



OASES

Promoting evidence-based reforms on medical deserts

D6.2 Overview of the 7 pilot site profiles as regards medical deserts

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1. Executive summary

According to the already approved framework for the pilot studies (Deliverable 6.1), each of the consortium countries of the OASES project will have to decide on the implementation of said framework in their country.

According to these principles, each OASES country has decided to implement the pilot studies as per the table below. 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).

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

Table 1. Sites of implementation of the pilot studies

For the countries that are going to implement the pilot studies at national level, the local data is not presented.

Following the selection of pilot study sites, the OASES consortium will meet and discuss the implementation of each pilot study. WP6 team will coordinate the implementation of the pilot studies. The consensus building exercise described in Deliverable 6.1. will commence and each consortium country will enforce the modified Delphi methodology.

The expected results are seven national medical deserts overviews in the OASES countries, seven consensus building exercises implemented and evidence-based recommendations for medical desert mitigation.

They will inform data-driven policy making and medical deserts mitigation measures and strategies.

The objectives of this document:

1. To describe the pilot studies implementation sites of the OASES project;
2. To guide the implementation of the OASES pilot studies;
3. To equip the interested and involved parties outside the OASES project with the necessary information to replicate the OASES pilot studies; were met as each implementation site was described and a baseline that will guide the pilot studies was formed. In the process of meeting the above-mentioned objectives, several efforts were required. Numerous bilateral meetings between WP6 and each partner were organized. Based on those meetings, a survey containing the indicators presented above was delivered for the self-reporting of each country. This document will be public, thus, it equips those interested outside the OASES project in replicating the pilot studies.

2. Objectives

The objectives of the present deliverable are to:

- describe the pilot studies implementation sites of the OASES project;

- guide the implementation of the OASES pilot studies;
- equip the interested and involved parties outside the OASES project with the necessary information to replicate the OASES pilot studies.

The objectives of the pilot studies are to:

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

3. Country profiles

- The pilot studies will be implemented in the seven consortium countries involved in the OASES project, namely Cyprus, Finland, France, Hungary, Italy, the Republic of Moldova, and Romania, either/both at the local or/and the national level.
- In order to develop the current deliverable, each country has provided several national and regional indicators, depending on the implementation level. To determine the indicators of interest, bilateral meetings between WP6 and each consortium country were organized. Afterwards, using already existing and validated frameworks, such as OECD Affordability, availability and use of services (OECD, 2021), we established a list of indicators in order to reflect the objectives of the present document, the pilot studies and data availability.
- These indicators include but are not limited to the location of the implementation, number of healthcare workers, in total and per 1 000 inhabitants, number of hospital beds and occupancy rate, the extent of healthcare coverage, routine vaccination rate, number of care units and number of healthcare services delivered.
- These indicators present a brief overview of each health system, in terms of its workers, services delivered and opportunities to access healthcare, coverage and use of services.
- The below-presented data are collected from national databases, reports and institutions, international databases, reports and peer-reviewed journals.
- This approach has several strengths and limitations. Some of the strengths are the objective manner in which several of the main components of a health system are presented, the cross-sectional image of each country created, the generalizability, dependability and versatility of the presented data. The limitations of the approach are that it does not offer a great level of detail, lack of potential depth on the matter, reliability of data and variations in data collection methods.

3.1. Cyprus



Figure 1. Map of Cyprus

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 the pilot studies will be implemented.

Demographic factors	Cyprus	EU
Population	888 005	447 319 916
Share of population over age 65 (%)	16.3	20.6
Fertility rate in 2019	1.3	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	25 790	29 801
Relative poverty rate (%2019)	14.7	16.5
Unemployment rate (%)	7.6	7.1

Figure 2. Demographic and socioeconomic context in Cyprus (OECD & European Observatory on Health Systems and Policies, 2021)

The demographic factors present a Cypriot population of 888 005 people, representing approximately 0.20% of the total European population. People over the age of 65 represent 16.3% of the population, which is close to the EU rate of 20.6%, and the fertility rate is 1.3%, being below the EU median of 1.5% by 0.2%. As for the socioeconomic factors, the GDP per capita is 25 790 EUR, which compared to the EU rate of 29 801 EUR is lower by approximately

4 000 EUR. The poverty rate of 14.7% is below the EU median of 16.5%, but the rate of unemployment is 7.6%, which is above the EU average of 7.1% by 0.5%.

Despite the prevalence of risk factors, such as obesity, alcohol consumption, and smoking, Cypriots have good health outcomes and are among the healthiest in the EU. The life expectancy remains at 82.3 years, which is above the EU level by approximately 1.7 years, as shown in Figure 7.

Starting with the year 2019, the health system includes universal coverage, and despite the worldwide pandemic, the efficiency of the health system improved. Until recently, three-quarters of the population had access to free care, as the services were delivered through a publicly funded health system. An important health pillar was the unregulated private sector which contributed to the high level of out-of-pocket payments. Moreover, the health spendings are below the EU average. More specifically, in 2019, the health spendings were 1 881 EUR per capita, which was below the EU average of 3 523 EUR. Thus, the goal of the health reforms is to reduce the high level of out-of-pocket spending by enhancing financial protection. The General Healthcare System enhanced accessibility addressed service delivery-related deficiencies and provided universal health coverage.

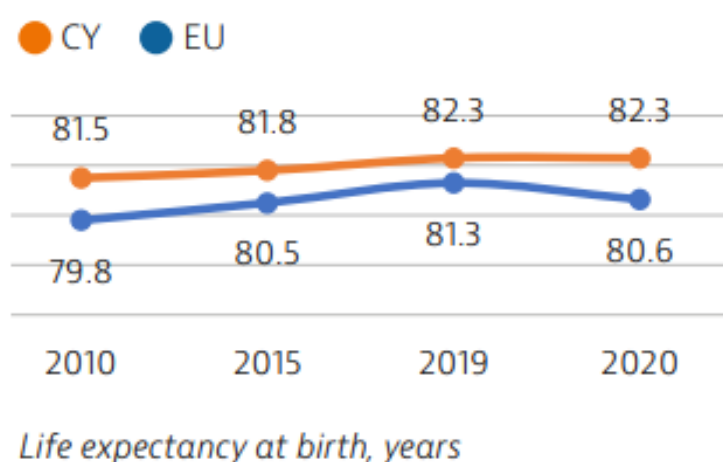


Figure 3. Life expectancy at birth in Cyprus

Cyprus will implement the pilot studies at a national level.

At the national level, Cyprus had 5 122 medical doctors in 2019 and 4 778 nurses in 2019.

In 2018, per 1 000 inhabitants, Cyprus had 4,27 medical doctors and 5,41 nurses.

At the national level, Cyprus had in 2019 2 747 beds, with an occupancy of beds of 61,72%.

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 packages include 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 2019, from a per capita perspective, 1 881

EUR were directed towards health, which, compared to the EU average of 3 521 EUR, is lower by approximately 1 600 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 translated to under 332 EUR, meaning 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).

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).

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.

These socio-economic characteristics are reflected in the health system's indicators, as in Cyprus there are 0,63 medical doctors per 1 000 inhabitants, fewer than the 2017 EU average of 4,9. At consortium level, Cyprus is the first country in terms of number of medical doctors per 1 000 inhabitants and the last country in terms of nurses per 1 000 inhabitants. This is reflected in the occupancy of the hospitals of 61,72%.

3.2. Finland



Figure 4. Map of Finland

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 the pilot studies will be implemented.

Demographic factors	Finland	EU
Population	5 525 292	447 319 916
Share of population over age 65 (%)	22.3	20.6
Fertility rate in 2019	1.3	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	33 949	29 801
Relative poverty rate (% ,2019)	11.6	16.5
Unemployment rate (%)	7.8	7.1

Figure 5. Demographic and socioeconomic context in Finland (OECD & European Observatory on Health Systems and Policies, 2021)

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%

Life expectancy has improved considerably over the past two decades, as it increased by more than four years between 2000 and 2020, and it is 1.6 points higher than the EU average. The health system is complex, multi-tiered and decentralised. All permanent residents benefit from the municipal health care services package which includes primary and specialist care. On the other hand, because of the long waiting times in primary care, the proportion of people who reported unmet medical needs is higher than the one at the EU level. Thus, the government is developing a reform focused on digitalization and care integration that aims at decreasing waiting times.

Between 2014 and 2019, health spending per capita has slowly increased. In 2019, the EU average was 3 520 EUR, whereas in Finland it was 3 150 EUR, implying a difference of almost 400 EUR. The health spendings are accountable for 9.2% of the GDP, being below the EU average of 9.9% by 0.7%, and the public funding is accountable for 78% of the overall health spending, lower than the EU average of 80% by 0.2%.

At the national level, Finland had 18 831 medical doctors and 60 202 nurses, 9 028 public health nurses and 2 393 midwives in 2018.

In 2018, Finland had 3,4 medical doctors, 10,9 nurses, 0,4 midwives and 1,6 public health nurses, per 1 000 inhabitants.

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).

Consultations delivered 2020			
		Occupational health care	Remote appointments in public health centres
Doctors	4 914 850	4 900 000	2 000 000
Nurses		2 000 000	5 400 000
Other health care professionals	4 985 765		
Consultations	1 183 000		

Table 2. Consultations delivered in 2020 in Finland

There are several innovative medical desert mitigation model initiatives, remote consultation (doctor's consultation for nurses, who have a physical appointment with the client), 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), mobile care units.

There have also been national development programmes on how to organize smooth reception at health centres and how to organize the care of chronically ill patients. There are models of doctor-nurse pairs, team care models, multi-professional teams and segmentation of clients, as well as different digital services, remote appointments, etc.

In Finland, health and social care reform will be implemented at the beginning of the year 2023. All health and social services are arranged by 21 counties (primary and specialized care, elderly care, social work, social services). The national reform aims at building stronger and larger service purchasers and at increasing the effectiveness of care and shortening waiting times in primary care (multi-professional health and social care centres) using different ways: developing care integration (multi-professional work especially in primary care and a case manager or care guidance), developing e-health services and e-consultations, developing transportable services. Primary care and primary level social services are developed in a large national Future Health and Social Services Centres programme.

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

The number of medical doctors is with 1,5 medical doctors per 1 000 inhabitants lower than the European average, which might have motivated part of the medical desert mitigation strategies implemented in Finland. At consortium level, Finland is the fourth country in terms of number of medical doctors per 1 000 inhabitants and the second country in terms of nurses per 1 000 inhabitants.

3.3. France



Figure 6. Map of France

France, a country in Western Europe, presented in the above image, is the leader of WP4 – *Methodology* in the OASES project and one of the countries in which the pilot studies will be implemented.

Demographic factors	France	EU
Population	67 320 216	447 319 916
Share of population over age 65 (%)	20.4	20.6
Fertility rate in 2019	1.9	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	31 091	29 801
Relative poverty rate (% 2019)	13.6	16.5
Unemployment rate (%)	8.0	7.1

Figure 7. Demographic and socioeconomic context in France (OECD & European Observatory on Health Systems and Policies, 2021)

The French population covers 15% of the total European population, with a mid-year estimate of 67 320 216 people. Out of these, 20.4% is represented by people over the age of 65, being

close to the EU median of 20.6%. In 2019, the fertility rate was 1.9%, which is above the EU average of 1.5% by 0.4%. The socioeconomic factors present a GDP per capita of 31 091 EUR, being above the EU median by more than 1 200 EUR. Nonetheless, the unemployment rate is above the EU average by 0.9%, and the poverty rate is 13.6%, 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 2020, it was 82.3, above the EU average by almost two years, but it decreased by eight 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 2019 11.1% of GDP was allocated to health spending, being along with Germany, the highest share in the EU. Likewise, health spending per capita was 3 645 EUR in 2019, being the seventh highest at the EU level.

The French healthcare system is organized as a social insurance system, having a traditionally considerable role for the state in organising the health systems 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, France having 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, since 2020. The law provides for the obligation of an internship in medically underserved areas for students in general practice.

Recently, two measures have been implemented, not specifically in medically underserved areas, but they aim at increasing GP time:

- The medical assistant: the GP chooses the mission for him (administrative tasks or help for the consultation)
- Advanced practice nurses: they regularly follow patients referred by a physician for certain pathologies. They can, for example, renew or adapt a prescription.

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.

3.4. Hungary



Figure 8. Map of Hungary

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 will be implemented.

Demographic factors	Hungary	EU
Population	9 769 526	447 319 916
Share of population over age 65 (%)	19.9	20.6
Fertility rate in 2019	1.6	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	22 103	29 801
Relative poverty rate (%2019)	12.3	16.5
Unemployment rate (%)	4.3	7.1

Figure 9. Demographic and socioeconomic context in Hungary (OECD & European Observatory on Health Systems and Policies, 2021)

The demographic factors present a Hungarian population of 9 769 526 people, covering approximately 2% of the European population. People over the age of 65 represent 19.9% of the population, which is close to the EU average of 20.6%, and the fertility rate is 1.6%, which is above the EU limit of 1.5%. As for the socioeconomic factors, the GDP per capita is 22 103

EUR, with a difference of approximately 7.600 EUR compared to the EU average of 29 801 EUR. The poverty and unemployment rates are below the EU median. Specifically, the poverty rate is 12.3% in Hungary, whereas at the EU level it is 16.5%, and the unemployment rate is 4.3% compared to 7.1% in the EU.

The life expectancy is 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 adolescents and adults.

The Hungarian health care system is based on the Bismarck model, and it has a single health insurance fund, being highly centralised. Besides being in charge of the education, culture, social affairs and sports, the Ministry has exclusive power for regulating the financial aspects, regulating the benefits package and implementing regulations and strategic directions.

Before the pandemic, health spending increased, but the per capita spending and GDP percentage remained below the EU median. At the EU level, the health spending per capita is 9.9%, whereas in Hungary it is only 6.4%, meaning a difference of 3.5%.

Hungary will implement the pilot studies at the national level.

At the national level, Hungary had 33 078 medical doctors in 2019 and 64 695 nurses in 2019. Hungary had, in 2019, 6 870 dentists, 7 842 pharmacists, 2 439 midwives, 1 275 healthcare workers with clinical qualifications (e.g. clinical psychologist, clinical microbiologist, clinical biochemist).

In 2018 Hungary had 3,38 medical doctors, 6,62 nurses, 0,7 dentists, 0,8 pharmacists per 1 000 inhabitants.

At the national level, Hungary had, in 2019, 69 150 beds, with an occupancy of beds of 71,84%. The extent of healthcare coverage at the national level in Hungary is of 68%.

Hungary is one of the countries in Europe with the highest level of routine immunization, of 99% in 2019.

Hungary is poorer and more unemployed when compared to the European average, with a lower life expectancy and with one of the lowest European health expenditures.

These socio-economic characteristics are reflected in the health system's indicators, as in Hungary there are 1,52 medical doctors per 1 000 inhabitants, fewer than the 2017 EU average of 4,9. At consortium level, Hungary is the sixth country in terms of number of medical doctors per 1 000 inhabitants and the fourth country in terms of nurses per 1 000 inhabitants. This is reflected in the occupancy of the hospitals of 71,84% and the healthcare coverage of 68%, while it does not apply to the highest immunization rate in Europe – 99%.

3.5. Italy



Figure 10. Map of Italy

Italy, a southern-central European country, is one of the countries in which the pilot studies will be implemented.

Demographic factors	Italy	EU
Population	59 641 488	447 319 916
Share of population over age 65 (%)	23.2	20.6
Fertility rate in 2019	1.3	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	28 002	29 801
Relative poverty rate (% ,2019)	20.1	16.5
Unemployment rate (%)	9.2	7.1

Figure 11. Demographic and socioeconomic context in Italy (OECD & European Observatory on Health Systems and Policies, 2021)

Italy comprises more than 10% of the total European population, with a mid-year estimate of 59 641 488 people, out of which 23% 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 28 002 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 – 9.2% (OECD & European Observatory on Health Systems and Policies, 2021).

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 studies will be implemented both at the national level, in the whole of Italy, and at regional level, in Lazio and Puglia.

At the national level, Italy had 238 688 practising medical doctors in 2020 (provisional value, source: https://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_WFMI), 320.000 professionally active in 2020, including about 35.000 medical doctors in vocational training and about 400.000 medical doctors licensed to practice (estimated value, source: Ministry of Health Italy). Italy had 362 061 professionally active nurses in 2020 (estimated provisional value; source: https://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_WFMI).

At the national level, Italy had 623 152 practising caring personnel (Personal care workers) in 2019, 51 061 practising dentists in 2020, 73 445 practising pharmacists in 2020, 17 119 practising midwives in 2020, 65 806 practising physiotherapists in 2020 (estimated provisional values; source: https://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_WFMI) and about 150 000 other practising allied health professionals (estimated value, source: Ministry of Health Italy).

In 2020, Lazio had 34 880 professionally active medical doctors and 43 971 professionally active nurses (estimated value, source: Ministry of Health Italy). Additionally, it had 5 184 practising dentists in 2020, 1475 practising midwives in 2020, and 9609 practising physiotherapists in 2020.

In 2020, Puglia had 20 531 professionally active medical doctors and 25 899 professionally active nurses (estimated value, source: Ministry of Health Italy). Additionally, it had 3 051 practising dentists in 2020, 1023 practising midwives in 2020 and 4782 practising physiotherapists in 2020 (estimated value, source: Ministry of Health Italy).

At the national level per 1 000 inhabitants, Italy had 4 medical doctors/1 000 inhabitants practising in 2020, 6 nurses/1 000 inhabitants practising in 2020, 10,4 practising caring personnel (personal care workers)/1 000 inhabitants in 2019, 0,9 practising dentists/1 000 inhabitants in 2020, 1,2 practising pharmacists/1 000 inhabitants in 2020, 0,3 midwives/1 000 inhabitants in 2020, 1,1 physiotherapists/1 000 inhabitants in 2020, 2,5 other practising allied health professionals/1 000 inhabitants.

In Lazio, in 2020, there were 6,10 professionally active medical doctors/1 000 inhabitants, 7,69 professionally active nurses/1 000 inhabitants, 0,91 practising dentists/1 000 inhabitants, 0,26 practising midwives/1 000 inhabitants, 1,68 practising physiotherapists/1 000 inhabitants (estimated value, source: Ministry of Health Italy).

In 2020, in Puglia, there were 5,1 professionally active medical doctors per 1 000 inhabitants, 6,43 professionally active nurses per 1 000 inhabitants, 0,76 practising dentists per 1 000 inhabitants, 0,25 practising midwives per 1 000 inhabitants, 1,19 practising physiotherapists per 1 000 inhabitants (estimated value, source: Ministry of Health Italy).

At the national level, Italy had 20 562 day beds, 187 010 ordinary hospitalisation beds, with an occupancy of the day hospital beds of 65% and the ordinary hospitalisation beds of 77%.

Number of hospital beds and occupancy in Lazio and Puglia			
	Lazio	Puglia	<i>National</i>
Day hospital beds	2 358	817	20 562
Ordinary hospitalisation beds	18 356	11 575	187 010
Day hospital beds	86%	32%	65%
Ordinary hospitalisation beds	74%	75%	77%

Table 3. Number of hospital beds and occupancy in Lazio and Puglia

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. Public spending accounted for 74% of health expenditure in 2017 (or 6.5% of GDP). Although the basic benefit package covers a wide range of services, direct out-of-pocket (OOP) payments by households are relatively high (24%), making up most of the remaining

expenses. Private health insurance plays a minor role, covering only about 2% of total health expenditure.

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.

- Diphtheria, tetanus, pertussis among children aged 2: 95%.
- Measles, among children aged 2: 93%.
- Hepatitis B, among children aged 2: 95%.
- Influenza, among people aged 65 and over: 52%.
- Covid-19: 85% of the population received at least one dose.

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 human resources, Italy has almost 4 medical doctors per 1 000 inhabitants, with almost one fewer medical doctor per 1 000 inhabitants than the 2017 average. However, both Puglia and Lazio have more than the average, with almost one in Lazio and with 0,2 in Puglia. At consortium level, Italy is the second country in terms of number of medical doctors per 1 000 inhabitants and the sixth country in terms of nurses per 1 000 inhabitants. Day hospital beds are used almost three-fold more in Lazio than in Puglia 86% - 32%, while at national levels, the usage is at 65%. Ordinary hospital beds have a higher usage rate in Puglia and at national level, while they are lesser used in Lazio.

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.

3.6. Republic of Moldova



Figure 12. Map of Republic of Moldova

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 will be implemented.

Demographic factors	Republic of Moldova	EU
Population	3 559 000	904 598 000
Share of population over age 65 (%)	9.9	14.8

Socioeconomic factors		
GDP per capita (USD PPP)	4 982	29 007

Figure 13. Demographic context in the Republic of Moldova

Between 2000 and 2014, the demographic factors presented a population of approximately 3.6 million inhabitants, out of which 9.9% are aged 65 years old or more, this proportion being below the WHO European Region median of 14.8% by almost 5%. The fertility rate is 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.

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\$.

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 show an increase by 2,4 years to 59 years for men and by 3,6 years to 66 years for women. Nonetheless, the average remained below the estimates for the WHO European Region by four to five years.

In the past decade, although the health situation has improved, access to enhanced sanitation facilities is not available to one-fourth of the population, and the gaps between the national numbers and the median for the WHO European Region still exist. Human welfare and individuals' health are highly affected by many risk factors such as alcohol consumption, tobacco smoking, diet, and overweight. As for the health expenditures, in 2000, as a GDP percentage, they increased by 77% from 6.6% to 11.8% in 2013. This percentage is higher than the median of 8.3% for the WHO European Region.

The Health 2020 policy has been aligned with the national health policies, and by 2020, its goals are to reduce premature mortality, increase life expectancy, reduce health inequalities, improve population's well-being, set national health goals and targets, assure universal coverage and people's rights of attaining the highest health level (World Health Organization Regional Office for Europe, 2016).

At the national level, the Republic of Moldova has 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.

The Republic of Moldova has 3.5 medical doctors and 6,54 nurses, 0,4 midwives and 1,6 public health nurses per 1 000 inhabitants.

At the national level, the Republic of Moldova has a number of 17 168 beds, out of which 16 751 public and 417 private.

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, in which 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.

3.7. Romania



Figure 14. Map of Romania

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 will be implemented.

Demographic factors	Romania	EU
Population	19 328 838	447 319 916
Share of population over age 65 (%)	18.9	20.6
Fertility rate in 2019	1.8	1.5
Socioeconomic factors		
GDP per capita (EUR PPP)	21 296	29 801
Relative poverty rate (% ,2019)	23.8	16.5
Unemployment rate (%)	5.0	7.1

Figure 15. Demographic and socioeconomic context in Romania (OECD & European Observatory on Health Systems and Policies, 2021)

The demographic factors present a population of 19 328 838 people, representing approximately 4% of the entire EU population. People over the age of 65 years old are accountable for 18.9% of the total Romanian population, which is close to the EU level of

20.6%, and the fertility rate is above the EU limit by 0.3 points. The GDP per capita is below the EU limit by approximately 8 500 EUR, confirmed by the poverty rate of 23.8%, which is above the EU limit of 16.5% by 7.3%. Nonetheless, the unemployment rate is 5.0%, below the median of 7.1% at the EU level by more than 2%.

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 behaviours, 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 the last decade, health-related spending increased, but it continues to be the second lowest in the EU, in terms of both per capita and share of GDP. In 2019, the average per capita was 1 310 EUR compared to 3 523 EUR at the EU level, meaning a difference of more than 2 200 EUR. Moreover, the average of out-of-pocket payments was 18.9%, which, compared to the EU average of 15.4%, is higher by 3.5%.

The pilot studies will be implemented in the North-West Region of Romania, which comprises six counties: Bihor, Bistrița-Năsăud, Cluj, Maramureș, 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 a number of 144 027 beds, out of which 1 064 geriatric beds. In the North-West region, the number of beds is 19 914 beds, out of which 35 are geriatric beds.

The vaccination rates for 2020 are the following:

BCG - 97%

DTP1 - 95%

DTP3 - 87%

HEPB3 - 87%

HEPBB - 97%

HIB3 - 87%

MCV1 - 87%

MCV1 - 75%

PCV3 - 85%

POL3 - 87%

RCV1 - 87% (UNICEF, 2021).

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.

The pilot studies will be implemented in the North-West Region of Romania, which comprises six counties: Bihor, Bistrița-Năsăud, Cluj, Maramureș, Satu Mare and Sălaj.

At the national level, Romania has with 1,62 fewer medical doctors and in the implementation region with 1,5 medical doctors 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. Analysis of the pilot studies sites

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.

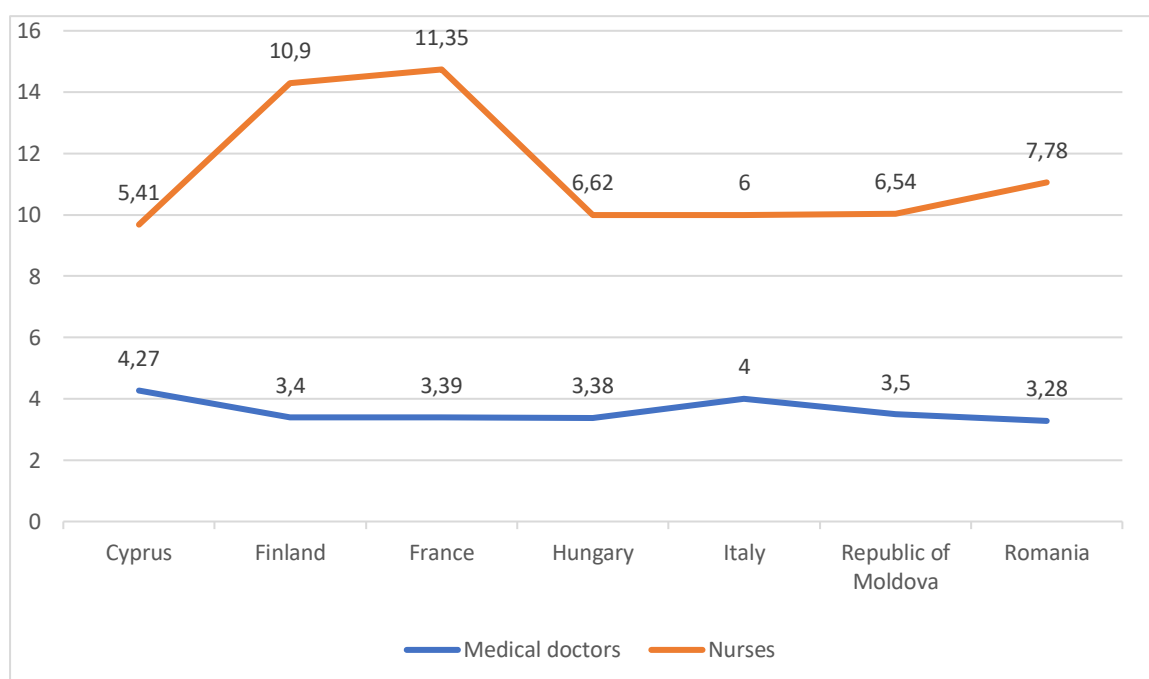


Figure 16. Number of medical doctors and nurses per 1 000 inhabitants in the OASES countries.

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 4. Summary of the number of human resources in health and number of beds in the OASES countries

5. Conclusions

The pilot studies implementation sites are all different and have their own particularities pertaining to their culture and environment. The information presented above represents the baseline of the pilot studies. Each country and/or region is briefly described before the implementation of the pilot studies. The combination between the current deliverable and the former deliverable - D6.1. Framework for pilot studies – provides the necessary context and knowledge for the successful implementation of the pilot studies.

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