3) Cardiologists	Restriction: age ≥27 yrs.	0.03
			1.4) Diabetologists/endocrinologists	Restriction: age ≥27 yrs.	0.03
			1.5) Gynaecologists	Restriction: age ≥27 yrs.	0.03
			1.6) Psychiatrists	Restriction: age ≥27 yrs.	0.03
Coverage	2) Coverage rate of health professionals per resident population	Local Health Unit/province	2.1) General practitioners	Restriction on professionals: age ≥25 yrs. Restriction on population: age ≥14 yrs.	0.22
			2.2) General paediatricians	Restriction on professionals: age ≥27 yrs. Restriction on population: age ≤13 yrs.	0.22
			2.3) Cardiologists	Restriction on professionals: age ≥27 yrs. Restriction on population: age ≥18 yrs.	0.055
			2.4) Diabetologists/endocrinologists	Restriction on professionals: age ≥27 yrs. Restriction on population: age ≥18 yrs.	0.055
			2.5) Gynaecologists	Restriction on professionals: age ≥27 yrs. Restriction on population: age ≥14 yrs.	0.055
			2.6) Psychiatrists	Restriction on professionals: age ≥27 yrs. Restriction on population: age ≥18 yrs.	0.055

QUALITY INDICATORS

Area	Indicator name	Minimal level of aggregation	Calculation specifications	Weight
Performance	3) Ischemic stroke: 30-day mortality	Local Health Unit/province	Adherence level to quality standards on the basis of the Italian National Outcomes Evaluation Programme (best performing hospital within the area)	0.04
	4) COPD flare-up: 30-day mortality			0.04
	5) % of primary caesarean section			0.04
	6) Surgery for colon cancer: 30-day mortality			0.04
	7) Laparoscopic cholecystectomy: % of admissions with postoperative length of stay <3 days			0.04
	8) Chronic kidney disease: 30-day mortality after hospitalisation			0.04
	9) STEMI: % of patients treated with PTCA within 90 minutes			0.04
	10) Femoral neck fracture in patients aged ≥65 years: % of patients who underwent surgery within 48 hours			0.04
Protection	11) Ischemic stroke: 30-day mortality among hospitalised patients living in the area	Local Health Unit/province	Adherence level to quality standards (calculated on patients living in the area considered)	0.03
	12) COPD flare-up: 30-day mortality among hospitalised patients living in the area			0.03
	13) % of primary caesarean section among women living in the area			0.03
	14) Surgery for colon cancer: 30-day mortality among hospitalised patients living in the area			0.03
	15) Laparoscopic cholecystectomy: % of admissions with postoperative length of stay <3 days among hospitalised patients living in the area			0.03
	16) Chronic kidney disease: 30-day mortality among hospitalised patients living in the area			0.03
	17) STEMI: % of patients living in the area treated with PTCA within 90 minutes			0.03
	18) Femoral neck fracture in patients aged ≥65 years: % of patients living in the area undergoing surgery within 48 hours			0.03
	19) Composite index of avoidable hospitalisation		Method description: https://doi.org/10.1093/eurpub/ckac129.539	0.44

ACCESSIBILITY INDICATORS

Area	Indicator name	Minimal level of aggregation	Type of professional	Calculation specifications	Weight
Usability	20) Dispersion index of health professionals	Local Health Unit/province	20.1) General practitioners	Coefficient of variation of the number of professionals within a radius of 5 km from the centroid of a 1km^2 square	0,11
			20.2) General paediatricians	Coefficient of variation of the number of professionals within a radius of 5 km from the centroid of a 1km^2 square	0,11
			20.3) Cardiologists	Coefficient of variation of the number of professionals within a radius of 20 km from the centroid of a 1km^2 square	0,03
			20.4) Diabetologists/ endocrinologists	Coefficient of variation of the number of professionals within a radius of 20 km from the centroid of a 1km^2 square	0,03
			20.5) Gynaecologists	Coefficient of variation of the number of professionals within a radius of 20 km from the centroid of a 1km^2 square	0,03
			20.6) Psychiatrists	Coefficient of variation of the number of professionals within a radius of 20 km from the centroid of a 1km^2 square	0,03
Equity	21) Acute Myocardial Infarction: major adverse cardiovascular and cerebrovascular events (MACCE) within a year in patients living in the area	Local Health Unit/province		Relative risk (women vs. men) adjusted for comorbidity	0,13
	22) Hospitalisation for urinary tract infections in patients living in the area	Region		Relative risk (foreigners from non-European High Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	0,09
	23) Hospitalization for COPD in patients living in the area	Region		Relative risk (foreigners from non-European High Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	0,09
	24) Hospitalisation for short- and long-	Region		Relative risk (foreigners from non-European High	0,09

	term complications of diabetes in patients living in the Area			Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	
	25) Hospitalisation for heart failure in patients living in the area	Region		Relative risk (foreigners from non-European High Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	0,09
	26) STEMI: % of patients living in the area treated with PTCA within 90 minutes	Local Health Unit/province		Relative risk (women vs. men) adjusted for comorbidity	0,04
	27) Femoral neck fracture in patients aged ≥65 years: % of patients living in the area undergoing surgery within 48 hours	Local Health Unit/province		Relative risk (women vs. men) adjusted for comorbidity	0,04
	28) COPD flare-up: 30-day mortality among hospitalised patients living in the area	Local Health Unit/province		Relative risk (women vs. men) adjusted for comorbidity	0,03
	29) Proportion of vaginal deliveries in women with prior caesarean section living in the Area	Local Health Unit/province		Relative risk (foreigners from non-European High Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	0,03
	30) Childbirth by caesarean section: hospital readmissions during the puerperium in women living in the area	Local Health Unit/province		Relative risk (foreigners from non-European High Migratory Pressure Country – HMPC vs. Italians/foreigners from developed countries) adjusted for comorbidity	0,03

The choice of a matrix framework, with each aspect of potential desertification analyzed through a set of dedicated indicators, brought a series of key advantages to the study, such as:

- A more "flexible" way to show either a wide or a narrow point of view on the matter at study, both in terms of geographical area analyzed (districts, Local Health Units/Provinces, Regions, whole Italy) and in terms of desertification determinants (i.e. is the risk of desertification in a specific area due to a low availability of medical services, a lack of quality practices, or both?);
- A robust framework for the indicators' calculation based on the PNE experience, due to its institutional and legal recognition in assessing volumes of activity and performances of Italian hospitals, and the important contributions that the medical and scientifical communities in Italy have provided to the PNE indicators in these years.

At the same time, some potential weaknesses of the study were also identified and taken into account, to the extent that it was possible, such as:

- The absence of a "true" interconnection between all the different data sources available (SDO, NTR, IQVIA). To compensate for this, the indicators of each area of the matrix were synthetized by using a system of weighted averages that, by virtue of being strongly representative of the Italian characteristics, is also difficult to adapt and replicate for other nations without further studies;
- The impact that different Italian local health regulations could have on the selection criteria implemented on the data sources, especially regarding the identification of doctors (either general practitioners, paediatricians or specialists) on the Italian territory. This is the case for some districts/Local Health Units where the doctor's affiliation is not directly with the NHS, but to some intermediate structures (i.e. hospitals) that are themselves affiliated with the NHS. Several relaxations of the selection criteria were tested to mitigate this problem, but without a direct involvement of the interested territories' representatives, the occurrence of under/over-estimation of doctors is still present.

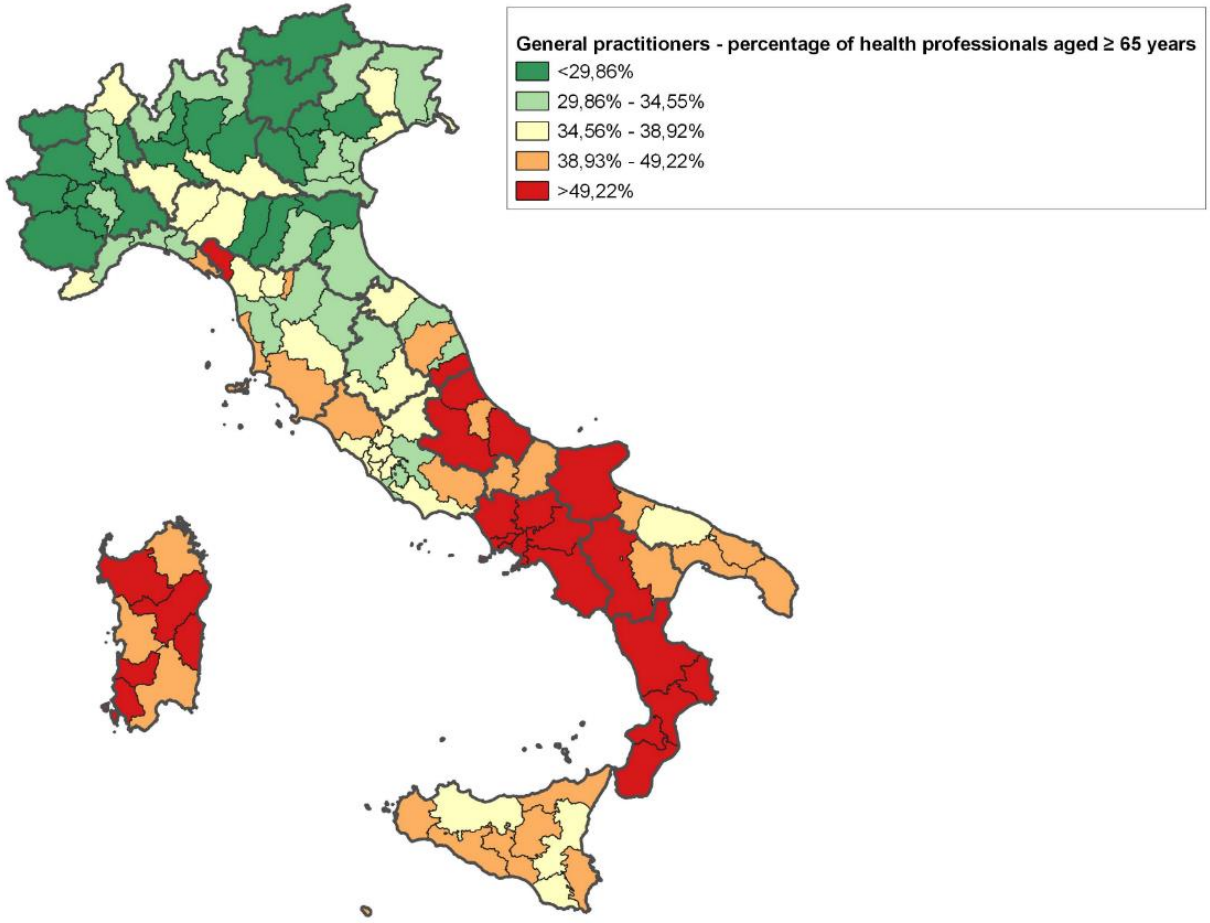
MAP OF LOCAL AREAS

Aree Territoriali

1. ASL To3
2. ASL To4
3. ASL To5
4. ASL Vc
5. ASL Bi
6. ASL No
7. ASL Vco
8. ASL Cn1
9. ASL Cn2
10. ASL At
11. ASL Al
12. ASL Citta' Di Torino
13. ASL Aosta
14. Ats Della Citta' Metropolitana Di Milano
15. Ats Dell'insubria
16. Ats Della Montagna
17. Ats Della Brianza
18. Ats Di Bergamo
19. Ats Di Brescia
20. Ats Della Val Padana
21. Ats Di Pavia
22. Azienda Sanitaria Della P.A. Di Bolzano
23. ASL Trento
24. Azienda Ulss N. 1 Dolomiti
25. Azienda Ulss N. 2 Marca Trevigiana
26. Azienda Ulss N. 3 Serenissima
27. Azienda Ulss N. 4 Veneto Orientale
28. Azienda Ulss N. 5 Polesana
29. Azienda Ulss N. 6 Euganea
30. Azienda Ulss N. 7 Pedemontana
31. Azienda Ulss N. 8 Berica
32. Azienda Ulss N. 9 Scaligera
33. Provincia di Udine
34. Provincia di Gorizia
35. Provincia di Trieste
36. Provincia di Pordenone
37. ASL Imperiese
38. ASL Savonese
39. ASL Genovese
40. ASL Chiavarese
41. ASL Spezzino
42. Azienda Usl Piacenza
43. Azienda Usl Parma
44. Azienda Usl Reggio Emilia
45. Azienda Usl Modena
46. Azienda Usl Bologna
47. Azienda Usl Imola
48. Azienda Usl Ferrara
49. Azienda Usl Della Romagna
50. Provincia di Massa-Carrara
51. Provincia di Lucca
52. Provincia di Pistoia
53. Provincia di Firenze
54. Provincia di Livorno
55. Provincia di Pisa
56. Provincia di Arezzo
57. Provincia di Siena
58. Provincia di Grosseto
59. Provincia di Prato
60. Ausl Umbria N. 1
61. Ausl Umbria N. 2
62. Provincia di Pesaro e Urbino
63. Provincia di Ancona
64. Provincia di Macerata
65. Provincia di Ascoli Piceno
66. Provincia di Fermo
67. ASL Viterbo
68. ASL Rieti
69. ASL Latina
70. ASL Frosinone
71. ASL Roma 1
72. ASL Roma 2
73. ASL Roma 3
74. ASL Roma 4
75. ASL Roma 5
76. ASL Roma 6
77. ASL Avezzano-Sulmona-L'aquila
78. ASL Lanciano-Vasto-Chieti
79. ASL Pescara
80. ASL Teramo
81. Provincia di Campobasso
82. Provincia di Isernia
83. ASL Avellino
84. ASL Benevento
85. ASL Caserta
86. ASL Napoli 1 Centro
87. ASL Napoli 2 Nord
88. ASL Napoli 3 Sud
89. ASL Salerno
90. ASL Br
91. ASL Ta
92. ASL Bat
93. ASL Ba
94. ASL Fg
95. ASL Le
96. Azienda Sanitaria Locale Di Potenza Asp
97. Azienda Sanitaria Locale Di Matera Asm
98. A.S.P. Cosenza
99. A.S.P. Crotone
100. A.S.P. Catanzaro
101. A.S.P. Vibo Valentia
102. A.S.P. Reggio Calabria
103. Asp Agrigento
104. Asp Caltanissetta
105. Asp Catania
106. Asp Enna
107. Asp Messina
108. Asp Palermo
109. Asp Ragusa
110. Asp Siracusa
111. Asp Di Trapani
112. Provincia di Sassari
113. Provincia di Nuoro
114. Provincia di Cagliari
115. Provincia di Oristano
116. Provincia di Olbia-Tempio
117. Provincia di Ogliastra
118. Provincia di Medio Campidano
119. Provincia di Carbonia-Iglesias

AVAILABILITY – PRESENCE

Indicator no. 1.1



Summary

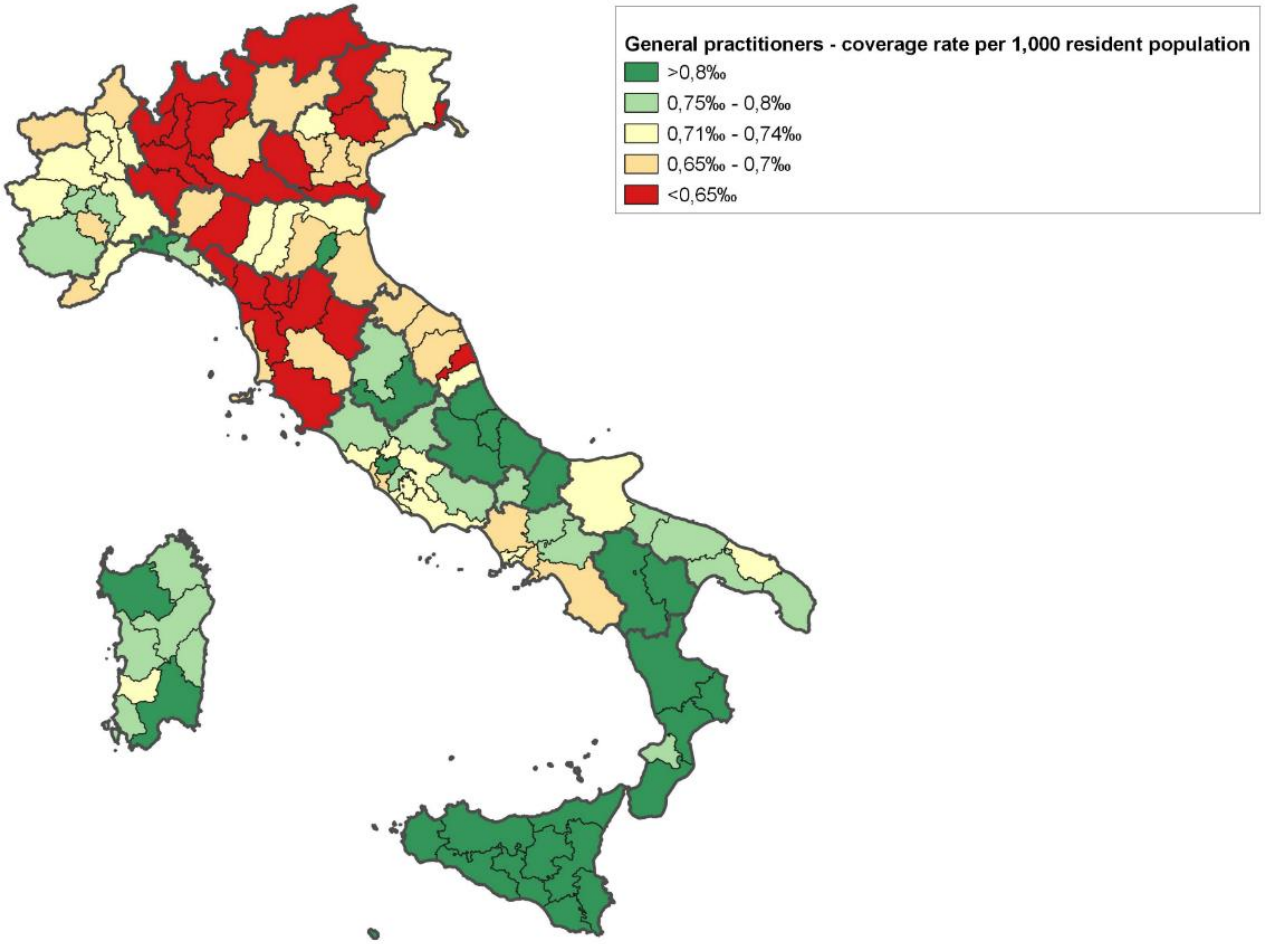
Italy
- Tot. 37.031 GPs
- % average of GPs aged ≥65 years: 38%

Regions/Autonomous Provinces
- [max] Calabria: 55%
- [min] A.P. Bolzano: 14%

Territory: V quintiles
- [max] Provincial Health Unit Vibo Valentia: 65%
- [min] A.P. Bolzano Health Unit: 14%

AVAILABILITY – COVERAGE

Indicator no. 2.1



Summary

Italy

- Average coverage rate of GPs: 0,71‰
- Average n° of patients aged ≥14 years per GPs: 1.408

Regions/Autonomous Provinces

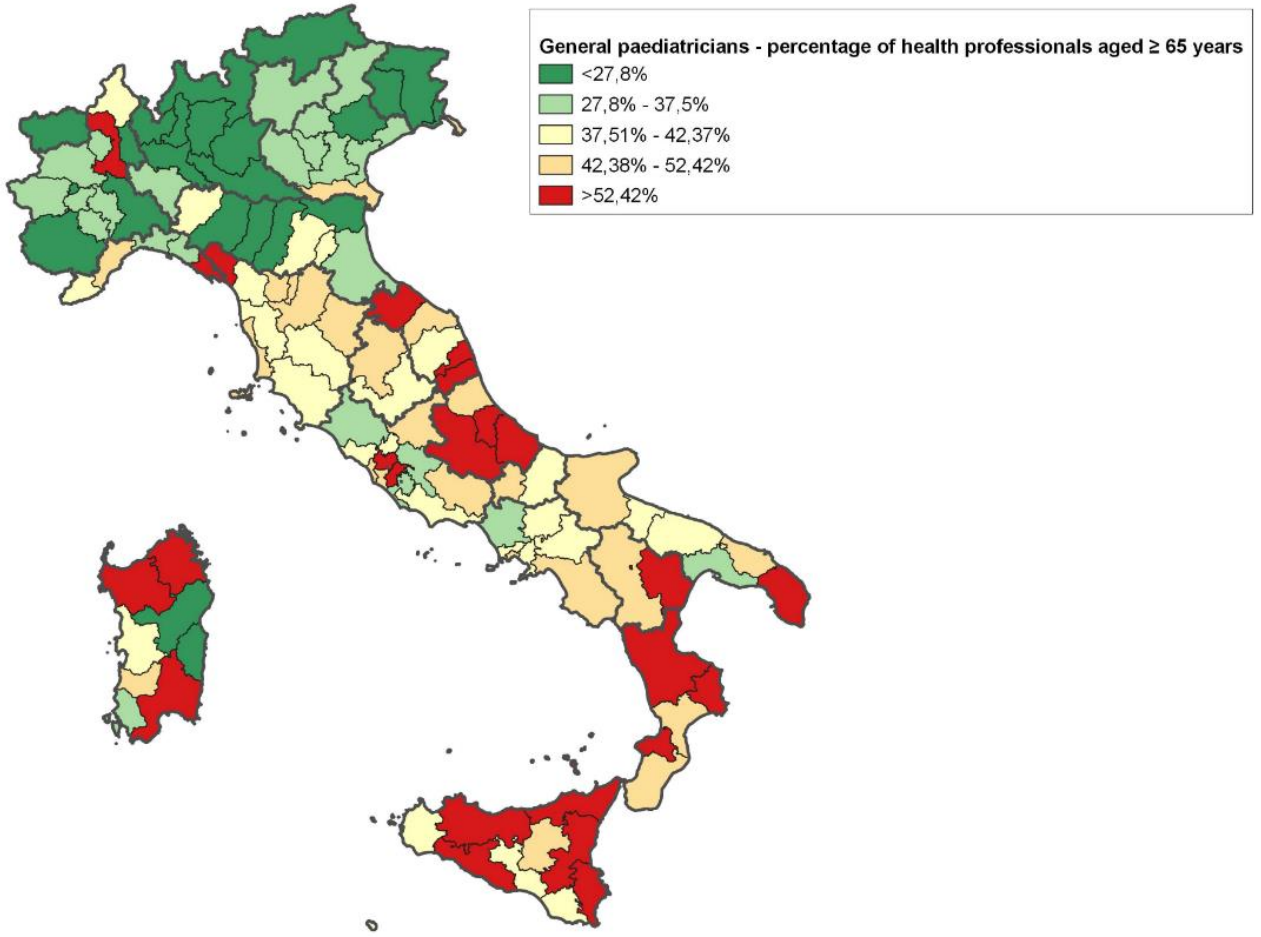
- [max] Abruzzo: 0,90‰
- [min] Toscana: 0,61‰

Territory: (LHU/Provinces)

- [max] LHU Pescara: 0,96‰
- [min] Province of Arezzo: 0,54‰

AVAILABILITY – PRESENCE

Indicator no. 1.2



Summary

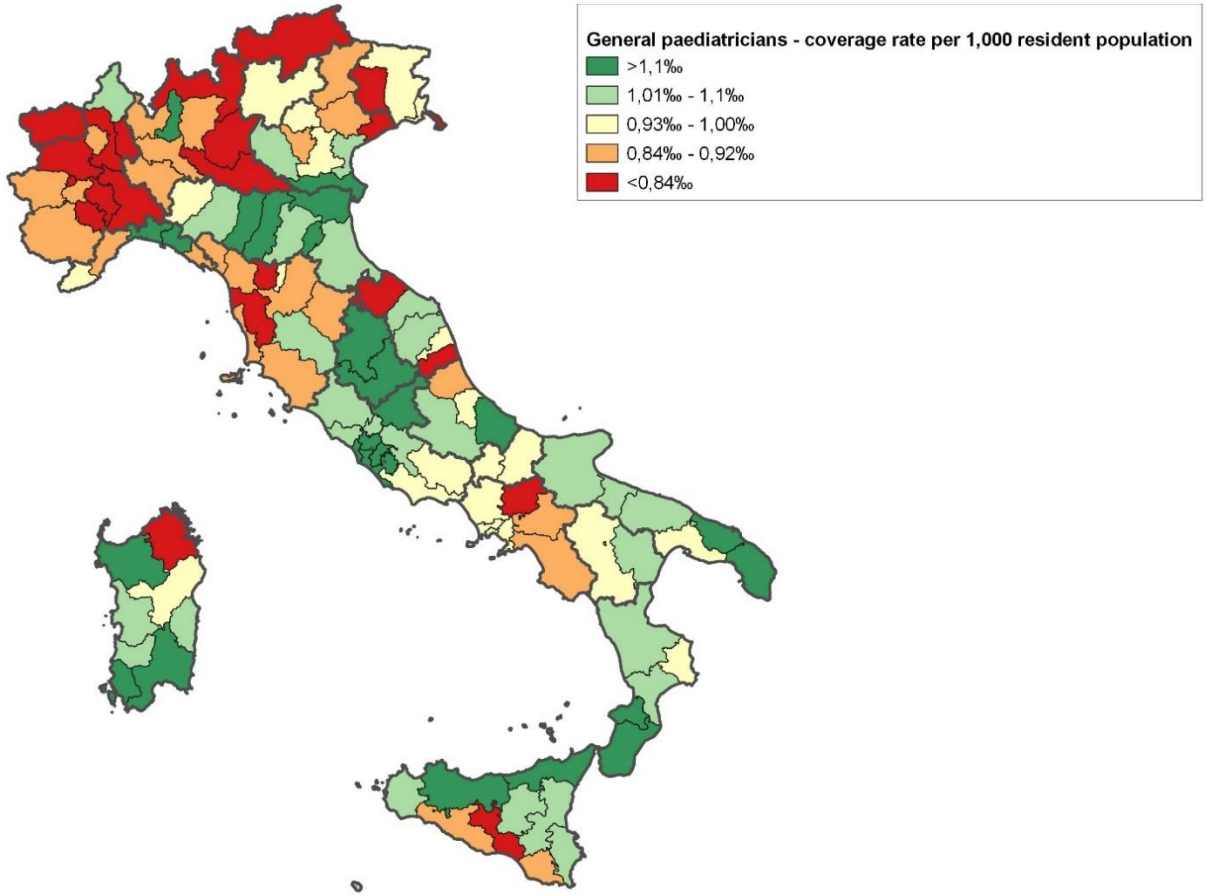
Italy
- Total: 6.723 General Pediatricians
- Average % of General Pediatricians ≥65 years: 40%

Regions/Autonomous Provinces
- [max] Sardegna: 60%
- [min] A.P. Bolzano: 16%

Territory: (LHU/Provinces)
- [max] LHU Pescara: 76%
- [min] Province of Gorizia: 7%

AVAILABILITY – COVERAGE

Indicator no. 2.2



Summary

Italy

- Average coverage rate of General Paediatricians: 0,97‰
- Average n° of patients aged <14 years per General Paediatricians: 1.029

Regions/Autonomous Provinces

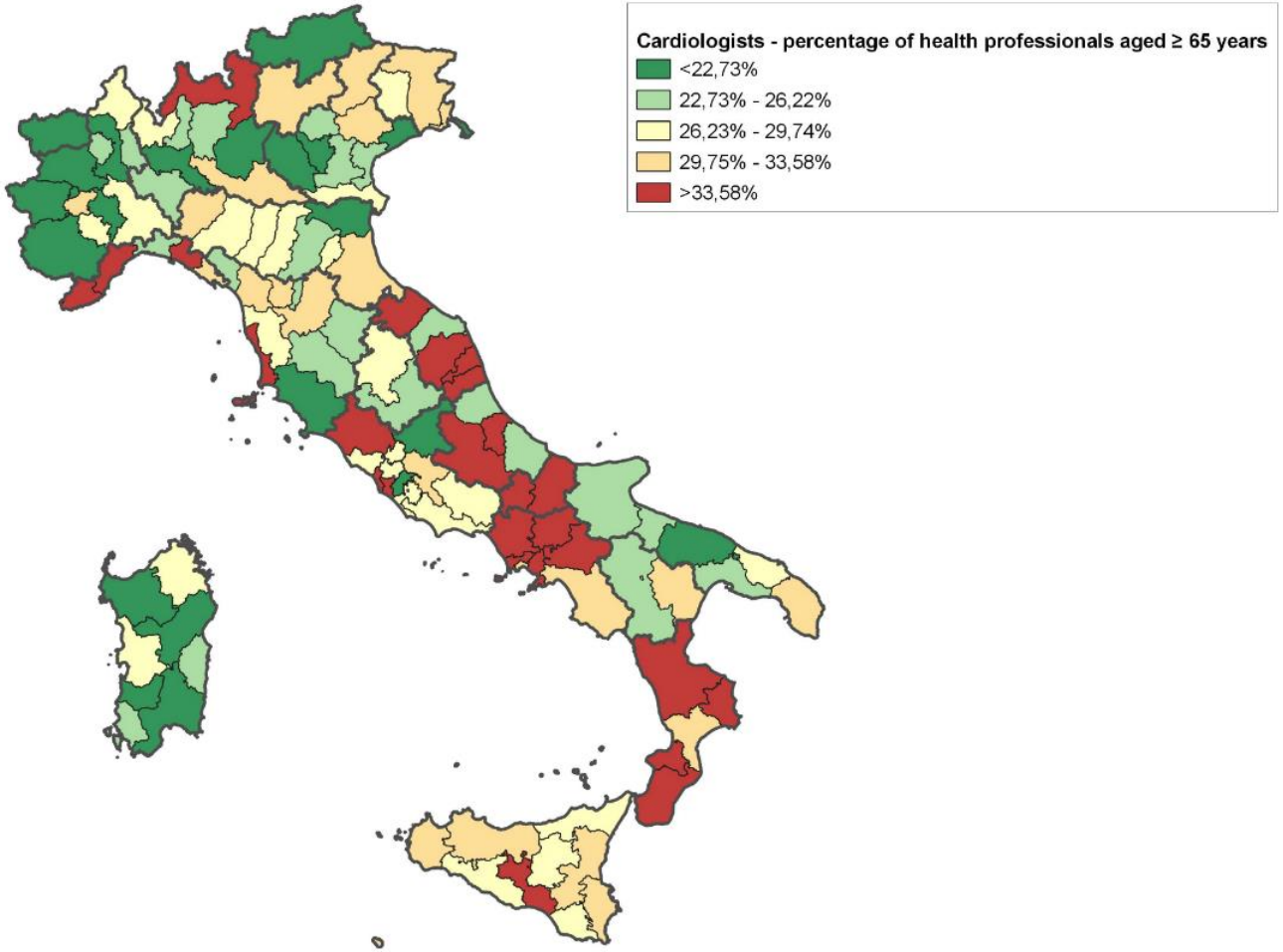
- [max] Sardegna: 1,17‰
- [min] Bolzano: 0,65‰

Territory: (LHU/Provinces)

- [max] Province of Cagliari: 1,38‰
- [min] LHU Asti: 0,42‰

Indicator no. 1.3

AVAILABILITY – PRESENCE



Summary

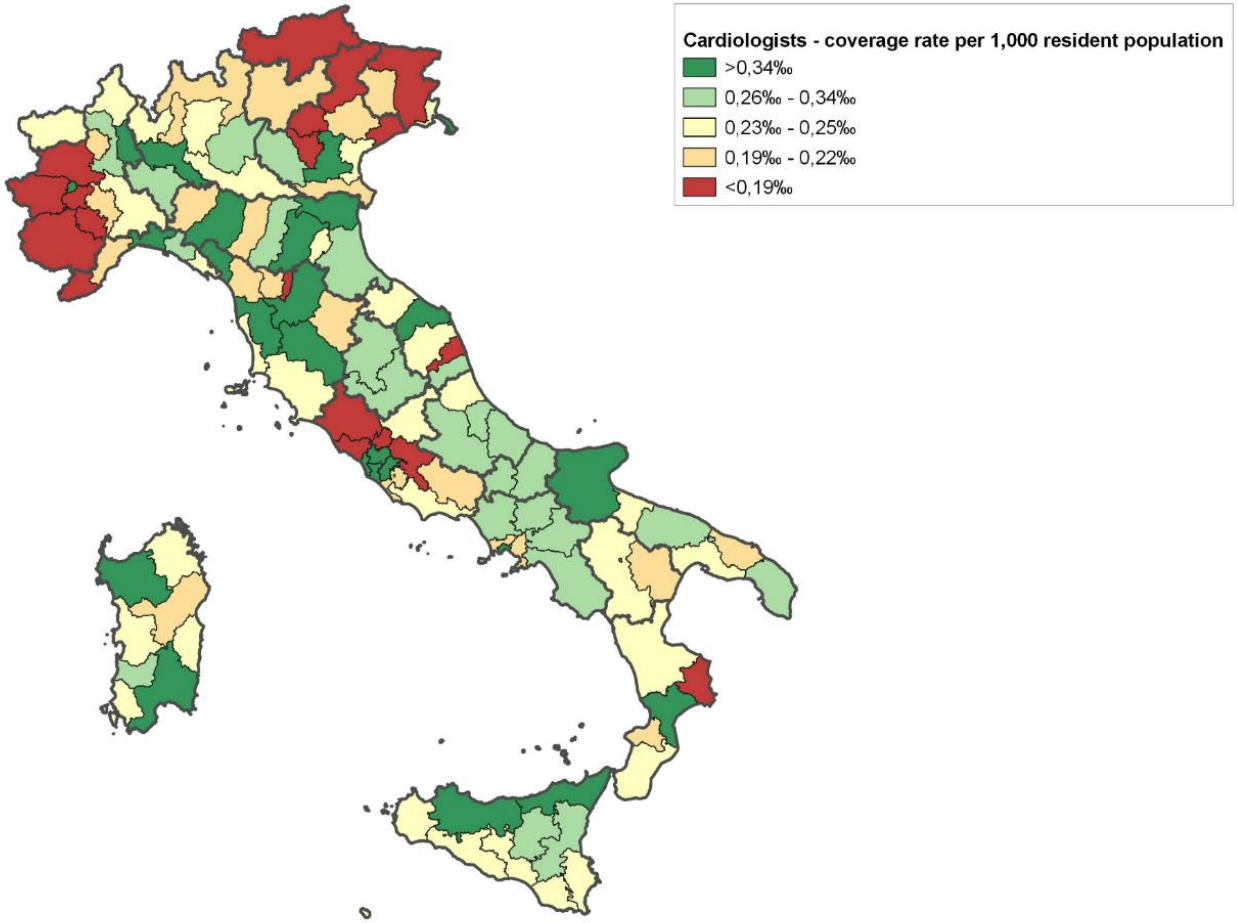
Italy
- Total: 14.459 Cardiologists
- Average % Cardiologists ≥65 years: 27%

Regions/Autonomous Provinces
- [max] Calabria: 39%
- [min] Valle d'Aosta: 13%

Territory: (LHU/Provinces)
- [max] ASP di Crotone: 49%
- [min]: ASL di Asti: 13%

AVAILABILITY – COVERAGE

Indicator no. 2.3



Summary

Italy

- Average Coverage Rate Cardiologists: 0,29 ‰

Regions/Autonomous Provinces

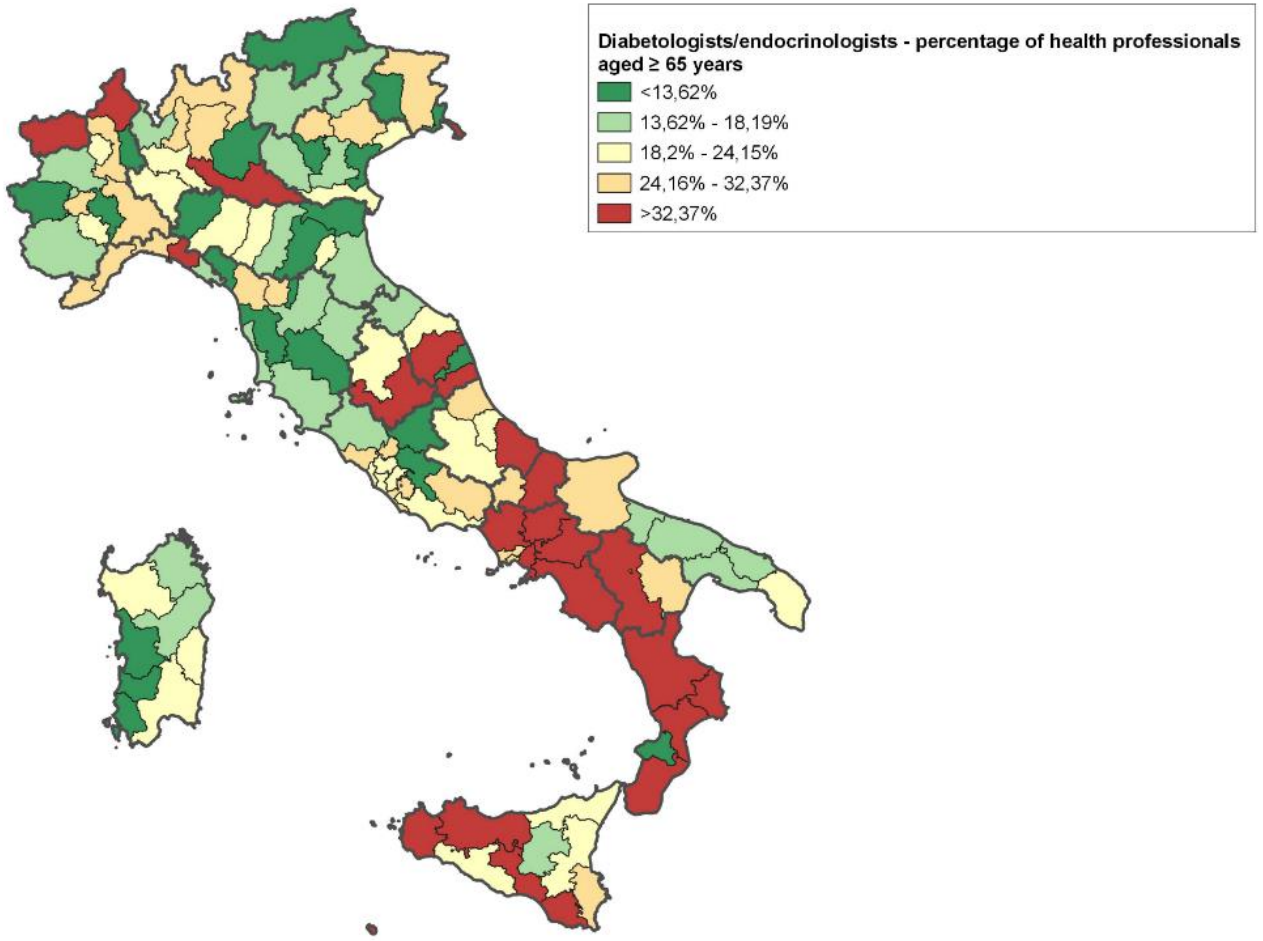
- [max] Lazio: 0,35‰
- [min] A.P. Bolzano: 0,13‰

Territory: (LHU/Provinces)

- [max] LHU Roma1: 0,76‰
- [min] LHU Roma4: 0,12‰

AVAILABILITY – PRESENCE

Indicator no. 1.4



Summary

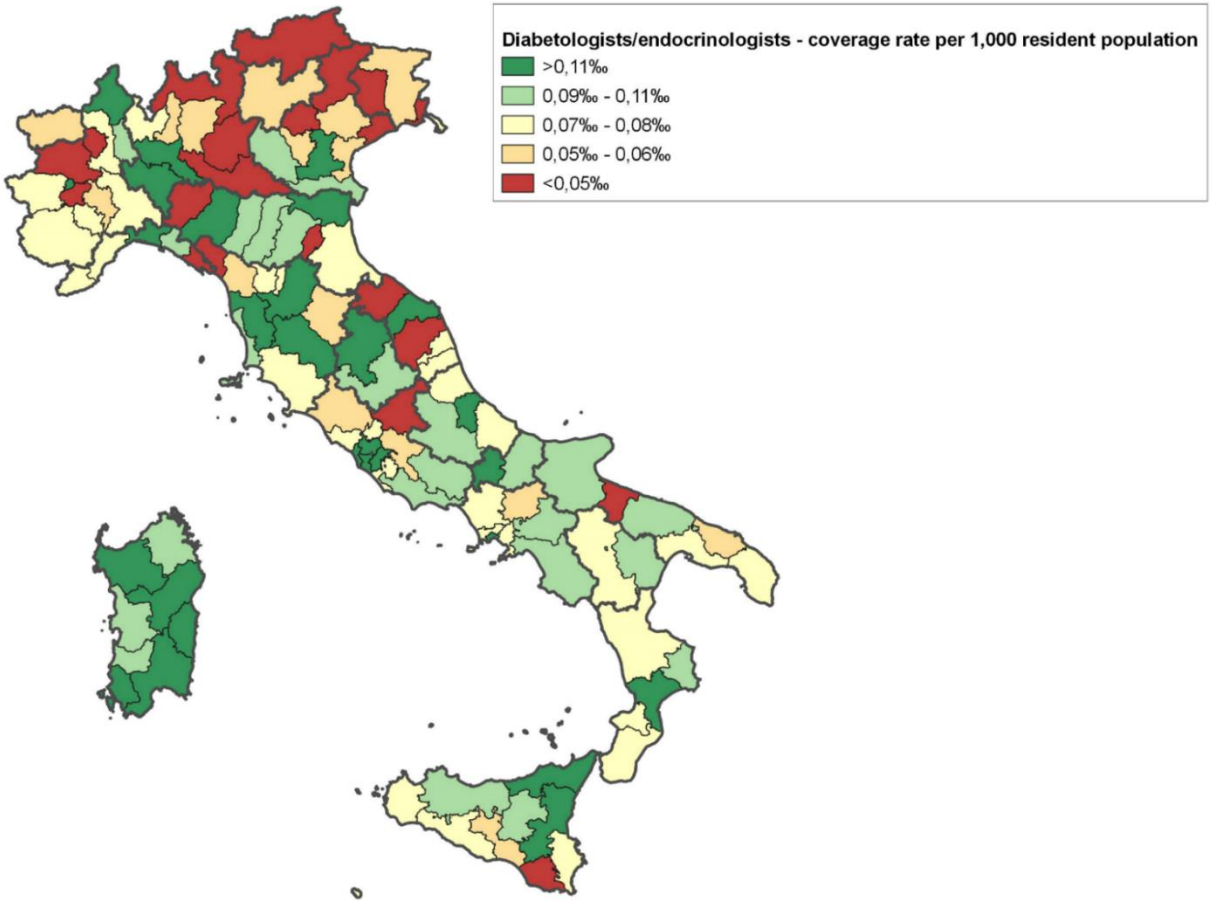
Italy
- Total: 4.466 Diabetologists/endocrinologists
- Average % Diabetologists/endocrinologists ≥65 years: 22%

Regions/Autonomous Provinces
- [max] Calabria: 38%
- [min] A.P. Bolzano: 5%

Territory: (LHU/Provinces)
- [max] Province of Ascoli Piceno: 50%
- [min]: ASL di Asti: 0%

AVAILABILITY – COVERAGE

Indicator no. 2.4



Summary

Italy

- Average coverage rate of diabetologists/endocrinologists: 0,09‰

Regions/Autonomous Provinces

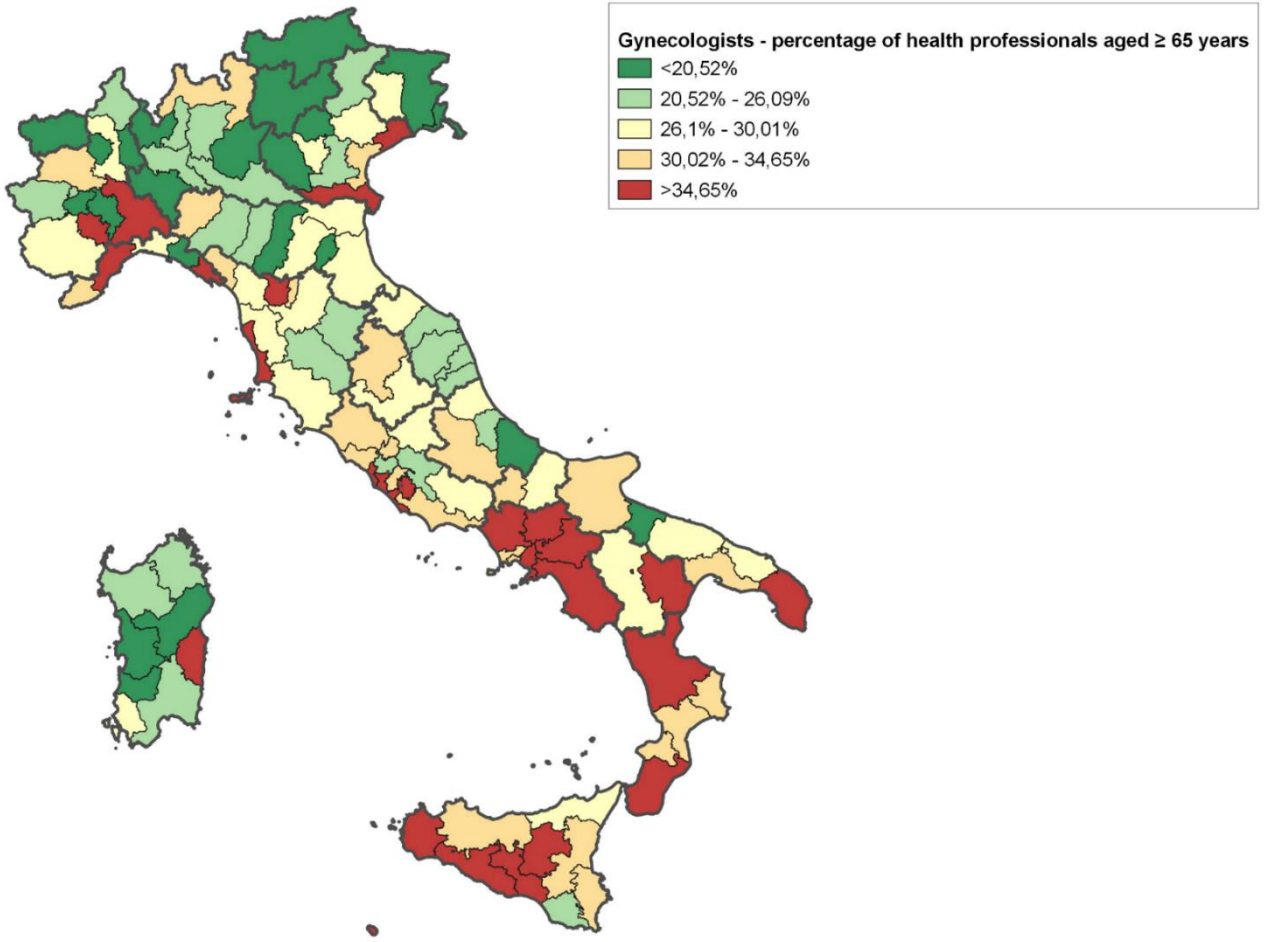
- [max] Lazio: 0,14‰
- [min] A.P. of Bolzano: 0,04‰

Territory: (LHU/Provinces)

- [max] LHU Rome 1: 0,36‰
- [min] ATS della Montagna: 0,03‰

Indicator no. 1.5

AVAILABILITY - PRESENCE



Summary

Italy

- Total of 11.341 gynaecologists
- Average score of gynaecologists aged ≥ 65 years: 32%

Regions/Autonomous Provinces

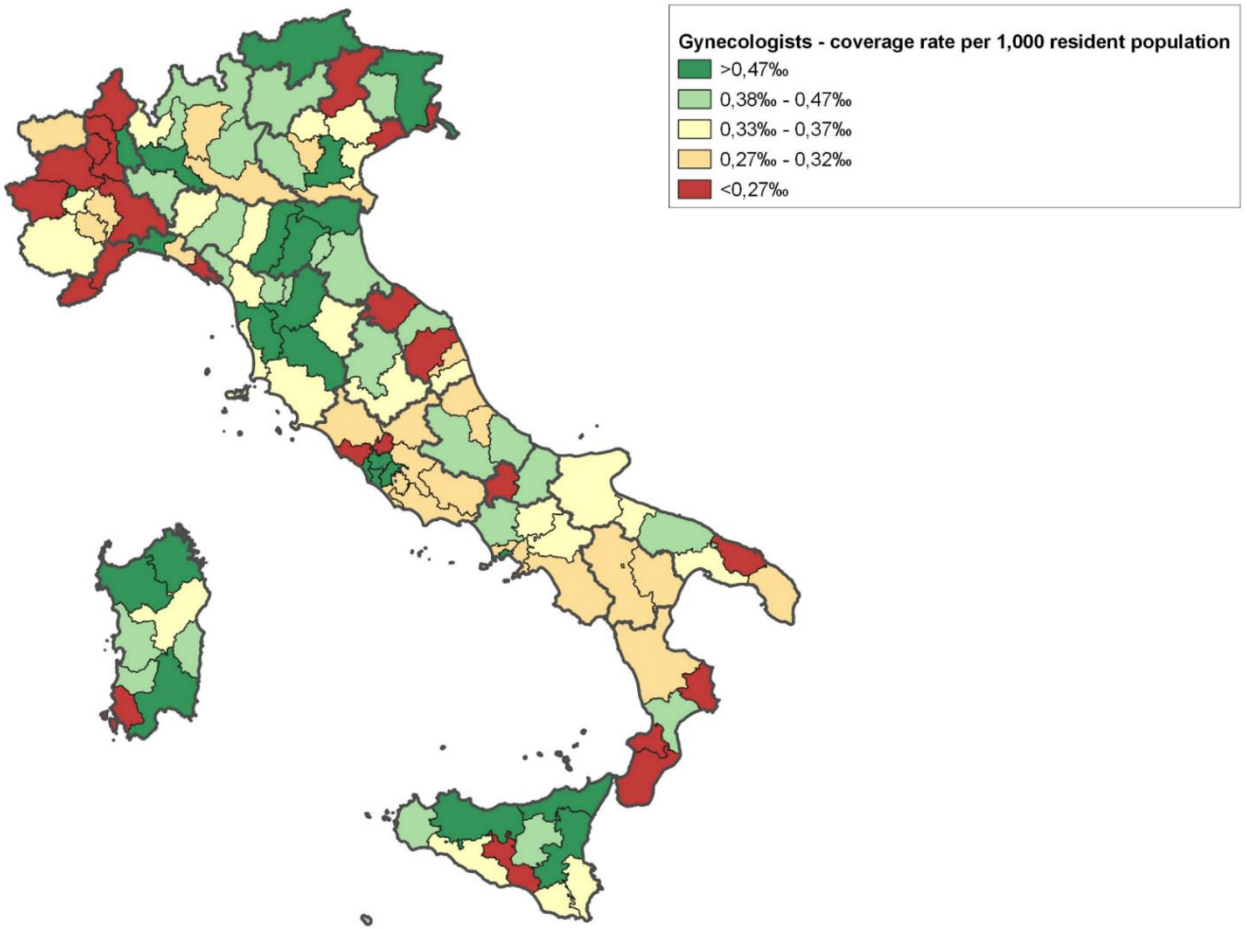
- [max] Calabria: 41%
- [min] Valle d'Aosta: 12%

Territory: (LHU/Provinces)

- [max] Province Health Unit of Cosenza: 48%
- [min] Province of Gorizia: 7%

Indicator no. 2.5

AVAILABILITY – COVERAGE



Summary

Italy

- Gynaecologists – average coverage rate: 0,42‰

Regions/Autonomous Provinces

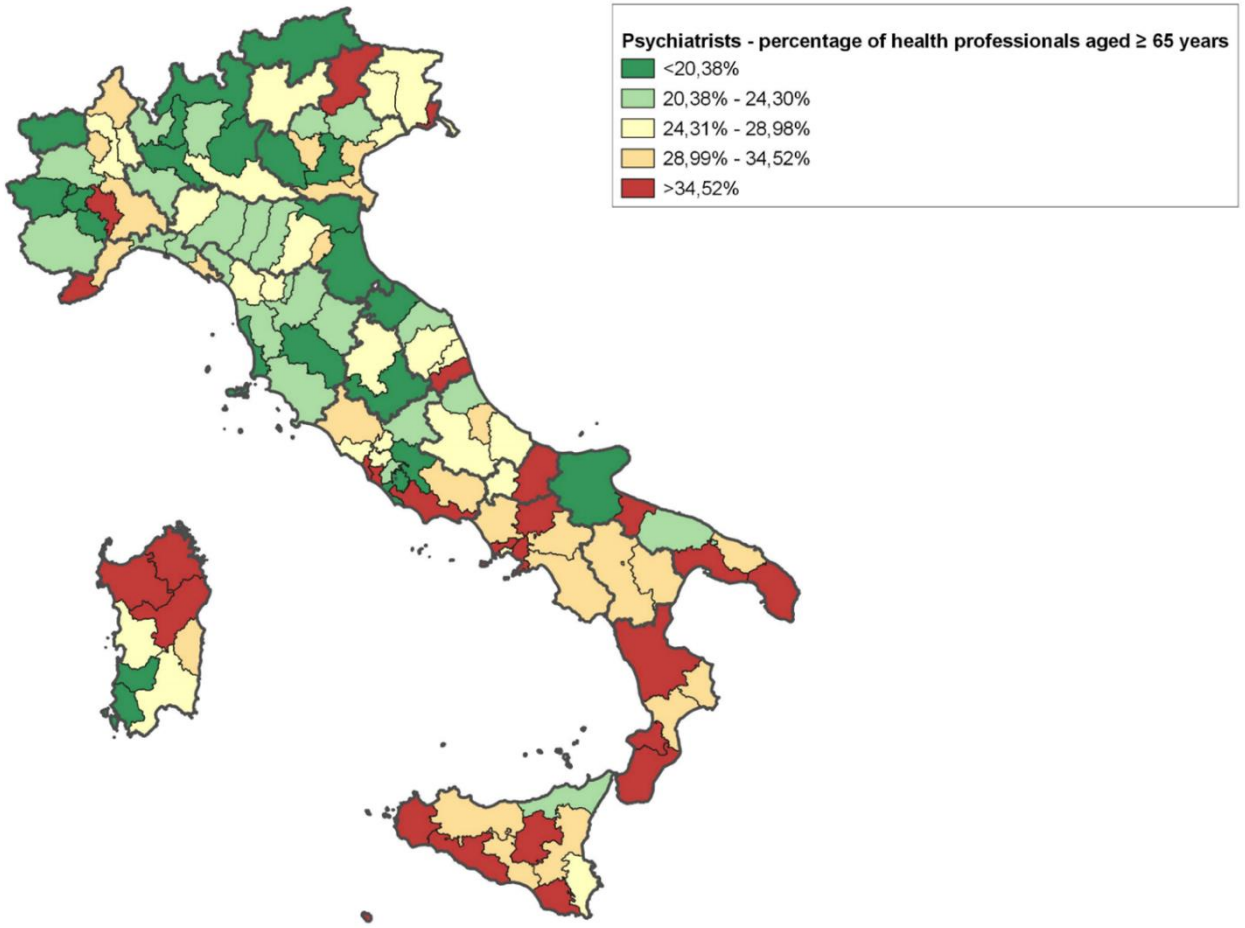
- [max] Lazio, Sardegna: 0,53‰
- [min] Calabria: 0,29‰

Territory: (LHU/Provinces)

- [max] LHU Rome 1: 1,27‰
- [min] LHU TO3: 0,17‰

Indicator no. 1.6

AVAILABILITY – PRESENCE



Summary

Italy

- Total of 9,292 psychiatrists
- Average score of psychiatrists aged ≥ 65 years: 26%

Regions/Autonomous Provinces

- [max] Calabria: 44%
- [min] Valle d'Aosta: 0%

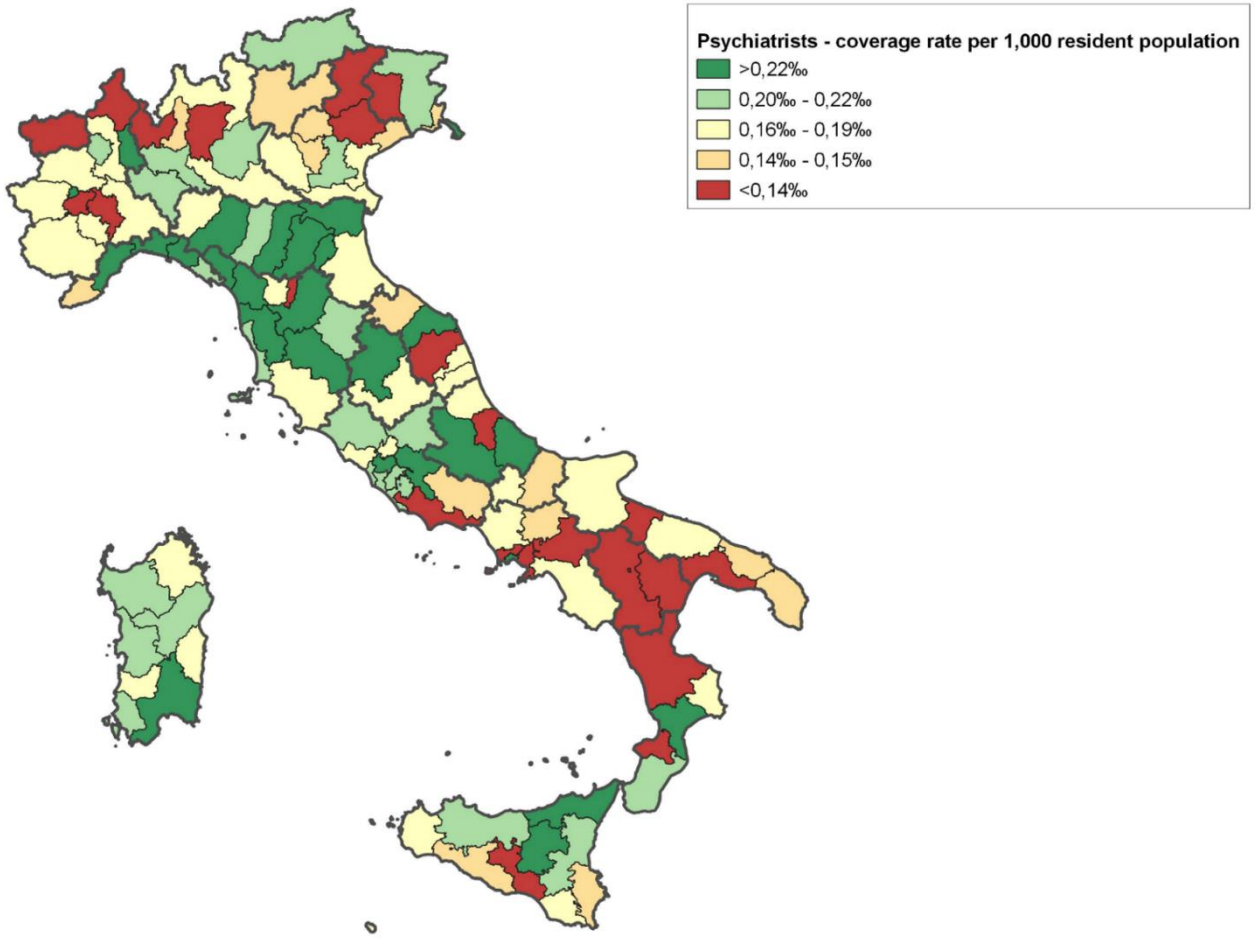
Territory: (LHU/Provinces)

- [max] Province Health Unit of Vibo Valentia: 60%

[min] LHU Aosta: 0%

AVAILABILITY – COVERAGE

Indicator no. 2.6



Summary

Italy

- Psychiatrists – average coverage rate: 0,19‰

Regions/Autonomous Provinces

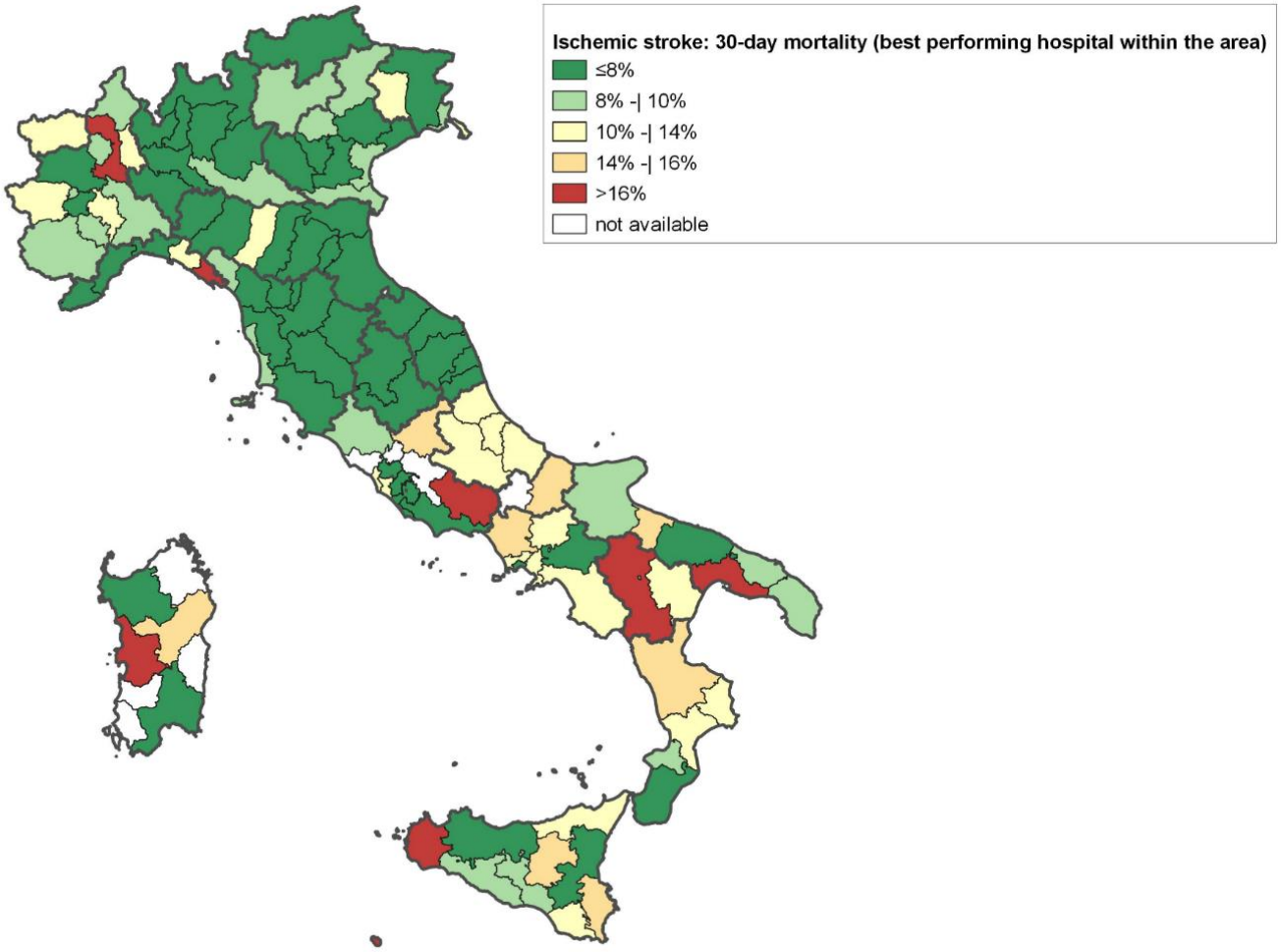
- [max] Liguria: 0,24‰
- [min] Valle d'Aosta: 0,13‰

Territory: (LHU/Provinces)

- [max] LHU Rome 1: 0,44‰
- [min] LHU Asti: 0,09‰

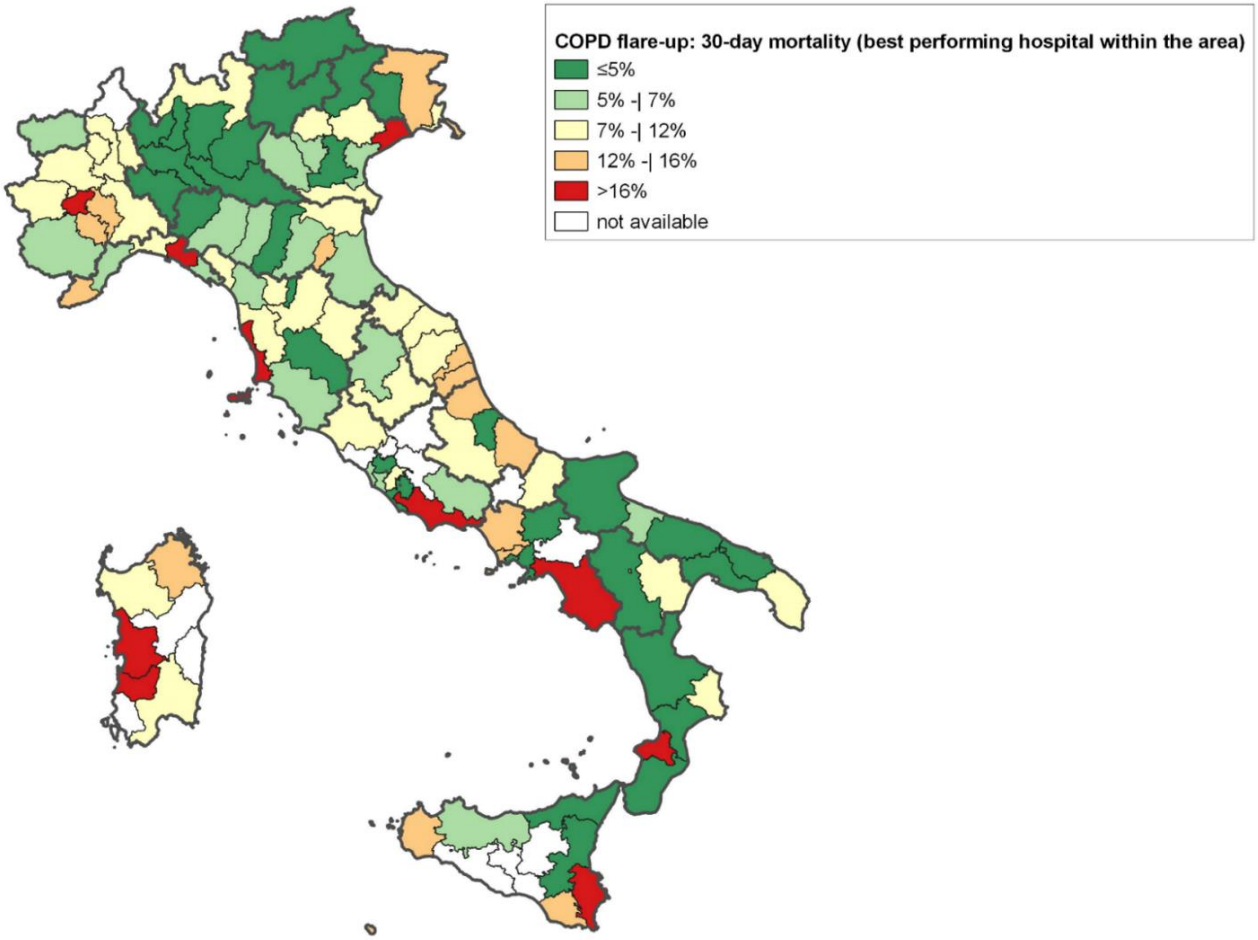
QUALITY – PERFORMANCE

Indicator no. 3



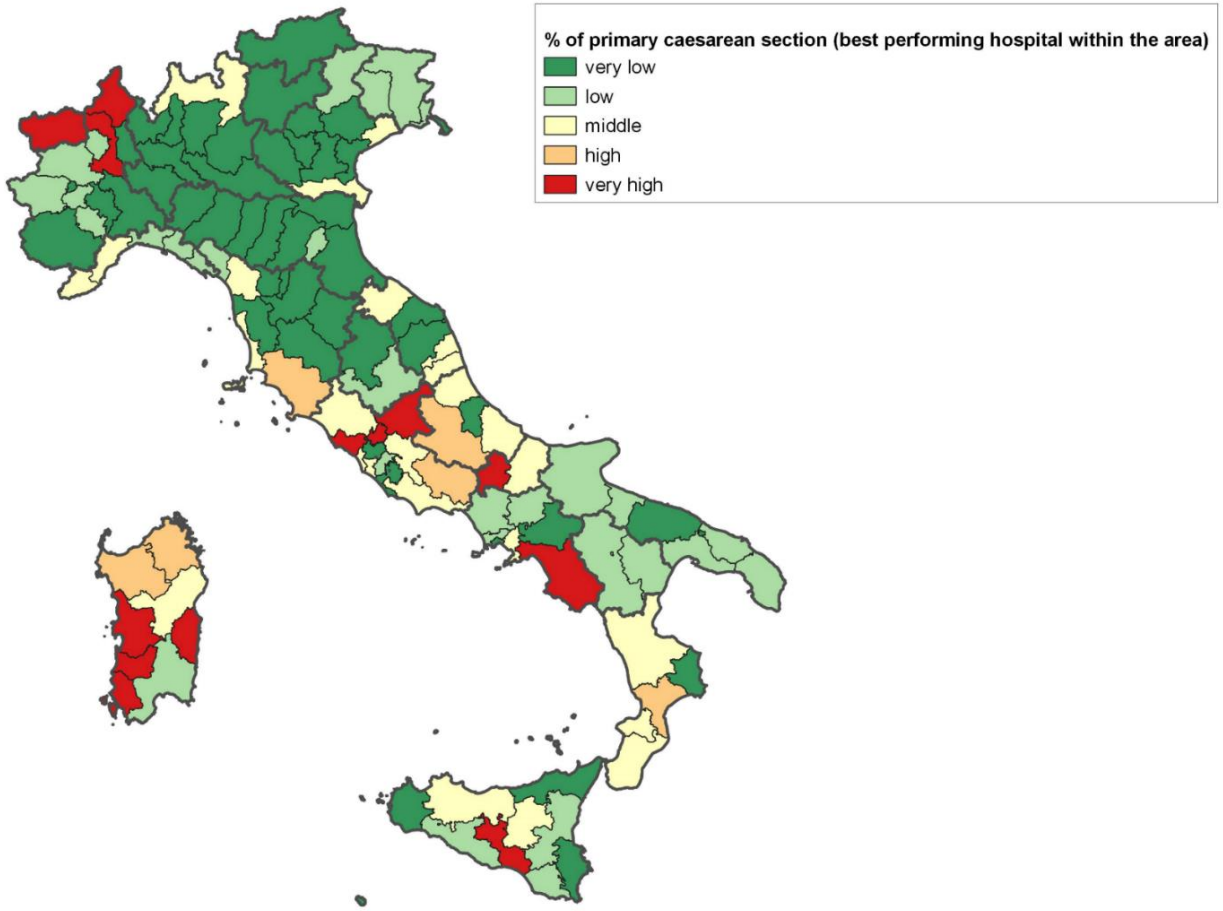
QUALITY – PERFORMANCE

Indicator no. 4



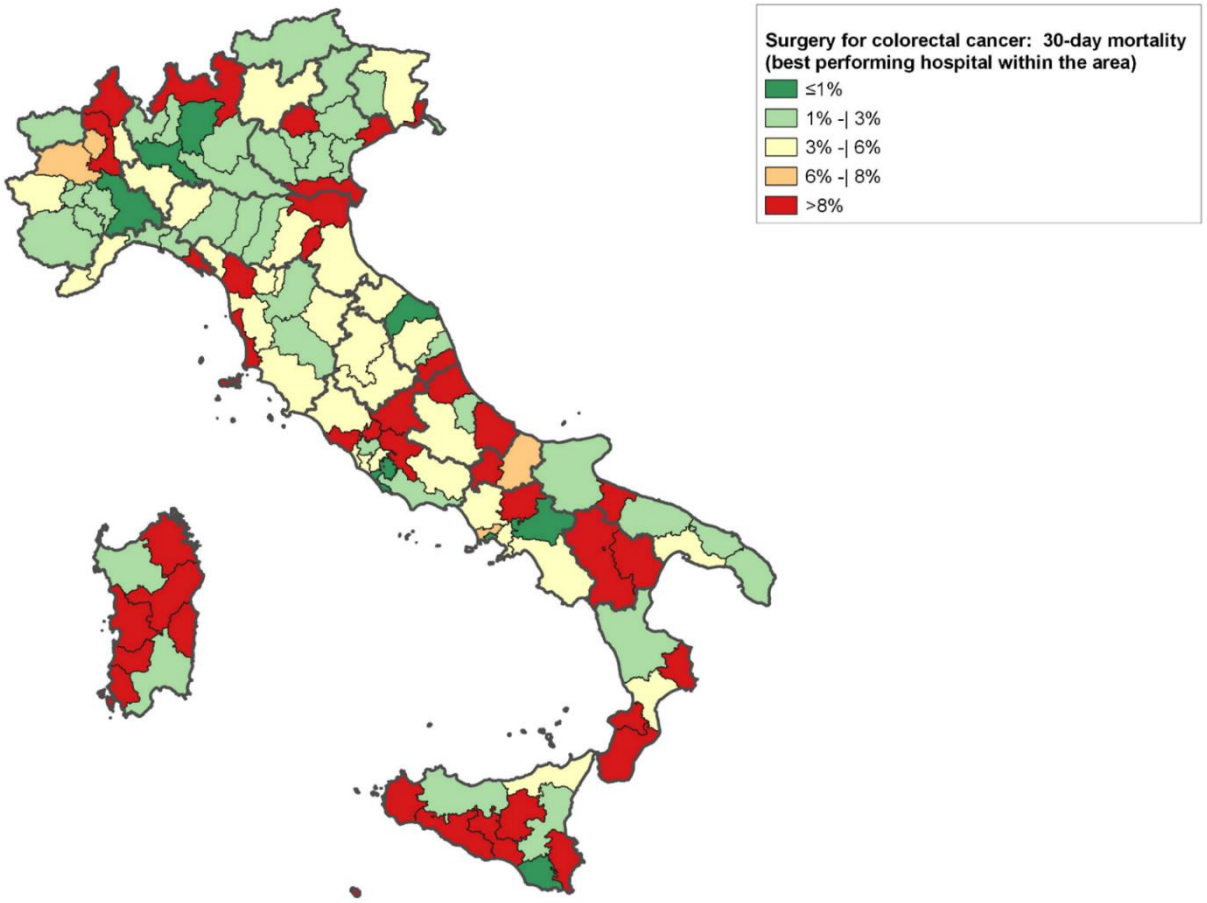
QUALITY – PERFORMANCE

Indicator no. 5



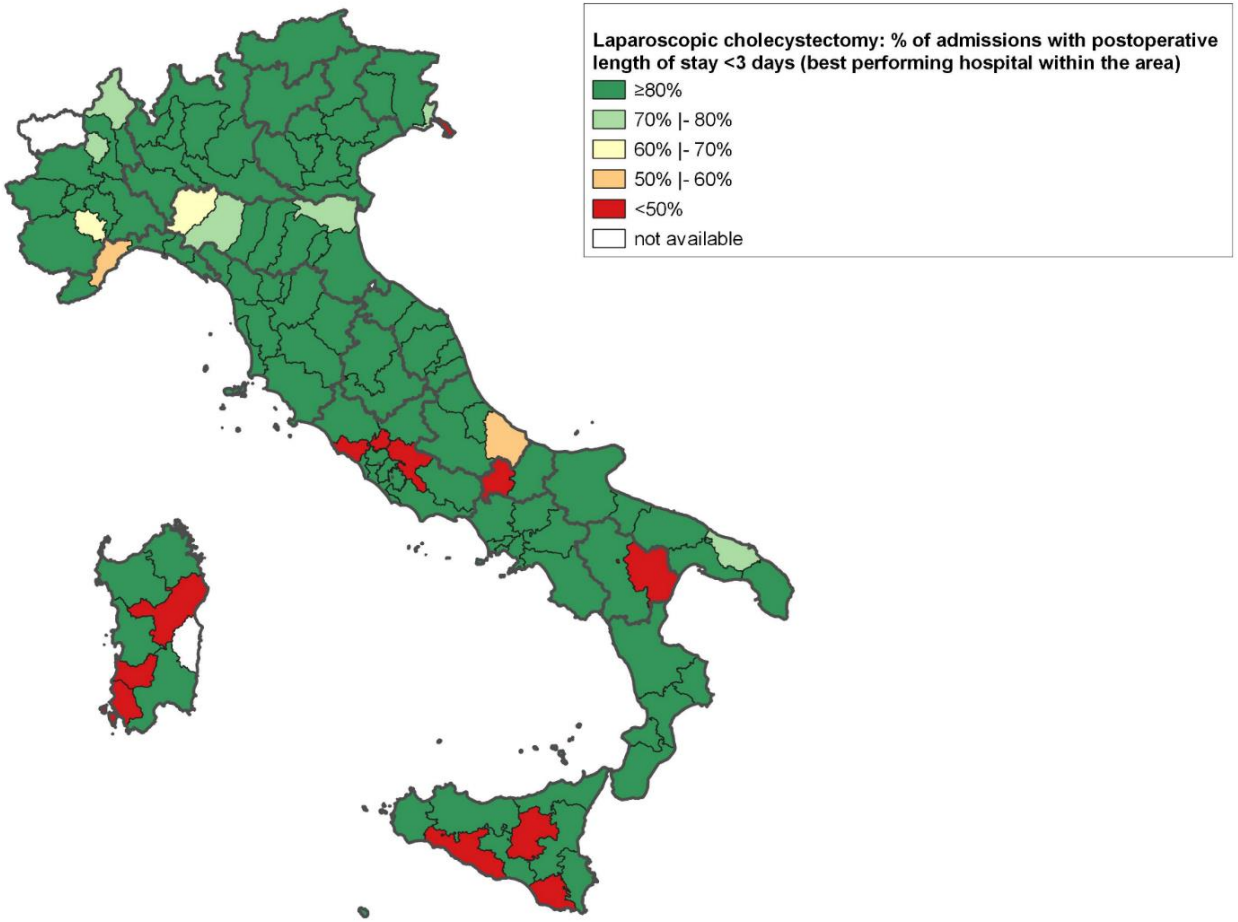
QUALITY – PERFORMANCE

Indicator no. 6



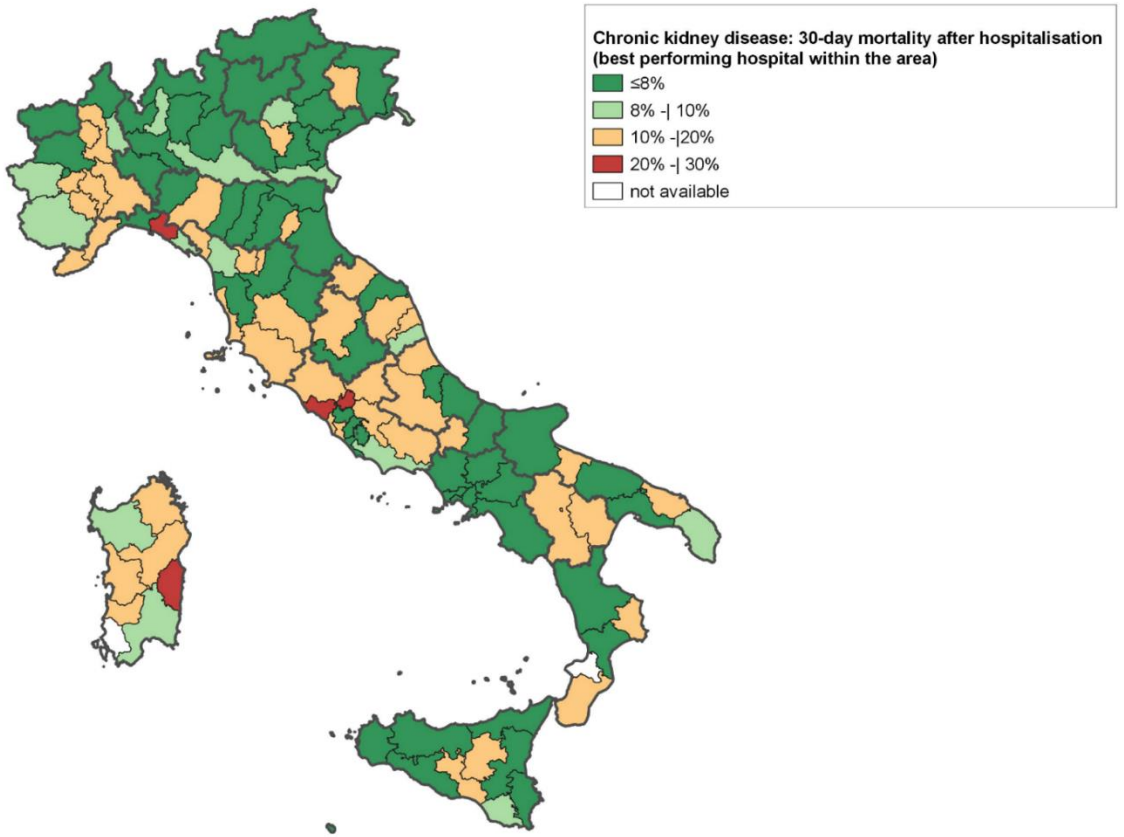
QUALITY – PERFORMANCE

Indicator no. 7



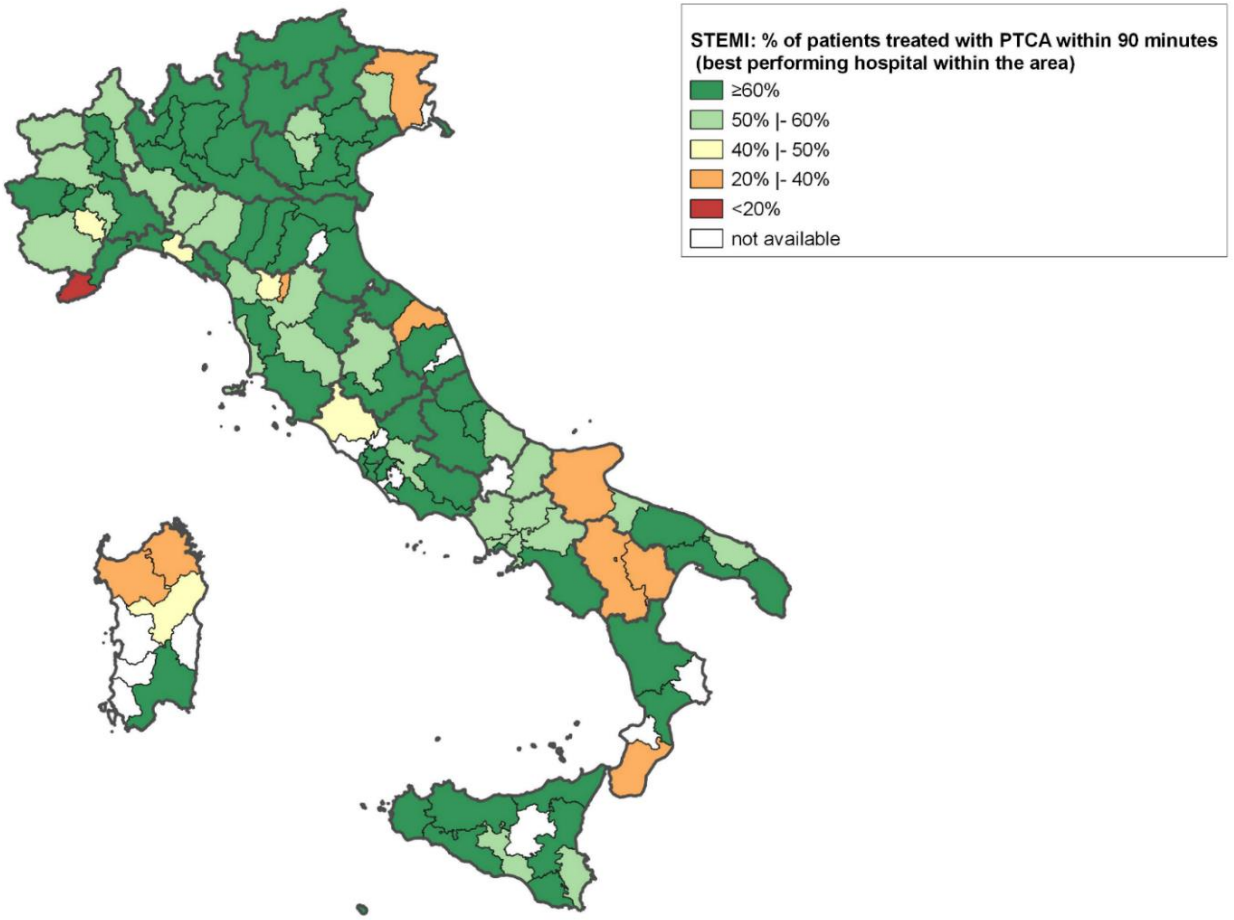
QUALITY – PERFORMANCE

Indicator no. 8



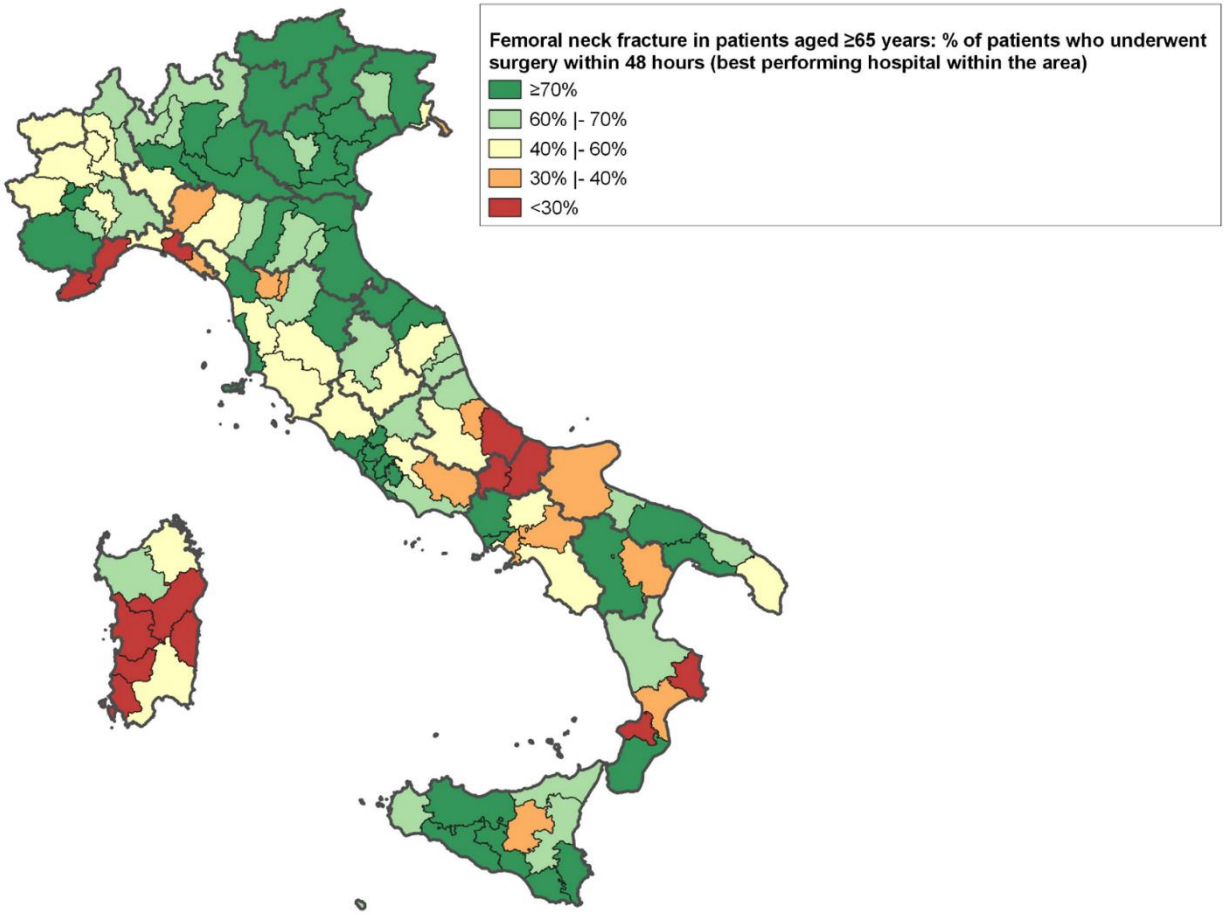
QUALITY – PERFORMANCE

Indicator no. 9



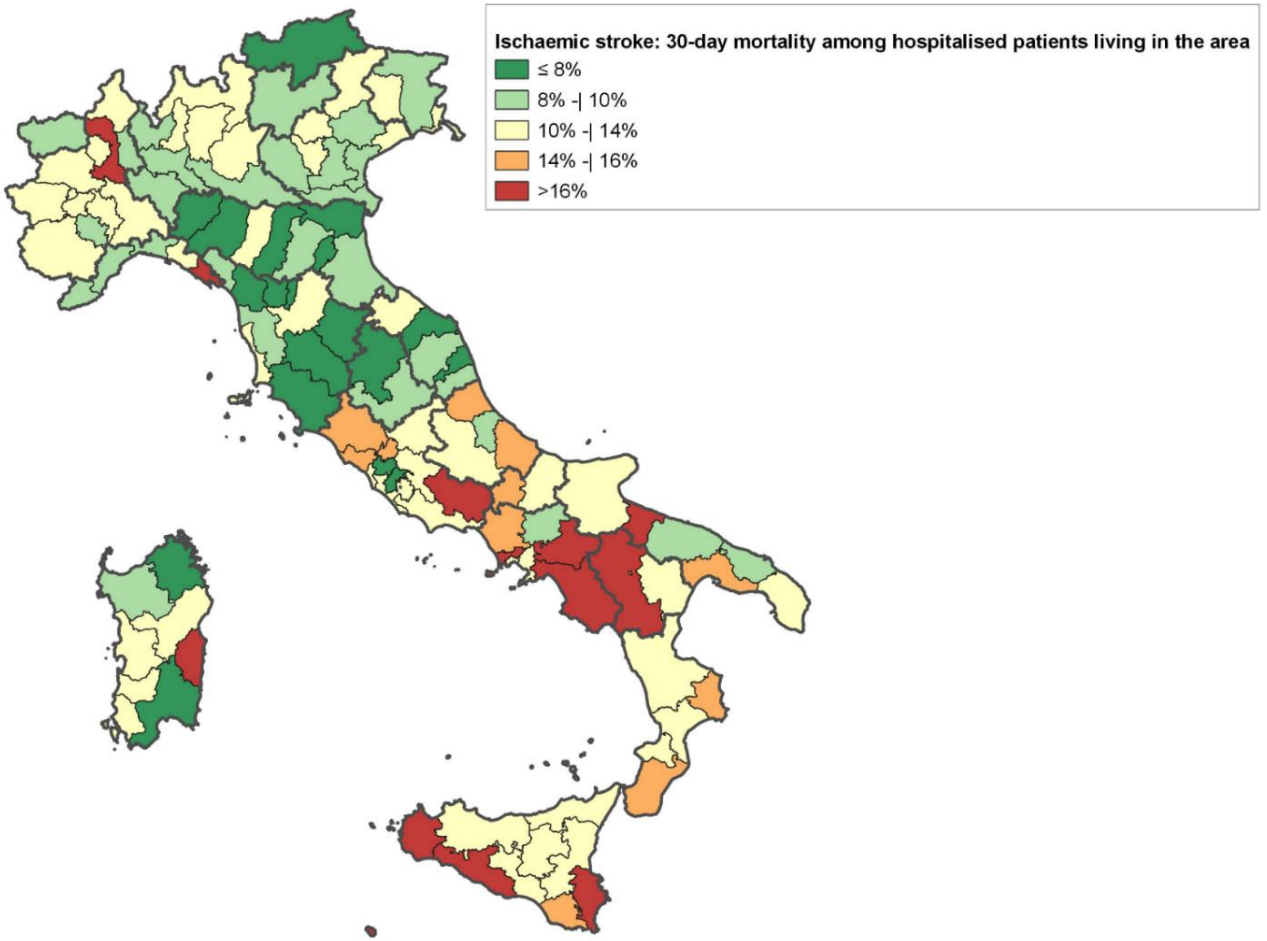
QUALITY – PERFORMANCE

Indicator no. 10



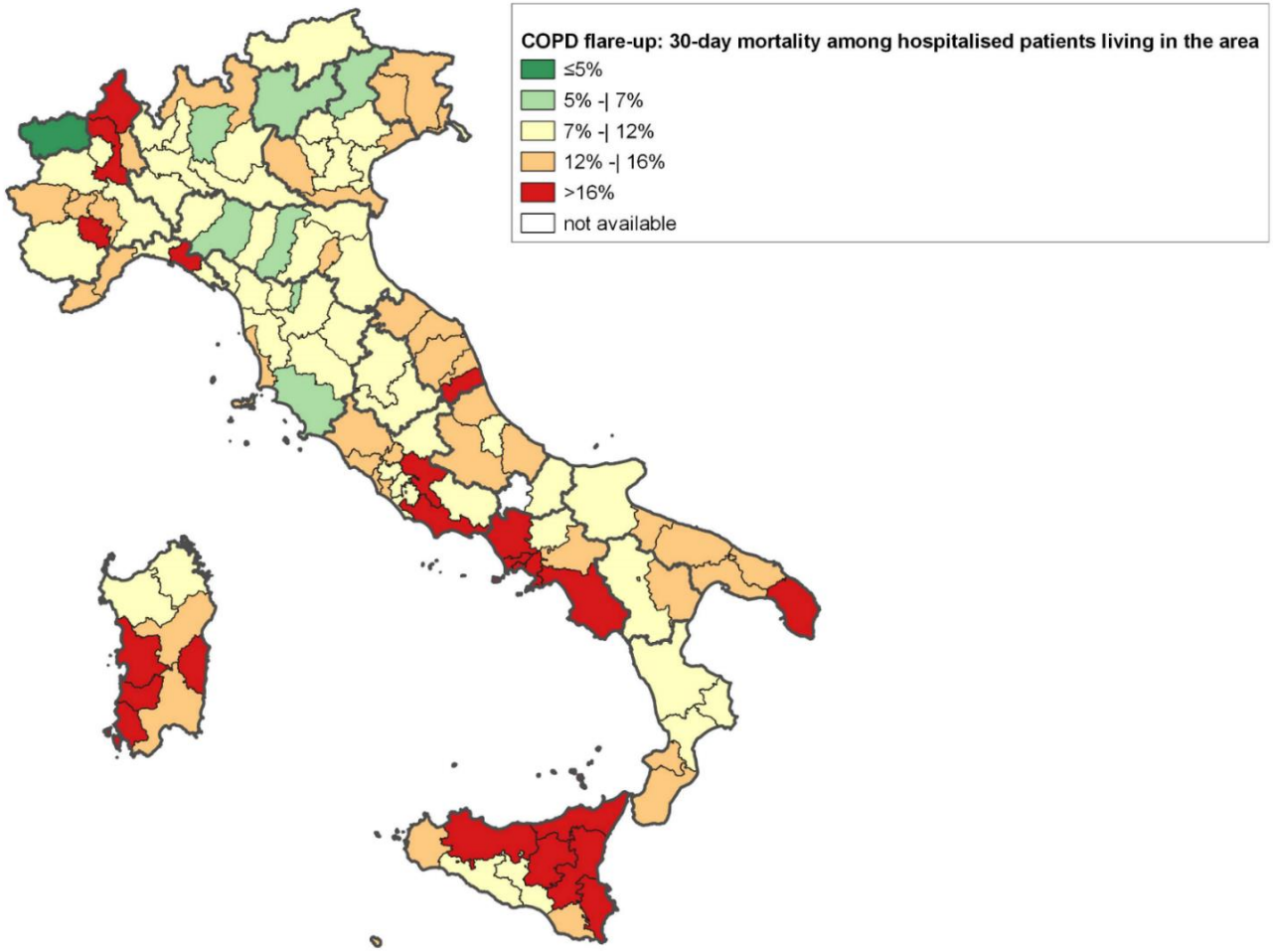
QUALITY – PROTECTION

Indicator no. 11



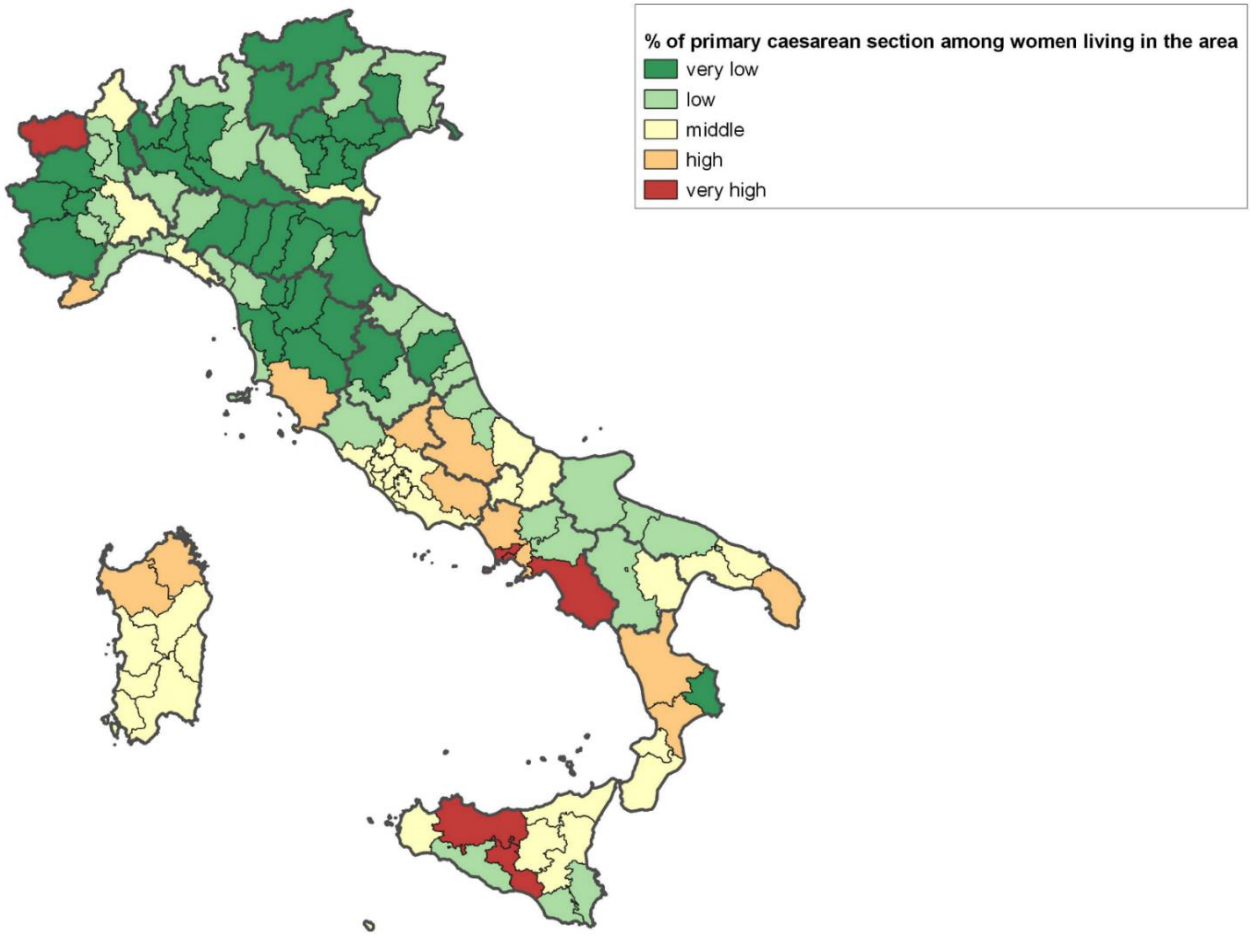
QUALITY – PROTECTION

Indicator no. 12



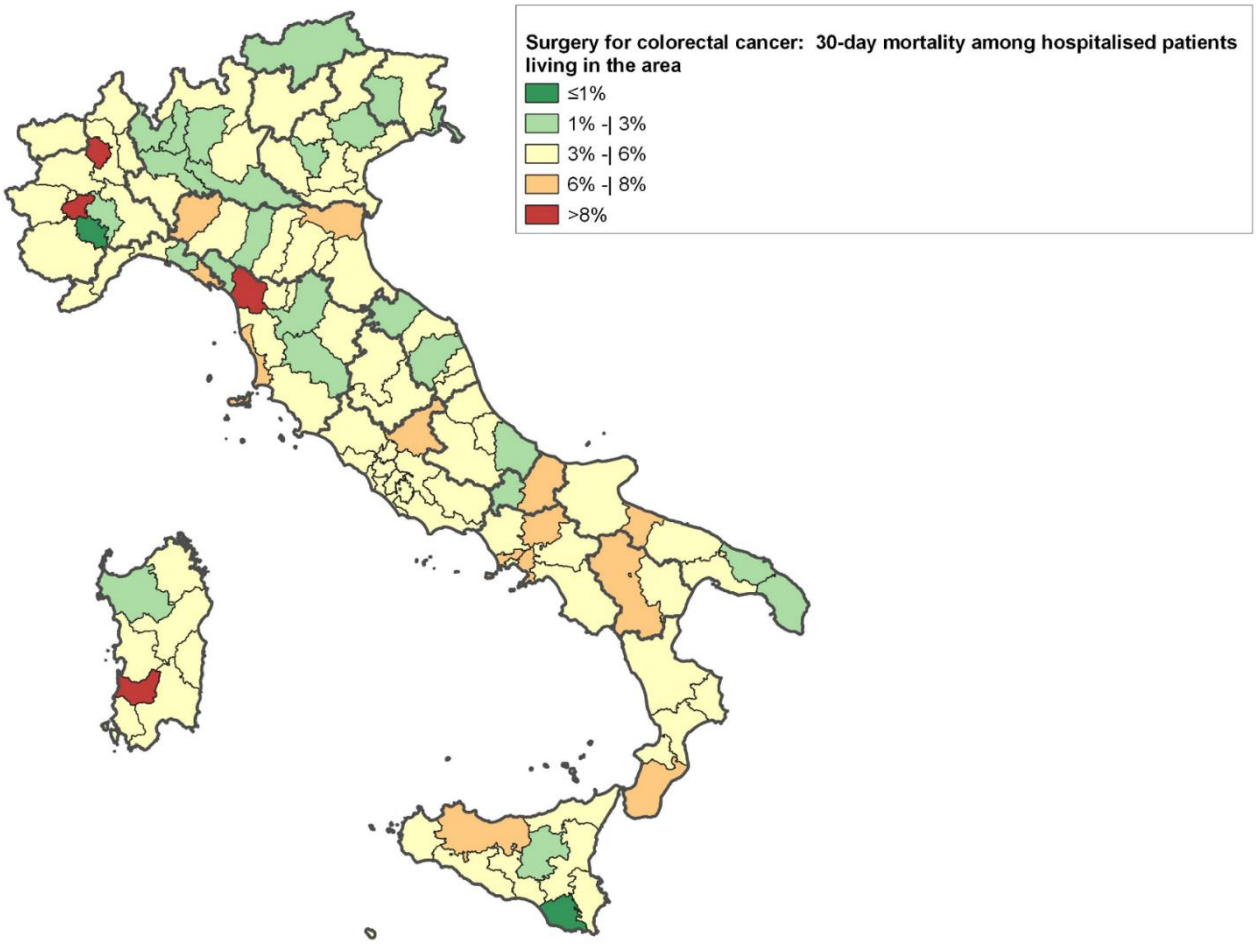
QUALITY – PROTECTION

Indicator no. 13



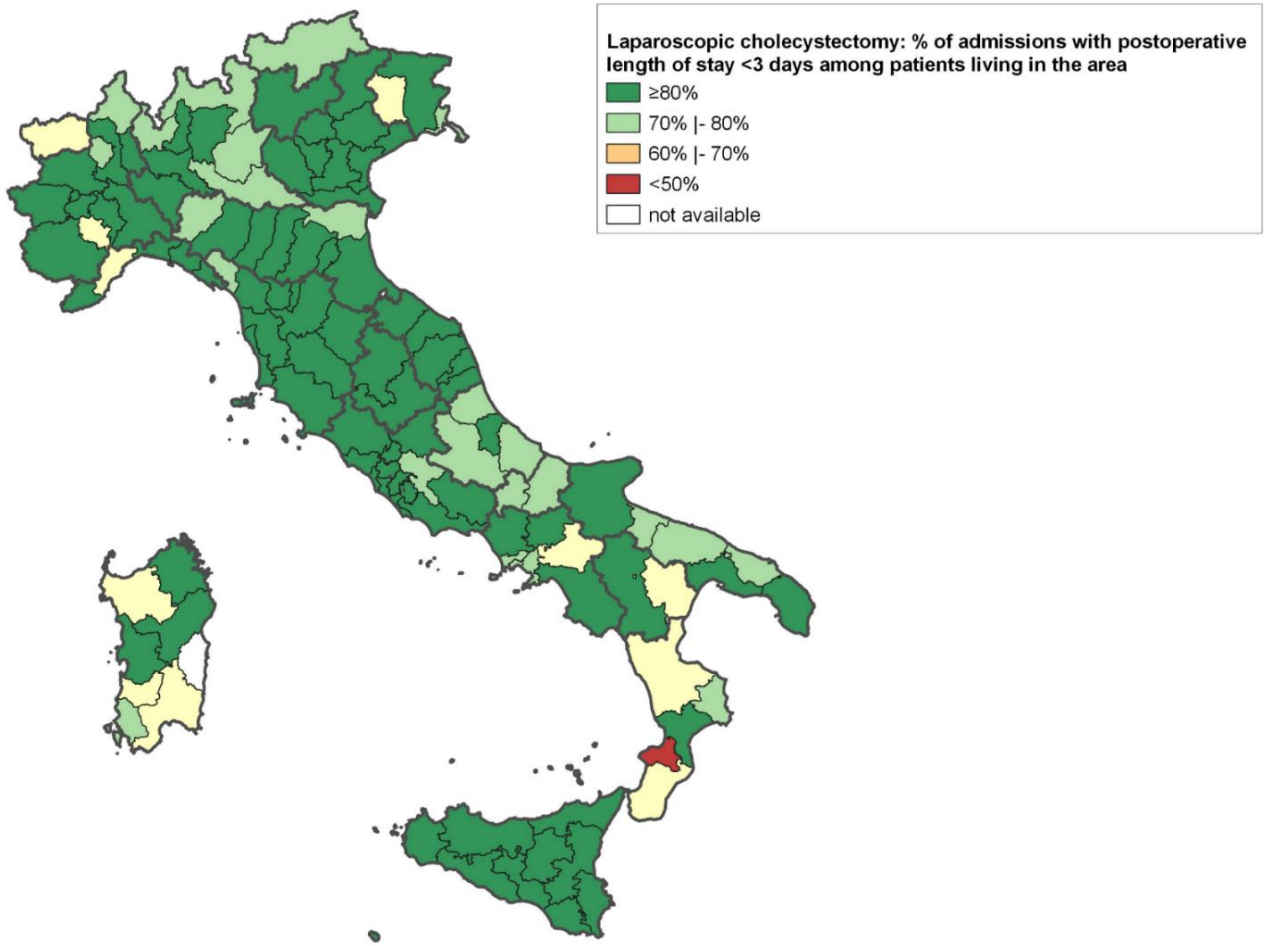
QUALITY – PROTECTION

Indicator no. 14



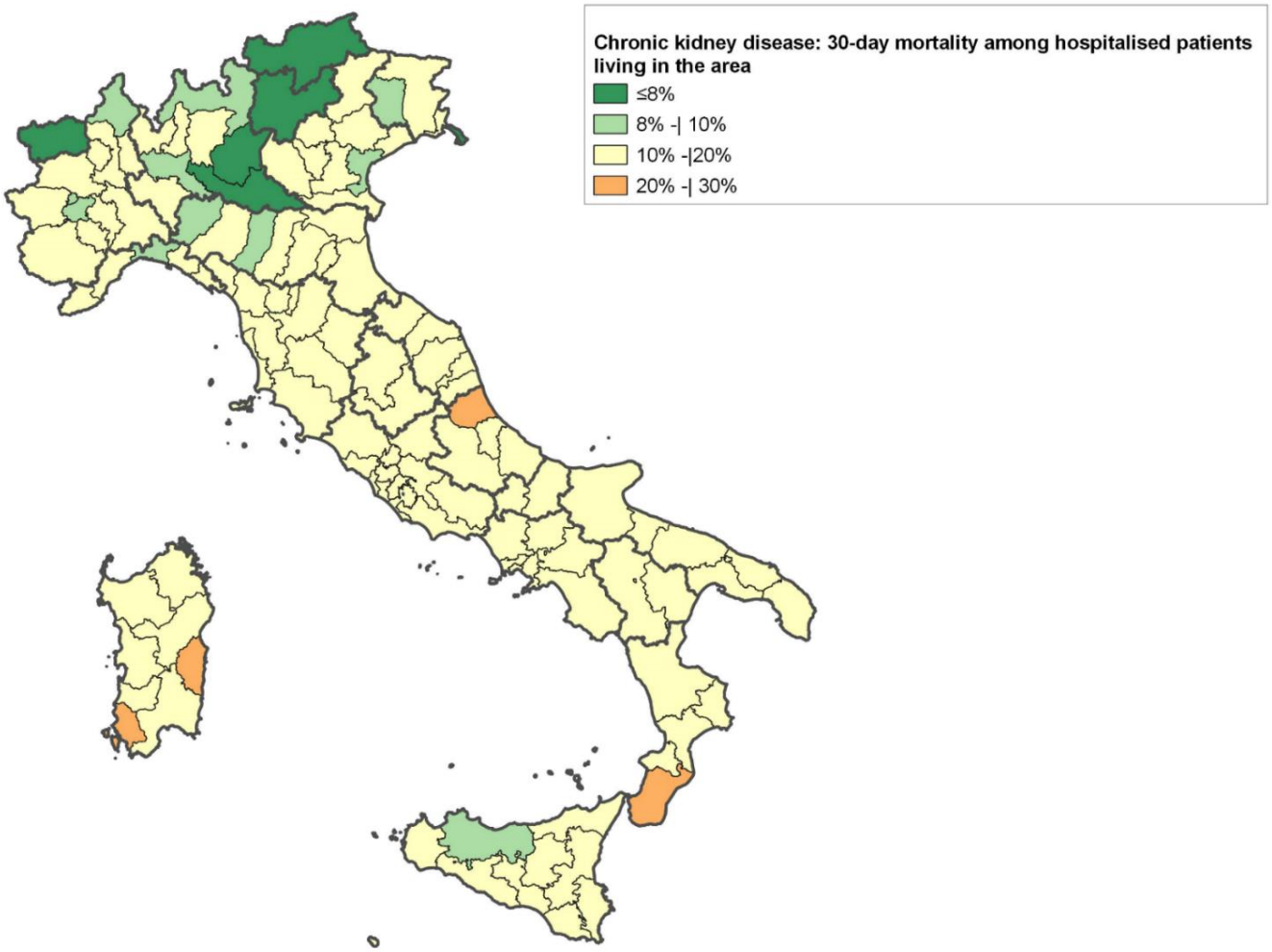
QUALITY – PROTECTION

Indicator no. 15



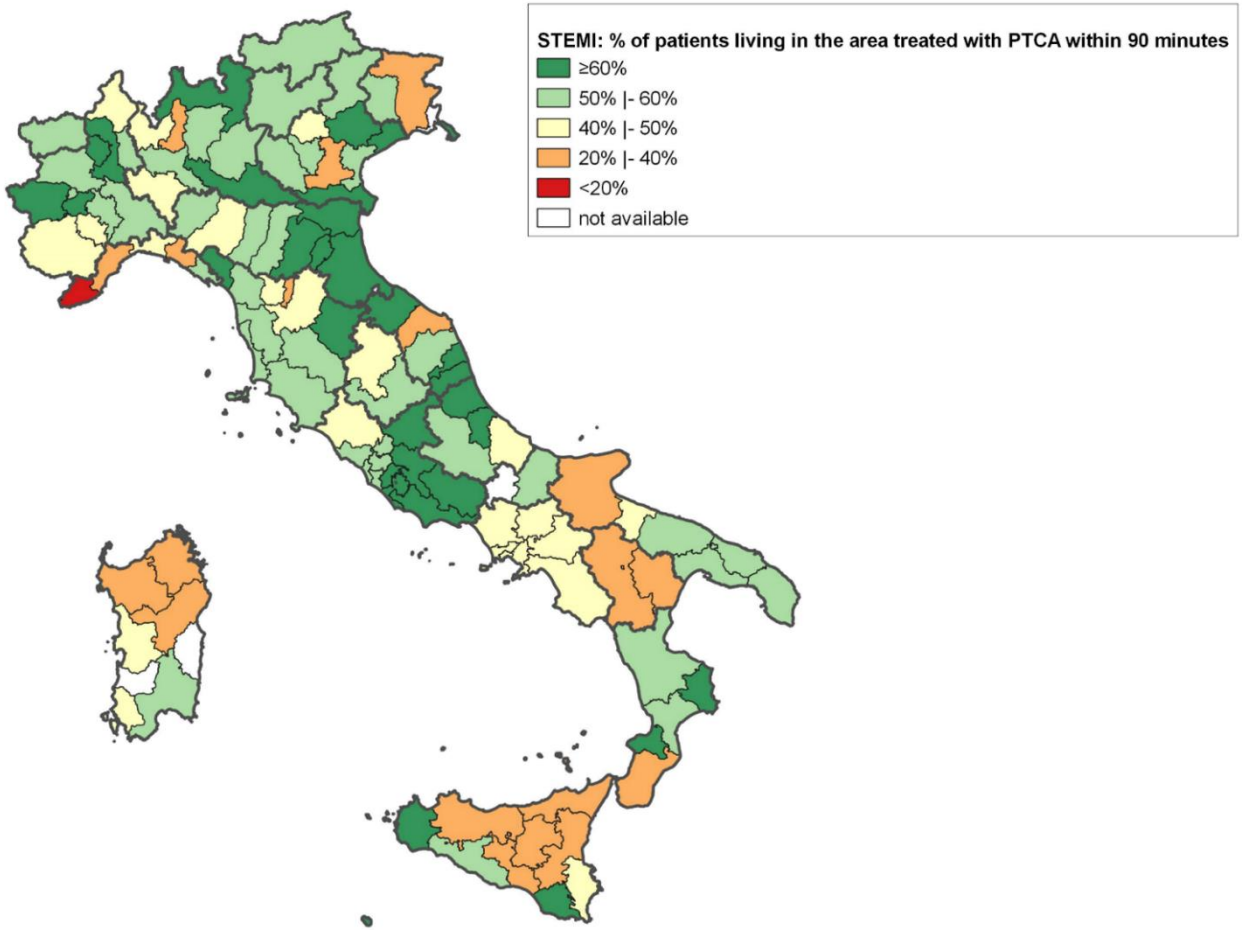
QUALITY – PROTECTION

Indicator no. 16



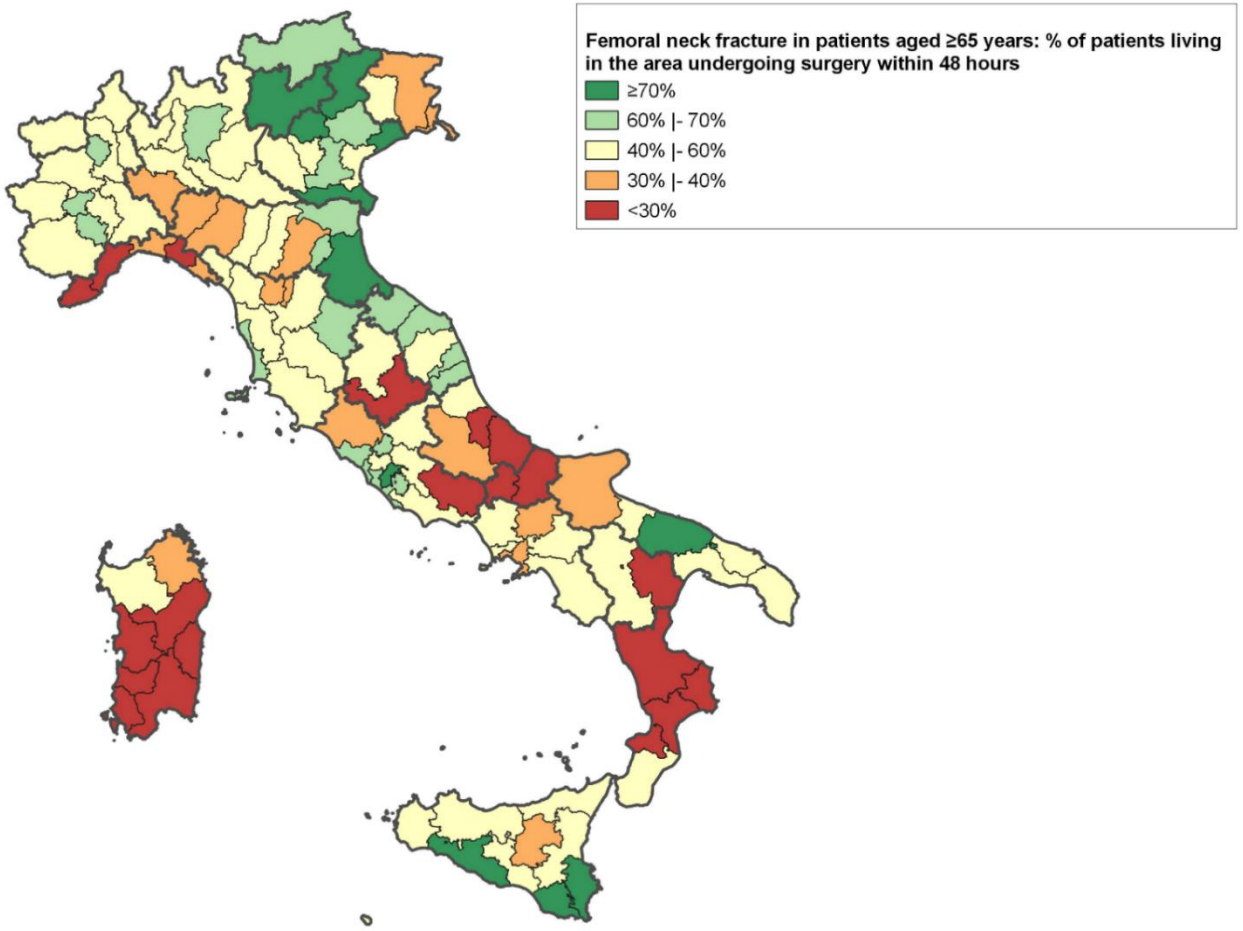
QUALITY – PROTECTION

Indicator no. 17



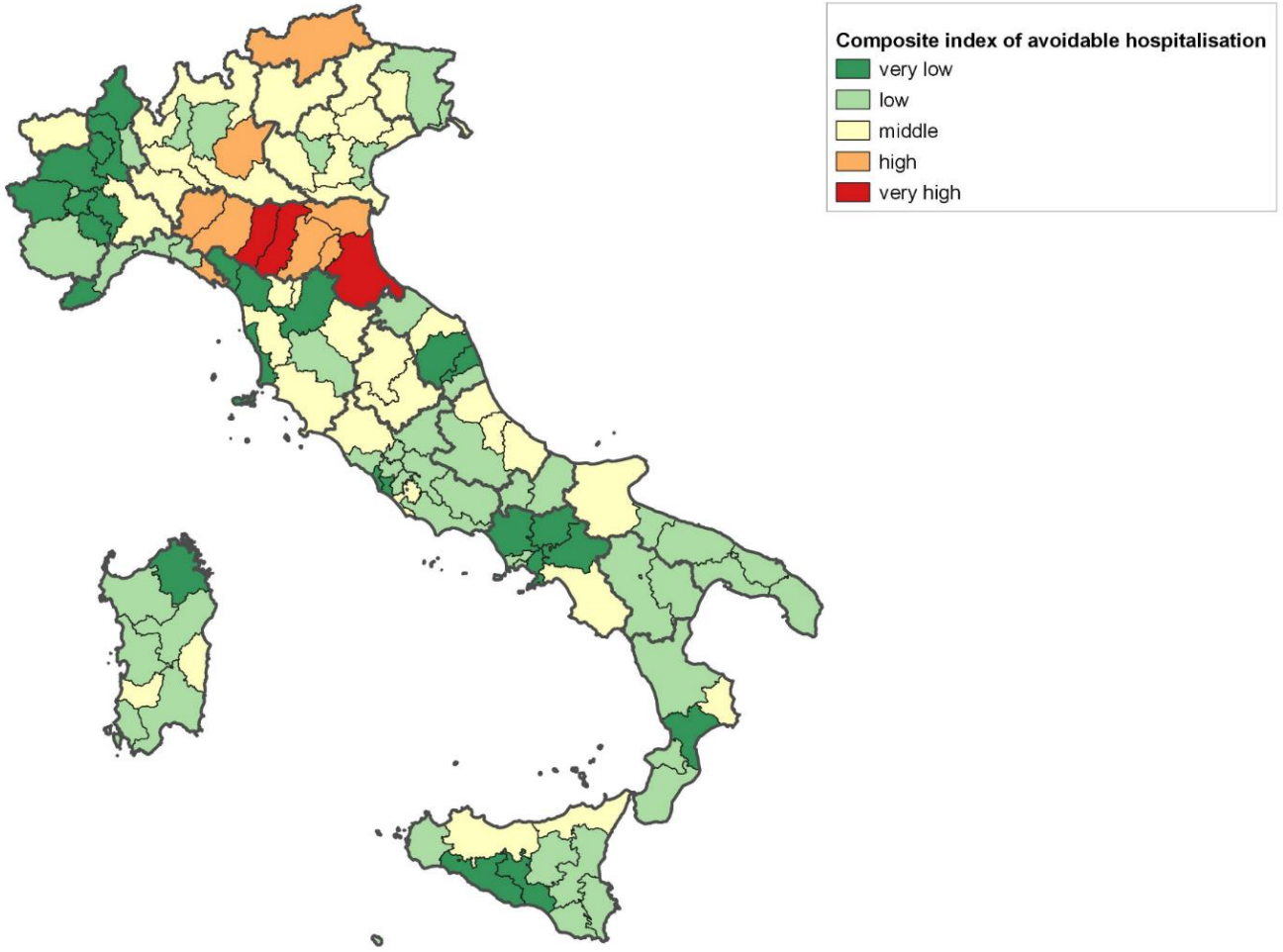
QUALITY – PROTECTION

Indicator no. 18



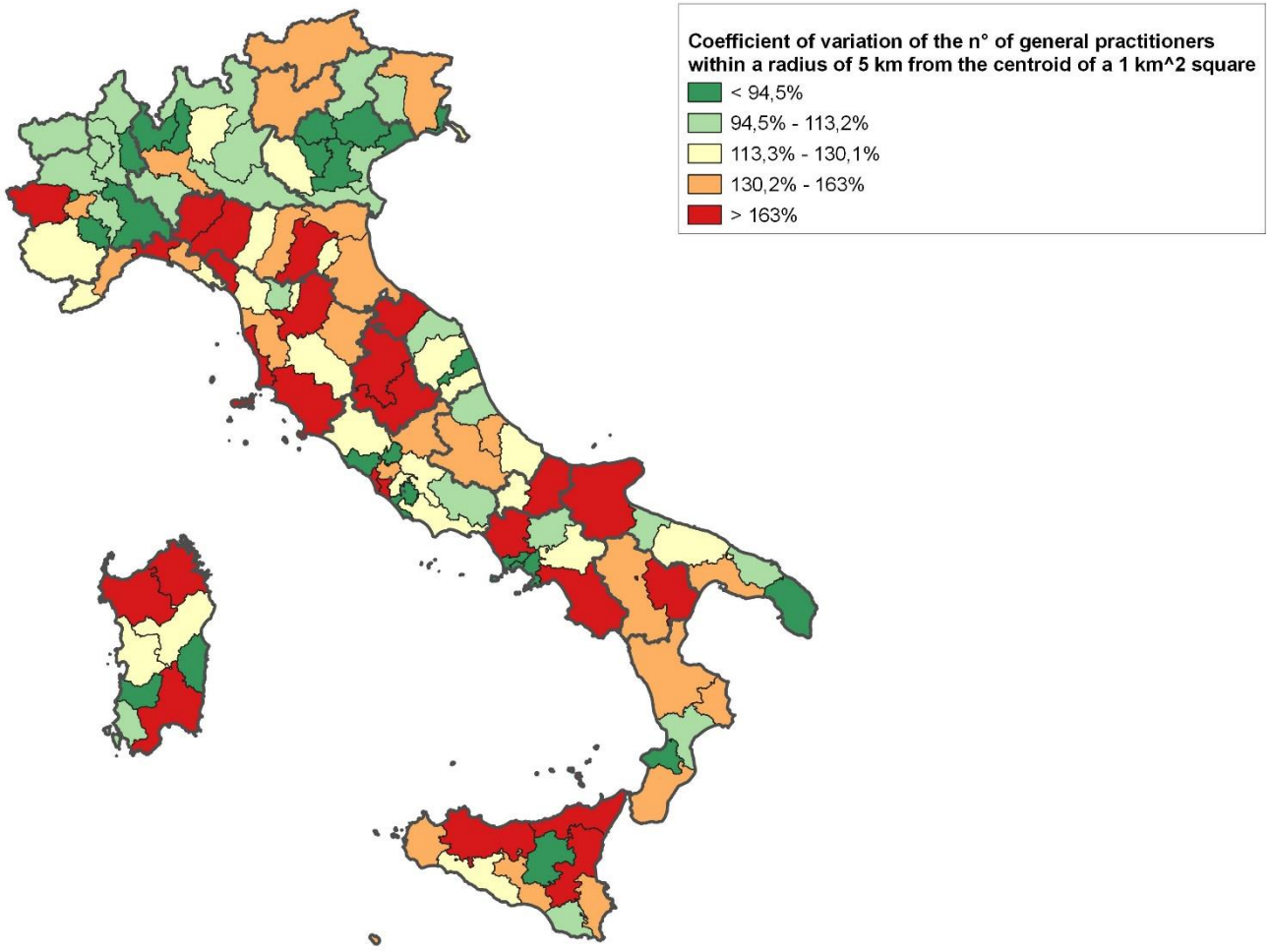
QUALITY – PROTECTION

Indicator no. 19



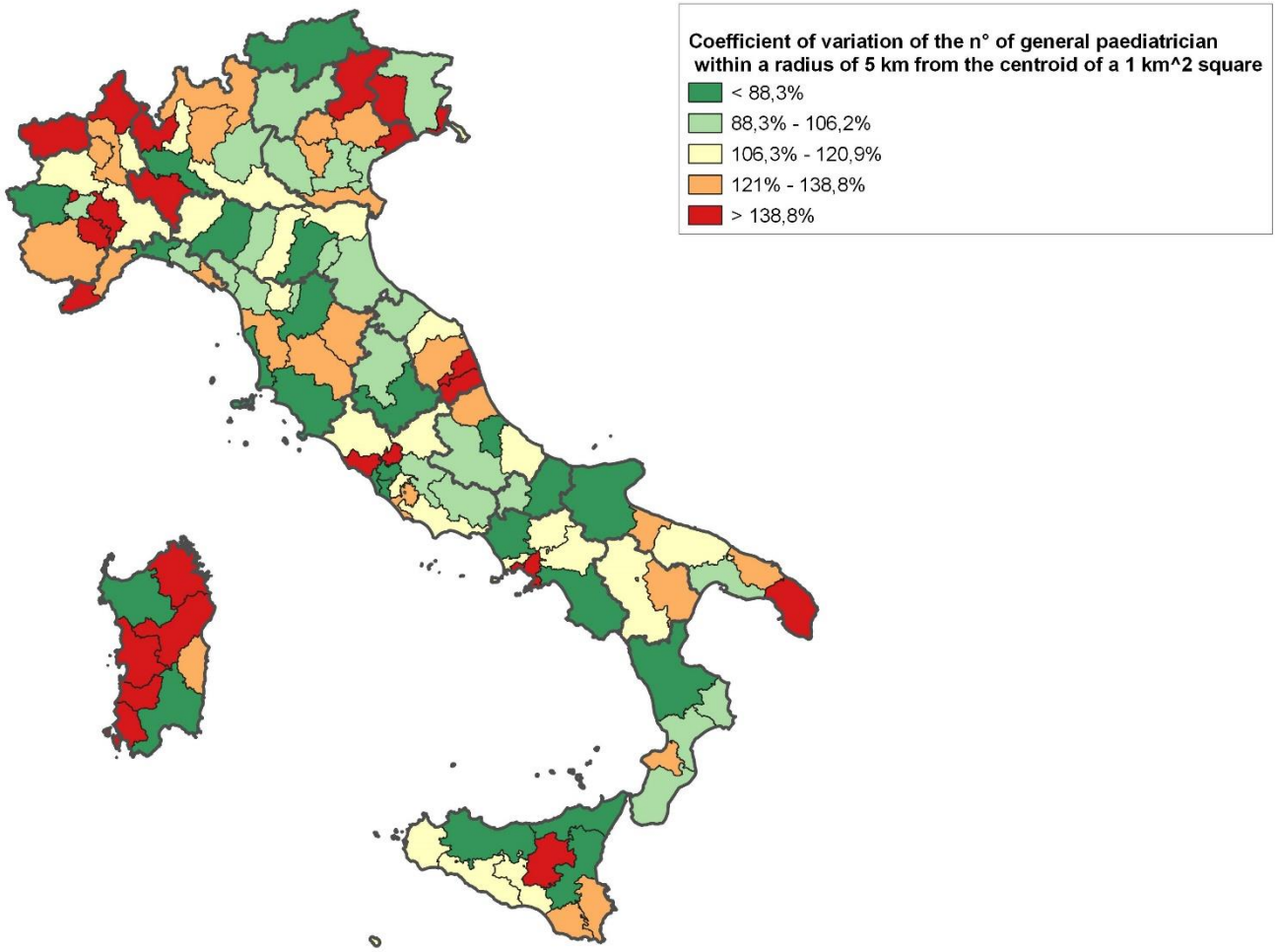
ACCESSIBILITY – USABILITY

Indicator no. 20.1



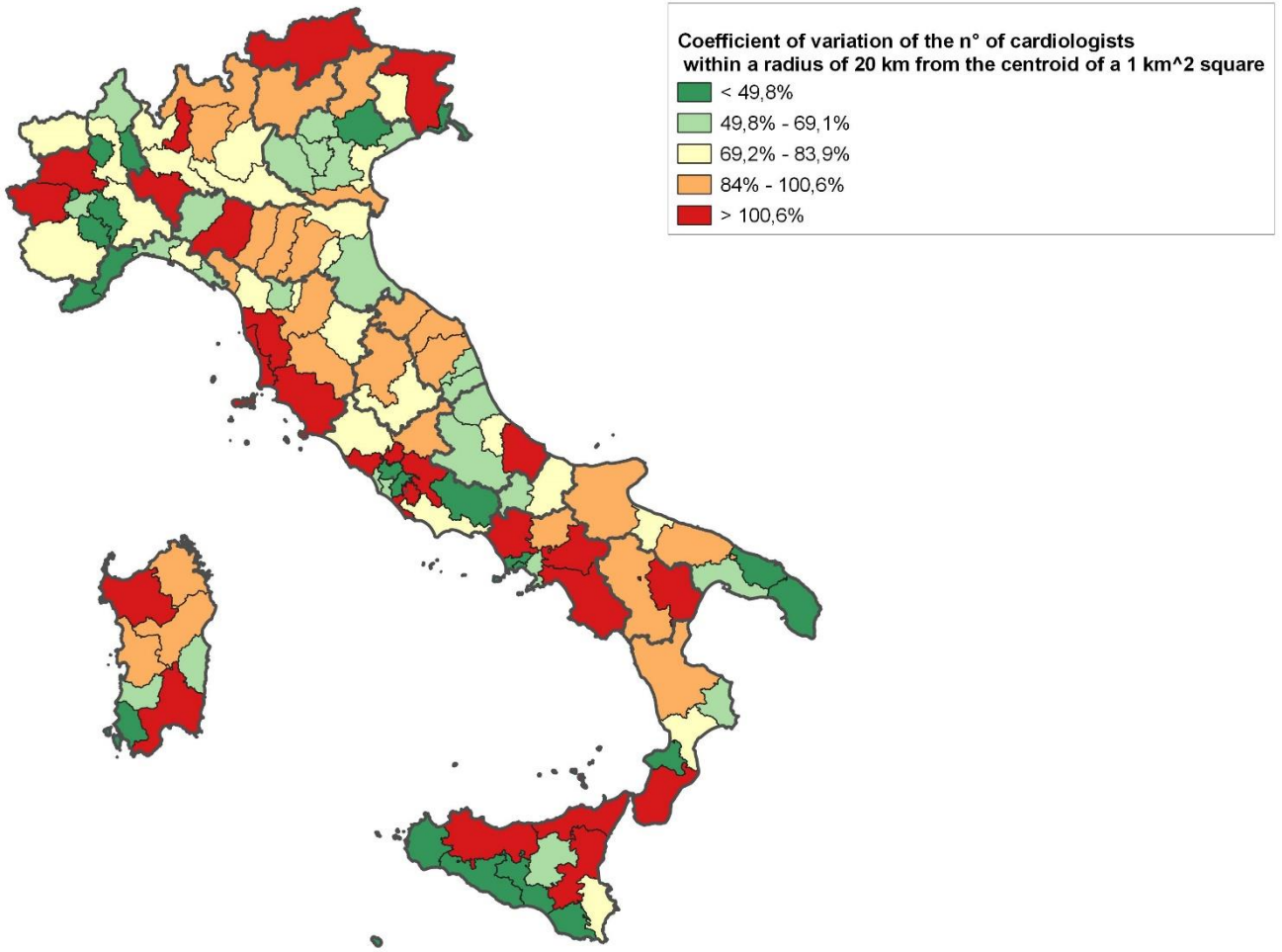
ACCESSIBILITY – USABILITY

Indicator no. 20.2



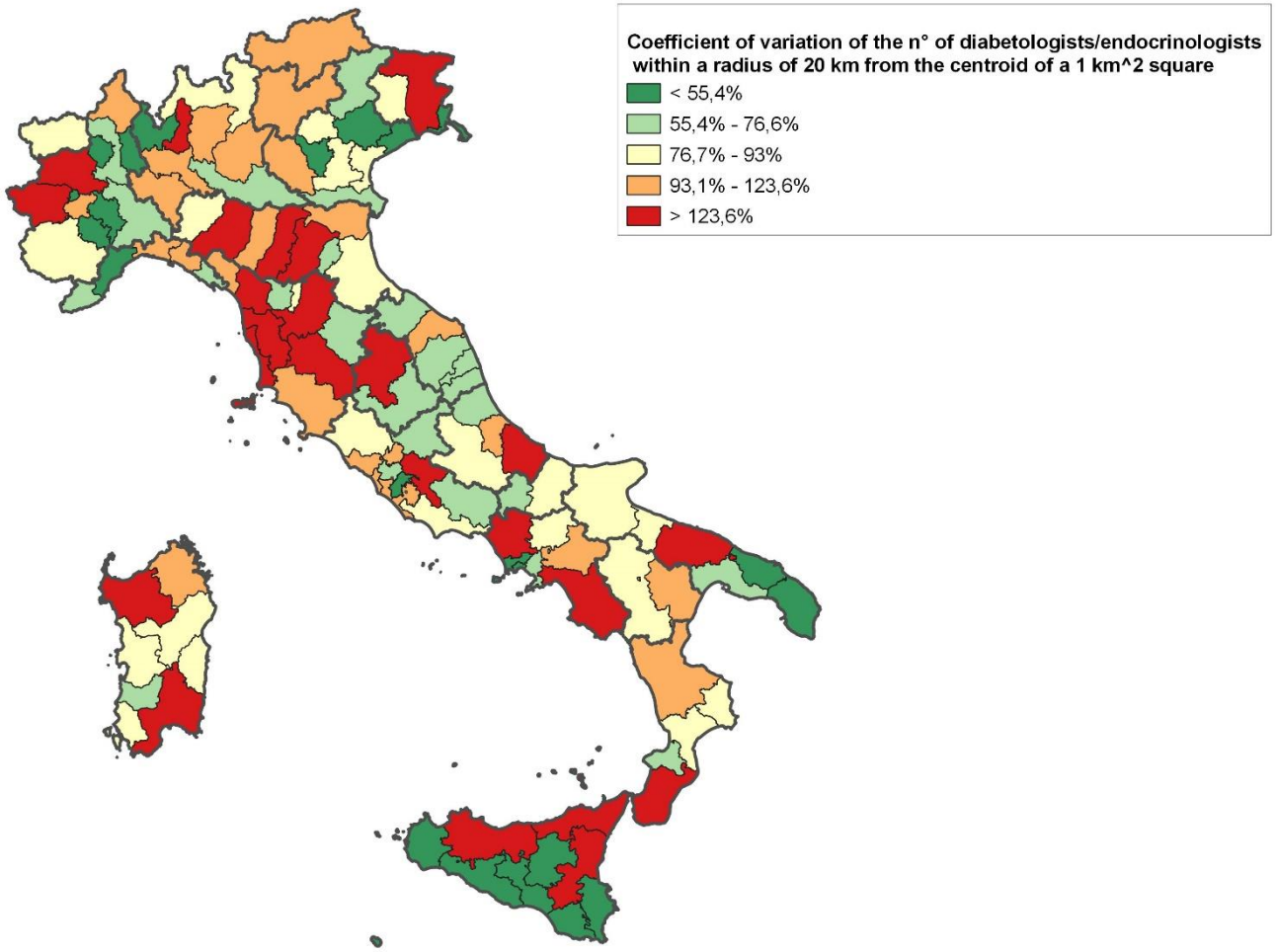
ACCESSIBILITY – USABILITY

Indicator no. 20.3



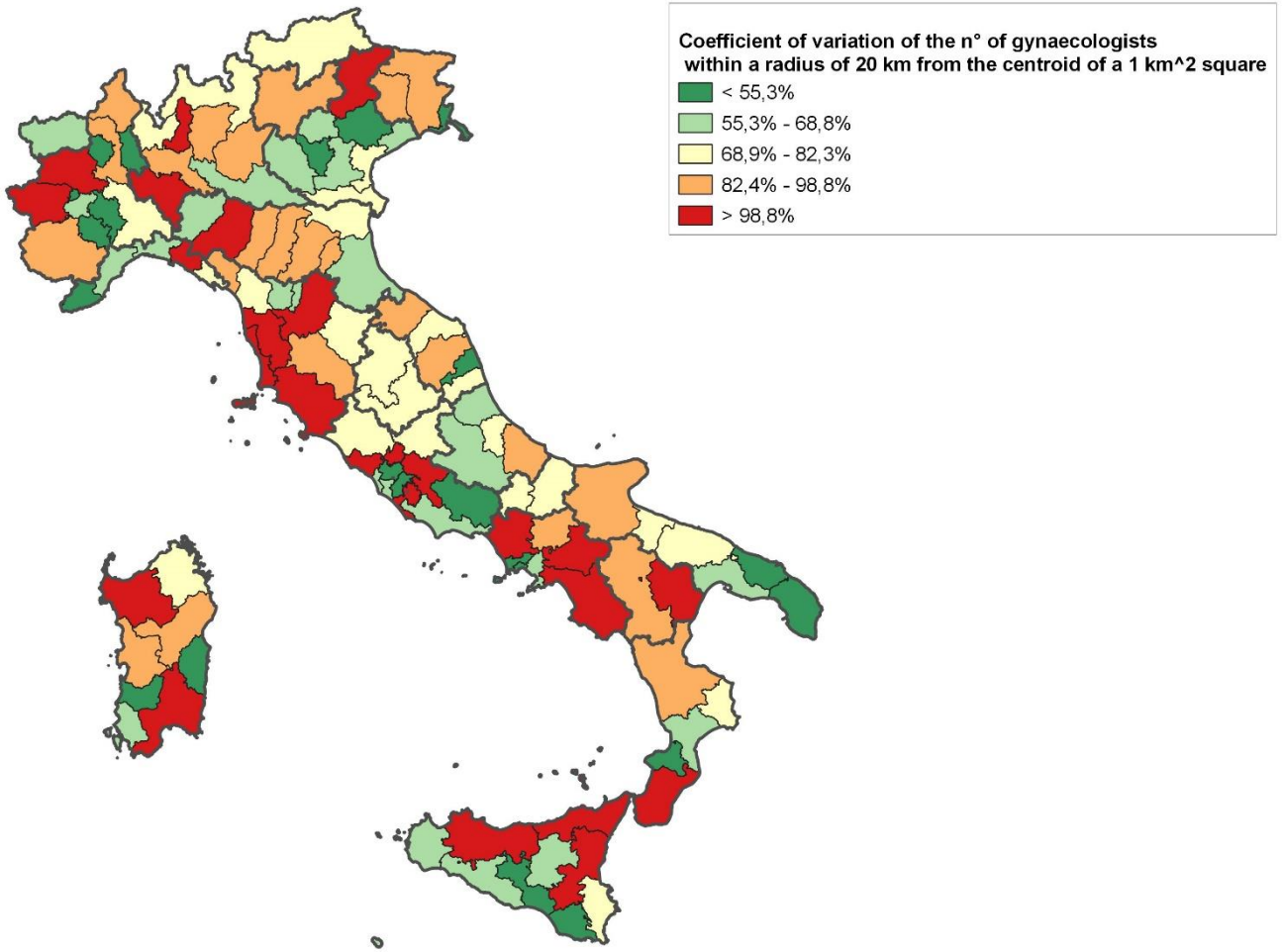
ACCESSIBILITY – USABILITY

Indicator no. 20.4



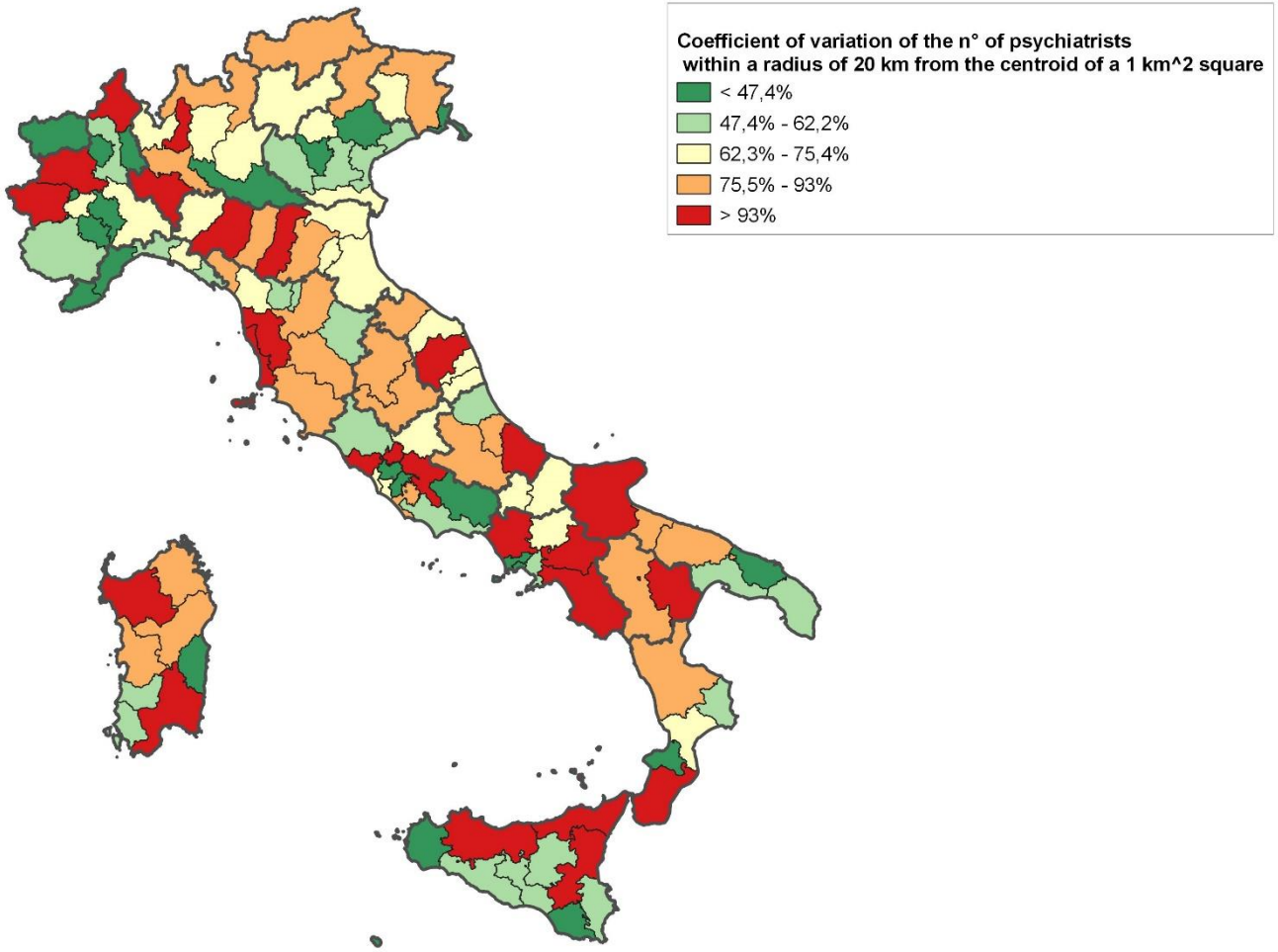
ACCESSIBILITY – USABILITY

Indicator no. 20.5



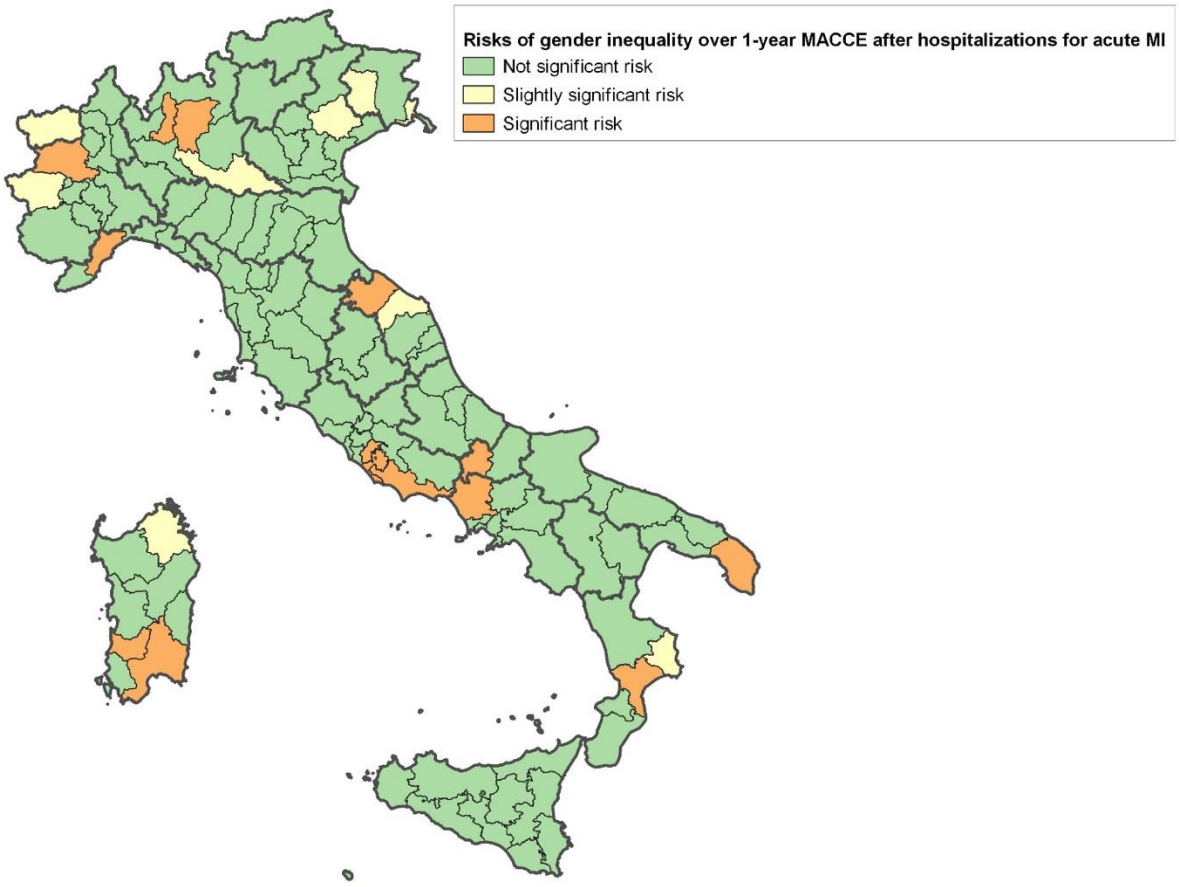
ACCESSIBILITY – USABILITY

Indicator no. 20.6



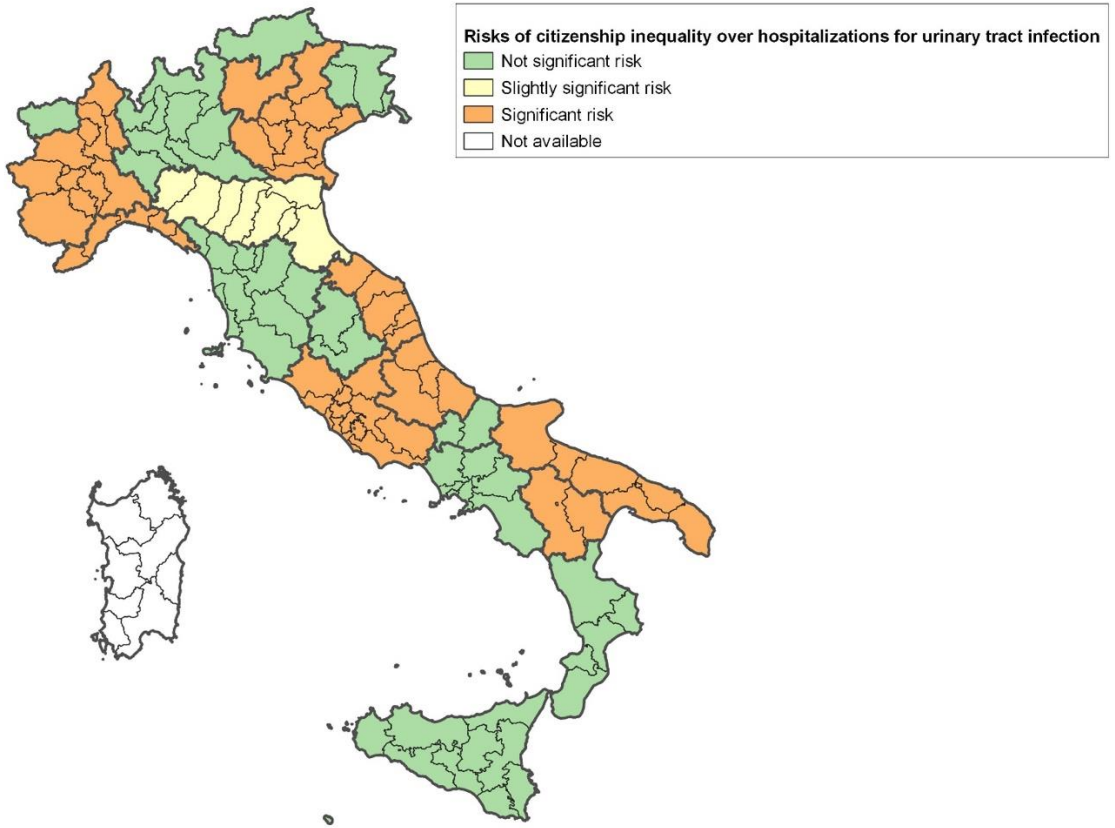
ACCESSIBILITY – EQUITY

Indicator no. 21



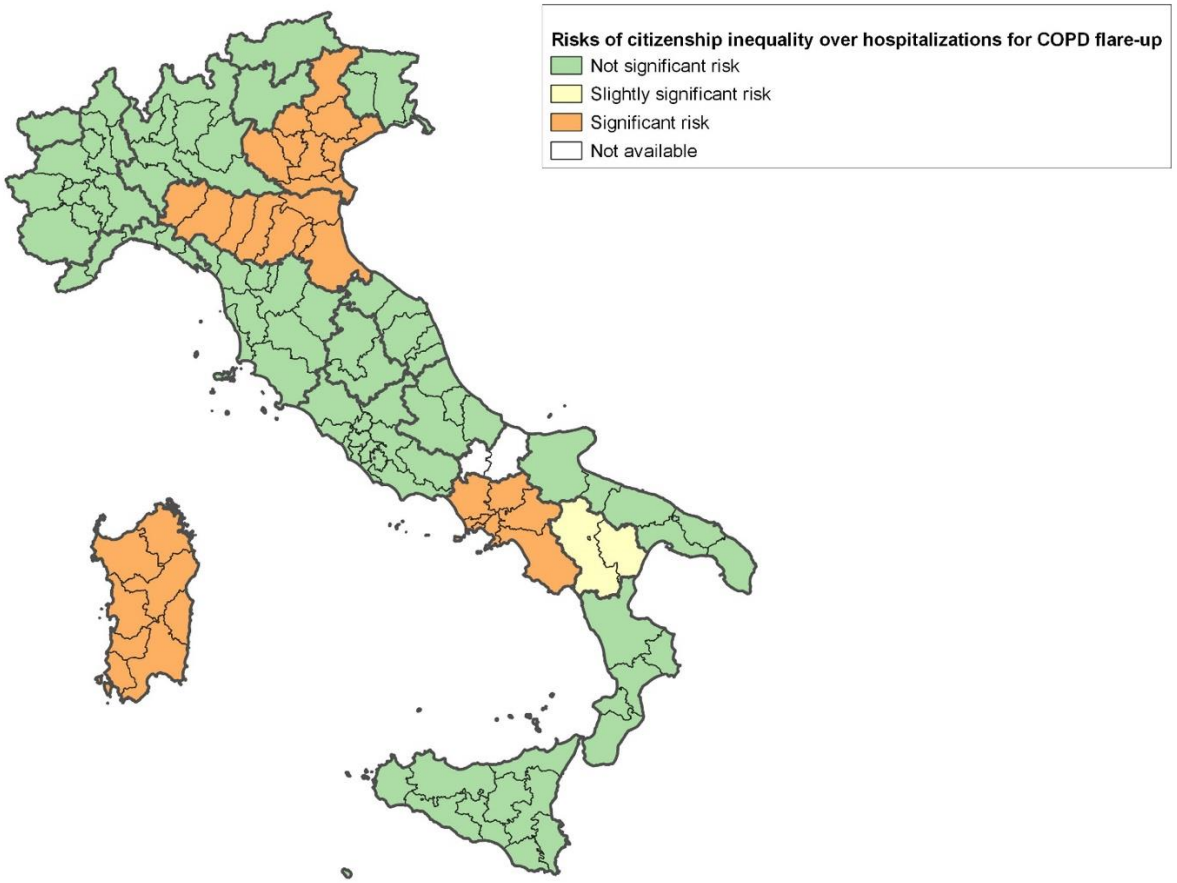
ACCESSIBILITY – EQUITY

Indicator no. 22



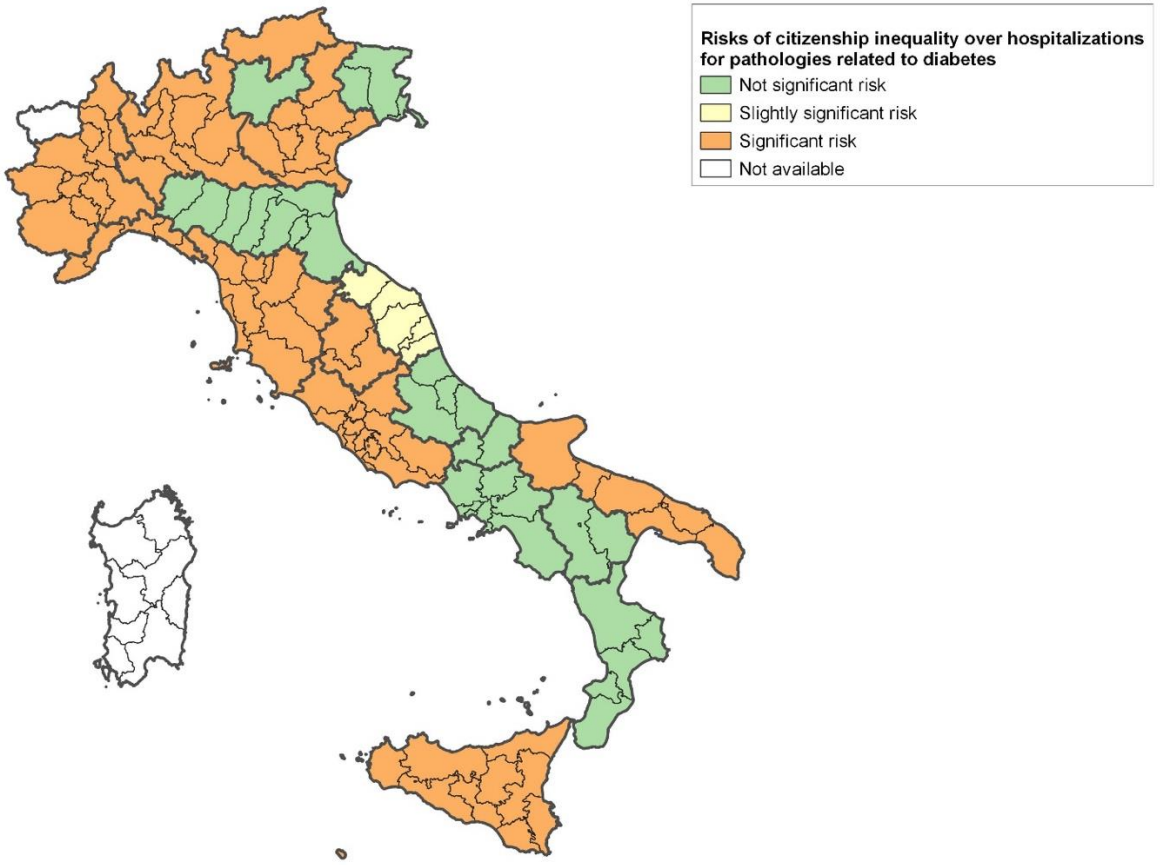
ACCESSIBILITY – EQUITY

Indicator no. 23



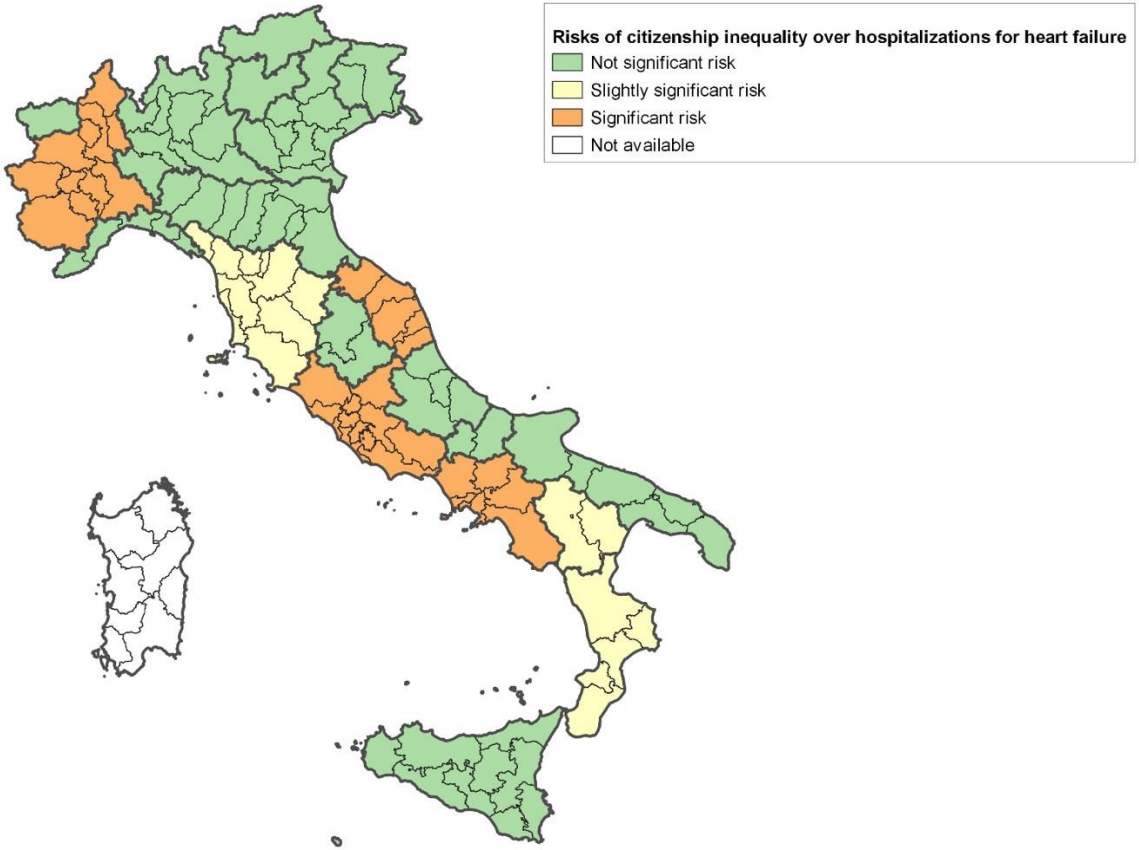
ACCESSIBILITY – EQUITY

Indicator no. 24



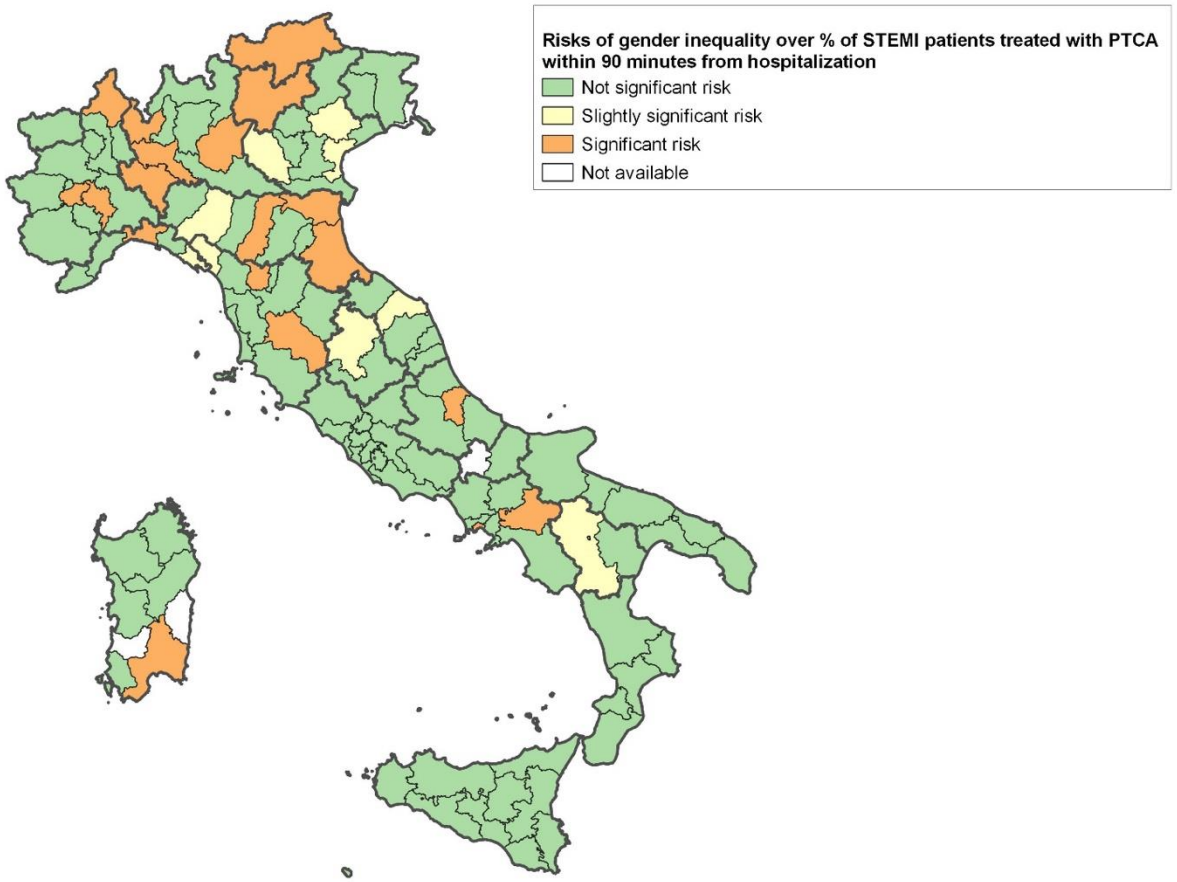
ACCESSIBILITY – EQUITY

Indicator no. 25



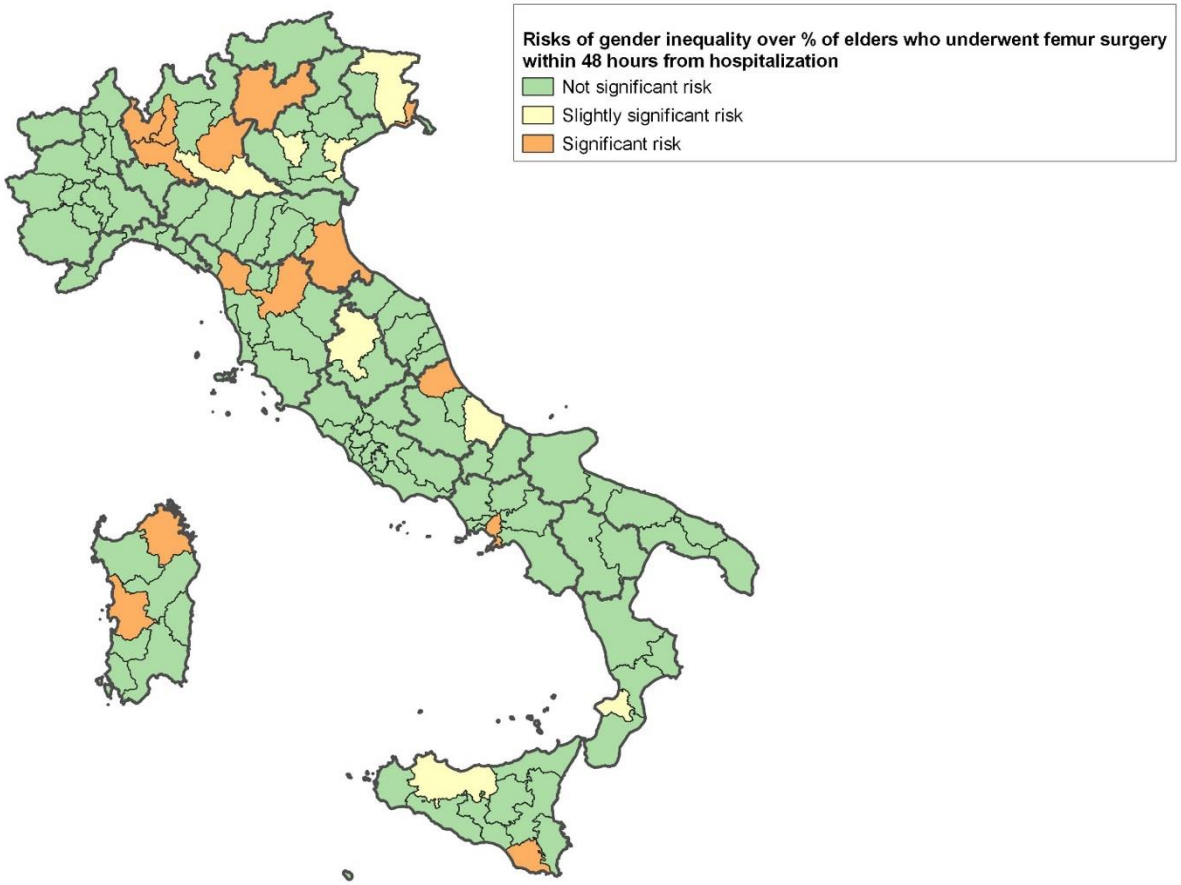
ACCESSIBILITY – EQUITY

Indicator no. 26



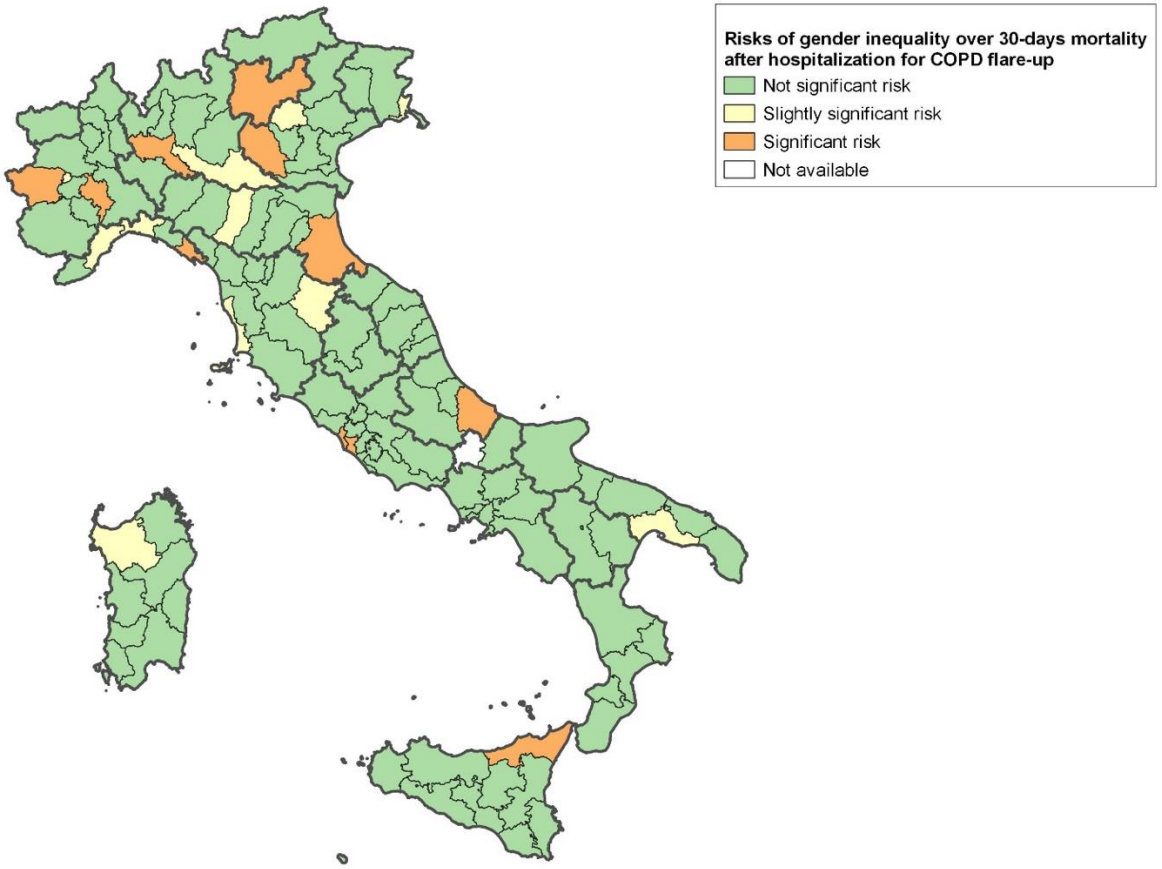
ACCESSIBILITY – EQUITY

Indicator no. 27



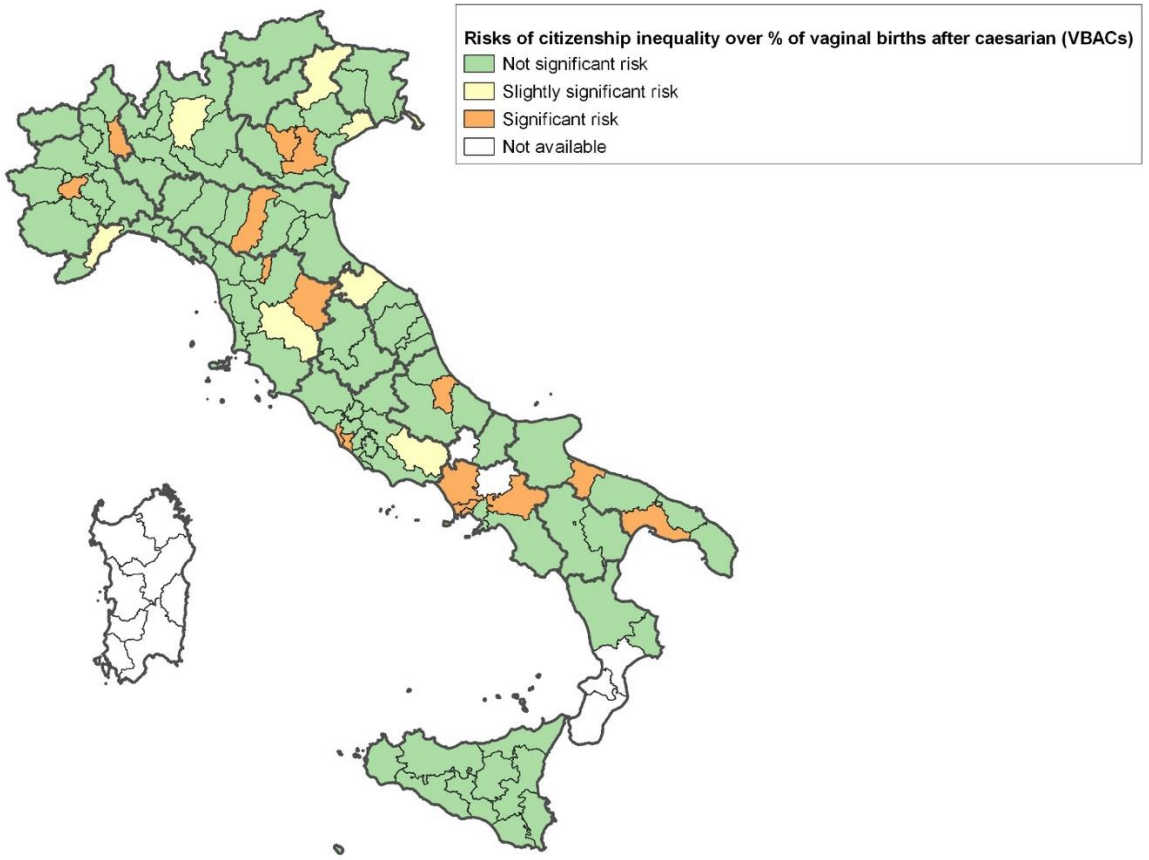
ACCESSIBILITY – EQUITY

Indicator no. 28



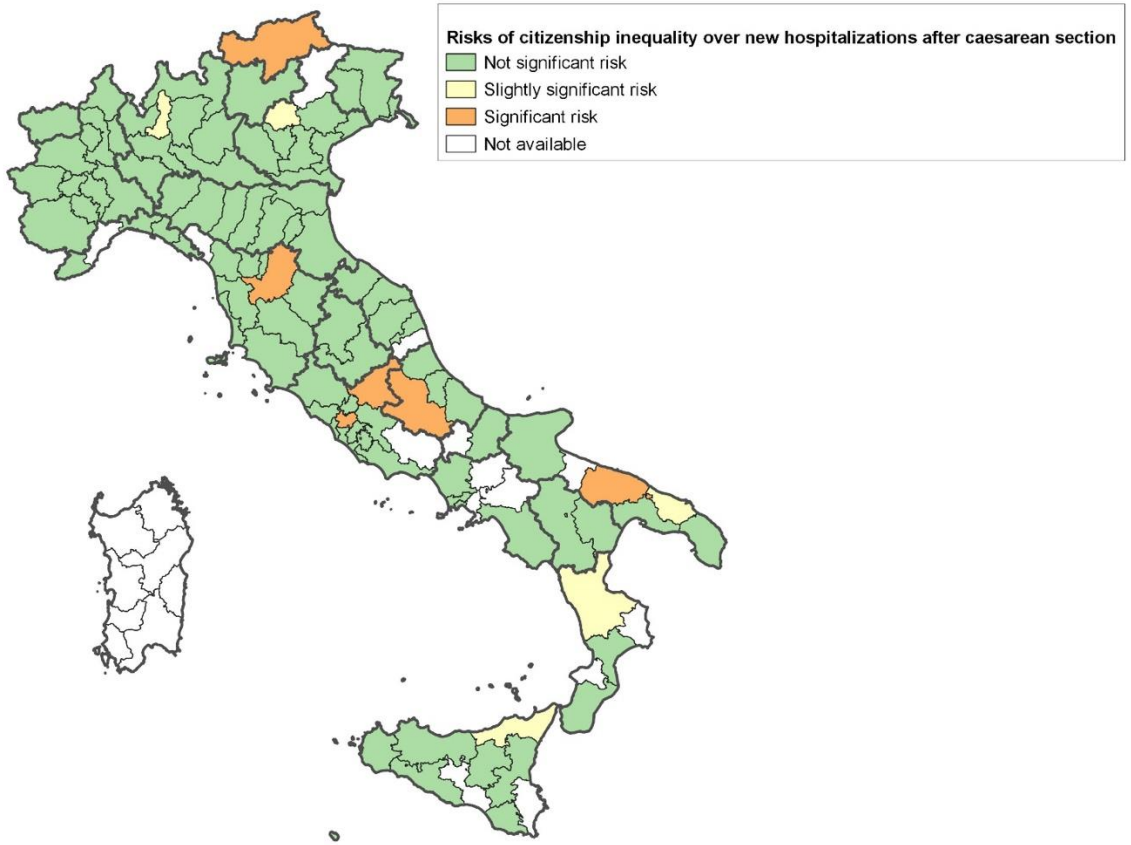
ACCESSIBILITY – EQUITY

Indicator no. 29



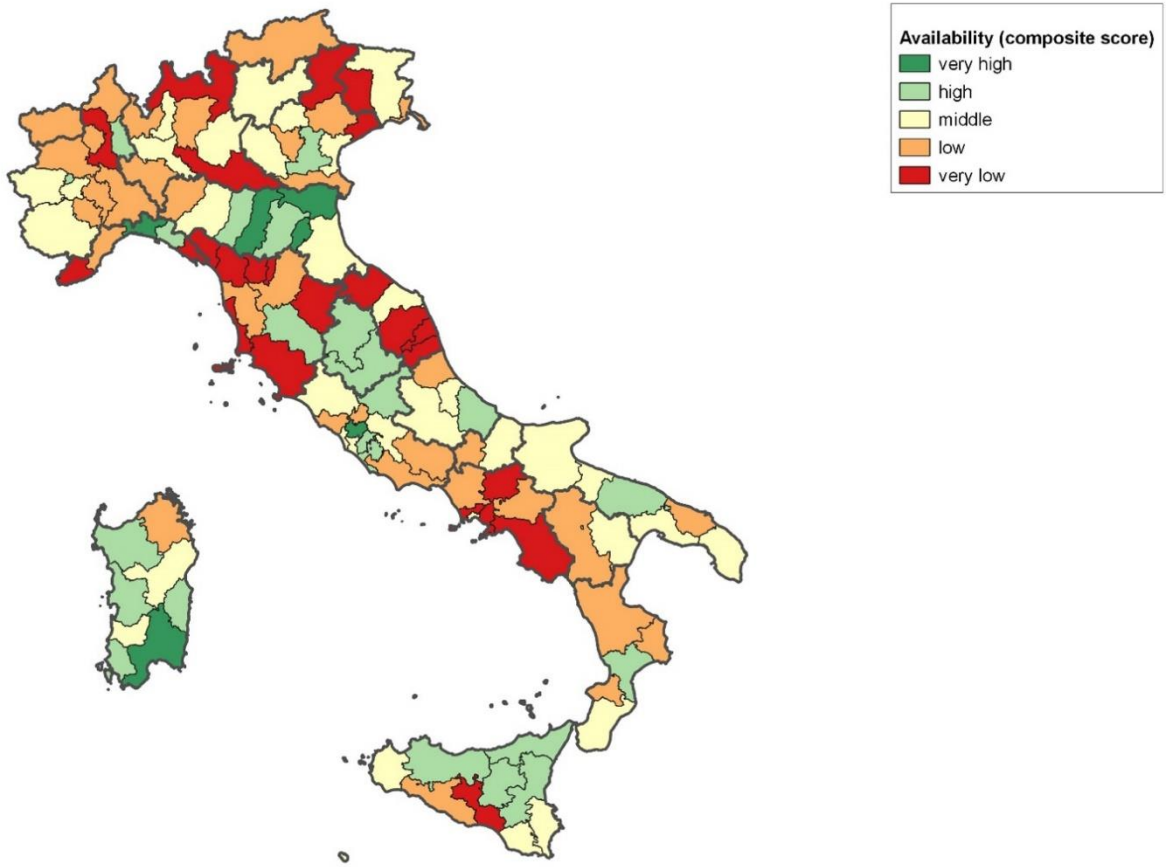
ACCESSIBILITY – EQUITY

Indicator no. 30



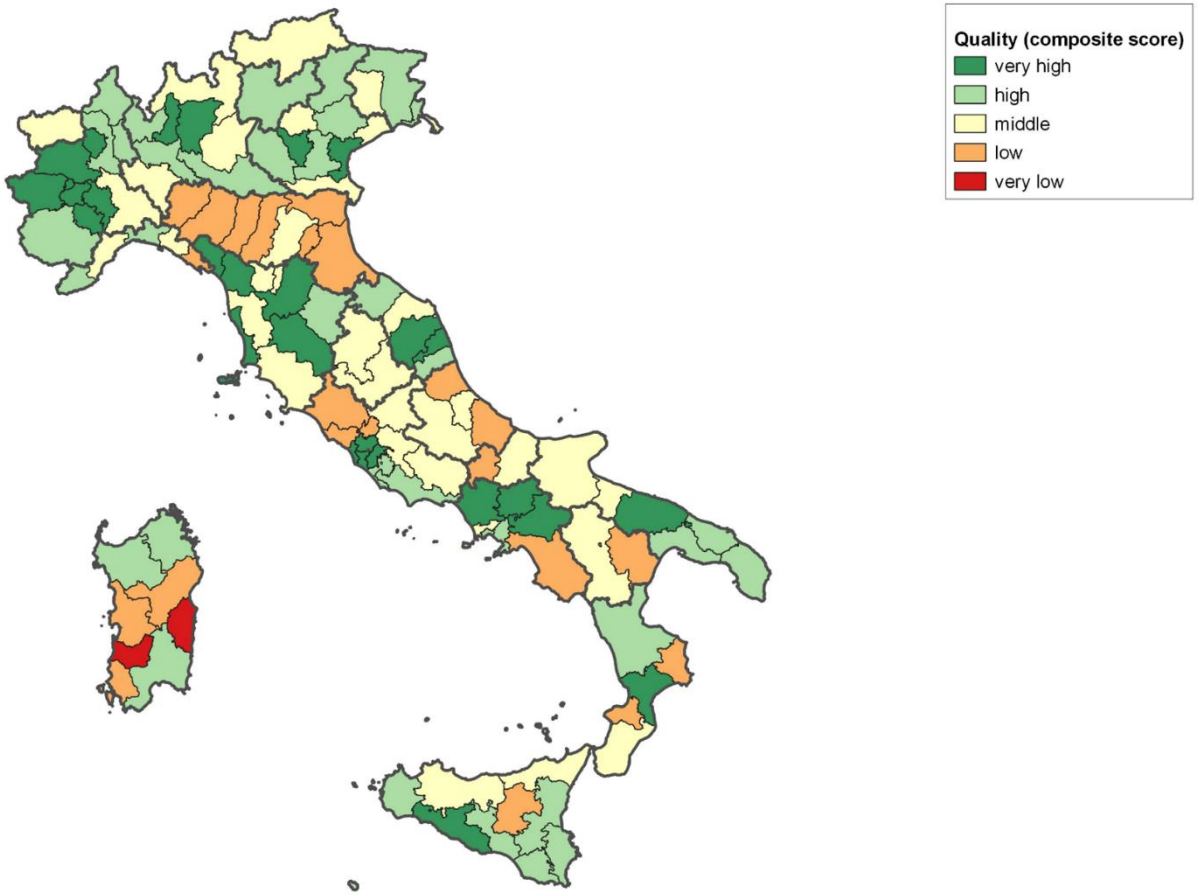
COMPOSITE SCORES - AVAILABILITY

Availability: composite score. LHU/Province distribution: grouped values by natural breaks.



COMPOSITE SCORES - QUALITY

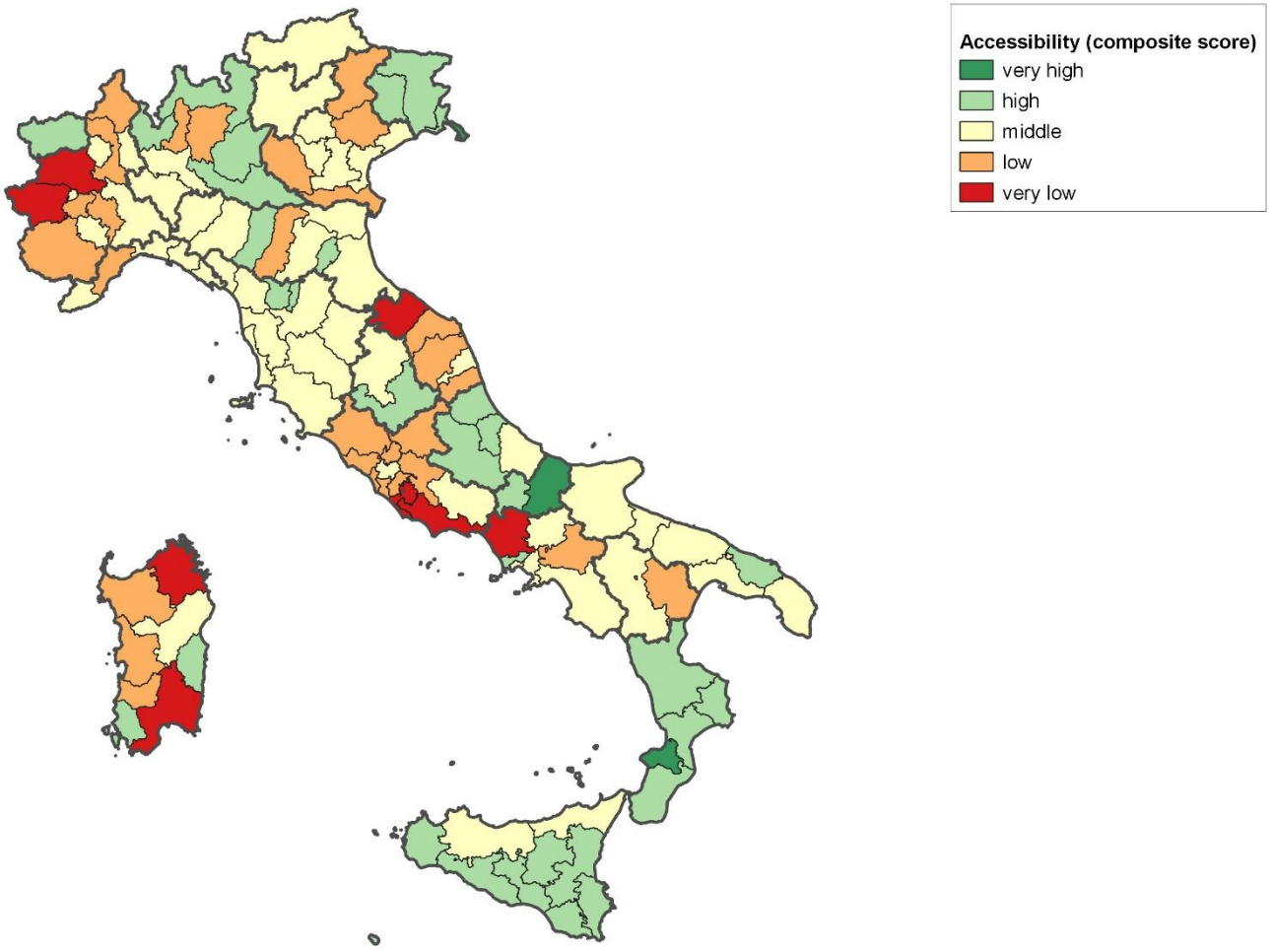
Quality: composite score. LHU/Province distribution: grouped values by natural breaks.



OASES Promoting evidence-based reforms on medical deserts

COMPOSITE SCORES - ACCESSIBILITY

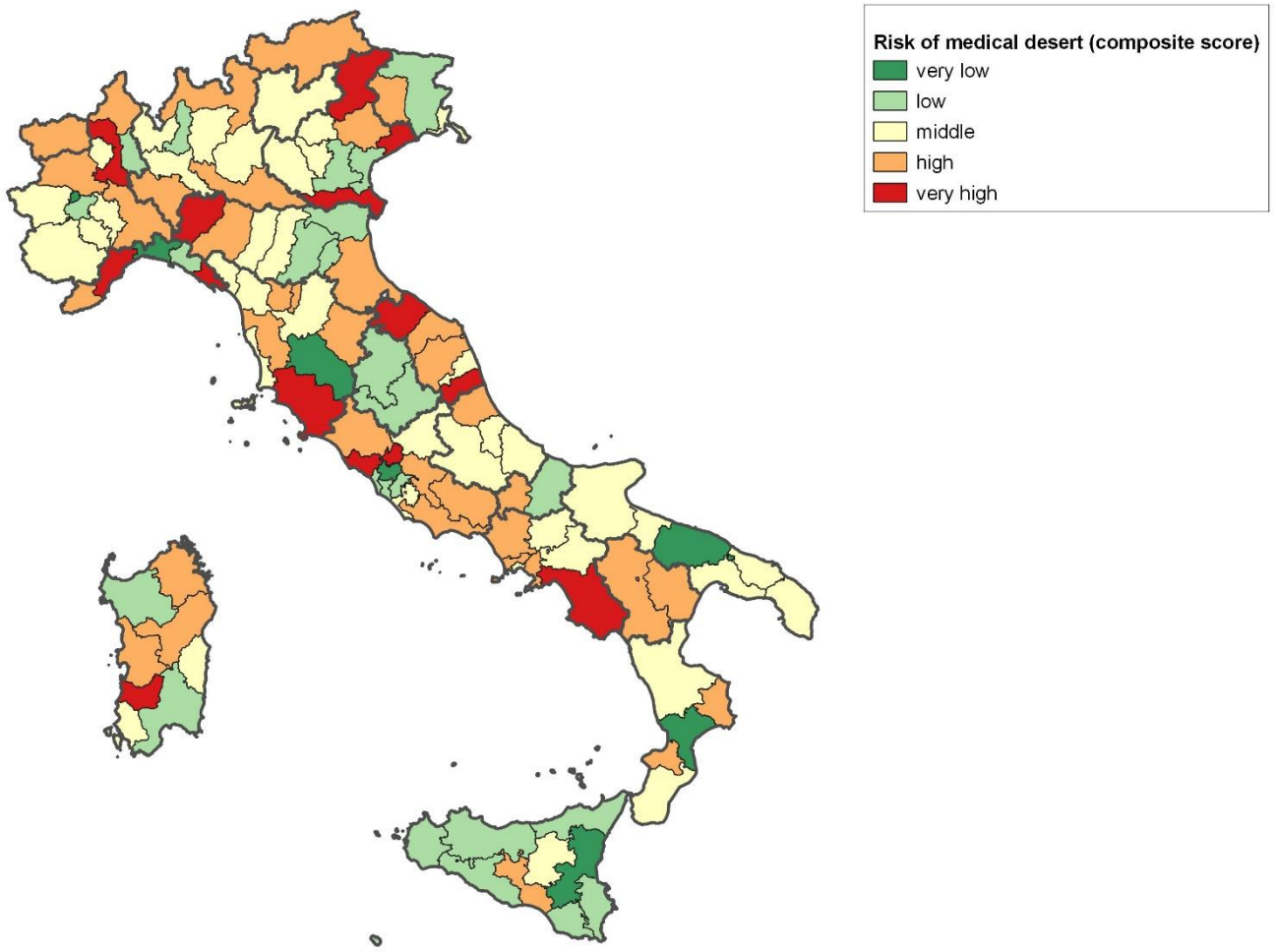
Accessibility: composite score. LHU/Province distribution: grouped values by natural breaks.



OASES Promoting evidence-based reforms on medical deserts

MEDICAL DESERT COMPOSITE INDEX

Medical desert composite Index: LHU/Province distribution: grouped values by natural breaks.



4.5.3.1. Consensus building exercise

Background of the exercise

Between the end of March and the beginning of April 2023, an Italian version of the survey and of the information package that had been made by work package 6 leaders were produced by the AGENAS team, so that the two documents would suit the Italian context. An online survey, which could be answered in approximately 6 minutes, was then created through Microsoft Forms. The questions revolved around the following topics: existence of medical deserts and indication of geographical areas and healthcare sectors affected by medical desertification, indication of the dimensions of medical desertification (tailored to be relevant for the Italian context), indication of possible actions to mitigate medical desertification, indication of previous policies and strategies implemented to deal with medical deserts and of policies and strategies that could be implemented in the future.

Following oral explanations during a hybrid, in-person-online meeting organised by AGENAS on 12 April, the information package and the link to the survey were shared with a group of ten Italian stakeholders that had been set up in the previous months and with whom AGENAS had already had several meetings to discuss about the OASES project and how to measure medical deserts in Italy. Starting from January 2022, when the first of these meetings took place, this first core of stakeholders coming from varied backgrounds (national and local level, university, public entities, active citizenship) had grown over time. As indicated below, it was then even further extended by means of involving representatives of associations of healthcare professionals.

First round of the survey

The first round of the survey was launched on 14 April. As it had initially gathered a low number of respondents (4), in June the deadline was further extended and the survey was disseminated to an enlarged group of Italian stakeholders, namely involving members of associations of healthcare professionals and professional orders. This enlarged group of stakeholders – comprising of academics, representatives of local and national public entities, representatives of an active citizenship association, healthcare professionals from different parts of the country - became the group that was involved in all rounds of the Italian consensus building exercise. The first round was closed on 7 July and saw a much higher

response rate (191 respondents). However, 80% consensus was not reached for any of the answer options provided to the questions.

Second round of the survey

The survey was then restructured for a second round: namely, some answer options that were selected by the lowest number of respondents were removed and the open-ended questions were transformed into closed-ended questions by means of selecting the most frequent answers and providing them as answer options. The second round was launched on 17 July and closed on 4 August. The respondents were 53, and 80% consensus was only reached in the answer to a question dealing with the presence of medical deserts in Italy.

Third round of the survey

The survey was therefore further adjusted in preparation of a third round: namely, answer options that were selected by the lowest number of respondents were removed. The third round was launched on 25 August and closed on 10 September. The respondents were 107, and 80% consensus was not reached on any additional answer option, including in those questions where only 2 answer options were provided.

Qualitative meeting

As a consequence of not having reached consensus after three rounds of the survey, an online meeting was organised with the stakeholders to discuss further about the survey questions and the related topics and see if consensus could be reached. The meeting took place on 19 October, it lasted 1 hour and saw the participation of 15 stakeholders. AGENAS provided an overview of the results obtained until then and interviewed the stakeholders through an online real-time polling tool, where the survey questions were proposed in a two-answer options format, after having removed the answer options that had been less frequently voted in the third round of the survey. 80% consensus was reached for all questions but one, as illustrated in the Annexes. The meeting was also an occasion to present to the stakeholders the state of art relating to the activity carried out by AGENAS within the OASES project.

As far as previous initiatives targeting medical deserts in Italy are concerned, what resulted from the consensus building exercise is that stakeholders mostly think that no policy or strategy has been put in place in the past to actually deal with medical deserts. Against this background, the National Recovery and Resilience Plan and the National Strategy for Inner Areas emerged as policies that have drawn attention to the topic so far, although mentioned by a minority of stakeholders.

The former (National Recovery and Resilience Plan)[7] refers to the plan developed by Italy within the context of the Next Generation EU programme. Mission no. 6 of the Plan is dedicated to health care. The Mission has two components (Proximity networks, facilities and telemedicine for territorial health care; Innovation, research and digitisation of the health service) that identify a series of reforms and investments that will have to lead the Italian National Health Service towards a change that will ensure that care needs are guaranteed, in a homogeneous way, in all areas of the country.

The latter (National Strategy for Inner Areas)[8] refers to a national development and territorial cohesion policy that aims to counter the marginalisation and demographic decline phenomena specific to the inner areas of our country, which are distant from the main centres of supply of essential services. Those territories cover 60% of the entire national territory, 52% of the municipalities and 22% of the population.

What could be commented with reference to previous initiatives on medical deserts is that the possible mitigation strategies that emerged from the exercise (see paragraph below) appear to be reflected in ongoing policy developments, which might possibly lead to a change and reorientation of stakeholders' perceptions in the upcoming years.

4.5.4. Medical deserts mitigation strategies

The most striking outcome of the consensus building exercise carried out in Italy was the difficulty in achieving quantitative consensus among stakeholders. The outputs of the exercise appear to be mostly relevant as a "listening exercise", an insight into the perceptions

[7] For more information: https://www.italiadomani.gov.it/content/sogei-ng/it/it/home.html
[8] For more information: https://www.agenziacoesione.gov.it/strategia-nazionale-aree-interne/

on medical deserts among Italian stakeholders. Despite the breadth and variety of the stakeholders' group, and despite the progressive reduction of response options throughout the exercise, 80% consensus was promptly achieved (2nd round questionnaire) only on the existence of medical deserts in the country. The frequent divergence of opinions among stakeholders and the difficulties in finding consensus might suggest the idea that medical desertification is perceived in Italy as a multifaceted phenomenon. This would support the idea of adopting a broad definition of medical desert, which does not only focus on lack of health services in a given area but also on other dimensions such as quality and accessibility. On the other hand, the question where sufficiently broad consensus was never reached, not even during the last meeting, refers to the identification of policies that drew attention to medical desertification. While the National Recovery and Resilience Plan and the National Strategy for Inner Areas emerged as policies that have shed light on the issue so far, this needs to be read in conjunction with the widespread perception, that was ascertained throughout the exercise, that existing policies and strategies, if any, have not been effective enough.

Within these two extremes, further outputs from the exercise, including the meeting, can be highlighted:

- Overall, the statement that was perceived as best describing medical deserts in Italy is “the perception of a lack of quality in the health care available in a given area, prompting people to seek it elsewhere”. This would support the idea that medical desert is a broader concept than the mere lack of healthcare services and workforce in a given geographical area. It is a concept which also includes other dimensions such as perceived quality. In other words, a territory may have sufficient and adequate healthcare services, but the perception of insufficient quality, be it justified or not, may still make people feel as if they lived in a medical desert and prompt them to search for health care elsewhere.
- The geographical areas that are mostly regarded to be the ones having medical deserts are the Southern part of Italy and peripheral and mountainous areas.
- The main perceived cause of medical desertification is the lack of adequate policies.

As far as the identified actions to mitigate medical deserts are concerned, the following aspects appear to be particularly relevant:

- at the national level, the allocation of the national health fund among regions might also consider the mapping of medical deserts;
- at the regional level, the healthcare networks could be strengthened in order to improve the organisation of healthcare services;
- at the local level, telemedicine could be further promoted and implemented to ensure better clinical management of the patient.

With regard to the first aspect, that draws the attention to the possible benefits of revising the allocation criteria of healthcare funding, what could be commented is that some degree of change is already underway in the criteria for distributing the health fund that includes not only purely demographic criteria but also elements describing aspects of health (mortality rate of the under-75s) and deprivation (socio-economic indicators that consider poverty, schooling, unemployment). Following this development, reflection on medical deserts could offer further elements to be included in decision-making. Current criteria of allocating funds, while relevant, could be extended to include criteria that better catch additional factors that are relevant in terms of medical desertification.

As far as the second aspect is concerned, it refers to the idea that a better organisation of the networks through which health care is provided could mitigate medical desertification, particularly at the regional level. This could entail a reorganisation of the processes centred on greater integration between hospitals and between the hospital networks and territorial services, ensuring that patients assistance takes place under conditions of appropriateness, effectiveness, efficiency, quality and safety of care, by linking professionals, facilities and services that provide health and social-health interventions of different types and levels.

As for telemedicine, it could be a means to make access to healthcare services easier and improve clinical management of the patient. The organisation of the National Healthcare Services, particularly at territorial level, could be rethought through the activation of digital health tools. This could entail promoting, strengthening and adapting telemedicine pathways to facilitate acute and chronic care by community-based care, promoting de-hospitalisation and enhancing and improving the quality of community-based care.

4.5.5. Lessons learned

The main learning from the Italian pilot study is that medical desertification is a complex phenomenon involving a variety of dimensions. If consensus can be found among Italian stakeholders, it appears to be on the idea that there are different aspects to medical desert. While focus can surely be placed on one particular dimension and solution, having the wider picture in mind appears to be desirable. The concept of medical desert appears to be a synthesis of a number of issues relating to availability, quality and accessibility of healthcare services in a given territory. The phenomenon therefore calls for an effort of systematisation. In this respect, the development of indicators, the subsequent measurements and the mapping carried out by AGENAS within the context of the OASES project will hopefully provide a cognitive basis for framing, understanding and addressing the phenomenon from now onwards. As far as mitigating actions are concerned, there seems to be a need for policies dealing with medical desertification in a more targeted and visible way. In this respect, some ongoing policy developments appear to be promising, and worth being closely monitored and assessed.

From the point of view of analysis, it is desirable that, in the future, aspects characterising contexts are also taken into account in the assessment of medical deserts and in the construction of indicators. These elements, to be understood as interacting factors that could mitigate or exacerbate the condition of health deserts, refer, in particular, to the urban setting (urban/rural context, areas undergoing repopulation/depopulation, etc.) and orographic (e.g. presence of natural barriers); to regulatory and organisational aspects (such as the residence requirement for access to services); the presence of infrastructures and means of transport (e.g. availability and quality of the road network, railway stations, taxis, etc.); qualifying environmental characteristics (green areas, level of pollution); welfare measures; the presence of social capital (associations, voluntary work, etc.); socio-demographic and economic-labour characteristics; finally, the population's state of health (measured and perceived).

With regard to the aspects of health planning and organisation of services, the analysis carried out is particularly significant in light of the National Recovery and Resilience Plan, which is introducing new models and organisational formulas whose impact deserves to be carefully

assessed and monitored over time. Another important issue in this regard concerns the financing of healthcare systems. The debate concerns the possibility of using 'health deprivation' measures as a criterion for allocating health funds among Regions, linking the disbursement of funds to the achievement of strategic and measurable objectives.

More generally, the challenge we face for the coming years is to define a set of measures that can be calculated by all European countries, applicable in different contexts and sustainable at both national and local level, in order to develop common policies and intervention plans.

4.6. Republic of Moldova

4.6.1. Status quo of the health system in Republic of Moldova

Figure 15. Map of the Republic of Moldova (Wikipedia, 2006)

The Republic of Moldova, a country in the eastern part of Europe, presented in the above image, is the co-leader of WP 6 – *Development and implementation of pilot studies to mitigate medical deserts* in the OASES project and one of the countries in which the pilot studies was implemented.

Demographic factors	Republic of Moldova	EU
Population	2 512 800	904 598 000
Share of population over age 65 (%)	9.9	14.8
Life expectancy at birth (in 2021)	69.1	80.1
Socioeconomic factors		
GDP per capita (USD PPP) (in 2021)	5 274	38 454
Total newborns (in 2021)	29 200	4.09 million
Fertility rate (in 2021)	1.73 live births per woman	1.53 live births per woman

Table 13. Demographic context in the Republic of Moldova (Biroul Național de Statistică al Republicii Moldova, 2022)

Between 2000 and 2014, the demographic factors showed a population of approximately 3.6 million inhabitants, out of which 9.9% were aged 65 years old or more, this proportion being below the WHO European Region median of 14.8% by almost 5%. The fertility rate was 25% lower compared to the average of 1.64 for the WHO European Region, despite its stabilization at 1.3 children per woman after the year 2000. This trend recently changed, and the fertility rate grew to 1.73 live births per woman, with a total of little more than 29 000 newborns in 2021 in the Republic of Moldova.

From a socioeconomic point of view, the GDP doubled after 2000, but in 2014, the average of 4 982 US$ remained below the average of 29 007 US$ for the WHO European Region by more than 24 000 US$. Due to significant changes in the governmental policies operated in the last decade, overall economic indicators started to improve and the GDP per capita reached the 5274 USD in 2021, but still remain one of the smallest in Europe.

The gap in life expectancy between the Republic of Moldova and the WHO European Regional average began to narrow after 2010, as the life expectancy increased at the rate of 1.4% yearly. Between 2000 and 2013, WHO's estimates showed an increase by 2.4 years to 59 years for men and by 3.6 years to 66 years for women. Nonetheless, due to recent progress and overall improvement of the health system's performance, the life expectancy at birth reached only the 69.1 mark in 2021 and remained below most of the European countries' numbers by four to five years.

Human welfare and individuals' health are highly affected by many risk factors such as alcohol consumption, tobacco smoking, diet, and overweight. All these are among the Ministry of Health main priorities for intervention and policy and regulation changes to lower the negative impact of those on population's health.

In the last few years, stronger regulations were adopted that provided more clarity and transparency in the health expenditure compartment, thus providing more evidence and data to authorities to achieve better financial management of the funds available. As a result, total health expenditures in the Republic of Moldova reached the 4.5% mark (as a % of GDP) in 2020, compared to the 3.9% in 2018-2019. The Health 2020 policy has been aligned with the national health policies, and by 2020, its goals were to reduce premature mortality, increase life expectancy, reduce health inequalities, improve population's well-being, set national

health goals and targets and assure universal coverage and people's rights of attaining the highest health level (World Health Organization Regional Office for Europe, 2016). The recently adopted National Development Strategy "Moldova 2030" put a strong accent on the population's overall well-being, set higher socio-economic targets to reach and pledged for better administrative policies and regulations. Aligned with this, but as a separate document, the National Strategy "Health 2030" set ambitious goals for the health system to achieve, but, at the same time, provided hope for the better for the patients and health and care workers along.

At the national level, the Republic of Moldova in 2020 had 12 394 medical doctors and 23 187 nurses, 1 652 stomatologists and dentists, 1 162 pharmacology specialists and 52 287 total health and care personnel in health institutions. At the same time, the Republic of Moldova had 3.5 medical doctors and 6.54 nurses, 0.4 midwives and 1.6 public health nurses per 1 000 inhabitants. In 2021, within the health system of the Republic of Moldova, there were a total of 17 168 beds, out of which 16 751 were in public institutions and 417 within private health institutions.

In the Republic of Moldova, there are 1 062 health institutions that offer primary healthcare and specialized healthcare including 85 hospitals, out of which 68 public and 17 private. A total of 10 864 997 consultations were provided in 2020 by public healthcare institutions.

The Republic of Moldova has with 1,4 medical doctors fewer per 1 000 inhabitants than the European average, while health expenditure has increased, but did not reach yet the EU median. At consortium level, Republic of Moldova is the third country in terms of number of medical doctors per 1 000 inhabitants and the fifth country in terms of nurses per 1 000 inhabitants.

	2021	
	abs.	**for 10 000 population**
Doctors, total	**12 394**	**35.0**
including		
Family doctors (GP)	**1 683**	**4.7**
Doctors in the private sector	**2 020**	**-**

Nurses attached to the family doctor's office	**3 989**	**11.3**
Community healthcare professionals	**279**	**0.8**

Table 14. Available health workforce in the Republic of Moldova

For the last couple of decades, the population of the country had a strong feeling that there is room for improvement in the national health system in the Republic of Moldova. The ordinary citizen wants to have all the possible specialists, laboratory tests and cutting-edge investigations right across the street. These wishes became strong beliefs and, later on, more and more requests to the politicians and health authorities all over the country were observed, raising the tensions and lowering the trust between the citizens and the health system of the country.

4.6.2. Pilot study methodology

Guided by the OASES project's D6.1. Framework for pilot studies and using the Delphi modified methodology, the local team of researchers approached the best qualified experts in human resources in health field from the Ministry of Health and Health education institutions in the country. After accepting the invitation, the above-mentioned professionals proposed other highly qualified experts from other healthcare providers and institutions (including from rural areas) to be also included in the online survey and to be involved in the consensus building exercise on medical deserts. As a result, seven experts were involved in the exercise generating a representative group for the entire health sector and assuring a multi angle approach on the medical deserts phenomenon in the country.

At first, an informational document was shared within the group that provided the main objectives of the project and explained the methodology and principles of the upcoming work. Second, a separate file was distributed that contained several major and up-to-date statistical data and existing indicators in health that helped to overview at national and municipality levels: the overall population and its territorial distribution, mean distance (in

km) and time spent (in minutes) from the municipality center to the furthest locality of the district, national health institutions network, including primary health care specialized institutions and their density (per 100 square km). Also, the working group was provided with the data on the number and distribution of GPs and nurses and their density per 100 square km, along with other relevant data on number of visits to GP per year in territorial segregation.

For six months' time, nine members of the working group, representing both national and local health authorities (Ministry of Health, National Agency for Public Health), health education institutions (State Medical and Pharmacy University, Centre of Excellence in medicine and pharmacy), ambulatory, hospital based and emergency healthcare institutions (all three from rural areas), along with a non-governmental organization representative, went through two rounds of online surveys and one online consensus building exercise with the aim of reaching the consensus on the a) medical desert definition and associated indicators, b) in-place mitigation actions and strategies and, c) possible solutions and recommendations for medical deserts in the Republic of Moldova.

The final consensus building dialogue helped the local team of researchers and national stakeholders to discuss the results of the surveys, share personal opinions and thoughts, and reach a consensus on the main characteristics, indicators and potential mitigation strategies of medical deserts that will be most suitable in the Republic of Moldova.

4.6.3. Pilot study outcomes

As a result of an excellent collaboration between the implementation team and the health stakeholders involved in the dialogue, all major objectives of the pilot study were achieved and shared with the OASES project team.

At the beginning, various statistical data and tables were shared within the group to help underline the problems and challenges the health system of the country is facing related to the access to health and care services.

Since the terms "Medical desert" and "Medical desertification" are not well known in the medical community of the Republic of Moldova, the first round of discussions and documents

shared within the group were aimed to inform the national stakeholders on the available taxonomy, other countries' knowledge and publicly shared articles on the phenomenon.

After reaching a sufficiently high level of confidence in the understanding of the phenomenon by the invited health professionals, and, after 2 rounds of survey and a group dialogue on the medical desertification phenomenon, a proposal of a medical desert definition in the Republic of Moldova was generated by consensus between the participants, as follows: "Medical desert is a distinct geographical area where there is no health worker available to offer health and care services to the population".

In general, distances (in km) between the localities in the Republic of Moldova are not so high, but the quality of roads and insufficient public and private transportation units available generate difficulties for the elderly population to reach any kind of health and care services if not available in their locality. This is more of a problem if the patient requires more specialized care, thus needing to visit a secondary or even a tertiary level health institution to meet his health need, which is very often situated at a much further distance from his village. As a result, time spent to reach the health institution or the required health professional was considered a more accurate criteria to identify and describe a potential medical deserts area.

Although all of the participants agreed that there are medical deserts areas in the country (100% of participants), especially in rural areas (100% of participants), currently used statistical data and indicators are not sufficient to identify and designate a distinct geographical area as a medical desert (85% of participants).

During the surveys and the consensus building dialogue, several options of indicators were analyzed (see the list below), but no single set of indicators could be accepted with sufficient high levels of confidence in order to be chosen as a single high confidence tool for identifying a medical desert area as such.

The final indicators and datasets related to the health workforce in the primary health care sector shared within the group were:

1) Population and area of the territorial units;
2) Average distance (km) and time (minutes) from the centroids of the municipalities to the farthest point of the raion;
3) Health institutions network in the country;

4) Primary health care (PHC) institutions network in the country;
5) Density of Primary health care (PHC) institutions (per km^2);
6) Family doctors in the health system of the Republic of Moldova;
7) Family doctors' nurses in the health system of the country;
8) Density of Family doctors per km^2;
9) Density of Family doctors' nurses per km^2;
10) Number of visits to PHC institutions and Family doctor's office.

The existing indicators (e.g. overall population by municipalities, number and distribution of health institutions and healthcare workers in the country, the number of young professionals going to rural areas, number of ambulatory consultations in rural areas per year, etc.) were considered weak in identifying medical deserts area, since they do not consider the distance and time spent in reaching the health and care institution by an average citizen. So, additional set of indicators were identified and shared within the group in order to help identify several areas of medical desertification in the country (e.g. the average distance in km and time spent in minutes for a citizen from its locality to the district center's healthcare institution, number of PHC institutions per square km segregated by municipality level and the overall area covered by these institutions, number of GPs and nurses by 100 square km and the area covered by them).

For example, the distance by car from the centroids of the municipalities to the farthest village of the raion varied between 20.5 and 65.8 km, and the average time spent (by car) for this was between 21 and 70 minutes (overview for the entire country). With a total of 262 primary healthcare institutions network available in the country, from which 221 were in rural areas and a total of 30 319 square km catchment area, the overall geographical distribution of PHC institutions was considered sufficient for the country. Although, when presented with the PHC institutions per 100 square km indicators, the results were ranging from 2.45 (in the capital city) down to 0.16-0.21 in some rural and remote areas, thus confirming that, at least from this point of view, the medical deserts phenomenon was present in the Republic of Moldova.

The additional set of indicators was considered stronger and helped the stakeholders to have a better overview of the potential medical deserts areas in the country. Still, no consensus was reached in nominating an area as a medical deserts area, since the experts pointed out that a distinct geographical area could have impressive emergency care or primary care service providers, but would lack hospital care services or, having a GP in the municipality would benefit firstly the localities closer to the doctor but the population from remote areas will still have limited access to health and care providers.

As a result, the main target group for pilot study in the Republic of Moldova was selected - the family doctors (general practitioners) and the family doctors' nurses.

Field of health professionals/ services	Spatial unit of reference	Aggregation method	Supply/demand volume	Accessibility measures	Types of distance
Family doctors and nurses	Raion (territorial administrative unit)	At spatial unit centroid for services and population	Number of HP Population volume	Density	None

Table 15. Indicators considered for medical deserts identification process in the PHC sector

With a total of 1 683 family doctors (absolute number, 2021) and a 6.4 per 10 000 population, the national numbers seem to add up to a quite satisfactory level. But, when researching the data in rural and remote areas, it was proved that some regions reach only 3.5-3.8 GPs per 10 000 population, compared to others where the number of family doctors per 10 000 population reached the 7.5-7.7 mark. The national average for density of GPs per 100 square km was determined at 5.46, whilst numerous regions having the lows under 2.0.

The same was observed associated to the family doctor's nurses: a total of 3 989 professionals (15.2 per 10 000 population) were distributed unevenly, with some regions having as low as 7.6 family doctor's nurses per 10 000 population, while others going above 23.6 and even 29.2 practicing family doctor's nurses per 10 000 population. The national average for density of family doctor's nurses per 100 square km was determined at 13.20, whilst numerous regions having the lows under the average, with some registering the highs of 92.02 and 224.33 for capital city and the Balti city.

Overall, rural and remote areas were accepted as the most suitable candidates for medical deserts area, without nominating directly any of the geographical areas of the Republic of Moldova.

Having an impressive professional background and many years of experience, and after going through two rounds of online surveys on the medical deserts phenomenon in the Republic of Moldova, the members of the group agreed (85% of participants) that most of the previous actions and strategies related to the human resources in health development in the country were targeting many aspects of the medical deserts phenomenon and its main causes and factors, but still could not produce the needed effect at national and local levels (85% of participants).

The main strategic document mentioned by all participants was the National Human Resources in Health Development Strategy for 2016-2025, approved by the Government (nr. 452 from 2016), that was essentially a comprehensive list of issues and challenges faced by the national health system in matters of human resources in health availability, and describing a roadmap on the recruiting and retention actions to be realized in order to mitigate the medical desertification in the country.

The most frequently nominated action implemented in the past was the use of allowance for the young professionals that opt to go to practice medical profession in rural areas and its graduated increase in the last years (reached a high of 6 000 euro for 3 years of practice in rural areas). Significant increase in salaries of all medical personnel in the Republic of Moldova (2018-2019, 2022-2023) was also mentioned as an initiative that led to an increase in the numbers of available health and care personnel in rural and remote areas. Other non-monetary incentives were also established in recent years and were mentioned by the experts during the dialogue, such as: preferential mortgage rates for healthcare personnel, better infrastructure and overall increase in the quality of life in the country.

It was stated that the existing gaps in salaries with the other health systems (including neighboring Romania), from the European Union and beyond, push medical personnel to seek opportunities to migrate to other countries. Overall, the migration of health and care professionals is a long-lasting process in the country, with the first healthcare migrants dating back to 1991. During the discussions, some experts mentioned that the migration of

healthcare workers was registered in waves: with higher numbers of them migrating during major economic downfalls in the country (1991-1992, 1998-1999, 2003-2005, 2008-2009, 2016-2018), thus putting a lot of pressure on the remaining professionals.

When comparing the total numbers of healthcare workers in the country, in the last 10 years almost each region of the country faced a decrease of overall numbers of doctors and nurses. In a period of 10 years (data from 2021 compared to the year 2011), the total number of professionally active doctors in the country decreased by almost 10%, with almost 60% of the decrease registered in rural and remote areas. The total number of registered nurses and midwives in the country (2021 compared to 2011) decreased by almost 15%, with almost 75% of the decrease registered in rural and remote areas.

As stated during the dialogue, all these measures and actions were aimed to recruit and retain sufficient numbers of healthcare workers in the system, but little was succeeded in assuring adequate geographical distribution of the healthcare workers in the system.

Another problem that the national health system is facing and was mentioned by the experts is the constant presence of open vacancies in healthcare sector, with more than 10% of the overall number of full-time equivalent positions left vacant. Most of them are in the family medicine, emergency care and diagnostics fields.

When presented with the data on the average age of the health professionals in the country (WHO time to act report, 2022), the experts agreed that, based on their own perceptions and relying on the official data, provided the fact that almost 40% of the healthcare workers are 55 years and older represent a ticking bomb for the national health system.

Although the State Medical and Pharmacy University of the Republic of Moldova trains one of the highest numbers of medical students per capita in the region, most of the graduates opt for working abroad or in other sectors than health care. At the same time, only up to 35% of the declared open vacancies are filled with young professionals on a yearly basis, due to the unattractiveness of the positions, most of them in rural and remote areas.

4.6.4. Medical deserts mitigation strategies

During the national level consensus building exercise, several potential actions and initiatives on mitigating medical deserts were proposed, discussed and assessed.

Actions proposed	Low potential efficiency	High potential efficiency
Recruit more young students in the health and care education	**57%**	**43%**
Preferred contractual conditions for health and care workers in rural and remote areas	**0%**	**100%**
More non-monetary benefits for healthcare workers in rural and remote areas	**43%**	**57%**
Specific working conditions in potential medical desert areas	**43%**	**57%**
Increased financial incentives for healthcare workers in rural and remote areas	**0%**	**100%**

Table 16. Potential medical deserts mitigation strategies and actions assessed

All identified actions were considered to hold some degree of potential effectiveness, but only two major groups of actions were considered with high potential effectiveness on mitigating the medical desertification process in the country: 1) preferential contractual conditions for health and care workers who accept working in a medical desert area (e.g. higher salaries, fixed-term contracts) and, 2) annual additional financial incentives to be offered to any health and care worker who accepts to work in a medical desert area (provided by Government and/or by local authorities).

In addition, other proposed options such as: “attract more graduates in the healthcare sector” (e.g. increased monthly allowance for students), “provide non-financial incentives” (e.g. lower than the market mortgage rates for young professionals) and “make use of digital and telemedicine solutions” (e.g. online consultations) were also considered, but were not assessed to have sufficient potential effectiveness by the national stakeholders.

It was stated that one of the factors that lead to medical desertification is the insufficient resources available for monitoring the data dynamics related to the health and care workforce mobility and migration within the country. The ever-increasing urbanization rates

all across the globe leave the rural population more often without proper access to health and care services, which is true also for Moldova as well.

Fortifying the national structures responsible for human resources in health development with developed digital tools for human resources in health (HRH) related data analysis will help better understand the health system's needs in HRH, better identification of the areas that are susceptible to medical desertification and will help provide more evidence and datasets on the problem.

Increased support to the national and local authorities in developing HRH friendly policies, will assure an increased inflow of health and care professionals to the rural areas, eventually leading to the filling of open position in remote areas as well.

All agreed that more innovative solutions are needed in order to deal effectively with the medical desertification process, e.g. digital information systems to track the numbers and geographical distribution of the healthcare professionals within the country, their competencies, levels of activity and service provided, etc. Telemedicine solutions were also taken into consideration when exploring potential medical deserts mitigation strategies. Open online platforms to show the open vacancies at national level in the health system were also considered to be one of highly effective options to implement in the country. Already in use mitigation strategies in other European countries should also be taken in consideration when planning local level interventions.

In fact, recruiting and retaining healthcare professionals in rural and remote areas should not be considered as a responsibility of health authorities exclusively. There were strong voices stating that a more multidisciplinary approach is mandatory in the Republic of Moldova, e.g. national authorities should invest more in the infrastructure and better roads all over the country, health authorities should invest more in health institutions and equipment.

Moreover, there should be a shared responsibility between national and local authorities in health on the medical deserts phenomenon. There should also be more actions taken to strengthen the capacities of public authorities, especially in rural and remote areas, improve social life overall in rural areas to trigger a better compliance of young healthcare workforce to work in areas outside big cities.

More studies focusing on health workforce demands from the health system (e.g. safe working conditions, use of stress and burnout management techniques, broad implementation of digital solutions) should be initiated in order to better understand the needs of health professionals, especially in potential medical desert areas.

Some participants in the discussion expressed their concern about the sustainability of the proposed actions and mitigation strategies, but agreed that more important than the financial and resource availability are increased stakeholder engagement and better policy and regulatory frameworks to be developed in the country.

1) Medical desertification is a complex process that can be often under the radar of the national authorities, with deep roots and long-lasting negative effects on the affected regions and population;

2) Rural and remote areas remain the most susceptible regions to medical desertification with little known reliable mitigation solutions available for authorities;

3) Having an increased percentage of health and care workers above 55 years old represents a high-risk situation for the national health system and needs immediate and urgent actions to avoid broad medical desertification in the country;

4) Health and care workers remain the main focus point when speaking about medical desertification and the most effective mitigation solution of medical deserts;

5) All of the proposed mitigation strategies and solutions to the medical deserts phenomenon should go through the sustainability analysis, including their financial sustainability and resource efficiency, potential stakeholder engagement and regulations in place and mandatory scalability and replicability criteria as well.

4.6.5 Lessons learned

In recent years, medical deserts and medical desertification have been a topic of discussion between national and local authorities. It frequently involves sensitive social and political aspects of the health system itself and policies and regulatory framework in place at the moment.

Being part of the OASES project, the local team of researchers from the Republic of Moldova had a great opportunity to acquire deeper knowledge on the international accepted

taxonomy on the medical deserts and some indicators related to the medical desertification process. But more important than this is that, during the piloting, there were intense discussions and open-minded dialogue with several relevant national and local level stakeholders in health that generated more qualitative information. The opinions expressed, coupled with the data collected via standard surveys, helped the team gain more knowledge on the matter of medical deserts in the country.

Overall, medical deserts are always a matter of not only medical but also social aspects. The population from rural and remote areas requires not only medical care, but more of a health and care approach from the authorities, especially for the elderly population. A multidisciplinary approach should become mandatory in medical desert areas: health professionals should combine their efforts with social workers in order to provide a comprehensive health and care model of health services to the population.

The team agreed that, due to the national context, many of the proposed actions and mitigation strategies would fit at local or national level, but they will hardly be efficient in a more developed country. Although, the scaling of the solutions proposed to the EU level is questionable, it is mandatory to take into consideration all proposed actions and strategies in order to develop a set of scenarios and a pool of high potential mitigation strategies to choose from for other European countries to inspire from.

4.7. Romania

4.7.1. Status quo of the health system in Romania

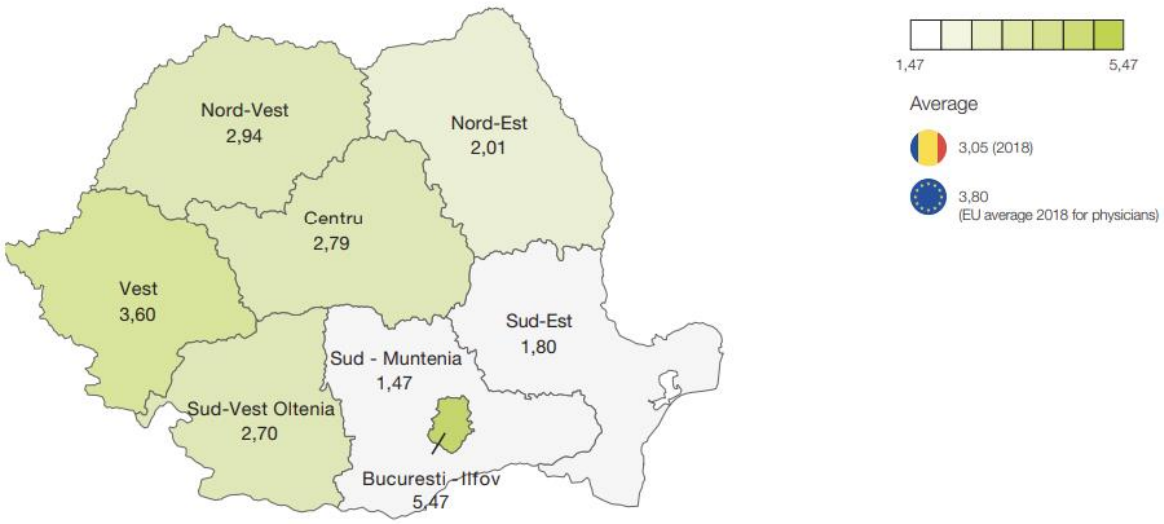


Figure 16. Number of practising physicians per 1.000 inhabitants (SEPEN Project, 2020e)

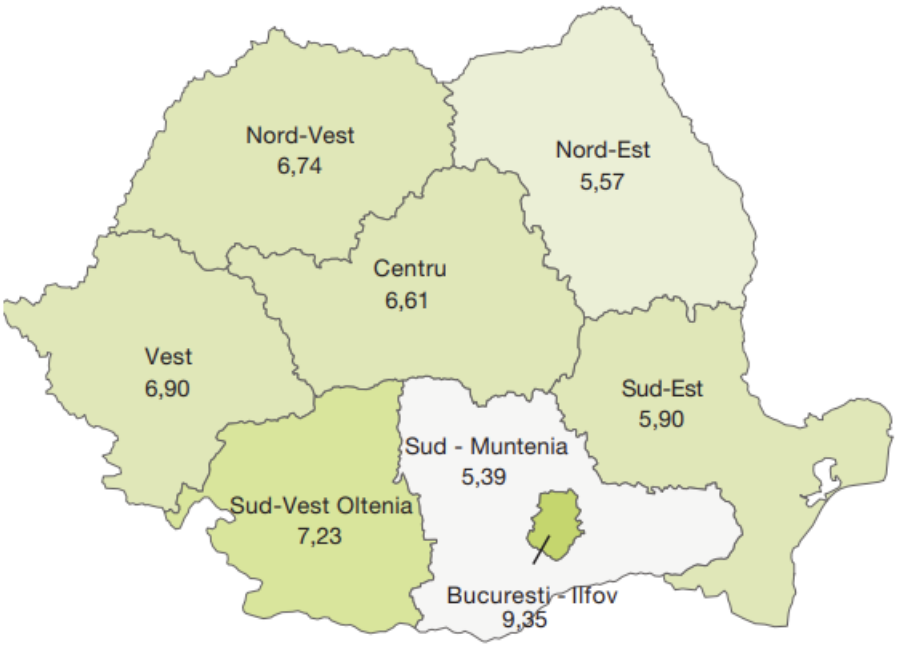


Figure 17. Number of practising nurses and midwives per 1.000 inhabitants (SEPEN Project, 2020e)

Romania, a country in south-eastern Central Europe, presented in the above image, is the leader of WP 6 – *Development and implementation of pilot studies to mitigate medical deserts* in the OASES project and one of the countries in which the pilot studies was implemented.

Demographic factors	Romania	EU
Population	19 042 455	446 735 291
Share of population over age 65 (%)	19.5	21.1
Fertility rate	1.8	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	27 073	35 219
Relative poverty rate (%)	21.2	16.5
Unemployment rate (%)	5.6	6.2

Table 17. Demographic and socioeconomic context in Romania (OECD/European Observatory on Health Systems and Policies, 2023f)

The demographic factors present a population of 19 042 455 people, representing approximately 4% of the entire EU population. People over the age of 65 years old are accountable for 19.5% of the total Romanian population, which is below the EU level of 21.1%, and the fertility rate is above the EU average values by 0.3 points. The GDP per capita is below the EU average by approximately 8 140 EUR, confirmed by the poverty rate of 21.2%, which is above the EU limit of 16.5% by 4.7%. Nonetheless, the unemployment rate is 5.6%, below the median of 6.1% at the EU level by 0.6%.

Between 2000 and 2019, the Romanian life expectancy has increased by more than four years, reaching 75.3 years in 2017, but this growth has been negatively impacted by the COVID-19 pandemic. Thus, it decreased by 1.4 years, Romania being one of the countries with the lowest life expectancy in the EU. This is strongly related to unhealthy behaviors, socioeconomic inequalities and also significant deficiencies in health service delivery.

The health system implies a compulsory social health insurance system that provides a comprehensive benefits package. The social health insurance system, using the working population's contributions, is financing particular groups of populations, such as pregnant women, disabled people and chronically ill patients, as well as children and students under

the age of 26. Nonetheless, 11% of the population, particularly from the rural area, is not insured and has only a minimum package of benefits that includes infectious diseases, pregnancy care and life-threatening emergencies.

In 2021, Romania's healthcare expenditure stood at EUR 1,663 per capita (adjusted for purchasing power differences), less than half of the EU average of EUR 4,030, making it the lowest rate within the EU. This accounted for 6.5% of the country's GDP. The ongoing costs associated with managing the COVID-19 pandemic led to sustained increases in current health expenditure in both 2020 (6.5%) and 2021 (10.2%). Despite a high public share of health spending (78% in 2021), out-of-pocket (OOP) spending as a percentage of total health expenditure reached 21%, considerably exceeding the EU average of 15%. This reflects the significant level of cost sharing for health services.

In 2022, 18% of Romanians reported additional payments or gifts to nurses, doctors, or hospitals (excluding official fees) when seeking care at public healthcare facilities, the highest rate in the EU, where the average was 4% (EU, 2022).

In 2021, the majority of health spending in Romania (44%) was allocated to inpatient care, the highest proportion among EU countries, contrasting sharply with relatively low spending on other areas. Outpatient care received only 18% of financing, the lowest in the EU and well below the average of 29%, despite efforts to strengthen primary care since the 1990s. Additionally, a quarter of health spending went towards pharmaceuticals, predominantly paid for out of pocket (OECD/European Observatory on Health Systems and Policies, 2023f).

Household out-of-pocket payments represented 21% of current health expenditure in 2021, compared to 15% across the EU. Nearly two-thirds of these payments in 2021 were for pharmaceuticals.

According to the annual EU-SILC survey, in 2022, 4.9 % of Romanians reported having unmet medical care needs due to costs, distance to travel or waiting times, with three quarters of these respondents citing cost as the main factor. The rate was just over double the EU average of 2.2 %. However, there are wide differences by income, as just 1.8 % of Romanians in the highest income quintile experienced unmet needs compared to 9.1 % in the lowest quintile. A similar pattern can be seen in unmet needs for dental care, which fell from 10.9 % in 2012 to 5.2 % in 2022, although again with stark differences according to income. Data from two

waves of Eurofound2 surveys conducted specifically during the COVID-19 pandemic show that, although rates were high, unmet needs fell between 2021 (25 %) and 2022 (20 %) (Eurofound, 2021; 2022). However, it is likely that the system may still need to cope with a delayed backlog of unmet needs.

Unmet needs for dental care are highest among those on lower incomes, the burden of dental care costs is felt the hardest by this group.

As in other areas of healthcare such as mental healthcare, availability of outpatient care is still limited, contributing to unmet needs. According to a Europe-wide survey carried out in spring 2021 and spring 2022, 22 % of Romanians reported unmet needs for healthcare, of which 12 % were related to mental healthcare. The share of reported unmet needs for mental healthcare was proportionally smaller than the EU average (22 %), indicating low demand for this type of service; however, demand may be hindered by stigma and other barriers (Manescu et al., 2023).

The pilot studies were implemented In the North-West Region of Romania, which comprises six counties: Bihor, Bistriţa-Năsăud, Cluj, Maramureş, Satu Mare and Sălaj.

At the national level, Romania has 63 303 medical doctors and 150 251 nurses and 240 geriatric doctors. In the North-West region, Romania has 8 688 medical doctors, 18 745 nurses and 31 geriatric doctors.

Romania has 3,28 medical doctors and 7,78 nurses, and 0,012 geriatrics per 1 000 inhabitants. The North-West region has 3,4 medical doctors, 7,34 nurses and 0,12 geriatrics per 1 000 inhabitants.

At the national level, Romania has 144 027 beds overall, out of which 1 064 geriatric beds. In the North-West region, there are 19 914 beds, out of which 35 are geriatric beds.

The vaccination rates for Romania were the following (World Health Organization, 2023):

Bacillus Calmette–Guérin (BCG):

2022: 97%,

2021: 96,9%

2020: 96,6%

Diphtheria Tetanus Toxoid and Pertussis (DTP):

2022: first dose – 89,3%, third dose – 79,88%

2021: first dose – 96,58%, third dose – 94,18%

2020: first dose – 67,95%, third dose – 57,13%

Haemophilus influenzae type b (Hib):

2022: 84,6%

2021: 86,3%

2020: 86,7%

Hepatitis B:

2022: 84,6%

2021: 86,3%

2020: 86,7%

Influenza:

2022: child age group 1 – 0,72%, child age group 2 – 1,45%, elderly – 23,05%, health care workers – 8,23%

2021: elderly – 35,23%, health care workers – 45,94%

2020: elderly – 23,48%, health care workers – 39,71%

Measles:

2022: first dose – 83,4%, second dose – 71,4%

2021: first dose – 86,2%, second dose – 74,6%

2020: first dose – 87,3%, second dose – 75,1%

Pneumococcal:

2022: first dose – 92,47%, third dose – 82,41%

2021: first dose – 96,85%, third dose – 94,1%

2020: first dose – 66,39%, third dose – 56,44%

Poliomyelitis:

2022: 84,6%

2021: 86,3%

2020: 86,7%

Rubella:

2022: 83,4%

2021: 86,2%

2020: 87,3%.

However, the majority of the vaccination rates are on a downward trend.

Romania is poorer than the EU average, both in terms of GDP per capita and poverty rate, while being more employed than the EU median. The health expenditure is the second lowest in the EU, both in terms of GDP per capita and share of GDP, which might reflect in the life expectancy, which, in Romania, is the lowest in the EU.

At the national level, Romania records 1,62 medical doctors and, in the implementation region, 1,5 medical doctors fewer than the European average. At consortium level, Romania is the last country in terms of number of medical doctors per 1 000 inhabitants and the third country in terms of nurses per 1 000 inhabitants.

4.7.2. Pilot study methodology

Between 6 April and 7 June 2023, two surveys were conducted, that included 19, respectively 15 participants from the Northwestern region of Romania. Before enrolling in the project, all participants were provided with detailed information about the OASES project and a comprehensive description of the Delphi process, elucidating its objectives in the context of addressing medical deserts. The surveys were disseminated in Romanian among Romanian OASES stakeholders. These were selected from central level – Ministry of Health and the National Health Insurance House due to their high involvement in the governance and financing of the health system, National College of Physicians, National Institute of Public Health and National Institute of Statistics and Center for Health Policies and Services due to their knowledge and data on the Romanian health system. At regional level we have included the relevant actors from each of the six counties from the District Public Health Authorities, County Insurance Houses, County College of Physicians, Universities of Medicine and Pharmacy and County Councils.

The first online survey called “Consensus building exercise – Phase 1” could be answered in approximately 20 minutes and contained 12 questions and the second one called “Consensus building exercise – Phase 2” in approximately 10 minutes and contained 14 questions. Both surveys were designed using Microsoft Forms. They included questions covering the following key aspects: demographic information regarding the institution and the area represented,

definition of medical deserts, existence and identification of medical deserts, the most affected areas and solutions to mitigate the medical deserts at national, regional and local level. An 80% agreement threshold was established as a consensus rate.

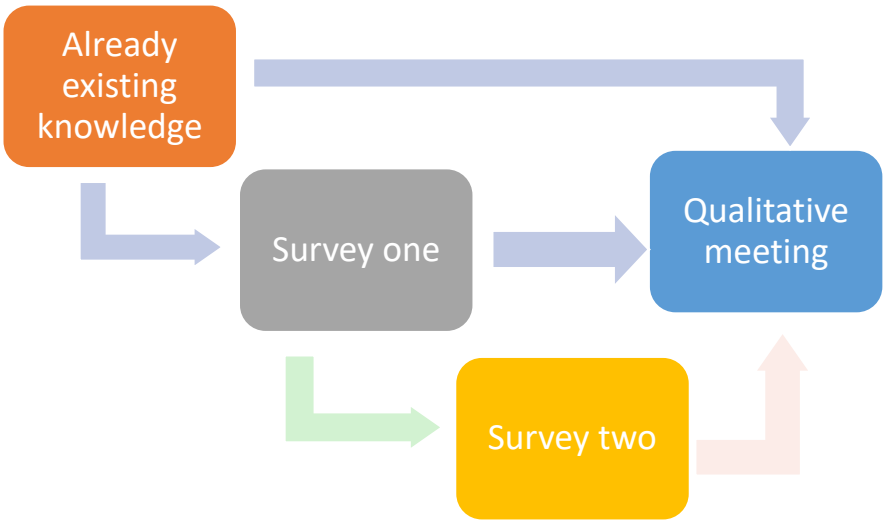


Figure 18. Methodology of the pilot study exercise

In terms of defining medical deserts, the official definition of medical deserts, selected by the OASES stakeholders, is: “Medical deserts refer to several situations or areas where people have difficulty accessing care (e.g., long waiting times, insufficient human resources, difficulties registering on the doctor’s list or long distances to the hospital”. An additional definition discussed was: “Medical deserts represent the lack of medical personnel in the public or private system in primary, secondary or tertiary care”, especially in the rural areas due to lack of family physicians and other specialized medical personnel, lack of access to medical services, long distances to the nearest medical facility, limited financial resources of the population and low educational levels.

On October 18, an integral component of the research involved conducting an online meeting with key stakeholders affiliated with the OASES project. This interactive session aimed to engage participants in a discussion focusing on the topic of medical deserts, emphasizing the exploration of proposed solutions and the identification of good practices within each

represented county. The one hour and half meeting discussed in greater detail the topic of medical deserts, what can be done and what was previously initiated.

4.7.3. Pilot study outcomes

Following the surveys and the online meeting, a comprehensive and collectively crafted definition for medical deserts was established by 80% of the stakeholders: “Medical deserts refer to several situations or areas where people have difficulty accessing care (e.g., long waiting times, insufficient human resources, difficulties registering on the doctor’s list or long distances to the hospital)”.

What has been established from the beginning was the topic of medical deserts is a new discussion in Romania and it is still mistaken with medical waste (deșerturi medicale compared with deșeuri medicale).

From the investigated region, the rural areas represent the biggest medical desert, mainly due to lack of medical personnel, low accessibility of medical services and high distance to the nearest medical unit.

Most of the countries have included general practitioners or medical doctors and nurses as health professionals selected (Finland, Hungary, Moldova, Italy and France). Only Romania has focused on geriatrics and gerontologists. The field selected refers to the key role of primary care in health system which has been promoted for a long time by the World Health Organization as "the first level of contact of individuals with the national health system" (WHO 1978, 2018). Romania is already involved in another project about medical desert (AHEAD Project). It is therefore important to avoid an overlap between the two projects and to work in a complementary manner. For the AHEAD project they already study medical desert through the lens of family doctors, paediatricians and community nurses. So, for the OASES project they choose to focus mainly on geriatricians and gerontologists.

When the indicators are calculated at a higher geographical level, the classic spatial accessibility indicators of density or distance are calculated on geographical units that correspond either to the availability of data (at the level of raion in Moldova) or to the local/intermediate level of organization of the health care system (county in Finland and

Romania, local health unit or administrative divisions mobilized for the planning of health resources such as regions and provinces in Italy).

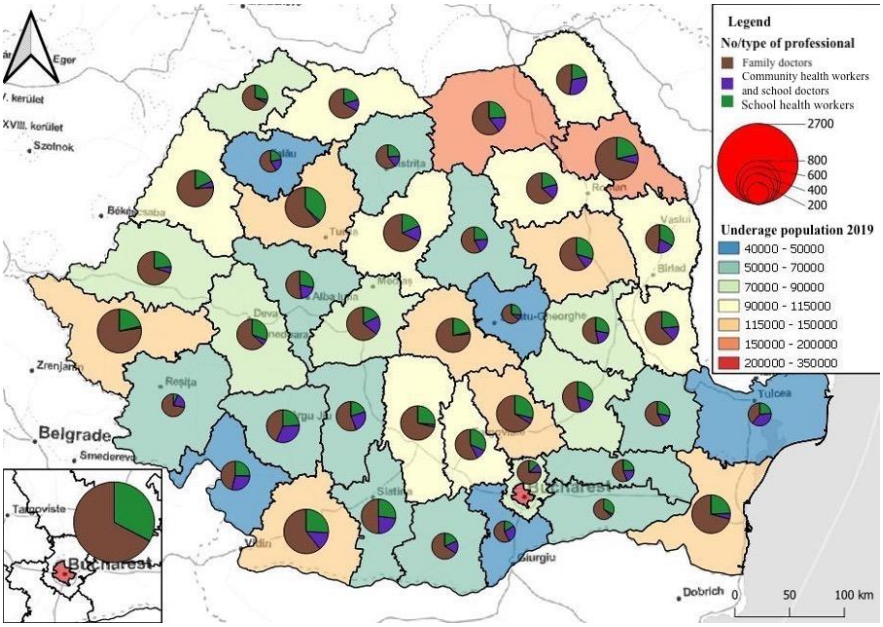


Figure 19. Distribution of primary health workers

In spite of focusing on geriatricians, our team has a comprehensive view of the Romanian health landscape. From the above map, we can easily observe that counties such as Timiș, Caraș-Severin, Brașov, Prahova and Cluj are among counties with few (to none) community health workers (CHW).

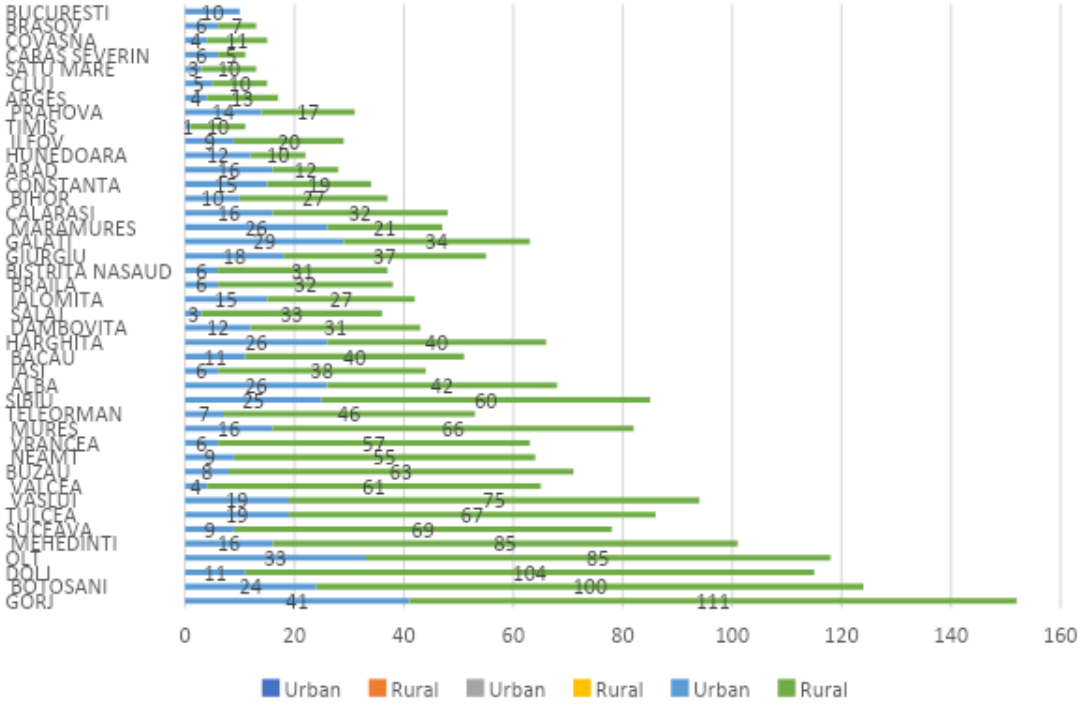


Figure 20. Distribution of community health workers per county

This is confirmed by the above figure, where the number of community health workers are divided by county, and we can notice the big discrepancies.

This is further confirmed by the distribution of family doctors in Bistrița-Năsăud county, part of the North-West region, where we have a heat point in the county seat and in the small urban areas, and no personnel outside of it.

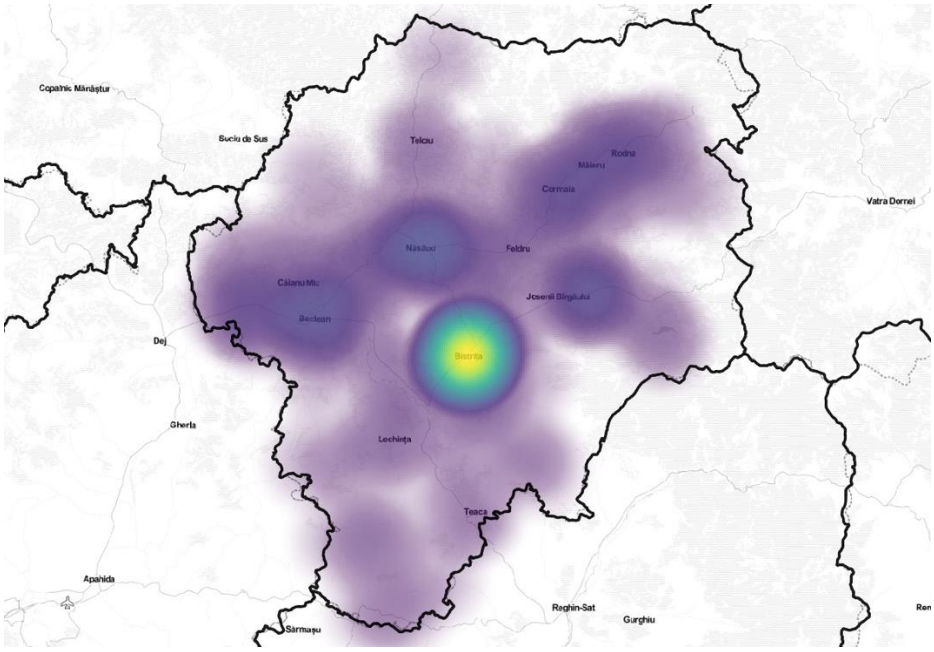


Figure 21. Heatmap of family doctors in Bistrița-Năsăud

The major difference between countries was in the choice of measure of accessibility. Of the six countries, all have decided to use the density indicators for some or all health professionals/services (Moldova, Romania, Hungary, Finland, Italy and France).

Field of health professionals/ services	Spatial unit of reference	Aggregation method	Supply/demand volume	Accessibility measures	Types of distance
Geriatricians	County (NUTS-3)	At spatial unit centroid for services and population	Number of HP	Density	None
Gerontologists	Villages, towns and cities (LAU)		Population volume (weighted by age)	2SFCA in a next step	

Table 18. Medical desert indicator in Romania

For the first level (multi-professionals with an ambulatory approach focused on primary care), Finland, Hungary, Moldova, Romania focus only on the scope of primary care. Romania on

geriatrics and gerontologists health care professionals. To take into account the medical deserts according to these professionals, Hungary, Moldova and Romania have chosen the density as indicators.

Also, Romania mentioned some problems of reliability of data (and specifically on migration of healthcare professionals that is a key issue as a general cause of health professionals' shortage).

For the selection of accessibility indicators according to countries, Romania used population-to-provider ratio. This type of indicator is very commonly used. They have the advantage of being easy to calculate and intuitive for professionals and decision-makers and of mobilizing readily available data. Health care supply ratios (densities) are traditionally used in international comparisons of healthcare systems to highlight differences in staffing between countries (European Observatory on Health Systems and Policies 2020; OECD 2016) or within countries to measure disparities in staffing at different scales. Similarly, they are very often used to set standard rates of equipment in terms of capacity or professionals in the context of planning or regulation exercises carried out by national or local authorities. They have also been used to delimit the territories where health professionals should be encouraged to settle. Depending on the type of health care provision considered, the scale of analysis used can be more or less fine - interregional, regional or intermediate for hospital facilities, smaller for primary care. In addition to the traditional densities (relating the supply of care to the population for a given geographical unit), distributed density will be tested to define a relevant density calculation for small geographical unit (supply is counted in the municipality and neighbouring municipalities and then related to the population of the municipality and neighbouring municipalities).

Over the course of previous years, different initiatives have been targeted and implemented with the primary objective of addressing the medical deserts by the stakeholders, such as mobile medical units reaching remote regions and incentives for healthcare professionals (especially to family physicians) to practice in the rural areas. Efforts have also been directed towards facilitating transportation for medical purposes, ensuring that individuals in remote areas can access essential medical services. The development of primary healthcare networks and integrated community canters has aimed at establishing a robust foundation for

accessible medical assistance. Despite these initiatives, challenges persist, including the need for more extensive medical screening campaigns and the imperative for increased involvement from local authorities. Taking into consideration the presented challenges, solutions for mitigating medical deserts are required in order to prioritize the establishment of comprehensive healthcare systems and reduce the impact of medical deserts.

4.7.4. Medical deserts mitigation strategies

As output of the consensus building exercises, various medical desert mitigation strategies were highlighted at national, regional and local level:

- Health policies regarding human resources in health (starting with the residency), to increase the number of medical personnel:
    - Review and reform health policies, with a focus on human resource allocation in healthcare, especially starting with residency programs.
    - Prioritize the development of primary health care in rural areas through targeted policies and incentives.
- Increase the number of places for residency in the family medicine field, ensuring the development of primary health care in the rural areas;
    - Facilitate partnerships with medical schools to encourage graduates to pursue careers in underserved regions.
- Involvement of medical personnel in the decision-making process;
    - Actively involve medical personnel in the decision-making process related to healthcare policies and resource allocation.
    - Establish collaborative platforms for healthcare professionals to contribute insights and expertise in shaping healthcare strategies.
- Offering incentives for the healthcare professionals who settle in the countryside;
    - Introduce financial and non-financial incentives for healthcare professionals who choose to practice in rural areas.
    - Develop programs to enhance the quality of life for healthcare professionals settling in the countryside.

- Increase the funding in the medical field;
    - Advocate for increased funding in the medical field, with a specific focus on allocating resources to rural healthcare infrastructure and services.
    - Explore public-private partnerships to attract additional funding for medical facilities in remote areas.
    - Advocate for increased funding in the medical field, with a specific focus on allocating resources to rural healthcare infrastructure and services.
    - Explore public-private partnerships to attract additional funding for medical facilities in remote areas.
- Development of prevention strategies, especially for the disadvantaged population;
    - Formulate and implement targeted prevention strategies, particularly focusing on the healthcare needs of the disadvantaged population in rural areas.
    - Enhance public awareness campaigns and health education initiatives to promote preventive healthcare practices.
    - Identify and capitalize on opportunities for the development of prevention services, with a focus on addressing the specific health needs of rural populations.
    - Encourage community engagement in preventive healthcare practices through outreach programs and education.
- Digitalization;
    - Embrace digitalization in healthcare to improve remote access to medical services in underserved regions.
    - Implement telemedicine programs to connect rural communities with healthcare professionals and specialists.
- Decision-making transparency with decisions based on the periodic analysis of scientifically documented data/information;
    - Ensure transparency in decision-making processes, basing decisions on periodic analyses of scientifically documented data and information.

  - Establish mechanisms for public engagement and feedback to enhance accountability and transparency.
- The implementation/monitoring/evaluation of medical measurements from existing documents approved or in progress;
  - Monitor and evaluate the implementation of medical measures outlined in existing documents, ensuring accountability and effectiveness.
  - Regularly assess the impact of ongoing initiatives and adjust strategies based on the evolving healthcare landscape.
- Development strategies for rural areas and road infrastructure;
  - Implement comprehensive development strategies for rural areas, including improvements to infrastructure and transportation networks.
  - Prioritize road infrastructure development to enhance accessibility to healthcare facilities in remote regions.

4.7.5 Lessons learned

The main learned lesson is represented by the challenges of medical deserts, characterized by complexity, involving various dimensions. Future efforts necessitate active involvement from both healthcare providers and policymakers. Additionally, the journey to address medical deserts is ongoing, but the development and implementation of policies in a targeted way should be taken into consideration.

1. Holistic Approach is Key:

Addressing medical deserts requires a comprehensive and integrated approach that combines policy reforms, financial support, infrastructure development, and incentives for healthcare professionals.

2. Tailored Solutions for Rural Areas:

Rural regions have unique challenges, necessitating the development of strategies specifically tailored to address the healthcare needs of these areas, including infrastructure and workforce considerations.

3. Incentivizing Rural Practice Works:

Financial and non-financial incentives play a crucial role in attracting and retaining healthcare professionals in rural areas, highlighting the importance of creating an environment that supports their well-being.

4. Prevention is Paramount:

Prioritizing prevention strategies, particularly for disadvantaged populations, is essential for reducing the burden on healthcare facilities and improving overall community health in underserved areas.

5. Digitalization Enhances Access:

The integration of digital solutions, such as telemedicine, significantly improves healthcare access in remote regions, demonstrating the potential for technology to bridge gaps in service delivery.

6. Community Involvement and Transparency Matter:

Involving local communities in decision-making processes and maintaining transparency in healthcare governance foster trust and ensure that policies align with the actual needs of the population.

7. Continuous Monitoring and Adaptation:

Ongoing monitoring and evaluation of healthcare initiatives are crucial for assessing their effectiveness. Flexibility and adaptability are essential to adjust strategies based on the evolving healthcare landscape.

8. Strategic Residency Programs are Vital:

Increasing the number of residency positions, especially in family medicine, is essential for building a sustainable pipeline of healthcare professionals with a focus on primary care, addressing workforce shortages in rural areas.

9. Advocacy for Increased Funding is Crucial:

Successful mitigation of medical deserts requires continuous advocacy for increased funding in the medical field, emphasizing the importance of securing resources to support infrastructure, services, and personnel in underserved regions.

10. Evidence-Based Decision-Making:

Decision-making based on scientifically documented data is imperative for effective resource allocation and policy formulation. Regular analysis ensures that strategies align with the most pressing healthcare needs.

11. Public-Private Collaboration Yields Benefits:

Exploring partnerships between the public and private sectors can unlock additional resources for healthcare initiatives, demonstrating the value of collaborative efforts in addressing complex challenges.

12. Community Education is Empowering:

Empowering communities through education and awareness campaigns fosters a proactive approach to healthcare, encouraging individuals to take preventive measures and actively participate in their own well-being.

13. Long-Term Commitment is Necessary:

- Lesson: Mitigating medical deserts requires sustained, long-term commitment from policymakers, stakeholders, and the community. Achieving lasting change necessitates ongoing efforts to monitor, adapt, and improve healthcare strategies over time.

In conclusion, addressing medical deserts in Romania demands a strategy that takes into account all the potential solutions for mitigation highlighted in this report, together with raising awareness and fostering a collaborative approach, involving stakeholders in the decision-making processes.

5. Recommendations to mitigate medical deserts

The recommendations to mitigate medical deserts, based on the seven pilot studies, include a variety of strategies:

1. Increasing the number of Practicing Human resources in Health:

- Encouraging job-retirement cumulation, allowing doctors to continue working post-retirement.
- Recruiting foreign-trained doctors.
- Improving the geographical distribution of GPs through zoning and financial incentives, such as tax exemptions, scholarships, and territorial contracts.
- Providing financial assistance for transport, accommodation, and practice setup.
- Implementing zoning regulations and financial incentives for other healthcare workers like nurses, physiotherapists, speech therapists, dentists, and midwives, including limiting installation in overserved areas and providing financial incentives in underserved areas.

2. Expanding Scope and Roles of Professionals:

- Increasing inter-professional cooperation, skill mix, and task shifting between GPs and nurses.
- Supporting advanced nurse practice positions to broaden nurses' responsibilities.
- Creating new roles like 'medical assistant' to support primary care workforce.

3. Financial Incentives:

- Providing tax exemptions and scholarships to GPs and other health workers in priority areas.
- Offering various financial contracts to incentivize GPs to practice in medically underserved areas.
- Regulating the geographical distribution of self-employed nurses with a system of limitations and financial incentives.
- Implementing contracts that provide financial aid for nurses settling in underserved areas.

4. Reorganizing Primary Care Delivery:

- Improving working conditions for healthcare professionals.
- Forming Primary Care Teams (PCTs) and primary care health centres where practitioners are salaried.
- Encouraging coordination, skill mix and task shifting among different types of health workers, including advanced practice nurses and supporting multi-professional group practices.
- Focusing on healthcare centres and multidisciplinary group practices for efficient primary care delivery.
- Providing financial support for investment in Primary Care Teams (PCT) and specific agreements for additional collective payments.

5. National Measures:

- Addressing the overall supply of doctors through education reforms.
- Introducing policies such as the numerus clausus to regulate the number of doctors trained each year.
- Implementing zoning policies to encourage GPs to practice in under-populated areas, benefiting from installation aid in addition to the zoning policy of health workers.

6. Utilizing E-Health:

- Investing in digital health infrastructure and telemedicine to improve access.
- Implementing a national strategy for eHealth, which includes reimbursing teleconsultations with physicians under specific conditions.

These strategies collectively aim to address the challenges of medical deserts by enhancing the availability and distribution of healthcare professionals, improving the working conditions and efficiency of primary care delivery, and leveraging technology to increase healthcare accessibility.

6. Conclusions

In synthesizing the insights gleaned from the attached document, a comprehensive narrative emerges, shedding light on the complexities surrounding the identification and mitigation of medical deserts. The following key conclusions encapsulate the multifaceted nature of the challenge and the ongoing efforts to address it.

The foundation of any effective intervention lies in the accuracy and reliability of data. The study underscores the critical importance of data quality, emphasizing the need for a nuanced understanding derived from multiple statistical databases. The presence of discrepancies between datasets underscores the necessity for triangulation, recognizing that a holistic view arises from the convergence of diverse data sources. The use of triangulation in the pilot studies was not just a methodological choice; it was a strategic approach to address the intricate nature of medical deserts. It aimed to ensure that the analysis was not one-dimensional but rather multidimensional, capturing the richness and diversity of the data and providing a more holistic understanding of the complexities inherent in the phenomenon of medical deserts.

Across the diverse landscapes of the countries under study, the identification of medical deserts remains a shared challenge. Through the pilot studies, the presence of medical deserts was discerned to varying extents in all countries, highlighting the pervasive nature of this issue.

Navigating the intricate landscape of information dissemination, stakeholders heavily rely on professional channels for insights into medical desertification. However, a significant gap exists, with recent mitigation steps and policy actions not adequately reaching stakeholders. This highlights the imperative for improved communication strategies to bridge this informational divide.

The clarion call for the extension of primary care resonates throughout the document, with stakeholders underscoring the need to recruit specialists with extended competencies. This strategic move is designed to significantly enhance care efficiency and quality, addressing the root causes of medical deserts.

Amidst the challenges encountered, various initiatives, programs, financial supports, and regulations have been set in motion to mitigate medical deserts. The document aptly recognizes the intricacies of this task, affirming that transformative actions require time to yield success. The trajectory from deserted areas to well-served regions is an evolving narrative, which necessitates persistence, collaboration, and continuous adaptation to foster positive change in primary care.

7. Annexes

7.1. First and second round of the questionnaires used in Cyprus with its corresponding answers

7.1.1. First round of the questionnaire

1. **Organisations/Health Institutions**

- Ministry of Health: **4** (18,18%)
- Health Insurance Organization: **3** (13,64%)
- European University Cyprus: **2** (9,09%)
- General Practitioner: **1** (4,55 %)
- Nea Polikliniki Faneromenis: **1** (4,55 %)
- Breast Center: **1** (4,55 %)
- Former Deputy Minister of Social Welfare, former coordinator of the office of the Minister of Health: **1** (4,55 %)
- University of Nicosia Medical School: **1** (4,55 %)
- Evangelismos General Hospital: **1** (4,55 %)
- German Oncology Center in Limassol: **1** (4,55 %)
- Nicosia General Hospital: **1** (4,55 %)
- Paphos General Hospital: **1** (4,55 %)
- American Medical Centre/ American Heart Institute (Nicosia): **1** (4,55 %)
- Mediterranean Hospital of Cyprus: **1** (4,55 %)
- State Health Services Organisation: **2** (9.09%)

Overall: **22** responses

2. **Which of the following statements best describes medical deserts in your country?**

Areas where access to healthcare services is limited

(1) Strongly Disagree: **2** (9,09%)

(2) Disagree: **1** (4,55%)

(3) Neither agree nor disagree: **0** (0%)

(4) Agree: **14** (63,64%)

(5) Strongly Agree: **5** (22,73%)

Insufficient access to medical care

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **9** (40,91%)

(3) Neither agree nor disagree: **0** (0%)

(4) Agree: **9** (40,91%)

(5) Strongly Agree: **3** (13,64%)

Barriers in accessing necessary medical care

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **6** (27,27%)

(3) Neither agree nor disagree: **0** (0%)

(4) Agree: **11** (50%)

(5) Strongly Agree: **4** (18,18%)

Poor health outcomes

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **6** (27,27%)

(3) Neither agree nor disagree: **2** (9,09%)

(4) Agree: **8** (36,36%)

(5) Strongly Agree: **5** (22,73%)

Disparities in health

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **6** (27,27%)

(3) Neither agree nor disagree: **2** (9,09%)

(4) Agree: **8** (36,36%)

(5) Strongly Agree: **5** (27,73%)

3. **If the above statements do not apply to medical deserts in your country, please suggest another statement.**

Statement from stakeholder: (English translation) Due to the size of the Republic of Cyprus, there is no absolute definition of medical deserts. While there may be areas with limited

access, there is no region where healthcare services are completely unavailable (From Ministry of Health).

Statement from stakeholder: (English translation) 1. There is a lack of health quality indicators and healthcare quality assessment measures. 2. There is a shortage of specific healthcare specialties (e.g., nurses) based on local demands.

4. **Do you think there are any areas in your country that can be classified as medical deserts?**

- Yes: **18** (81,8%)
- No: **4** (18,2%)

5. **If you answered yes to the previous question, please indicate which of the following statements better define medical deserts in the area(s) you're thinking of.**

Lack of resources

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **3** (16,67%)

(3) Neither agree nor disagree: **3** (16,67%)

(4) Agree: **10** (55,56%)

(5) Strongly Agree: **2** (11,11%)

Lack of medical infrastructure

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **2** (11,11%)

(3) Neither agree nor disagree: **2** (11,11%)

(4) Agree: **11** (61,11%)

(5) Strongly Agree: **3** (16,67%)

Poor medical infrastructure

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **5** (27,78%)

(3) Neither agree nor disagree: **2** (11,11%)

(4) Agree: **6** (33,33%)

(5) Strongly Agree: **5** (27,78%)

Delay of receiving medical help

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **3** (16,67%)

(3) Neither agree nor disagree: **1** (5,56%)

(4) Agree: **8** (44,44%)

(5) Strongly Agree: **6** (33,33%)

Distance to medical services

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **1** (5,56%)

(3) Neither agree nor disagree: **2** (11,11%)

(4) Agree: **8** (44,44%)

(5) Strongly Agree: **7**(38,89%)

6. **If the above statements do not mention areas that you consider as medical deserts in your country, please suggest another statement.**

No responses

7. **In your opinion, at what level can medical deserts be addressed?**

National

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **2** (9,09%)

(3) Neither agree nor disagree: **0** (0%)

(4) Agree: **11** (50%)

(5) Strongly Agree: **8** (36,36%)

Regional

(1) Strongly Disagree: **1** (4,55%)

(2) Disagree: **1** (4,55%)

(3) Neither agree nor disagree: **1** (4,55%)

(4) Agree: **12** (54,55%)

(5) Strongly Agree: **7** (31,82%)

Local

(1) Strongly Disagree: **2** (9,09%)

(2) Disagree: **0** (0%)

(3) Neither agree nor disagree: **3** (13,64%)

(4) Agree: **11** (50%)

(5) Strongly Agree: **6** (27,27%)

8. **Based on your response to the previous question, what steps do you believe can be taken to mitigate medical deserts?**

Statements from stakeholders: (English translation)

- Develop a comprehensive strategic plan with goals spanning short-term, medium-term, and long-term periods. Foster collaboration between the public and private sectors to effectively implement the strategic plan.
- Promote community nursing, telemedicine, health literacy, and a healthcare surveillance platform.
- Provide incentives for establishing medical infrastructure in remote areas.
- Address economic, institutional, and educational factors related to healthcare.
- Enhance transportation design and accessibility to medical assistance, incorporating innovative technologies like telemedicine.
- Enhance the organization and staffing of health centers remote areas. Mobilize doctors and nurses to fill positions and ensure sufficient staffing levels. Improve emergency response capabilities in hard-to-reach regions.
- Offer incentives for infrastructure development in remote areas.
- Provide incentives to address healthcare "deserts" and underserved regions.
- Increase the number of hospitals/clinics with emergency departments. Expand personnel to decrease response time for incidents and conduct more frequent evaluations to enhance quality.
- Develop a national strategy led by the Ministry of Health, including comprehensive capacity planning involving local governance.
- For instance, foster the growth of community nursing, integrate all healthcare providers into unified information systems, establish multi-center primary and

outpatient care facilities, and provide targeted incentives to the private sector (such as urban planning incentives, tax relief, and accelerated licensing) to encourage investments. Additionally, offer incentives to healthcare professionals (e.g., rent subsidies from local governance), improve road networks, and enhance transportation infrastructure.

- Implement mandatory "packaging" in the licensing process for medical centers, diagnostic centers, and clinics. This ensures that new investments in the healthcare sector also include investments in underserved areas. For example, an operating license for a diagnostic/medical center/private hospital in the center of Nicosia should be bundled with a mandatory operating license for a corresponding center in Kampo or Kato Pyrgos, etc.

9. Based on your experience, in recent years, have any policies or strategies been implemented to target medical deserts?

- No: **5** (22,7%)
- Yes, but it did not work: **7** (31,8%)
- Yes, and it worked: **10** (45,5%)

10. If you answered yes to the previous question, please select which initiatives you believe align with the mission of addressing medical deserts.

Access of outpatient healthcare services for the population, with small user charges

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **4** (23,53%)

(3) Neither agree nor disagree: **1** (5,88%)

(4) Agree: **7** (41,18%)

(5) Strongly Agree: **5** (29,41%)

Coverage to hospital care and specialty pharmaceuticals for the population, with small user charges

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **2** (11,8%)

(3) Neither agree nor disagree: **0** (0%)

(4) Agree: **8** (47,1%)

(5) Strongly Agree: **7** (41,2%)

The introduction of information systems

(1) Strongly Disagree: **0** (0%)

(2) Disagree: **2** (11,76%)

(3) Neither agree nor disagree: **1** (5,88%)

(4) Agree: **8** (47,06%)

(5) Strongly Agree: **6** (35,29%)

Investing in medical education and training programs

(1) Strongly Disagree: **1** (5,88%)

(2) Disagree: **1** (5,88%)

(3) Neither agree nor disagree: **3** (17,65%)

(4) Agree: **5** (29,41%)

(5) Strongly Agree: **7** (41,18%)

Implementing telemedicine

(1) Strongly Disagree: **2** (11,76%)

(2) Disagree: **0** (0 %)

(3) Neither agree nor disagree: **1** (5,88%)

(4) Agree: **5** (29,41%)

(5) Strongly Agree: **9** (52,94%)

Establishing mobile health clinics

(1) Strongly Disagree: **2** (11,76%)

(2) Disagree: **1** (5,88%)

(3) Neither agree nor disagree: **1** (5,88%)

(4) Agree: **7** (41,18%)

(5) Strongly Agree: **6** (32,29%)

Increase the government funding for the healthcare sector

(1) Strongly Disagree: **1** (5,88%)

(2) Disagree: **4** (23,53%)

(3) Neither agree nor disagree: **1** (5,88%)

(4) Agree: **6** (32,29%)

(5) Strongly Agree: **5** (29,41%)

Provision of financial incentives to healthcare workers

(1) Strongly Disagree: **2** (11,76%)

(2) Disagree: **1** (5,88%)

(3) Neither agree nor disagree: **3** (17,65%)

(4) Agree: **7** (41,18%)

(5) Strongly Agree: **4** (23,53%)

Increase the funding for healthcare infrastructure and services

(1) Strongly Disagree: **1** (5,88%)

(2) Disagree: **1** (5,88%)

(3) Neither agree nor disagree: **3** (17,65%)

(4) Agree: **8** (47,06%)

(5) Strongly Agree: **4** (23,53%)

11. **If the above statements do not contribute to addressing medical deserts in your country, please suggest another statement.**

Statement from stakeholder: (English translation) Creation of healthcare clinics.

Statement from stakeholder: (English translation) The problem of healthcare desertification is not exclusive to the healthcare sector; rather, it is part of the larger issue stemming from the lack of national policies and strategies to address urbanization and the resulting widespread desertification of non-urban areas across the country. Looking at the problem from this standpoint, it is crucial to establish a connection between the development of urban areas and the parallel development of rural and remote regions. This undoubtedly demands political determination, as the solutions do not necessitate a doctoral thesis in astrophysics.

7.1.2. Second round of the questionnaire

1. **Please indicate your organisation:**

- Mediterranean Hospital of Cyprus: **(1) 11,1%**
- Ministry of Health: **(1) 11,1%**

- Health Insurance Organisation HIO: **(4) 44,4%**
- ΓΕΣΥ: **(1) 11,1%**
- Bank of Cyprus Oncology Center, BOC: **(1) 11,1%**
- Former Ministry of Health Employee and Current Health Advisor: **(1) 11,1%**

Overall: **9** responses

2. To what extent do you believe medical deserts exist in Cyprus?

(1) Agree: **(0) (0 %)**

(2) Neither agree nor disagree: **(4) 44,4%**

(3) Disagree: **(5) 55,6%**

3. How would you describe the areas in Cyprus that can be classified as medical deserts?

Not well-equipped with healthcare facilities

(1) Agree: **(3) 60%**

(2) Neither agree nor disagree: **(1) 20%**

(3) Disagree: **(1) 20%**

Limited availability of healthcare professionals

(1) Agree: **(4) 80%**

(2) Neither agree nor disagree: **(1) 20%**

(3) Disagree: **(0) 0%**

Insufficient access to specialised medical services

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(1) 20%**

Inadequate healthcare infrastructure

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(1) 20%**

Lack of pharmacies or medical supplies

(1) Agree: **(3) 60%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(0) 0%**

Inadequate transportation to healthcare facilities

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(1) 20%**

(3) Disagree: **(2) 40%**

Limited availability of emergency medical services

(1) Agree: **(5) 100%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(0) 0%**

4. **Which statements better define medical deserts in the area(s) you are thinking of?**

Lack of healthcare facilities within a reasonable distance

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(3) 60%**

Limited healthcare services or specialties available

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(1) 20%**

Inadequate number of healthcare professionals

(1) Agree: **(4) 80%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(1) 20%**

Difficulty in accessing healthcare due to geographical barriers

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(1) 20%**

(3) Disagree: **(2) 40%**

Insufficient medical resources and supplies

(1) Agree: **(1) 20%**

(2) Neither agree nor disagree: **(3) 60%**

(3) Disagree: **(1) 20%**

Inadequate transportation options to healthcare facilities

(1) Agree: **(2) 40%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(1) 20%**

Delayed or limited emergency medical services

(1) Agree: **(5) 100%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(0) 0%**

5. **What areas do you consider as medical deserts in your country? (Open ended question)**

1. Remote geographically areas with insufficient accessibility to healthcare professionals and/or limited provision of services.
2. Areas with limited or absence of specialized expertise.
3. All regions of Cyprus can be considered medical deserts based on the above data.
4. Departments of Accidents and Emergencies.

6. **At what level do you believe medical deserts can be effectively addressed?**

National level (government policies and initiatives): **(5) 100%**

Regional level (collaboration between neighboring areas): **(2) 40%**

Local level (community-based efforts): **(1) 20%**

Public-private partnerships: **(3) 60%**

International collaborations: **(2) 40%**

Not sure: **(0) 0%**

7. **To what extent do you believe the following steps can mitigate medical deserts in Cyprus?**

Increasing the number of healthcare facilities

(1) Agree: **(3) 60%**

(2) Neither agree nor disagree: **(2) 40%**

(3) Disagree: **(0) 0%**

Enhancing the recruitment and retention of healthcare professionals

(1) Agree: **(4) 80%**

(2) Neither agree nor disagree: **(1) 20%**

(3) Disagree: **(0) 0%**

Improving transportation infrastructure to healthcare facilities

(1) Agree: **(4) 80%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(1) 20%**

Strengthening telemedicine and digital healthcare services

(1) Agree **(5) 100%**

(2) Neither agree nor disagree **(0) 0%**

(3) Disagree **(0) 0%**

Providing financial incentives for healthcare professionals to serve in underserved areas

(1) Agree: **(5) 100%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(0) 0%**

Implementing targeted healthcare programs in medical desert regions

(1) Agree: **(5) 100%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(0) 0%**

Enhancing public awareness about healthcare access and options

(1) Agree: **(5) 100%**

(2) Neither agree nor disagree: **(0) 0%**

(3) Disagree: **(0) 0%**

8. **Are there any existing policies or strategies in Cyprus specifically targeting medical deserts?**

Yes: **(4) 80%**

No: **(1) 20%**

9. **Please share any initiatives or programs you believe align with the mission of addressing medical deserts in Cyprus. (open ended question)**

1. The establishment of primary care clusters by the government in remote areas is a program heading in the right direction, which should be upgraded (more

specializations, integration of ambulance stations, infrastructure and equipment upgrades, healthcare professional training, telemedicine, etc.).

2. Inclusion of private Diagnostic and Therapeutic Centers (DTCs) in the National Health System (GeSY) with specialized clinics.

10. Please indicate your availability for a future face-to-face meeting at the European University Cyprus.

17-21 July: **(1) 20%**

24-28 July: **(2) 40%**

31 July- 4 August: **(2) 40%**

24 July online meeting: **(1) 20%**

7.2. First, second and third round of the questionnaires used in Finland

Originally in Finnish language, translated for this report with artificial intelligence.

7.2.1. First survey

1. Which of the following statements best describe medical deserts in primary health care services in Finland?

a. There are areas in Finland where the availability of services is weak

b. Regions differ in terms of the availability of health services

c. There are areas in Finland where the number of doctors is too small in relation to the needs of the population

d. There are areas in Finland where the number of nurses is too small in relation to the needs of the population

e. There are areas in Finland where recruiting health professionals is challenging

f. There are areas in Finland where keeping health professionals in the organization is challenging

g. There are areas in Finland where the physical accessibility of services is a challenge

h. There are areas in Finland where access to services (queues) is a challenge

i. Something else, what?

2. In which areas do medical deserts occur in particular?

3. Because of what factors do you think these areas have shortage of services or staff?

4. What can be done in national level to mitigate the challenges of medical deserts?

5. What can be done in regional or local level to mitigate the challenges of medical deserts?

6. What actions have previously been taken at the national and local level to mitigate the challenges of medical deserts?

7. What policy actions would be central to mitigate the challenges of medical deserts?

7.2.2. Second survey

1. In which areas do medical deserts especially occur in primary care?

a. Geographically, the prevalence of covered areas is twofold: in the area of large cities and in a remote/sparsely populated area

b. There is a shortage of doctors especially in sparsely populated areas/outlying areas

c. The shortage of nurses occurs especially in sparsely populated areas/outlying areas

2. Because of which factors do you think these areas have primary health care services or staff availability problems? Choose five most important factors.

a. Population aging and the resulting increase in service needs

b. The amount of training in the social and health field is too low

c. Salary is not sufficient (especially for nursing staff)

d. It is difficult to recruit professionals to small municipalities/outlying areas or smaller units (due to, for example, weaker work, education and advancement opportunities)

e. It is more difficult to recruit professionals to areas or units where there are no opportunities for multi-professional and multi-disciplinary work

f. There are so many jobs available that employees can afford to choose and change organizations

g. Working conditions and ways of organizing work are inadequate and the work is burdensome

h. Location of universities of applied sciences and universities (recruiting students study cities externally challenging)

i. Weak access to public transport hinders the accessibility of services

3. What are the most central means at the national level to mitigate the challenges of medical deserts in primary health care? Choose five most important factors.

a. Increasing the number of social and health professionals by increasing the starting places for training

b. Adequate funding for the training of social and health professionals must be secured

c. Internships included in the curriculum must be carried out in a remote/sparsely populated area

d. social and health professionals working in sparsely populated areas/outlying areas should be offered financial benefits incentives such as the remote area allowance and tax breaks

e. Work-based immigration must be streamlined and utilized more than at present

f. The treatment guarantee for primary healthcare should be tightened more moderately than planned

g. Personnel measurements must be achieved flexibly

h. The availability of personnel should be improved with national salary solutions

i. The total funding of the social security sector must be increased

j. Eligibility criteria for personnel must be flexible

4. What are the most central means at the organizational level to mitigate the challenges of medical deserts in primary health care? Choose five most important factors.

a. Social and health services should be prioritized based on effectiveness

b. Digitization must be utilized and digital health and social services must be increased and developed

c. The availability of services should be promoted with digital, take-home and mobile services

d. Additional resources should be directed to basic services

e. Solution measures should be established rather than project-based

f. The work of professionals must be directed to tasks corresponding to their education and competence

g. The division of labor between professionals and task descriptions should be reexamined

h. The number of supporting personnel should be increased (for example, secretaries, facility custodians and care assistants)

i. Private and third sector resources should be utilized and cooperation should be increased as part of the social and healthcare as a whole

j. The service network must be renewed to promote the availability of high-quality services

k. Staff should be offered tip bonuses for recruiting new employees

l. Organizations must recruit part-time workers

m. Recruitment must identify and utilize the organization's key attractiveness factors

n. Pre-recruitment from educational institutions should be used

o. The organization must use local salary solutions

p. Organizations must develop and utilize a regional knowledge base that takes e.g. population service needs, personnel needs and the economy into account

q. Welfare regions must cooperate to improve the availability of services and personnel

r. Opportunities for advancement and training at work must be increased

s. Investment must be made in increasing productivity without undermining work well-being

t. Workplace well-being should be invested in work communities

u. In the planning of services, cooperation with educational institutions in R&D activities should be used

v. Public transport should be developed to improve the accessibility of services

w. Assessment of the need for treatment should be developed

x. Self-care guidance and counseling should be increased

y. Measures to prevent and support the population's functional capacity and health must be increased

7.2.3. Third survey

1. Because of what factors do you think these areas have primary health care services or staff availability problems? Choose three most important factors.

a. Population aging and the resulting increase in service needs

b. It is difficult to recruit professionals to small municipalities/outlying areas or smaller units (due to, for example, weaker work, education and advancement opportunities)

c. There are so many jobs available that employees can afford to choose and change organizations

d. Working conditions and ways of organizing work are inadequate and the work is burdensome

e. Location of universities of applied sciences and universities (recruiting students study cities externally challenging)

2. What are the most central means at the national level to mitigate the challenges of medical deserts in primary health care? Choose three most important factors.

a. Adequate funding for the training of social and health professionals must be secured

b. Work-based immigration must be streamlined and utilized more than at present

c. Personnel measurements must be achieved flexibly

d. The total funding of the social security sector must be increased

e. Eligibility criteria for personnel must be flexible

3. What are the most central means at the organizational level to mitigate the challenges of medical deserts in primary health care? Choose three most important factors.

a. Social and health services should be prioritized based on effectiveness

b. Digitization must be utilized and digital health and safety services must be increased and developed

c. The availability of services should be promoted with digital, take-home and mobile services

d. Additional resources should be directed to basic services

e. The work of professionals must be directed to tasks corresponding to their education and competence

f. The division of labor between professionals and task descriptions should be reexamined

g. The number of supporting personnel should be increased (for example, secretaries, facility custodians and care assistants)

h. Private and third sector resources should be utilized and cooperation should be increased as part of the social and healthcare as a whole

i. Investment must be made in increasing productivity without undermining work well-being

7.3. First and second round questionnaires of the Hungarian survey

7.3.1. First round questionnaire

Egészségügyi sivatagok a magyarországi alapellátásban

*** Kötelező kérdés**

1. Betegellátásban vesz részt?*

a. Igen

b. Igen, de egyéb tisztséget is betöltök

c. Nem

2. Amennyiben nem (csak) betegellátásban vesz részt, milyen (egyéb) tisztséget tölt be?

3. Magyarország melyik vármegyéjében dolgozik/praktizál? (Több válaszlehetőség is megjelölhető, amennyiben - pl. helyettesítéssel - több vármegyében is ellát betegeket.)*

a. Bács-Kiskun

b. Baranya

c. Békés

d. Borsod-Abaúj-Zemplén

e. Csongrád-Csanád

f. Fejér

g. Győr-Moson-Sopron

h. Hajdú-Bihar

i. Heves

j. Jász-Nagykun-Szolnok

k. Komárom-Esztergom

l. Nógrád

m. Pest

n. Somogy

o. Szabolcs-Szatmár-Bereg

p. Tolna

q. Vas

r. Veszprém

s. Zala

t. Budapest

4. Magyarország melyik településén/településein dolgozik/praktizál? (Több válasz is adható, amennyiben - pl. helyettesítéssel - több településen is ellát betegeket.)*

5. Megítélése szerint vannak egészségügyi sivatagok Magyarországon vagy nincsenek?*

a. Igen, vannak

b. Nem, nincsenek

6. Kérem, nevezze meg az ország azon vármegyéit, amelyekben megítélése szerint egészségügyi sivatagok találhatók! (Több válaszlehetőség is megjelölhető.)*

a. Bács-Kiskun

b. Baranya

c. Békés

d. Borsod-Abaúj-Zemplén

e. Csongrád-Csanád

f. Fejér

g. Győr-Moson-Sopron

h. Hajdú-Bihar

i. Heves

j. Jász-Nagykun-Szolnok

k. Komárom-Esztergom

l. Nógrád

m. Pest

n. Somogy

o. Szabolcs-Szatmár-Bereg

p. Tolna

q. Vas

r. Veszprém

s. Zala

t. Budapest

7. Miért gondolja, hogy az Ön által említett vármegyékben egészségügyi sivatagok találhatók?*

8. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására országos szinten?*

a. Igen, de még nem látszanak az eredményei

b. Igen, de nem voltak eredményesek

c. Igen, és eredményesek voltak

d. Nem, nem történtek

9. Amennyiben igennel válaszolt az előző kérdésre, kérem, sorolja fel a megtett intézkedéseket országos szinten!

10. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására vármegyei szinten?*

a. Igen, de még nem látszanak az eredményei

b. Igen, de nem voltak eredményesek

c. Igen, és eredményesek voltak

d. Nem, nem történtek

11. Amennyiben igennel válaszolt az előző kérdésre, kérem, sorolja fel a megtett intézkedéseket vármegyei szinten!

12. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására helyi szinten?*

a. Igen, de még nem látszanak az eredményei

b. Igen, de nem voltak eredményesek

c. Igen, és eredményesek voltak

d. Nem, nem történtek

13. Amennyiben igennel válaszolt az előző kérdésre, kérem, sorolja fel a megtett intézkedéseket helyi szinten!

14. Megítélése szerint milyen intézkedéseket lehetne tenni az egészségügyi sivatagok felszámolása érdekében (országos, vármegyei, helyi szinten)?*

15. Kérjük - tájékoztatási céllal -, adjon meg számunkra olyan e-mailes elérhetőséget, amin értesíthetjük a pilot kutatás esetleges további lépéseiről, eredményeiről! (Az e-mail-címet a beérkezett válaszoktól elkülönítve kezeljük, így az nem befolyásolja az anonimitás követelményét.)*

7.3.2. Second round questionnaire

Egészségügyi sivatagok a magyarországi alapellátásban: 2. kör

1. Demográfiai és szakmai háttérrel kapcsolatos kérdésblokk

1. Az Ön neme:*

a. Férfi

b. Nő

2. Melyik vármegyében lakik?*

a. Bács-Kiskun

b. Baranya

c. Békés

d. Borsod-Abaúj-Zemplén

e. Csongrád-Csanád

f. Fejér

g. Győr-Moson-Sopron

h. Hajdú-Bihar

i. Heves

j. Jász-Nagykun-Szolnok

k. Komárom-Esztergom

l. Nógrád

m. Pest

n. Somogy

o. Szabolcs-Szatmár-Bereg

p. Tolna

q. Vas

r. Veszprém

s. Zala

t. Budapest

3. Melyik településen lakik?

4. Betegellátásban vesz részt?*

a. Igen (Lépjen tovább a 6. kérdésre!)

b. Igen, de egyéb tisztséget is betöltök

c. Nem (Lépjen tovább a 7. kérdésre!)

5. Milyen egyéb tisztséget tölt be?

6. Milyen szakterületen vesz részt betegellátásban?

a. Háziorvos

b. Házi gyermekorvos

c. Fogorvos

d. Házi-, házi gyermekorvosi, fogászati asszisztens

e. Egyéb

7. Magyarország melyik vármegyéjében dolgozik/praktizál? Több válaszlehetőség is megjelölhető, amennyiben - pl. helyettesítéssel - több vármegyében is ellát betegeket.*

a. Bács-Kiskun

b. Baranya

c. Békés

d. Borsod-Abaúj-Zemplén

e. Csongrád-Csanád

f. Fejér

g. Győr-Moson-Sopron

h. Hajdú-Bihar

i. Heves

j. Jász-Nagykun-Szolnok

k. Komárom-Esztergom

l. Nógrád

m. Pest

n. Somogy

o. Szabolcs-Szatmár-Bereg

p. Tolna

q. Vas

r. Veszprém

s. Zala

t. Budapest

2. Az egészségügyi elsivatagosodás és megoldási lehetőségei

8. Az első kérdőív válaszadói többségében az alábbi vármegyéket nevezték meg az egészségügyi ellátás szempontjából sivatagos (ellátáshiányos) területként. Kérem, nevezze meg azt a három vármegyét, amelyek egészségügyi ellátás szempontjából megítélése szerint a leginkább sivatagos területnek tekinthetők!*

a. Békés

b. Borsod-Abaúj-Zemplén

c. Heves

d. Nógrád

e. Szabolcs-Szatmár-Bereg

f. Somogy

9. Mi alapján tudja megítélni, hogy egy adott vármegyében egészségügyi sivatagok találhatók? Több válasz is adható! Kérem, jelölje meg az(oka)t tényező(ke)t, amely(ek) alapján ez eldönthető!*

a. Betöltetlen praxisok számából

b. Orvoshiány alapján

c. Földrajzi elhelyezkedés alapján (pl. elaprózott településszerkezet)

10. Milyen információs források alapján ítélhető meg, hogy egy adott vármegyében egészségügyi sivatagok találhatók? Több válasz is adható! Kérem, jelölje meg az(oka)t az információs forrás(oka)t, amely(ek) alapján ez eldönthető!*

a. Statisztikai adatforrás alapján

b. Szakmai információs csatornák alapján (vármegyei vezetők, orvosi fórumok)

11. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására országos szinten?*

a. Igen

b. Nem (Lépjen tovább a 13. kérdésre!)

12. Amennyiben igennel válaszolt az előző kérdésre, kérem, válassza ki a három legfontosabb országos szintű intézkedést az alábbiak közül!

a. Praxisközösségek létrehozása

b. Pénzügyi támogatás: személyi kifizetés (béremelés, ösztöndíjrendszer, letelepedési támogatás)

c. Pénzügyi támogatás: költségek finanszírozása (alapellátás támogatása hátrányos településen, rezsitámogatás)

d. Átszervezések (körzethatár-módosítás)

e. Modellprogramok

13. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására a vármegyék szintjén?*

a. Igen

b. Nem (Lépjen tovább a 15. kérdésre!)

14. Amennyiben igennel válaszolt az előző kérdésre, kérem, válassza ki a három legfontosabb vármegyei szintű intézkedést az alábbiak közül!

a. Praxisközösségek létrehozása

b. Pénzügyi támogatás: személyi kifizetés (béremelés, ösztöndíjrendszer, letelepedési támogatás)

c. Pénzügyi támogatás: költségek finanszírozása (alapellátás támogatása hátrányos településen, rezsitámogatás)

d. Infrastrukturális fejlesztés

e. Egészségprogram

15. Tudomása szerint történtek-e a múltban intézkedések az egészségügyi sivatagok felszámolására helyi (önkormányzati) szinten?*

a. Igen

b. Nem (Lépjen tovább a 17. kérdésre!)

16. Amennyiben igennel válaszolt az előző kérdésre, kérem, válassza ki a legfontosabb helyi (önkormányzati) szintű intézkedés(eke)t! Több válasz is adható!

a. Letelepedési támogatás

b. Ösztöndíjprogram

c. Költségek finanszírozása (rezsitámogatás, iparűzési adó elengedése, felszereltség támogatása, rendelőhelyiség biztosítása)

17. Megítélése szerint milyen intézkedéseket lehetne tenni az egészségügyi sivatagok felszámolása érdekében (országos, vármegyei és helyi szinten)? Kérem, válassza ki a három legfontosabbat az alábbiak közül!*

a. Finanszírozás növelése

b. Szakmai motiváció- és tudásnövelés

c. Az egészségügy vonzóbbá tétele

d. Az egészségügyi ellátás fejlesztése

e. Az alapellátás hatáskörének bővítése

f. Megfelelő adatok gyűjtése az ellátásról

18. A kutatás későbbi szakaszában részt tud-e venni fókuszcsoportos beszélgetésen is?*

a. Igen

b. Nem (Lépjen tovább a 20. kérdésre!)

19. A fókuszcsoportos beszélgetésen megoldható-e az Ön számára egy budapesti helyszínen való személyes részvétel is?

a. Igen

b. Nem

20. Kérjük - tájékoztatási céllal -, adjon meg számunkra olyan e-mailes elérhetőséget, amin értesíthetjük a pilot kutatás további lépéseiről és a kutatás eredményeiről! (Az e-mail-címet a beérkezett válaszoktól elkülönítve kezeljük, így az nem befolyásolja az anonimitás követelményét.)*

7.3.3. Qualitative meeting questions of the consensus building meeting

Egészségügyi sivatagok a magyarországi alapellátásban – fókuszcsoport

I. Bevezetés, bemutatkozás – 10 perc

Kezdés, ráhangolódás a beszélgetésre

- Köszönet a résztvevőknek a jelenlétért, bemutatkozás
- Résztvevők rövid bemutatkozása: szakmai háttér, foglalkozás, beosztás

Ismerteti a beszélgetés szabályait és körülményeit. Felvétel készül és a HRH-munkatársak is jelen vannak a beszélgetés során. Mire használjuk a felvételt, anonim feldolgozás stb. Hozzászóláskor nem kell jelentkezni, de a mikrofont, kapcsolják ki, ha épp nem ők beszélnek. 1,5 órára tervezzük, de ha minden kérdésben egyetértés van, akkor hamarabb elérjük a szükséges konszenzust.

A pilot kutatás célja – (relatív) hozzáférési nehézségek vizsgálata az alapellátásban: (2Q) földrajzi elhelyezkedés, közlekedés és a humánerőforrás – házi- és házi gyermekorvosok – rendelkezésre állása alapján. A most és a kérdőívben alkalmazott Delphi-módszer célja a 80%-os konszenzus elérése. Tematikus blokkok rövid bemutatása.

II. A kérdőív eredményei, reflexiók – 25 perc (35 percnél járunk)

Ismertetjük a kérdőív azon eredményeit, ahol konszenzust sikerült kialakítani, vagyis elértük 80% feletti eredményt, és ahol nem sikerült, de el szeretnénk érni.

- Rövid visszajelzést kérünk az eredményekről
- Szakmai információs csatornákon való információáramlásról pl. egyetértés van, még sincs a megtett intézkedésekről (információ, disszemináció hiánya?) – Ezt kell boncolgatni!

- **Mi tekinthető egészségügyi sivatagnak a hazai alapellátásban –> mik a legkomolyabb gátló tényezők a hozzáférésben? Összegzés a fogalomról**
- Mi ennek az oka?
- Kinek a feladata a hozzáférés biztosítása?

III. Eddig megtett és szükséges intézkedések – 30 perc (65 percnél járunk)

Mit tehet az egészségügyi kormányzat, illetékes hatóság? Történtek-e a felszámolásuk érdekében kísérletek? Ez azok a kardinális kérdések, ahol nem értük el a 80%-os konszenzust. (Mi az oka, hogy nem értenek egyet, nem jut el az információ az alapellátásban dolgozókhoz?)

1. Történtek-e már intézkedések a felszámolásuk érdekében országos szinten?

- Milyen intézkedések történtek?
- Ha nem értenek egyet ebben, mi az oka?
- A megtörténtek intézkedések eredményesek voltak-e? Ha nem, mi az oka (a kistelepüléseken nem hasznosul az intézkedés, disszemináció hiánya, olyan helyeken hasznosul pont, ahol kevéssé indokolt).
- Tehát abban egyetértenek, hogy…

2. Történtek-e már intézkedések a felszámolásuk érdekében megyei szinten?

- Milyen intézkedések történtek?
- Ha nem értenek egyet ebben, mi az oka?
- A megtörténtek intézkedések eredményesek voltak-e? Ha nem, mi az oka (a kistelepüléseken nem hasznosul az intézkedés, disszemináció hiánya, olyan helyeken hasznosul pont, ahol kevéssé indokolt).
- Tehát abban egyetértenek, hogy…

3. Történtek-e már intézkedések a felszámolásuk érdekében helyi szinten?

- Milyen intézkedések történtek?
- Ha nem értenek egyet ebben, mi az oka?
- A megtörténtek intézkedések eredményesek voltak-e? Ha nem, mi az oka (a kistelepüléseken nem hasznosul az intézkedés, disszemináció hiánya, olyan helyeken hasznosul pont, ahol kevéssé indokolt).
- Tehát abban egyetértenek, hogy…

4. Milyen intézkedéseket lenne szükséges megtenni?

- Abban már volt konszenzus, hogy emelni kell a finanszírozást.
- Milyen típusú finanszírozásnövelés jöhet szóba?
- Tehát abban egyetértenek, hogy…

IV. Praxisközösségek a gyakorlatban – 25 perc (90 perc)

Lehet-e a betöltetlen praxisok problémáját a praxisközösségi modell által orvosolni?

A praxisközösségek alapítása jógyakorlatként jelent meg a kérdőív-eredmények alapján.

Mik a praxisközösségek tapasztalatai gyakorlati, háziorvosi oldalról?

- A Svájci Modellprogram eredményei tükröződnek-e az eddigi tapasztalatokban?
- Megvalósultak-e az ott megfogalmazott célkitűzések?

a. Csökkent-e a háziorvosok, házi gyermekorvosok leterheltsége a praxisközösségekben?

b. Bővültek-e új munkakörökkel, új (pl. prevenciós) szolgáltatásokkal, új szakemberekkel a praxisközösségek (pl. gyógytornászok, dietetikusok, kiterjesztett hatáskörű diplomás ápolók)?

c. Tudnak-e az orvosok kompetenciákat, felelősségi köröket delegálni alacsonyabb szintre?

d. Tehermentesültek-e ezáltal az orvosok a praxisokban?

- Vagy mások-e a tapasztalatok?
- Zárókérdés mindenkihez: Mi szükséges ahhoz, hogy a praxisközösségek eredményesek legyenek?

7.4. First, second and third round of the questionnaires used in Italy

7.4.1. First survey round

1. **Nome e cognome**
2. **Istituzione**
3. **Paese e Regione**
4. **Quale delle seguenti affermazioni sui deserti sanitari descrive meglio il suo Paese?**

a. Mancanza di competenze rilevanti tra gli operatori sanitari in relazione ai bisogni di salute della popolazione

b. La percezione di una mancanza di qualità dell'assistenza sanitaria disponibile in un determinato territorio, che spinge le persone a cercarla altrove

c. Lunghe distanze per raggiungere una struttura sanitaria o un professionista sanitario

d. Mancanza di alcune categorie di operatori sanitari in una determinata area

e. Mancanza di un determinato tipo di assistenza sanitaria in una determinata area (ad es. ospedali)

f. Mancanza di conoscenza delle strutture sanitarie o dei professionisti disponibili e/o delle modalità di accesso alle/gli stesse/i

5. **Ritiene che nel suo Paese ci siano dei deserti sanitari?**

a. Sì

b. No

6. **Se ha risposto affermativamente alla domanda precedente, la** preghiamo di indicare le aree geografiche o i settori sanitari che considera "deserti sanitari".
7. **Se ha risposto sì alle domande precedenti, perché ritiene che quell'area o settore sia un deserto sanitario?**
8. **Che cosa si può fare a livello nazionale per mitigare i deserti sanitari?**
9. **Che cosa si può fare a livello regionale per mitigare i deserti sanitari?**
10. **Che cosa si può fare a livello locale per mitigare i deserti sanitari?**
11. **In passato, sono state messe in atto politiche o strategie per affrontare i deserti sanitari?**

a. No

b. Si, ma solo di recente

c. Si, ma non hanno funzionato

d. Si, e hanno funzionato

12. Se ha risposto affermativamente alla domanda precedente, la preghiamo di elencare le iniziative messe in atto in passato.

13. Quali politiche o strategie potrebbero essere implementate per mitigare i deserti sanitari?

7.4.2. Second survey round

1. Nome e cognome

2. Istituzione

3. Paese e Regione

4. Quale delle seguenti affermazioni sui deserti sanitari descrive meglio il suo Paese?

a. La percezione di una mancanza di qualità dell'assistenza sanitaria disponibile in un determinato territorio, che spinge le persone a cercarla altrove

b. Mancanza di alcune categorie di operatori sanitari in una determinata area

c. Mancanza di un determinato tipo di assistenza sanitaria in una determinata area (ad es. ospedali)

5. Ritiene che nel suo Paese ci siano dei deserti sanitari?

a. Sì

b. No

6. Se ha risposto affermativamente alla domanda precedente, la preghiamo di selezionare le aree geografiche o i settori sanitari che considera maggiormente "deserti sanitari".

a. Aree interne

b. Sud Italia

c. Centro e Sud Italia

d. Zone periferiche ed aree montane

e. Assistenza Primaria

f. Assistenza Specialistica

7. Se ha risposto sì alle domande precedenti, la preghiamo di selezionare quale tra le seguenti ritiene sia la causa principale di desertificazione sanitaria?

a. Assenza di servizi
b. Assenza di professionisti sanitari
c. Assenza di strutture/ospedali
d. Assenza di incentivi per i professionisti
e. Assenza di investimenti
f. Assenza di politiche adeguate

8. **Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello nazionale?**

a. Maggiore pianificazione del personale sanitario
b. Mappatura specifica per aree territoriali/professione sanitaria
c. Piano di investimenti
d. Potenziare la formazione universitaria
e. Potenziare la medicina territoriale ed aumentare digitalizzazione
f. Potenziare formazione dei professionisti sanitari

9. Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello regionale?

a. Maggior controllo nelle strutture sanitarie
b. Aumentare l'assunzione di personale
c. Aumentare l'informazione, la prevenzione e la formazione
d. Aumentare l'attrattività del territorio migliorando i servizi essenziali ed i trasporti
e. Aumentare le strutture territoriali
f. Aumentare la formazione del personale territoriale
g. Creare una rete di strutture territoriali
h. Migliorare la distribuzione dei finanziamenti

10. Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello locale?

a. Migliorare l'uso dei fondi a disposizione - Come il PNRR

b. Responsabilizzare la dirigenza medica

c. Aumentare i programmi di screening e prevenzione

d. Aumentare la formazione del personale

e. Coinvolgere il personale e la popolazione locale nella programmazione

f. Aumentare la digitalizzazione dei servizi

11. In passato, sono state messe in atto politiche o strategie per affrontare i deserti sanitari?

a. No

b. Si, ma solo di recente

c. Si, ma non hanno funzionato

d. Si, e hanno funzionato

12. Se ha risposto affermativamente alla domanda precedente, la preghiamo di selezionare le iniziative che nella sua opinione sono state messe in atto in passato.

a. Riparto del fondo sanitario per costo standard

b. Strategia aree interne

c. Concorsi

d. PNRR

e. Istituzione di commissari ad hoc

f. Assunzione di personale dall'estero

g. Richiesta di attivazione di nuovi corsi di laurea

13. Quali delle seguenti politiche/strategie possono essere maggiormente implementate per mitigare i servizi sanitari?

a. Mappare il territorio ed applicare politiche di incentivazione

b. Realizzazione di nuovi i presidi sanitari o miglioramento della performance di quelli già esistenti

c. Rimuovere il numero chiuso dalle facoltà sanitarie

d. Maggiore apertura oraria dei servizi

e. Aumentare la retribuzione

f. Migliorare la programmazione del personale sanitario

g. Costruire un gruppo interregionale che lavori in modo trasversale sulla creazione di buone prassi e modalità di presa in carico adeguate

h. Aumentare l'attrattività del territorio, migliorando servizi di base e traporti

7.4.3. Third survey round

1. Nome e cognome

2. Istituzione

3. Paese e Regione

4. Quale delle seguenti affermazioni sui deserti sanitari descrive meglio l'Italia?

a. La percezione di una mancanza di qualità dell'assistenza sanitaria disponibile in un determinato territorio, che spinge le persone a cercarla altrove

b. Mancanza di un determinato tipo di assistenza sanitaria in una determinata area (ad es. ospedali)

5. La preghiamo di selezionare le aree geografiche o i settori sanitari che considera "deserti sanitari".

a. Sud Italia

b. Zone periferiche ed aree montane

c. Assistenza Specialistica

6. La preghiamo di selezionare quale tra le seguenti ritiene sia la causa principale di desertificazione sanitaria?

a. Assenza di professionisti sanitari

b. Assenza di politiche adeguate

7. Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello nazionale?

a. Mappatura specifica per aree territoriali/professione sanitaria

b. Potenziare la medicina territoriale ed aumentare digitalizzazione

c. Piano di investimenti

8. Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello regionale?

a. Creare una rete di strutture territoriali

b. Migliorare la distribuzione dei finanziamenti

9. Quale delle seguenti opzioni ritiene sia più adeguata per mitigare i deserti sanitari a livello locale?

a. Migliorare l'uso dei fondi a disposizione - Come il PNRR

b. Coinvolgere il personale e la popolazione locale nella programmazione

c. Aumentare la digitalizzazione dei servizi

10. In passato, sono state messe in atto politiche o strategie per affrontare i deserti sanitari?

a. No

b. Si, ma solo di recente

c. Si, ma non hanno funzionato

11. Se ha risposto affermativamente alla domanda precedente, la preghiamo di selezionare l'iniziativa che nella sua opinione è stata messa in atto in passato con più successo.

a. Riparto del fondo sanitario per costo standard

b. Strategia aree interne

c. PNRR

d. Richiesta di attivazione di nuovi corsi di laurea

12. Quale delle seguenti politiche/strategie può essere maggiormente implementata per mitigare i servizi sanitari?

a. Mappare il territorio ed applicare politiche di incentivazione

b. Costruire un gruppo interregionale che lavori in modo trasversale sulla creazione di buone prassi e modalità di presa in carico adeguate

c. Aumentare l'attrattività del territorio, migliorando servizi di base e traporti

7.4.4. Qualitative meeting – Yes/No questions - online real-time polling tool

1. Il deserto sanitario in Italia è “la percezione di una mancanza di qualità dell’assistenza sanitaria disponibile in un determinato territorio”?

2. L’area geografica che rappresenta maggiormente i “deserti sanitari” è il SUD ITALIA: presenta aree periferiche e assenza di assistenza specialistica.

3. Soluzioni per mitigare i deserti sanitari a livello nazionale: connubio tra potenziamento della medicina territoriale e piano di investimenti.
4. Come mitigare i deserti sanitari a livello regionale: coinvolgimento personale locale e incremento fondi.
5. Politiche o strategie esistenti per affrontare i deserti sanitari: se ci sono state, non hanno funzionato. Concordate?
6. Le politiche che al momento hanno avuto maggiore impatto: Strategia Aree interne e PNRR. Concordate?
7. Politiche/Strategie che possono essere implementate: mappare il territorio e costruire un gruppo interregionale. Concordate?

7.5. First and second round of the questionnaires used in Republic of Moldova

7.5.1. First round

1. Țara și regiunea:

_____;

2. Cum credeți, prin ce se caracterizează un deșert medical în Republica Moldova? (puteți selecta mai multe răspunsuri)

a) Lipsa sau insuficiența personalului medical în teritoriul deservit;

b) Dificultăți în a atrage tineri specialiști în această zonă;

c) Rata sporită de medici cu vârsta peste 55 de ani;

d) Distanţele mari pînă la specialiști sau instituțiile medicale din zonă;

e) Timpul de așteptare îndelungat pentru a beneficia de un serviciu medical.

3. Credeți că în Republica Moldova există deșerturi medicale?

a) Da;

b) Nu (treceți direct la ultima întrebare).

4. Dacă ați răspuns cu „Da" la întrebarea precedentă, vă rugăm să numiți care zone le considerați ca deșert medical?

_____

_____

5. Dacă ați răspuns cu „Da" la întrebarea nr.3, vă rugăm să explicați de ce considerați această/aceste zone ca fiind deșert medical?

_____

_____

6. Ce trebuie de întreprins la nivel național pentru a combate deșerturile medicale din Republica Moldova?

_____

_____

7. Ce trebuie de întreprins la nivel regional pentru a combate deșerturile medicale din Republica Moldova?

_____

_____

8. Ce trebuie de întreprins la nivel local pentru a combate deșerturile medicale din Republica Moldova?

_____

_____

9. În trecut, au fost careva politici sau strategii țintite spre combaterea deșerturilor medicale din Republica Moldova?

a) Nu;

b) Da, dar doar în ultimii cîțiva ani;

c) Da, dar acestea nu au fost eficiente;

d) Da, și acestea au fost eficiente.

10. Dacă ați răspuns cu „Da" la întrebarea precedent, vă rugăm să enumărați inițiativele anterioare.

_____

_____

11. Care politici sau strategii ar putea fi implementate în viitor pentru a combate fenomenul deșertificării medicale în Republica Moldova?

_____

7.5.2. Second round

1. Cunoașteți careva indicatori oficial recunoscuți de către autoritățile naționale care permit identificarea cu certitudine a unui areal geografic ca o zonă de deșert medical?

- Da;
- Nu.

2. Dacă ați răspuns cu „Da" la întrebarea precedentă, vă rugăm să numiți și să descrieți indicatorul la care v-ați referit sau să furnizați link-ul către acesta

_____

_____

3. În opinia Dvs., unde se întâlnesc deșerturile medicale în Republica Moldova?

- În mediul rural;
- În mediul urban.

4. În trecut, au fost careva acțiuni țintite spre combaterea deșerturilor medicale din Republica Moldova?

- Nu;
- Da.

5. Dacă ați răspuns cu „Da” la întrebarea precedentă, vă rugăm să apreciați eficiența acțiunilor întreprinse.

- Au fost eficiente;
- Nu au fost eficiente.

6. Vă rugăm să vă expuneți cu privire la eficiența soluțiilor de mitigare a deșerturilor medicale din Republica Moldova, identificate în runda I de chestionare.

- De atras mai mulți tineri în domeniul medical (de ex. taxe de studii mai mici, burse mai mari);
- Cu potențial scăzut de eficiență,
- Cu potențial crescut de eficiență.
- Condiții contractuale preferențiale pentru medicii care acceptă să activeze într-un deșert medical (de ex. angajare pe o perioadă determinată, cu salariu mai mare decît în orașe);
- Cu potențial scăzut de eficiență,
- Cu potențial crescut de eficiență.
- Stimulente nefinanciare pentru lucrătorii medicali din zonele de deșert medical (de ex. asigurare cu locuință de serviciu, rate preferențiale la credite, facilități la transport);
- Cu potențial scăzut de eficiență,
- Cu potențial crescut de eficiență.
- Condiții de muncă speciale în zonele de deșert medical (de ex. program de muncă redus și/sau flexibil, practicarea consultațiilor online, educație medicală continuă la distanță);
- Cu potențial scăzut de eficiență,
- Cu potențial crescut de eficiență.
- Acordarea unei indemnizații oricărui medic ce acceptă să activeze într-o zonă de deșert medical (identică cu cea acordată tinerilor specialiști în primii 3 ani de activitate profesională: 120.000 lei).
- Cu potențial scăzut de eficiență,

- Cu potențial crescut de eficiență.

7.5.3. Qualitative meeting

1. După cum am observat, lipsa personalului medical și distanțele mari până la instituțiile medicale sunt considerate cele mai caracteristice fenomenului deșertificării medicale (DM). De ce credeți aceasta? Este nevoie de o definiție bine structurată a DM care să fie acceptată la nivel de UE sau DM rămâne un fenomen ce depinde mult de contextul național al fiecărei țări în parte? Argumentați vă rog!
2. Toți respondenții au menționat că în Republica Moldova există deșerturi medicale în mediul rural, puteți să menționați exemple de teritorii și/sau specialități în care considerați că există DM? Ce vă determină să credeți asta? Oferiți exemple proprii, împărtășiți experiențe!
3. Reieșind din experiența Dvs, ați întâlnit anterior vreun indicator sau set de date care ar permite catalogarea unui areal geografic ca o zonă de desert medical? Dacă ați avea posibilitatea să propuneți unul, care ar fi acesta și ce seturi de date sau indicatori ar conține acesta?
4. Care politici în vigoare sau anterior utilizate au avut cele mai bune rezultate în domeniul asigurării cu cadre medicale în Republica Moldova? Exemplificați! Sunt acestea utile și în cazul deșerturilor medicale?
5. În timpul chestionării desfășurate anterior, au fost înaintate mai multe propuneri de modificare de politici și soluții de mitigare a fenomenului deșertificării medicale. Multe dintre aceste au fost considerate cu potential crescut de eficiență. Totuși, care dintre acestea le considerați cele mai oportune în contextul național din Republica Moldova? Care ar putea fi extrapolate la nivel de regiune/UE? Puteți să propuneți și alte soluții și strategii de combatere a deșertificării medicale? Dați exemple.

7.6. First and second round of the questionnaires used in Romania

7.6.1. First round

1. Regiune
2. Instituție
3. Care dintre următoarele afirmații despre deșerturile medicale descrie cel mai bine România?
4. Credeți că există deșerturi medicale în România?
5. Dacă ați răspuns "da" la întrebarea anterioară, vă rugăm să numiți zonele pe care le considerați deșerturi medicale.
6. Dacă ați răspuns "da" la întrebarea anterioară, de ce considerați că acea zonă este un deșert medical?
7. Ce se poate face la nivel național pentru a atenua deșerturile medicale?
8. Ce se poate face la nivel regional pentru a atenua deșerturile medicale?
9. Ce se poate face la nivel local pentru a atenua deșerturile medicale?
10. În trecut, au fost implementate politici sau strategii pentru a atenua deșerturile medicale? (de exemplu: sporuri pentru zone rurale, consultații mobile în zonele izolate, etc)
11. Dacă ați răspuns afirmativ la întrebarea de mai sus, vă rugăm să enumerați inițiativele implementate.
12. Dacă ați răspuns "nu" la întrebarea anterioară, ce politici sau strategii ar putea fi implementate pentru a atenua deșerturile medicale?

7.6.2. Second round

1. Regiune
2. Instituție
3. Care dintre următoarele afirmații despre deșerturile medicale descrie cel mai bine România?
4. Ce zone considerați că sunt cel mai afectate de deșerturi medicale?
5. Ce altă zonă considerați drept deșert medical?
6. De ce considerați că acea zonă este un deșert medical?
7. Din ce alt motiv considerați acea zonă un deșert medical?

8. Ce se poate face la nivel național pentru a atenua deșerturile medicale?

9. Ce altceva se poate face la nivel național pentru atenuarea deșerturilor medicale?

10. Ce se poate face la nivel regional pentru a atenua deșerturile medicale?

11. Ce altceva se poate face la nivel regional pentru atenuarea deșerturilor medicale?

12. Ce se poate face la nivel local pentru a atenua deșerturile medicale?

13. Ce altceva se poate face la nivel local pentru atenuarea deșerturilor medicale?

14. Ce politici sau strategii pentru a atenua deșerturile medicale au fost implementate în trecut? (de exemplu: sporuri pentru zone rurale, consultații mobile în zonele izolate, etc)

7.6.3. Qualitative meeting guide

1. Conform chestionarului completat, definiția deșertului medical este:

Deșertul medical se referă la mai multe situații sau zone în care oamenii întâmpină dificultăți în accesul la îngrijire (de exemplu, timp de așteptare mare, resurse umane insuficiente, dificultăți la înregistrarea pe lista medicului sau distanțe mari până la spital).

- Vă rugăm să ne spuneți de ce considerați că această definiție cea mai potrivită României?

- Care sunt punctele forte și punctele slabe ale indicatorilor creați (dimensiunilor deșerturilor medicale)?

- Ca urmare a chestionarului, am identificat zonele rurale drept zone predominant deșertice. Considerați că acest aspect reflect realitatea? De ce considerați zonele rurale deșertice din punct de vedere medical?

- Care sunt inițiative anterioare care vizează deserturile medicale? În ce măsură au fost acestea eficiente? De ce considerați acest lucru?

- Ce ar putea mitiga deșerturile medicale în România? De ce considerați acest lucru?

8. References

Ádány, R., Kósa, K., Sándor, J., Papp, M., & Fürjes, G. (2013). General practitioners' cluster: a model to reorient primary health care to public health services. *European Journal of Public Health*, *23*(4), 529–530. https://doi.org/10.1093/EURPUB/CKT095

Állami Egészségügyi Ellató Központ. (2019). *Beszámoló az egészségügyi ágazati humáneroforrás 2018. évi helyzetéről*.

Bálint, C. (2019). A betöltetlen háziorvosi és házi gyermekorvosi körzetek területi összefüggései. *Studia Mundi – Economica*, *6*(2), 15–36. https://doi.org/10.18531/STUDIA.MUNDI.2019.06.02.15-36

Bálint, C. (2021). Pillanatkép a háziorvosi és házi gyermekorvosi alapellátás járási szintű területi egyenlőtlenségeiről a koronavírus-járvány előtti időszakból. *Multidiszciplináris Kihívások, Sokszínű Válaszok - Gazdálkodás- És Szervezéstudományi Folyóirat* , *1*, 78–107. https://doi.org/10.33565/MKSV.2021.01.04

Biroul Național de Statistică al Republicii Moldova. (2022). *Biroul Național de Statistică al Republicii Moldova*. https://statistica.gov.md/ro

Brinzac, M. G., Kuhlmann, E., Dussault, G., Ungureanu, M. I., Chereches, R. M., & Baba, C. O. (2023). Defining medical deserts-an international consensus-building exercise. *European Journal of Public Health*, *33*(5), 785–788. https://doi.org/10.1093/EURPUB/CKAD107

GOKVI. (2023a). *HÁROM GENERÁCIÓVAL AZ EGÉSZSÉGÉRT-AZAZ KARDIOVASZKULÁRIS PREVENCIÓ AZ ALAPELLÁTÁSBAN*. 1.

GOKVI. (2023b). *HÁROM GENERÁCIÓVAL AZ EGÉSZSÉGÉRT-AZAZ KARDIOVASZKULÁRIS PREVENCIÓ AZ ALAPELLÁTÁSBAN*. 3.

GOKVI. (2023c). *HÁROM GENERÁCIÓVAL AZ EGÉSZSÉGÉRT-AZAZ KARDIOVASZKULÁRIS PREVENCIÓ AZ ALAPELLÁTÁSBAN*. 4.

Letenyei, L. (2005). Településkutatás I. : Módszertani kézikönyv és szöveggyűjtemény. *Településkutatás I. : Módszertani Kézikönyv És Szöveggyűjtemény.* https://doi.org/10.14267/963-0606-24-0

OECD and European Observatory on Health Systems and Policies. (2021a). *Cyprus: Country Health Profile 2021 | State of Health in the EU : Country Health Profiles | OECD iLibrary*. https://www.oecd-ilibrary.org/social-issues-migration-health/cyprus-country-health-profile-2021_c2fe9d30-en

OECD and European Observatory on Health Systems and Policies. (2021b). *Finland: Country Health Profile 2021 | State of Health in the EU : Country Health Profiles | OECD iLibrary*. https://www.oecd-ilibrary.org/social-issues-migration-health/finland-country-health-profile-2021_2e74e317-en

OECD and European Observatory on Health Systems and Policies. (2021c). *France: Country Health Profile 2021 | State of Health in the EU : Country Health Profiles | OECD iLibrary*. https://www.oecd-ilibrary.org/social-issues-migration-health/france-country-health-profile-2021_7d668926-en

OECD and European Observatory on Health Systems and Policies. (2021d). *Hungary: Country Health Profile 2021 | State of Health in the EU : Country Health Profiles | OECD iLibrary*. https://www.oecd-ilibrary.org/social-issues-migration-health/hungary-country-health-profile-2021_482f3633-en

OECD, & European Observatory on Health Systems and Policies. (2021a). *Italy: Country Health Profile 2021, State of Health in the EU*. https://www.oecd-ilibrary.org/docserver/5bb1946e-en.pdf?expires=1645042288&id=id&accname=guest&checksum=77800C80A79079D1CE568F12C45A35EA

OECD, & European Observatory on Health Systems and Policies. (2021b). *Romania: Country Health Profile 2021*. https://doi.org/10.1787/74AD9999-EN

OECD/European Observatory on Health Systems and Policies. (2023a). *Cyprus: Country Health Profile 2023, State of Health in the EU*. https://health.ec.europa.eu/document/download/e230c331-8f9c-4612-a9a0-92f74e3d4996_en?filename=2023_chp_cy_english.pdf

OECD/European Observatory on Health Systems and Policies. (2023b). *Finland: Country Health Profile 2023, State of Health in the EU*. https://health.ec.europa.eu/document/download/69be51c9-628e-467e-9825-50eb23559f17_en?filename=2023_chp_fi_english.pdf

OECD/European Observatory on Health Systems and Policies. (2023c). *France: Country Health Profile 2023, State of Health in the EU*. https://www.oecd-ilibrary.org/docserver/07c48f9f-en.pdf?expires=1709040615&id=id&accname=guest&checksum=D76B8808E101851DF535B9326033B75D

OECD/European Observatory on Health Systems and Policies. (2023d). *Hungary: Country Health Profile 2023, State of Health in the EU*. https://doi.org/10.1787/0eb17a30-en

OECD/European Observatory on Health Systems and Policies. (2023e). *Italy: Country Health Profile 2023, State of Health in the EU*. OECD. https://doi.org/10.1787/0eb17a30-en

OECD/European Observatory on Health Systems and Policies. (2023f). *Romania: Country Health Profile 2023, State of Health in the EU*. OECD. https://doi.org/10.1787/f478769b-en

Pál, V., Fabula, S., Ilcsikné Makra, Z., & Uzzoli Annamária. (2022, December). *Az egészségügyi dolgozók területi eloszlása Magyarországon: mintázatok, okok és különböző narratívák [Spatial distribution of health workers in Hungary: patterns, causes and different narratives] (Journal: Tér-Gazdaság-Ember)*. https://www.researchgate.net/publication/365959736_Az_egeszsegugyi_dolgozok_teruleti_eloszlasa_Magyarorszagon_mintazatok_okok_es_kulonbozo_narrativak_Spatial_distribution_of_health_workers_in_Hungary_patterns_causes_and_different_narratives_Journal_Te

Papp, M. (2017). Az alapellátás-fejlesztés tapasztalatai, jövője/The experiences and future of the primary care development. *A NÉPEGÉSZSÉGÜGYI KÉPZŐ-ÉS KUTATÓHELYEK ORSZÁGOS EGYESÜLETÉNEK TUDOMÁNYOS FOLYÓIRATA PUBLIC*

HEALTH RESEARCH JOURNAL OF THE HUNGARIAN ASSOCIATION OF PUBLIC HEALTH TRAINING AND RESEARCH INSTITUTIONS, *95*, 6.

Papp, M. C. (2021). *A háziorvosi ellátás humánerőforrás-krízise Magyarországon longitudinális kutatás tükrében*. http://hdl.handle.net/2437/324581

SEPEN Project. (2020a). *Specific country information sheet – Cyprus*. https://archive.healthworkforce.eu/specific-country-information-sheet-cyprus/#disclaimer

SEPEN Project. (2020b). *Specific country information sheet – Finland*. https://archive.healthworkforce.eu/specific-country-information-sheet-finland/

SEPEN Project. (2020c). *Specific country information sheet – France*. https://archive.healthworkforce.eu/specific-country-information-sheet-france/

SEPEN Project. (2020d). *Specific country information sheet – Hungary*. https://archive.healthworkforce.eu/specific-country-information-sheet-hungary/

SEPEN Project. (2020e). *Specific country information sheet – Romania*. https://archive.healthworkforce.eu/specific-country-information-sheet-romania/

SEPEN Project. (2020f). *Specific information country sheet – Italy*. https://archive.healthworkforce.eu/specific-information-country-sheet-italy/

Uzzoli, A. (2016). *Health inequalities regarding territorial differences in Hungary by discussing life expectancy*. https://doi.org/10.15196/RS06108

Uzzoli, A., Egri, Z., Szilágyi, D., & Pál, V. (2020). Does better availability mean better accessibility? Spatial inequalities in the care of acute myocardial infarction in Hungary. *Hungarian Geographical Bulletin*, *69*(4), 401–418. https://doi.org/10.15201/HUNGEOBULL.69.4.5

Véronique Lucas-Gabrielli, Cindy Padilla, Marie Bonal, Guillaume Chevillard, & Fei Gao. (2022). *A potential spatial access measure tool package promoting evidence-based reforms on medical deserts Acronym OASES medical deserts*. http://www.oasesproject.eu/

Wikipedia. (2006). *Republica Moldova.png - Wikipedia*. https://ro.m.wikipedia.org/wiki/Fi%C8%99ier:Republica_Moldova.png

World Health Organization. (2023). *Immunization data - Romania*. https://immunizationdata.who.int/listing.html?topic=&location=ROU

World Health Organization Regional Office for Europe. (2016). *Republic of Moldova - Profile of Health and Well-being*. www.euro.who.int

OASES

Promoting evidence-based reforms on medical deserts

The content of this report represents the views of the author only and is his/her sole responsibility; it cannot be considered to reflect the views of the European Commission and/or the European Health and Digital Executive Agency (HaDEA) or any other body of the European Union. The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.

Co-funded by the Health Programme of the European Union