PLANAPP

Centro de Planeamento e de Avaliação
de Políticas Públicas

The NHS Healthcare Workforce in Portugal

Overview and recent evolution

October 2024

Title

The NHS Healthcare Workforce in Portugal — Overview and recent evolution

Date

October 2024

Authorship

Ana Sofia Ferreira, Senior Consultant (Project coordinator)
William de Melo e Rita Costa, Monitoring Unit
Sabina Pereira, Communication and Knowledge Management Unit
Nuno Duarte, Policy, and Regulatory Impact Evaluation Unit

Review and layout

Communication and Knowledge Management Unit

Data provided by the Central Administration of the Health System IP

Index

Index of figures

Index of tables

Acronyms

ACSS – Administração Central do Sistema de Saúde IP (Central Administration of the Health System)

RHA – Regional Health Administration (Administração Regional de Saúde)

LVT – Lisboa e Vale do Tejo (Lisboa and Tagus Valley - RHA)

RHALVT – RHA of LVT

RHAN – Regional Health Administration of the North

HC – Hospital care

HCS – Hospital care sector

HCW – Healthcare Workforce

PHC – Primary healthcare

PHCS – Primary healthcare sector

CS – Central Services

CSS - Central Services Sector

FTE – Full-time Equivalent

GFM – General and Family Medicine (medical specialty)

MH – Ministry of Health

NP – Number of Professionals (head count)

NUTS – Nomenclatura das Unidades Territoriais para Fins Estatísticos (Nomenclature of Territorial Units for Statistical Purposes)

WHO – World Health Organization

NWP – Normal Working Period

pp – percentage points

HR – Human Resources

HRH – Human Resources for Health

RHV – *Recursos Humanos e Vencimentos* (NHS payroll information system)

NHS – National Health Service

SPMS – Serviços Partilhados do Ministério da Saúde EPE (Shared Services of the Ministry of Health)

1. Introduction

The National Health Service (NHS) is, within the Portuguese legal and political framework, the central component of the health system, with the private sector playing a complementary role.

The NHS offers a wide range of clinical services, from preventive care to rehabilitative or long-term care, including complex acute and hospital procedures. It is universal, comprehensive, and integrated, focused on the health of citizens.

Its professionals are, in this context, valuable and essential players, constituting the backbone of the health system. Their scarcity, unavailability, or unbalanced distribution across the territory and/or between the various types of public health care providers, has a direct negative impact on the operational efficiency of the health system, the quality of care, as well as on (un)fair access to care and health outcomes and, in general, on the well-being of the population.

Strategic healthcare workforce (HCW) planning always requires knowledge of the sociodemographic profiles and trends of the different groups of professionals. Therefore, meeting the challenge of properly assessing the characteristics, and monitoring the evolution, of NHS professionals is particularly important. However, this exercise is highly complex, with many countries facing difficulties in accurately assessing the health professionals available, even in systems that are not very fragmented in their provision, and especially if we evaluate them in full-time equivalents (FTE). And even greater difficulties are faced in targeting the volume and skills of health professionals needed.

In the context of the Portuguese NHS, improving the effectiveness of HCW management is essential to overcome some of the complex challenges it faces today, such as the scarcity of resources and the growing demand for clinical services, partly related to the marked ageing of our population, which translates into problems of access to healthcare, which are not equally present, or intense, in different regions of the territory.

This Note summarises, in English, a major study about the NHS health workforce, carried out by PLANAPP, and published in march 2024. The initial aim of the study, under Order no. 7985/2023 of 3 August, was to support the production of data for an analysis of the healthcare labour market in Portugal, in line with what the World Health Organization proposes, as a recommended first step in a strategic planning exercise for the HCW. The analysis of the healthcare labour market should make it possible to characterise the various dimensions and forces that condition the sector, taking a holistic view of it, as represented in **Figure 1**. In this sense, in addition to characterising and analysing the dynamics of the healthcare labour market (considering both the public and private sectors), it is also important to analyse education and training policies and the dynamics that characterise the development of human resources for health (HRH), as well as the economic and social context of territorial insertion.

Figure 1 – Framework for the analysis of HRH labor market (health systems with universal coverage)
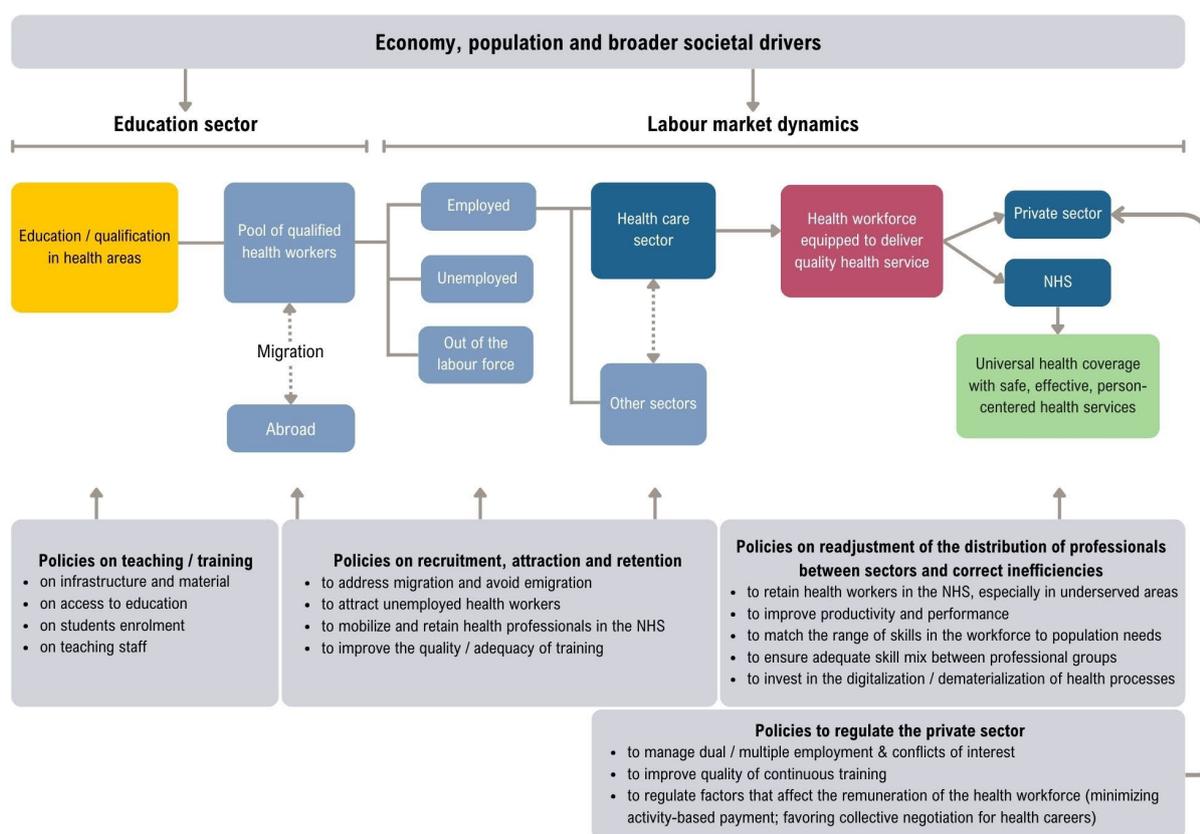
However, limitations of access to the potential universe of data needed, which covers other areas of governance (such as education and employment), as well as, in particular, data on the HCW of the private health sector – from which there is no systematized information on the respective human resources (HR) – , made it advisable to carry out an initial diagnosis of the situation of the labour market restricted to the NHS, based on the information available and accessible from the Central Administration of the Health System (ACSS), and focusing exclusively on professionals with permanent ties to the NHS as an illustration of the actual workforce working for the NHS in Portugal.

The study has therefore analysed the NHS workforce in mainland Portugal since 2010, updating and/or deepening the analysis of various areas of intervention and achieving the following objectives:

1. To detail the factors explaining the growth in NHS HR over the last 13 years.
2. To characterise NHS HR in detail, considering the variables of gender, age group, care sector[2] and region, in general and for each professional group, with special detail, in the case of doctors, by medical specialty.

---

[1] Adapted from figure S.2 (*Health labour market framework for universal health coverage*) in WHO (2021), p. xxiii.
[2] Care or productive sectors within the NHS are three: primary health care sector, hospital sector and central services sector. Long-term care is mainly sub-contracted, and its workforce is, in general, not employed directly by the NHS.

3. To assess the situation and evolution of the regional disparity in the distribution of NHS HR, especially by reference to the respective population.

4. Estimate the shortage of HR in the NHS using internal benchmarking between regions, considering data by sector and professional group, with a view to the desirable deepening of territorial cohesion.

The analysis and diagnosis are divided into two periods, 2010 to 2023, and 2017 to 2023, since in the period between 2010 and 2016 the quality and detail of the data provided by the Ministry of Health to PLANAPP is more limited and did not allow for the diversity of analysis possible from 2017 onwards. Data specifications and limitations are detailed in Annex 1 of the main study (available in Portuguese).

2. NHS healthcare workforce – overview (2010-2023)

The absolute number of professionals (head count - HC) in the NHS has increased consistently over the years under analysis, reflecting an overall expansion of the NHS workforce.

The average annual rate of change of NHS HR in the period 2010-2023 was around 1.7% per year, with 151,851 professionals working for the NHS in June 2023. However, the growth of the NHS's HC did not occur evenly between 2010 and 2023 and also reflects the legal decisions regarding the Normal Working Period (NWP) made during that period, as well as the effect of the COVID-19 pandemic between 2020/21, contrasting with a much more moderate rate of increase in the NHS's HR from then onwards.

The **general evolution of NHS HR** between 2010 and 2023 is shown in **Figure 2.**

The date of 31 December was taken as the reference for data extraction in all years except 2023, when 30 June was taken as the reference. The solidity and consistency of the data by **professional group** recommends considering only the professional groups of Doctors and Nurses, across the entire period.

Figure 2 – Evolution of the Number of Professionals in the NHS – Total and by selected professional groups, 2010-2023 (Head Count)
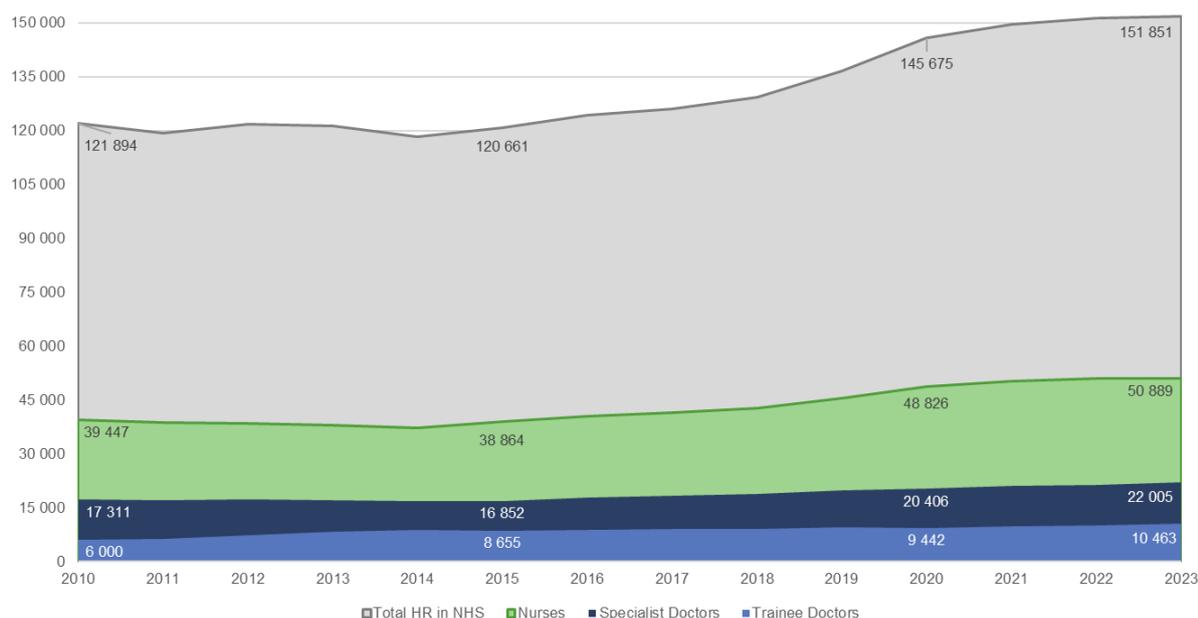
The period between 2010 and 2023 (1st half) includes several very different phases in terms of HRH management, especially with regard to the degree of restrictions on hiring new professionals, which were intense at the time of the Economic and Financial Assistance Program, or *Troika's* intervention[3], in Portugal, as well as the legal working hours in the NHS. In fact, the normal working period (NWP) varied

---

[3] Financial assistance to Portugal was formally provided based on a three-year policy programme for the period 2011 to mid-2014, although bilateral and multi-lateral contacts to design it began in 2010.

in legal terms throughout this period, which is reflected in the analysis of the growth rates summarised above. NWP was, firstly, expanded to 40 hours per week, at the beginning of the *Troika's* intervention. From 2016 onwards the NWP gradually returned to 35 hours per week, except for Doctors (group which kept 40 hours per week during the whole period analysed). However, the moment of change(s) in the NWP was not coincident for all the different professional groups of the NHS healthcare workforce.

Comparing the evolution of NP growth between Nurses, Trainee Doctors, and Specialist Doctors in absolute terms, the professional group of Nurses recorded the greatest growth in the period analysed (+11,442 nursing professionals in service). This growth was largely related to the replacement of FTEs, since the NWP returned to 35 hours in this specific group in mid-2016. In relative terms, the greatest growth occurred in the Trainee Doctors´ group (an increase of 74.8% between 2010 and 2023).

Concerning **regional cohesion analysis**, the NHS was, since its origin and during the period studied, territorially organized into five Regional Health Administrations (RHA): North, Center, Lisbon and Tagus Valley (LVT – *Lisboa e Vale do Tejo*), Alentejo and Algarve. The distribution of NHS health professionals between 2010 and 2023, it can be observed in **Figure 3**, showing that the growth in NHS NP numbers is common to all the five RHA, but with very different intensities.

Figure 3 – Total Number of NHS Professionals by Regional Health Administration, 2010-2023
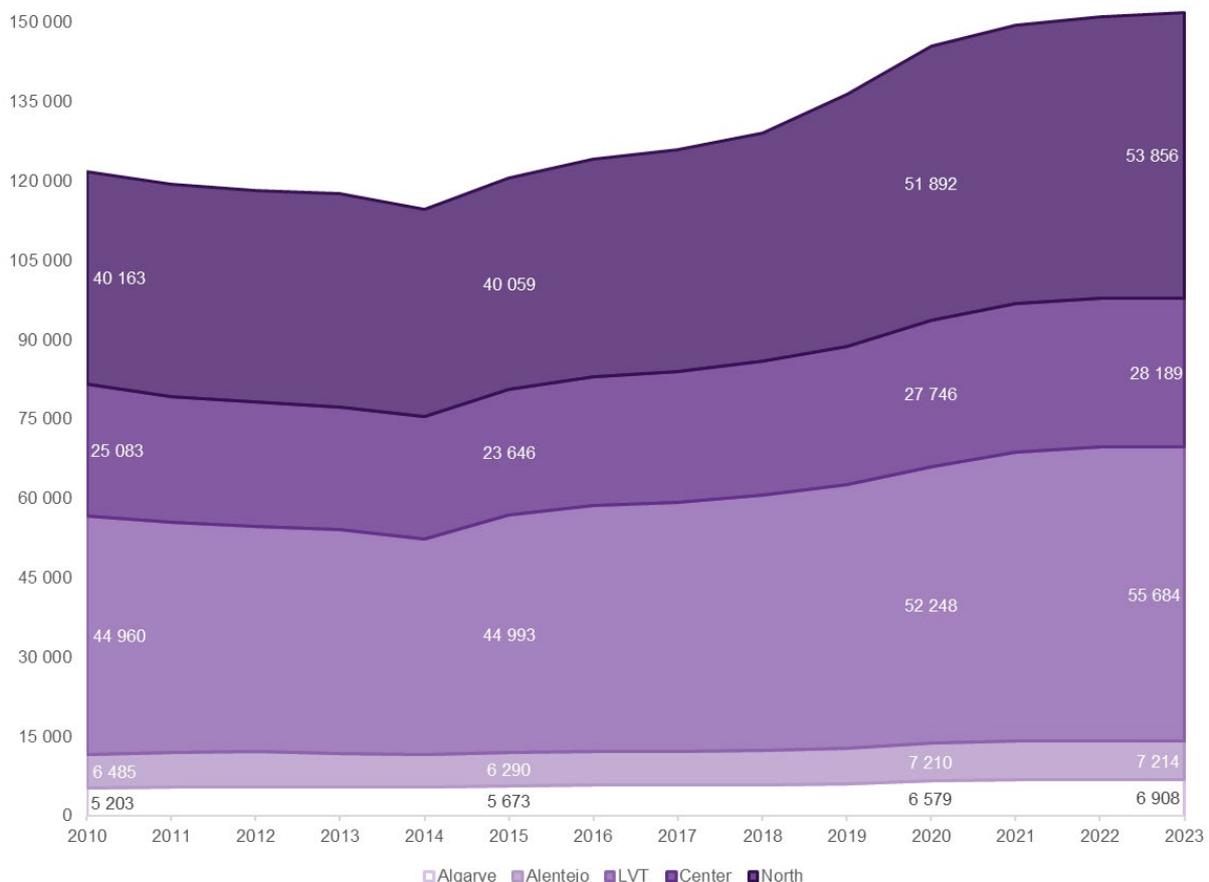
The structure of the NHS HCW per region is summarised in **Figure 4**, in 4 years.

Figure 4 – Percentage of NHS Professionals by Regional Health Administration, 2010-2023
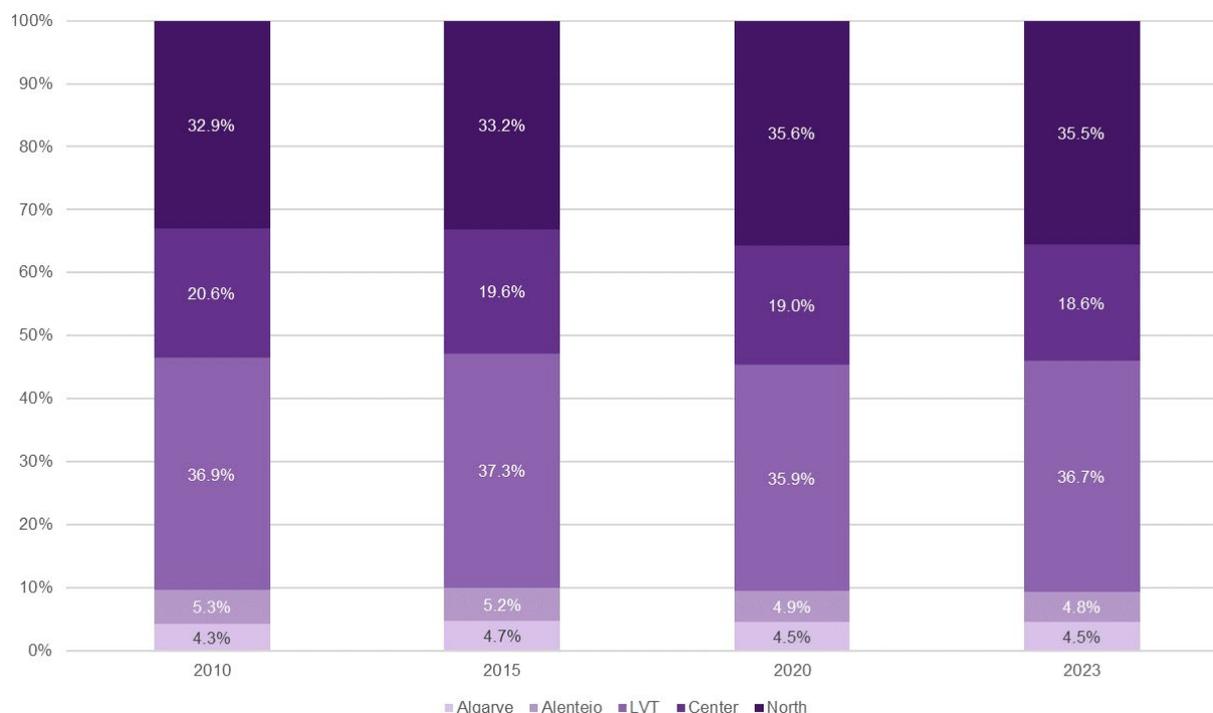
The LVT RHA (including professionals from the NHS Central Services, whose headquarters are located there, in spite of serving the whole country) has maintained a stable concentration of around a third of NHS professionals over the years. Only the RHA of the North has seen an increase in the relative weight of its HR in the NHS total, while the RHA of the Center and Alentejo have seen decreases. The RHA Algarve accounted for approximately 5% of HRH during this period.

Regional variations present particularities. Between 2010 and 2016, regions showed different patterns of evolution in the representation of professionals compared to the total NHS workforce. If current dynamics persist, in four years, RHA of the North is expected to surpass RHA of LVT[4] in terms of their respective share of the NHS workforce participation.

In terms of an analysis of the gender and age group of NHS HCW, it can be seen, on the one hand, that female representation in the NHS workforce gradually increased between 2010 and 2023 (females represent around 76% at the start of the period and 78% at the end), as shown in **Figure 5**.

---

[4] Even including professionals from the Central Services at RHA of LVT.

Figure 5 – Percentage of NHS Professionals by Gender, 2010-2023
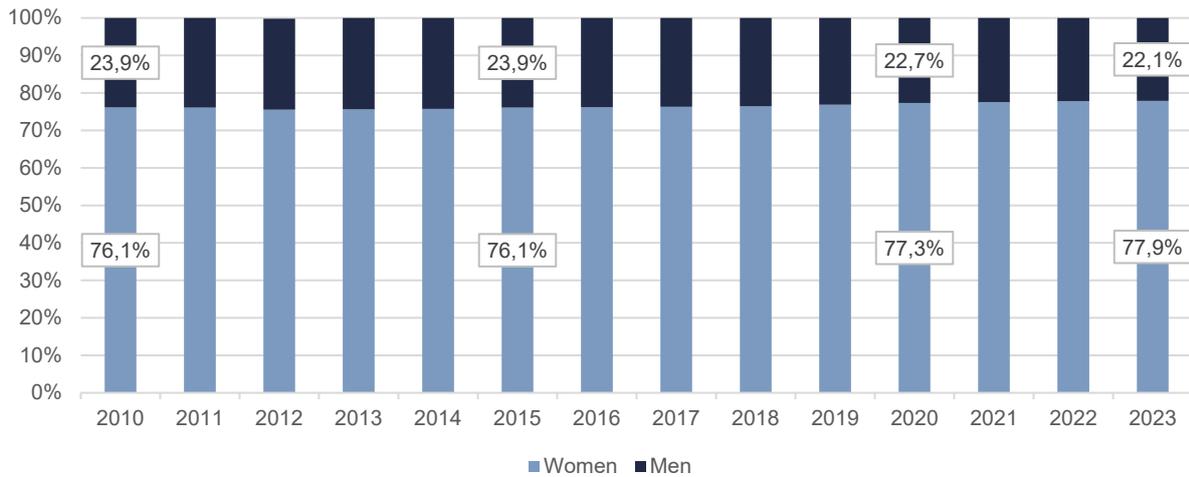
On average, the feminisation rate of the NHS increased by about 0.14 percentage points (pp) per year. The observed trend in gender demographics in the health sector reflects a deepening of the historical trend, with women making up an increasingly larger proportion of the NHS workforce over the period, and markedly above the proportion of women in the total active population in Portugal[5].

On the other hand, data presented on **Figure 6**, shows the NHS workforce has aged consistently and significantly (professionals over the age of 45 go from around 42% in 2010 to over 50% of the total NHS in 2023).

Figure 6 – Percentage of Professionals in the NHS by Age, 2010-2023

---
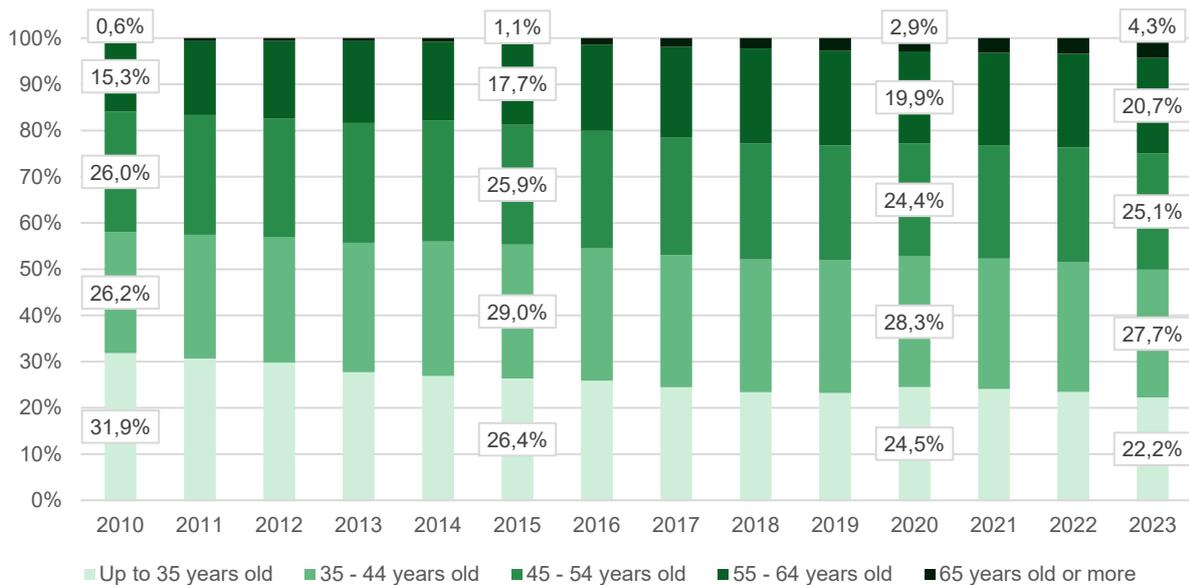
[5] In 2023, the percentage of women in the active population in Portugal was about 49.9% (data from INE and Pordata, consulted at: https://www.pordata.pt/en/portugal/labour+force+total+and+by+sex-28).

While the increase in the feminization rate poses major challenges, especially with respect to gender policies and policies for reconciling work and family life, the ageing of the workforce is a greater challenge and is very worrying for the sustainability of the NHS in the medium term.

3. NHS healthcare workforce – detailed evolution and characteristics (2017-2023)

Regarding the **more detailed evolution of NHS Human Resources** in the period restricted to the last 7 years - between 2017 and 2023[6] - it should be remembered that only for this shorter period was it possible to analyse NHS HR measured in Full-time Equivalent (FTE), compared to the evolution in Number of Professionals (NP). Counting professionals weighted by the FTE metric, instead of only counting the NP, allows the analysis to correspond more accurately to the reality in terms of working time available in the NHS, and is indispensable for international comparisons or benchmarking.

Between 2017 and 2023, the NP grew consistently, at an average annual rate of around 3.2%, higher than that which had been calculated globally for the long period from 2010 to 2023, and which included the years of the Economic and Financial Assistance Program (*Troika's* intervention), which contrasts, in the most recent period, with the strong growth recorded during the COVID-19 pandemic, as shown in **Figure 7.**

Figure 7 – Number of Professionals (Head Count) and Full-Time Equivalents in the NHS, 2017-2023
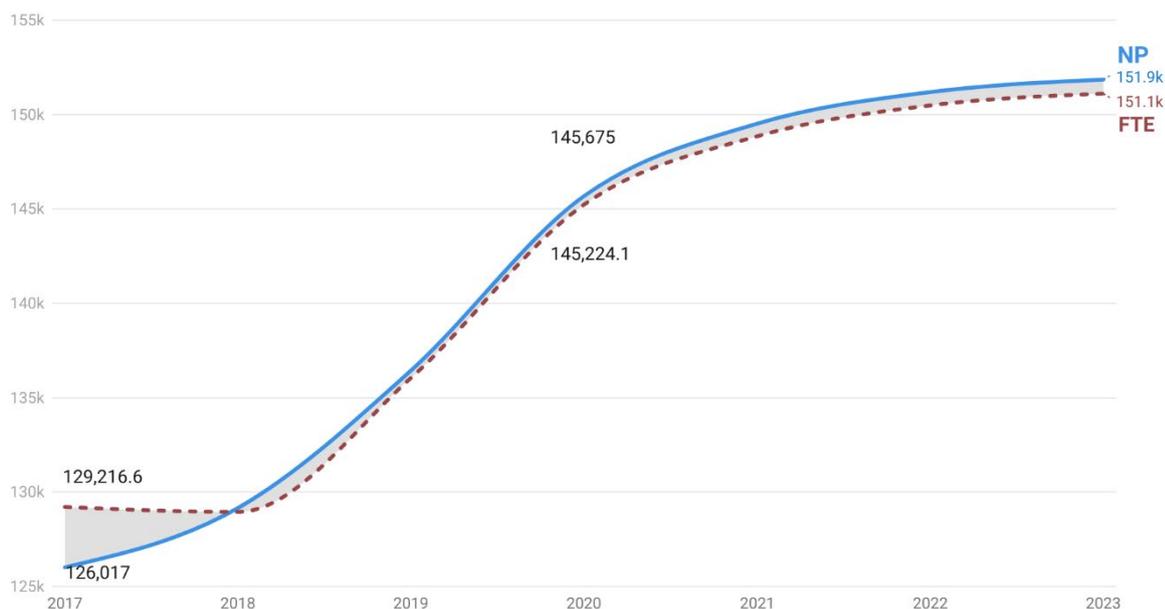
At the same time, the FTE workforce also grew, but with a lower annual average of approximately 2.6%, showing a growing trend towards contracts with hours below the NWP for the average workforce. These growths were not uniform, with 2019 and 2020 standing out as having the highest growth rates, while 2022 and 2023 saw a slowdown.

---

[6] It should be remembered that the data for 2023 refers to June, while for all the other years it refers to December.

An analysis of the variation in FTE by professional group (**Figure 8**) shows that all professional groups, except for Specialist Doctors, have FTE and NP values that are close to each other, which means that, in the Portuguese NHS, most professionals have contracts of 35 hours per week and do not opt for part-time hours' contracts.

Figure 8 – FTE as % of NP, by professional group (2017-2023)

Values expressed in % of NP
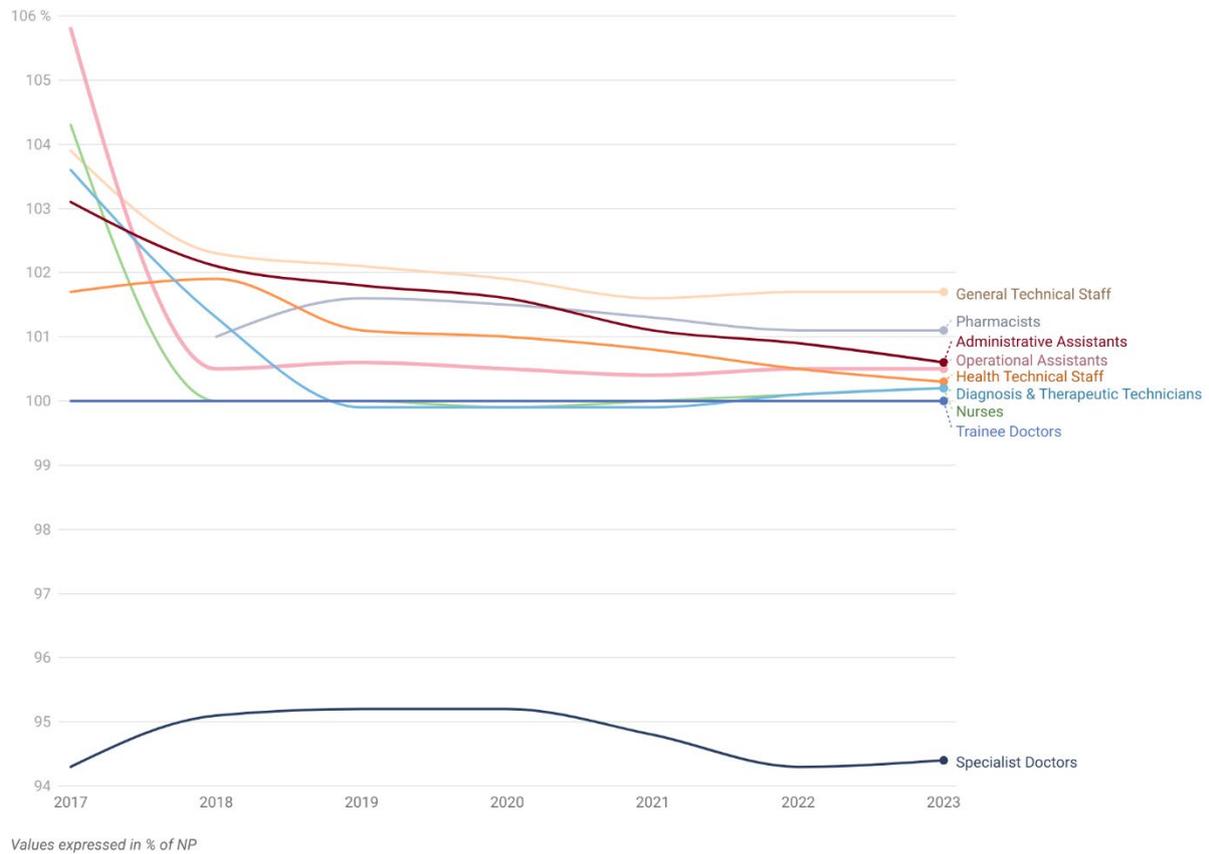
However, in the case of Specialist Doctors (whose NWP remains at 40 hours a week and not 35), the ratio of FTE to NP is 96%[7], meaning that the medical working hours practiced are, on average, lower than the reference PNT (40 hours), although, on average, higher than the reference PNT for all other professional groups (35 hours).

Finally, regarding the breakdown by group of the total number of FTE professionals in the NHS over the years 2017 to 2023, data presented in **Figure 9** shows there is a generally consistent upward trend in all professional groups, although more marked in the case of Diagnosis and Therapeutic Technicians.

---

[7] See Figure 10. As of June 2023, specialist doctors in the NHS work an average of 37.8 hours a week.

Figure 9 – FTE by professional group (2017-2023)
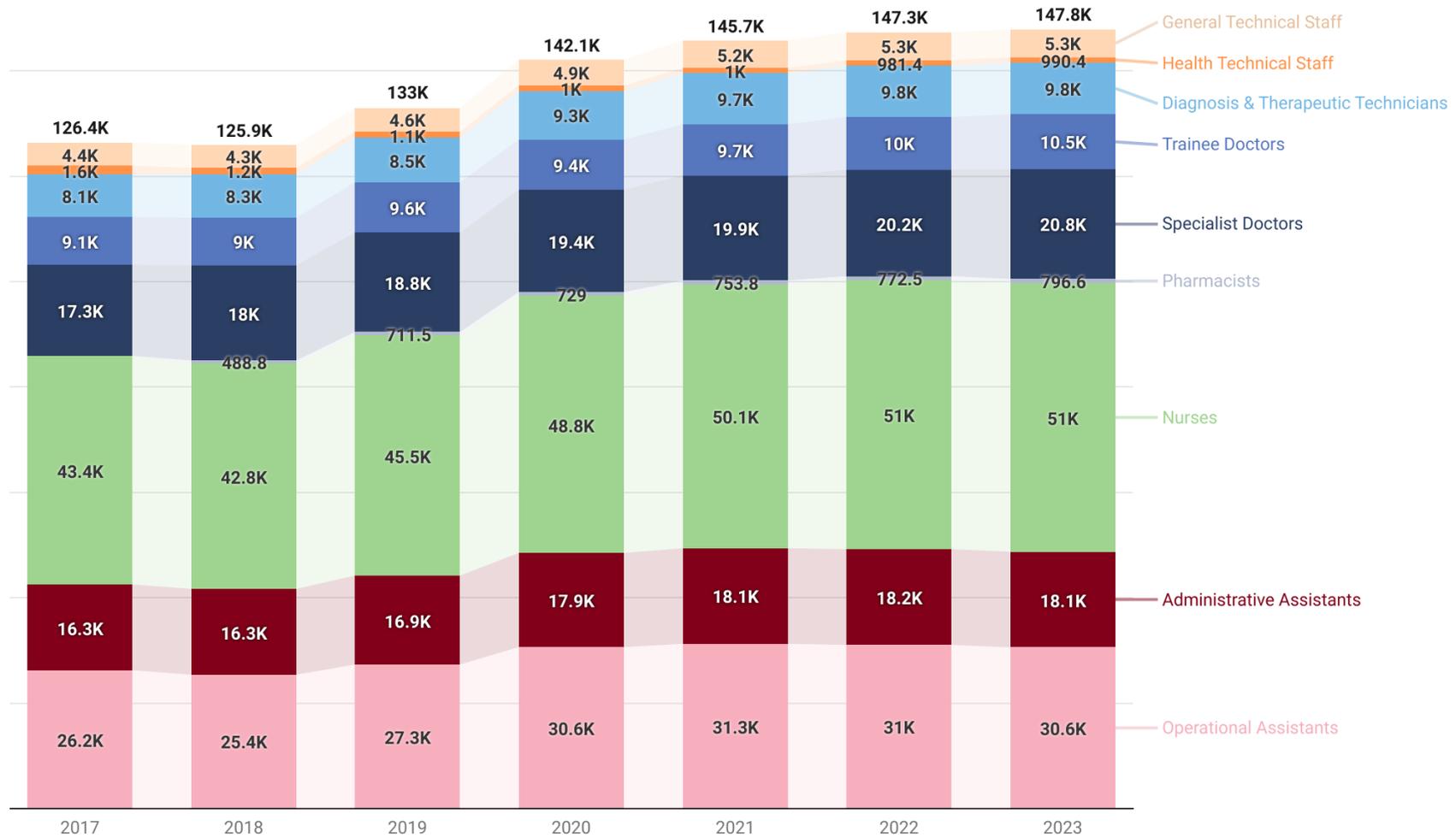
In the case of **the evolution of NHS HR assessed in FTE, by RHA**, data also shows that the growth in FTE values is common to all RHA, but with very different intensities, highlighting the more intense relative increase in NHS HR in the RHA of the North, the only one whose weight increases in the structure of NHS HR by region in the period considered. This is summarised in **Figure 10**.

Figure 10 – FTE by Regional Health Administration – (2017-2023) in total value and %
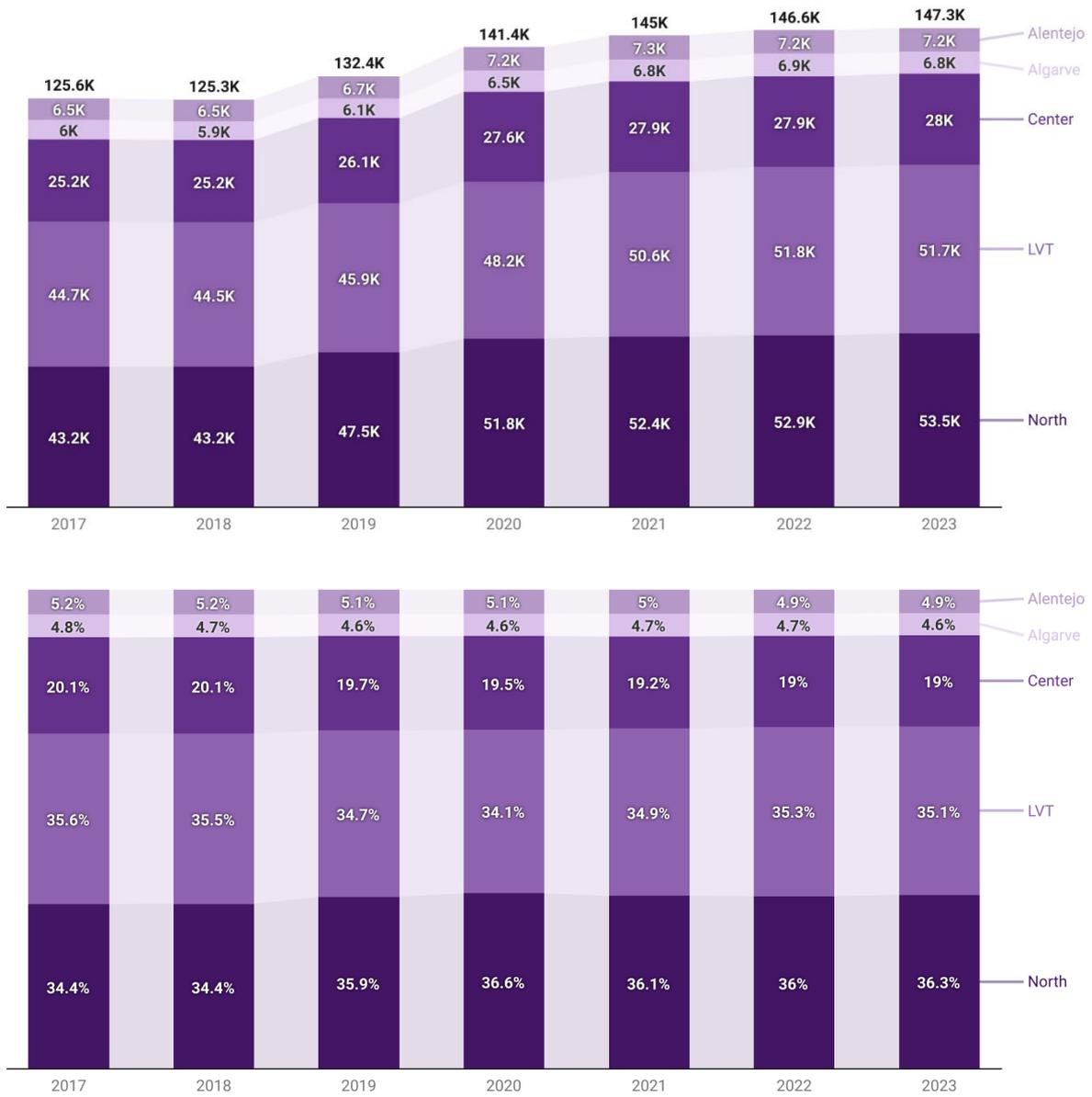
In terms of the **analysis of NHS HCW by productive sector**, available data is summarised in **Figure 11**.

Figure 11 – FTE by Sector – (2017-2023) in total value and %
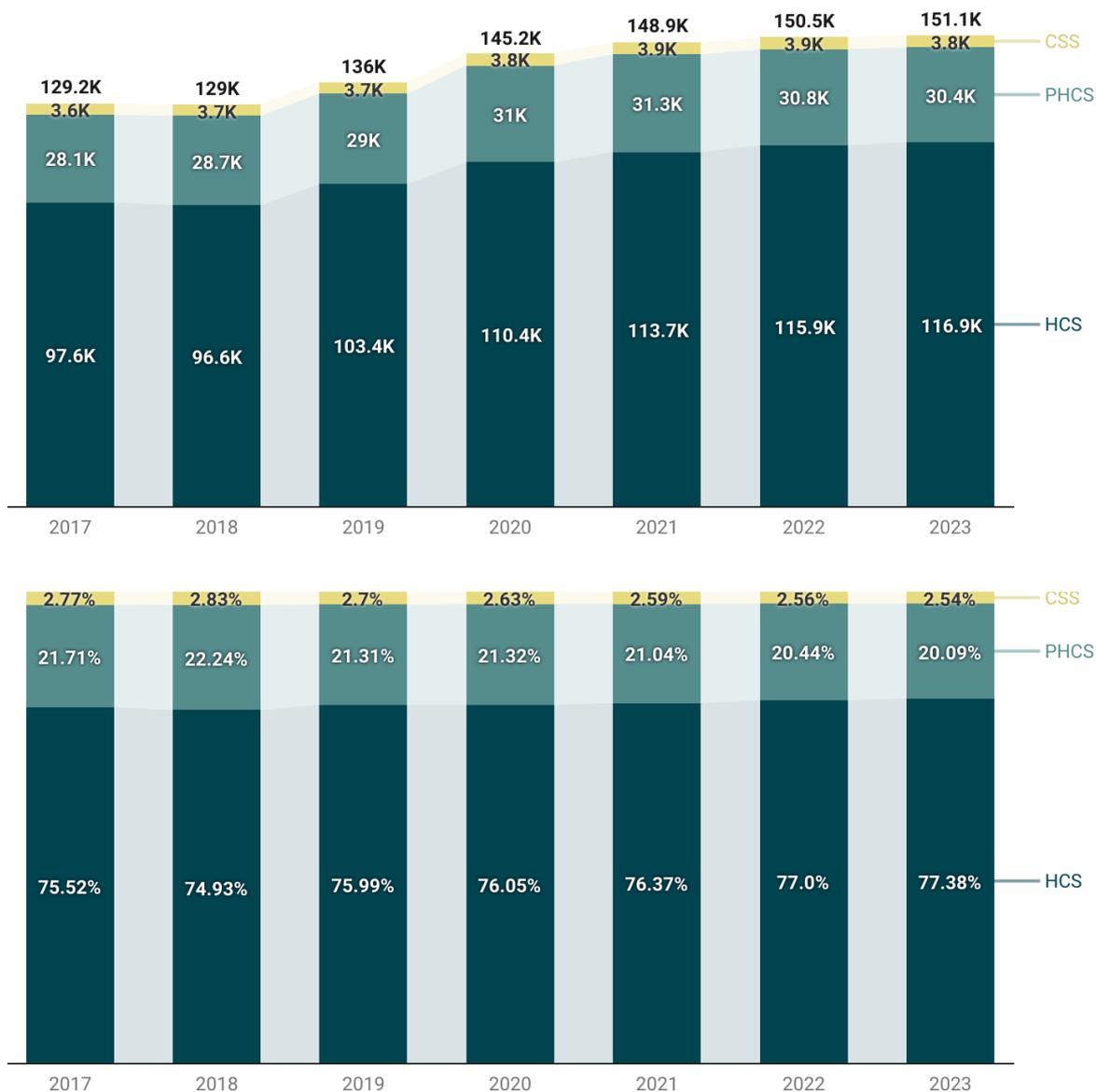
NHS Hospitals' HR are the most representative, with the hospital sector employing around three out of every four NHS professionals. The Central Services Sector (CSS) shows a stable weight in terms of the percentage of NHS HR it employs, but has, nevertheless, decreased its weight by an average of -0.04 pp per year. The average change in HR in Hospital Care (HC) over the period was an increase of around 0.31 percentage points (pp) per year in its representativeness, while in Primary Healthcare (PHC) there was an average decrease of around 0.27 pp per year in its weight in the structure of HRH, showing a trend of gradual strengthening of the allocation of human resources to the hospital care sector of the NHS, which in turn raises questions about the effective centrality of PHC in relation to what is considered desirable in terms of national health policy.

Finally, it is useful to summarise the **main (more frequent) features of the "typical" NHS professional**, and its evolution, as shown in **Figure 12**.

Figure 12 – Predominant professional profile in the NHS (2017 and 2023)
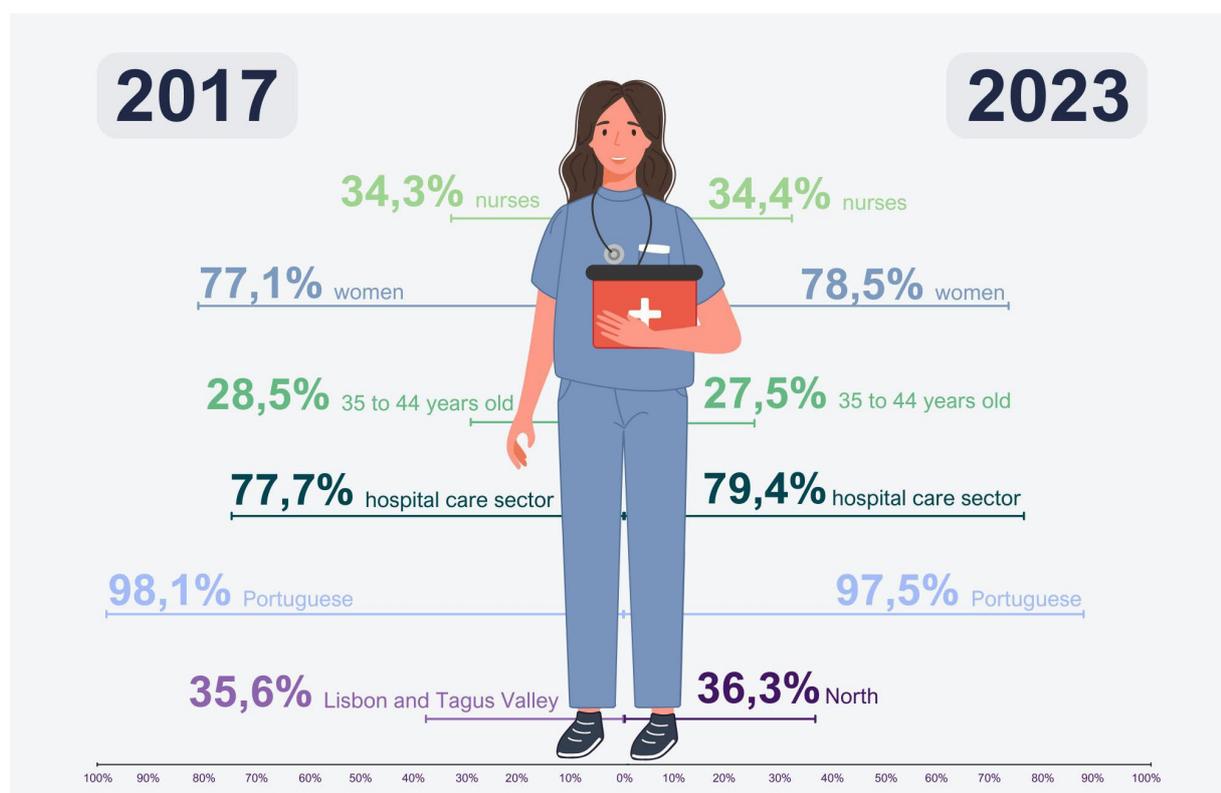
Gender analysis by professional group shows that NHS professionals are predominantly women: the feminization rate is always over 60% in any professional group and, if we exclude doctors (trainees and specialists), it is always over 75% in the various years under analysis. The professional group with the highest feminization rate is Pharmacists. In general, the feminization rate remains stable in most professional groups, except in the Specialist Doctors group, where there is an increase (close to five percentage points between 2017 and 2023).

With regard to age structure, it can be seen that most of the professional groups have tended to age over the period, specifically the Nurses, Diagnosis and Therapeutic Technicians, Health Technical Staff, General Technical Staff, and Administrative Assistants' groups, while the Pharmacists and Operational Assistants have a stable age structure and, in the case of Specialist Doctors, there is, against this trend, some rejuvenation with a greater relative representation of younger age groups at the end of the period (the group of younger Specialist Doctors, aged up to 44, grew by 13.5 pp over the period). However, in this group, there are movements in the opposite direction: on the one hand, the participation of professionals aged over 65 grew by 5.7 pp in the period under analysis, but there was a sharp decline of representation of doctors aged between 45 and 64 in the period.

In terms of nationality, the representation of foreign professionals in the NHS workforce remains low, with only a slight increase observed during the period in question. The professional groups with the highest representation of non-Portuguese professionals in FTEs, in 2023, are Operational Assistants (4.7% of

the total) and Specialist Doctors (4.6%). It is the marked increase in the percentage of foreign workers in the professional group of Operational Assistants (the one that requires the least qualifications and earns the lowest salaries), from 1.7% in 2017 to 4.7% at the end of the first half of 2023, that explains its proportional growth in the NHS over this period.

In summary, the predominant professional profile in the NHS is a woman of Portuguese nationality, working in hospital care as a nurse, assigned to the RHA of the North and aged between 35 and 44 (with average age increasing over the period).

4. NHS medical workforce – some insights (2017-2023)

Given the richness of the information available on the Specialist Doctors' professional group for the period 2017 to 2023, including detailed data by medical specialty, it was possible to deepen the analysis of this professional group.

A first aspect worth highlighting was the **analysis of the ratio of Trainee Doctors to Specialist Doctors**, given that Specialist Doctors are largely responsible for the training of the former, and that, in addition to this, specialists must carry out their normal clinical activity, so it is desirable that the value of the trainee / specialist ratio (in FTE) is not too high. However, for the period analysed (2017-2023) and for the country as a whole, the ratio between Trainees and Specialists has generally remained high and with little variation over the years, with an average ratio of around "half" a trainee for every specialist (measured in FTE), as shown in **Figure 13**. Nonetheless, there are differences in the ratio of these professional groups when we analyse the different regions and productive sectors. As a rule, the ratio is higher (unfavourable) in the HCS than in the PHCS. In 2023, in the case of Hospital care, the most critical ratio between Trainees and Specialists is in the RHA of Algarve, while in the case of PHC, the RHA with the highest (worse) ratio is LVT.

Figure 13 – Ratio of Trainee Doctors to Specialist Doctors – Total HC and PHC (without CS), 2017-2023

Total (PHCS+HCS)

Year	Alentejo	Algarve	Center	LVT	North	Total
2017	0.42	0.48	0.51	0.56	0.52	0.53
2018	0.43	0.48	0.49	0.54	0.49	0.50
2019	0.43	0.51	0.50	0.55	0.49	0.51
2020	0.44	0.47	0.49	0.52	0.47	0.49
2021	0.43	0.50	0.49	0.54	0.46	0.49
2022	0.46	0.55	0.51	0.55	0.45	0.50
2023	0.42	0.58	0.52	0.54	0.47	0.50

Hospital care sector

Year	Alentejo	Algarve	Center	LVT	North	Total
2017	0.52	0.56	0.61	0.65	0.57	0.60
2018	0.55	0.59	0.55	0.63	0.54	0.57
2019	0.56	0.66	0.57	0.64	0.54	0.59
2020	0.56	0.62	0.56	0.60	0.52	0.56
2021	0.52	0.67	0.55	0.61	0.50	0.56
2022	0.53	0.74	0.57	0.60	0.49	0.55
2023	0.48	0.81	0.58	0.59	0.51	0.56

Primary healthcare sector

Year	Alentejo	Algarve	Center	LVT	North	Total
2017	0.28	0.33	0.33	0.36	0.41	0.37
2018	0.27	0.30	0.35	0.36	0.38	0.36
2019	0.24	0.27	0.34	0.35	0.37	0.35
2020	0.25	0.23	0.34	0.34	0.35	0.33
2021	0.30	0.22	0.35	0.37	0.35	0.34
2022	0.36	0.24	0.37	0.40	0.35	0.37
2023	0.31	0.24	0.39	0.40	0.37	0.37

Given the high value of the ratio in some cases and considering the evolution of the age structure of the group of Specialist Doctors mentioned earlier, it seems that there may be some risk of disruption in medical capacity advanced training, or serious impacts on its quality, unless we somehow manage to increase the number of Specialists in the NHS and reduce these ratios. This could possibly be achieved by improving the retention of senior doctors, by (voluntarily) extending their working hours[8], and/or by

---

[8] It should be noted, however, that the reference NWP for Doctors remained at 40 hours a week during the period, which is therefore higher than that of the other professional groups in the NHS (35 hours), so this route would probably not be the most effective.

increasing the hiring/retention of the NHS specialist senior doctors who may also be working in, or exclusively, in the private sector.

Regarding the evolution of Specialist Doctors' FTEs by productive sector, region, and medical specialty, there has been modest growth in the FTEs of specialists working in PHCS, with an average annual growth rate of only 0.8% (Figure 14). This growth is still quite uneven across RHAs, with a clear concentration of PHC specialists in the RHA of the North.

Figure 14 – Specialist Doctors by sector and RHA, 2023 (%)

	North	Centro	LVT	Alentejo	Algarve	Total
HCS	41.5%	17.7%	34.9%	2.9%	3.0%	100.0%
PHCS	40.1%	19.1%	31.9%	4.1%	4.9%	100.0%
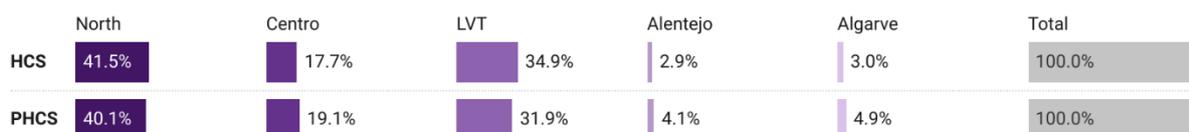
Detailed data on the medical workforce *per* productive sector is presented in **Tables 1 and 2**.

The most significant medical specialty in PHC (**Table 1**) is General and Family Medicine (GFM), which accounted for 91.5% of the FTEs of PHC specialists in June 2023, followed by Public Health, with 6% of the total FTEs in this productive sector.

Table 1 – Specialist Doctors in FTE from the PHC sector of the NHS (June 2023) by medical specialty (total FTE and %)

	Medical Specialty	FTE	FTE (Cum.Freq)	FTE (%)	FTE (%Cum.Freq)
1	General and Family Medicine	5.5K	5,517	91.5%	91.5%
2	Public health	360.4	5,877	6.0%	97.4%
3	Others	155.4	6,032	2.6%	100.0%

In the HC sector (**Table 2**), where there is typically a greater diversity of specialties, almost half of the specialists are concentrated in just six specialties (Internal Medicine, Paediatrics, Anaesthesiology, General Surgery, Obstetrics/Gynaecology and Orthopaedics). In this care sector of the NHS, the average annual growth between 2017 and 2023 in the number of specialist doctors was 4.2%, much higher than in PHC, but also very uneven between RHA, ranging from 0.5% average annual growth in the Algarve to 6.2% average annual growth in the North.

Table 2 – Specialist Doctors in FTE from the HC sector of the NHS (June 2023) by medical specialty
(total FTE and %)

	Medical specialty	FTE	FTE (Cum.Freq)	FTE (%)	FTE (% Cum. Freq.)
	Total	**14 683,60**		**100,00%**	
1	Internal medicine	2.2K	2.2K	14.8%	14.8%
2	Paediatrics	1.3K	3.4K	8.7%	23.5%
3	Anaesthetics	1.3K	4.7K	8.6%	32.1%
4	General surgery	1.1K	5.8K	7.2%	39.3%
5	Obstetrics and Gynaecology	745.2	6.5K	5.1%	44.3%
6	Trauma and Orthopaedics	614.2	7.1K	4.2%	48.5%
7	Psychiatry	580.9	7.7K	4.0%	52.5%
8	Cardiology	508.8	8.2K	3.5%	55.9%
9	Respiratory Medicine	448.2	8.7K	3.1%	59.0%
10	Clinical pathology	400.8	9.1K	2.7%	61.7%
11	Ophthalmology	400.2	9.5K	2.7%	64.5%
12	Neurology	362	9.8K	2.5%	66.9%
13	Radiology	337.7	10.2K	2.3%	69.2%
14	Otorhinolaryngology	307	10.5K	2.1%	71.3%
15	Gastro-enterology	295.2	10.8K	2.0%	73.3%
16	Renal Medicine	293.6	11.1K	2.0%	75.3%
17	Medical Oncology	284.5	11.3K	1.9%	77.3%
18	Rehabilitation Medicine	238.7	11.6K	1.6%	78.9%
19	Urology	210.9	11.8K	1.4%	80.3%
20	Immunohemotherapy	202	12K	1.4%	81.7%
21	Haematology	192	12.2K	1.3%	83.0%
22	Infectious diseases	184.3	12.4K	1.3%	84.3%
23	Intensive Care Medicine	183.4	12.6K	1.2%	85.5%
24	Endocrinology and Diabetes	163.3	12.7K	1.1%	86.6%
25	Anatomical pathology	162.8	12.9K	1.1%	87.7%

Additional 23 rows not shown.

Only Medical specialties with FTE (%) greater than 1% are displayed

In June 2023, 42% of the total number of FTE hospital specialists in the NHS worked in hospitals of the RHA of the North, by far the most representative in terms of concentration of medical HR. The RHA of the North clearly stands out from the others in this period, increasingly concentrating medical specialists, and it is important for public policy, elsewhere, to delve into the reasons for this fact, which may be related to greater training capacity (and, thus, greater availability of trained specialists to hire), greater volume of authorizations/vacancies for hiring granted by the government, and/or the greater attractiveness of NHS entities in this region compared to the offers that the same specialists receive from the private sector, especially in other regions of Portugal, among other possible explanatory factors, including the high cost of housing in the LVT region, or in Algarve, which discourages professionals from settling, especially at the start of their careers.

On the other hand, the **patterns of variation in FTE by medical specialty** over the period proved to be very different, by sector and by RHA.

In the case of the HCS, the 6 most prevalent medical specialties show considerable regional disparities in their growth (including decreases in some cases and RHA), but always a stronger growth in FTE in the RHA of the North. A medical specialty list by RHA can be consulted in the **Annex**.

In general, the so-called transversal specialties, such as anaesthesiology, radiology or pathological anatomy, have seen less intense growth than the average growth of FTE specialists at national level over the period, which indicates changes in the relative balance of clinical team work which, by nature, involves several medical specialties, and in all of them, regional inequalities in the distribution of doctors by RHA tend to be accentuated over recent years.

Of particular concern are the areas of mental health and maternal and child health. In mental health (FTE data in June 2023), the concentration of Psychiatry and Child and Adolescent Psychiatry specialists (together) almost exclusively (92.2%) in the HCS, and very sparsely (7.2%) in the PHCS, discourages access to these medical areas on a community basis, as these specialists are almost absent from primary healthcare[9].

In the field of maternal and child health, which includes Obstetrics/Gynaecology and Paediatrics, the growth of the respective FTEs over the period is below the national average, and/or is also exacerbating the disparities in the distribution of these specialists in the territory over the period.

As for the evolution of the number of FTE specialists and their distribution by **medical career category**, as can be seen in **Figure 15**, there was a marked increase in the number of Assistants over the period, but a stagnation in the number of Graduate Assistants and a reduction in the number of Senior Graduate Assistants, implying marked changes in the structure of the distribution of Specialist Doctors by professional category (with the basic initial category of Assistant gaining enormous representation in the structure).

Once again, these aspects are not uniform, especially in their intensity, by productive sector and by RHA, with comparative changes being stronger in the PHCS than in the HCS.

---

[9] Even in RHA where medical specialists in the field of mental health are present in the PHCS, there are great disparities, both in the distribution between regions (the RHA oh the North concentrates 44.1% of all NHS psychiatrists assigned to the PHC in June 2023) and in the evolution throughout this period.

Figure 15 – FTE doctors by medical career category (2017-2023)
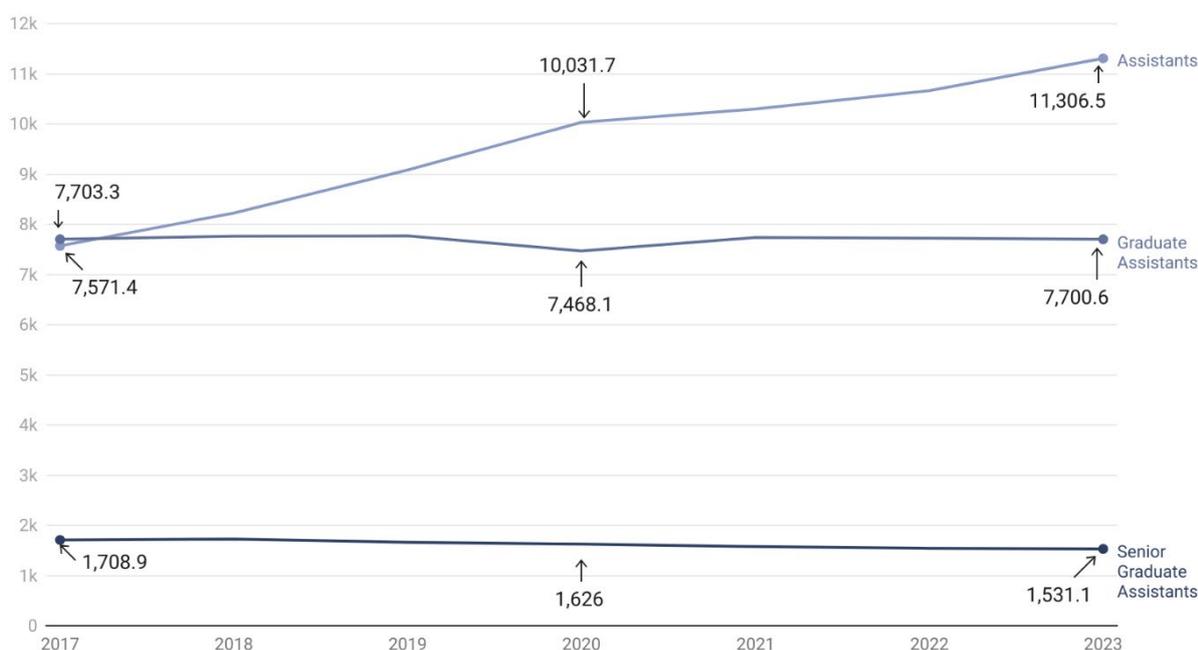
By RHA, in general terms, data showed that the number of physician assistants is growing in all regions, but, in line with what has already been established, significantly more so in the RHA of the North. This evolution is directly related to at least two established facts: on one hand, there has been a relative rejuvenation of the group of Specialist Doctors, and on the other hand, the marked increase in the hiring of (young) doctors, especially during the pandemic, has contributed to the overall increase in FTE doctors, both in the PHCS and in the HCS.

On the other hand, the evolution of FTE doctors by category raises relevant questions that deserve further investigation, whether related to the pace (and possible obstacles) to the "natural" progression of specialists in the medical career, which seems to be slower (or more difficult) than the evolution of the age structure would suggest, or related to the possible abandonment of the NHS by specialists in the middle positions in the career and/or ages around 40-55, possibly due to working conditions and the relative attractiveness of the private sector.

The ratio between FTE and NP in the medical workforce is also not stable over the course of a medical career. A tendency was detected for Specialist Doctors to be more likely to request a reduction in their working hours as they progress up the career ladder. In 2023, the FTE per NP ratio decreases from 95.8 in the Assistant doctor category to 92.6 in the Senior Graduate Assistant category, which corresponds to a 3.34% reduction in available hours compared to the NWP of 40 hours.

By specialty, we highlight the problem arising from the fact that, in specialties of "high volume" and centrality to the NHS, such as General and Family Medicine in PHC, and, in HC, Internal Medicine, Anesthesiology, Obstetrics/Gynaecology, Paediatrics, Orthopaedics or Psychiatry – in all of them – there was a reduction in the FTE of Senior Graduate Assistants between December 2017 and June 2023. The

same is true regarding support specialties that are essential to medical teamwork, such as Radiology, Clinical Pathology, Pathological Anatomy or Nuclear Medicine.

5. NHS healthcare workforce – overview of regional disparities (2017-2022)

The context of a clear increase, in recent years, in regional disparities in the distribution of Specialist Doctors (FTE) in the Portuguese NHS was finally detailed in the light of the distribution of the population in the territory and extended to the various professional groups.

In fact, the data analysed regarding NHS professionals showed, clearly, that there is no homogeneous "national reality", but rather a very diverse set of sociodemographic and local/regional realities, when we segment productive sectors of the NHS, professional groups, or medical specialties within the medical profession, per region.

Therefore, a detailed analysis of the (diverse) causes of this diagnosis is necessary, for the effective design and customization of public policy measures suited to the various realities. One size does not fit all.

As for the density of NHS HR in the territory, considering the borders of each Regional Health Administration, a first point to note is that the distribution of the resident population by RHA, as represented in **Figure 16**, remained relatively stable between 2017 and 2022[10], despite the existence of significant changes in regional disparities related to the distribution of NHS HR in the territory.

---

[10] At the time the Study was produced, population data for June 2023 was not available, so we considered data from December 2022.

Figure 16 – Resident Population per RHA, 2017 and 2022 (%)[11]
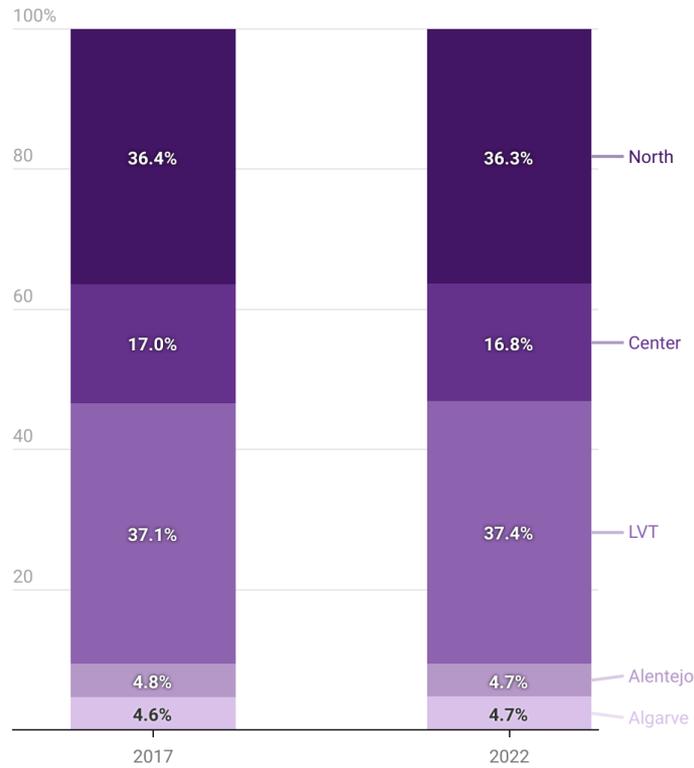
In the population-based analysis, only the PHC and HC sectors were considered, i.e. NHS professionals providing direct health care, thus excluding Central Services.

As depicted in **Figure 17**, there has been a (favourable) general increase in the density of NHS HR per 1,000 inhabitants (‰) in the five RHA, but this ratio has stabilized (or even decreased) in the last two years. There is a slight relative reduction in the overall disparities between the five regions (less deviation from the national average density in 2022 than in 2017) but underlying very different growth dynamics in the density of HRH by RHA, which vary by professional group.

---

[11] Source: Statistics Portugal, Annual estimates of resident population

Figure 17 – NHS professionals / 1,000 residents per RHA (‰) (2017-2022)
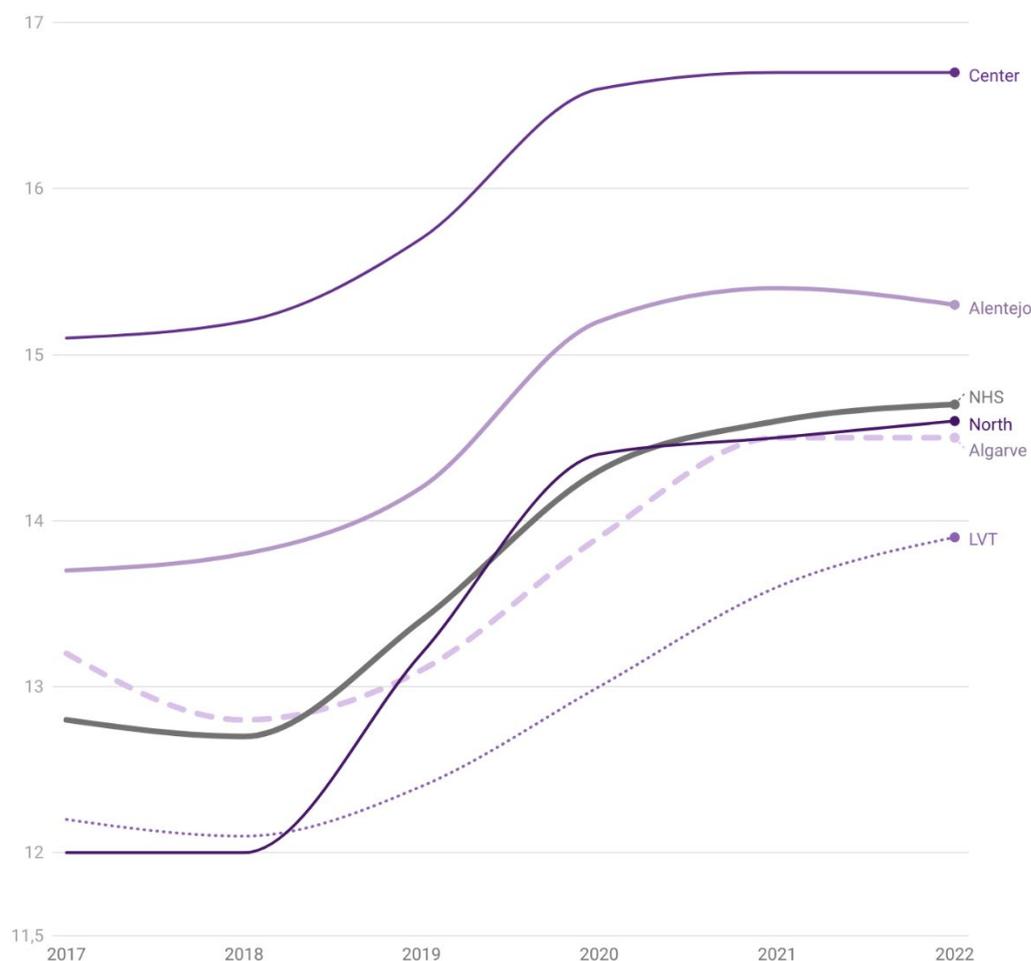
The RHA with the highest ratio of NHS professionals per thousand inhabitants is RHA of the Center, throughout the period analysed. The RHA of the North showed the greatest positive variation over this period, with an average annual increase of 3.9% in the density of HRH in relation to the population. In RHA of LVT, the region with the highest percentage of residents in the country, it can be seen that, unlike the North and Center, the density of NHS HR has been the lowest in the country since 2019. Despite growth in this density over the period, it was still insufficient for this RHA to reach the levels that, for example, RHA of the Center and RHA Alentejo had already reached in 2017, or that the RHA of the North and RHA Algarve reached before 2020. By the end of the period, the RHA of LVT is approximately two years behind the worst situation in all other regions, in terms of the number of health professionals relative to the population served by the NHS entities.

By care sector, **Figures 18 and 19** disaggregate the situation and evolution of NHS HRH densities (in ‰), in primary health care and in hospital care.

Figure 18 – NHS professionals / 1,000 residents per RHA in PHC (‰) (2017-2022)
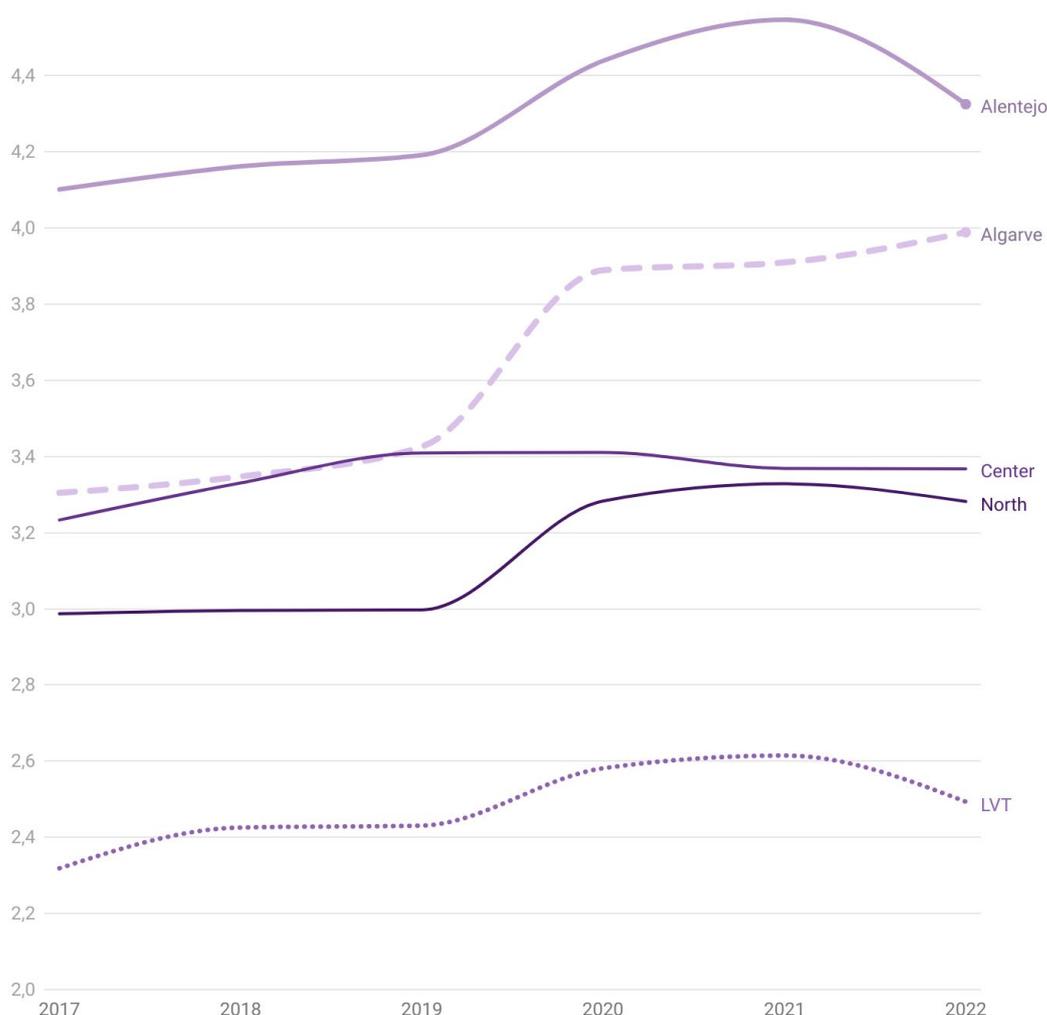
In PHC, the density of professionals in relation to the resident population grew in all RHA, but at different rates (more marked in RHA of the North), and the regional disparities in HRH density worsened over the period, unlike what we found for the aggregate NHS. The RHA Alentejo has the highest density of HRH in relation to the population; on the other hand, LVT is the most disadvantaged health region in terms of the number of NHS professionals available in PHC in relation to the resident population. Despite the growth in the density of HRH in PHC across all the five RHA, the growth occurred at different rates, with the most intense increase in the RHA of the North.

Figure 19 – NHS professionals / 1,000 residents per RHA in HC (‰) (2017-2022)
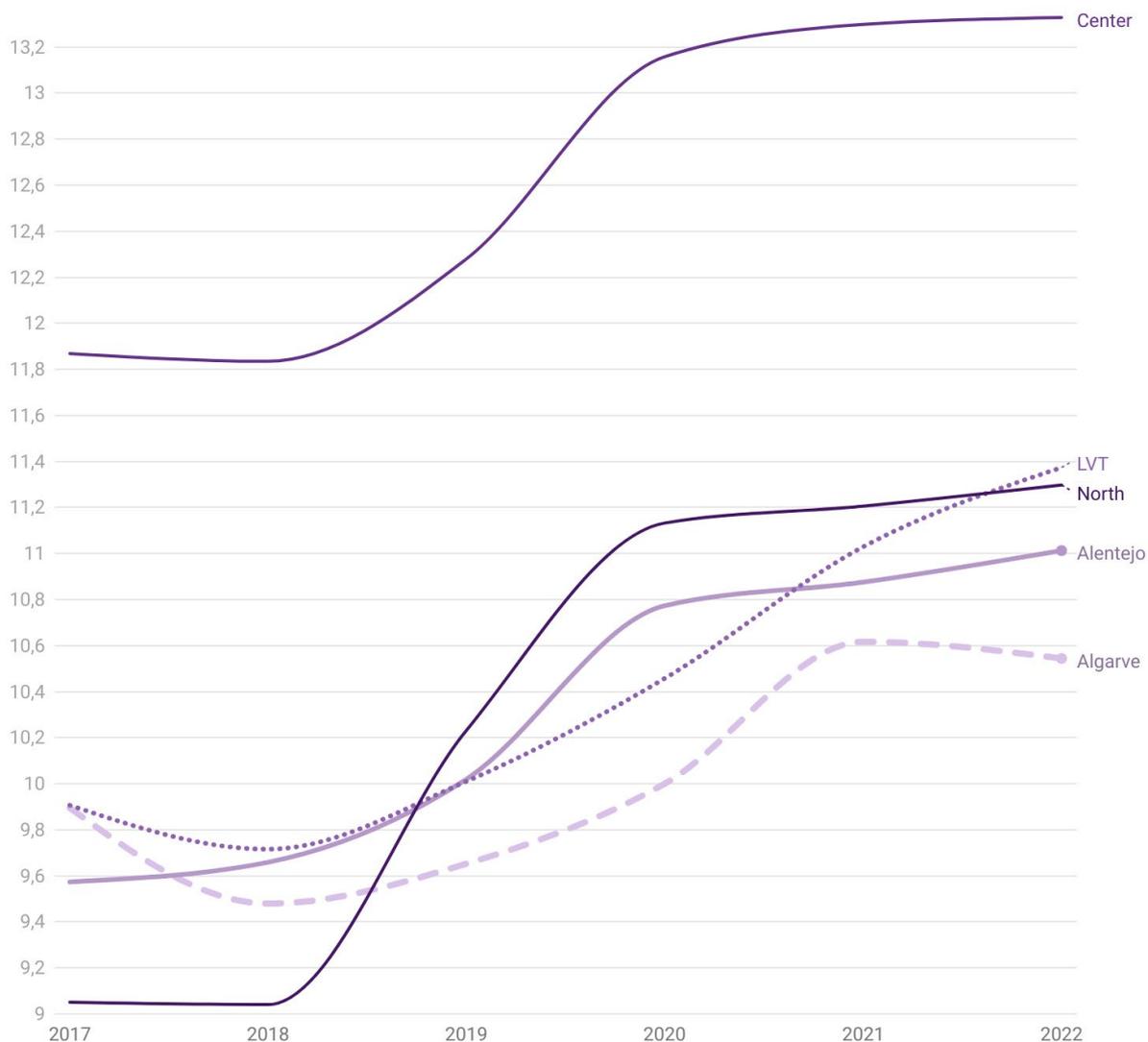
The disparity in the territorial density of HR of the NHS in the HCS decreased between 2017 and 2022, with a slight convergence in the approximation of the ratios of the five RHA, unlike the situation we established for PHC. It is in the RHA of the Center that, in all years, there are more HRH in the HCS, in relation to the population. On the other hand, the most disadvantaged health region in terms of the number of NHS professionals available in HC, in relation to the resident population, changed between 2017 and 2022: in 2017, in this sector, it was the North, but in 2022, it became the Algarve, with the RHA of the North moving to an intermediate position, very close to the share of the RHA of LVT.

Another way of analysing and measuring these regional disparities in the distribution of the NHS workforce in relation to the resident population, is to take as a reference the RHA with the best allocation in 2022 and, based on this ratio, estimate how many FTEs are missing in the other regions, in order to

eliminate the differences in density in the distribution of NHS HR in the territory. **Figure 20** summarises this analysis.

It should be noted, however, that this "measurement" does not mean that it is assumed that in the RHA with the highest ratio of NHS HR compared to resident population (‰), this ratio is assumed to be "satisfactory". In other words, this comparison does not assess the scarcity (or sufficiency) of HRH at the NHS on a national level, in terms of actual health needs, as it simply calculates a measure of the size of regional disparities, in terms of the different densities of NHS HR in a territory with five different RHA, over the period under analysis.

Figure 20 – FTE required to equalize regions in terms of NHS professionals´ densities (2022)

	North	Center	LVT	Alentejo	Algarve	Total
PHCS	3783.3	1602.1	6837.9	0.0	158.9	**12382.2**
HCS	7360.7	0.0	7295.4	1091.3	1314.0	**17061.4**

Thus, to harmonise territorial inequalities in the density of HR in the NHS, bringing the population ratios of all the RHA into line, 29,443 more professionals (FTE) would be needed in the NHS (all professional groups), of which 17,061 in the HCS and 12,382 in the PHCS. Achieving regional convergence, in terms of HRH per 1,000 inhabitants (‰), would therefore imply a 20% increase in the workforce assigned to the NHS's PHC and HC sectors (taking the year 2022 as a reference), which would require recruiting 29,684 human resources in (absolute) number of professionals (NP). It should be remembered that these totals refer to all professional groups.

The study also analyses, in particular, the regional differences in the density of doctors and nurses in relation to the population of each RHA.

In the case of the density of Specialist Doctors in the NHS, by RHA and productive sector, in both PHC and HC, regional disparities in the distribution of Specialist Doctors have grown between the RHA.

In PHC, the ratio of Specialist Doctors to population only increased in two of the five RHA over the period (RHA of the North and RHA Algarve). It should also be noted that the position of the RHA of LVT as the region with the worst number of doctors in the NHS in relation to the population, remains constant throughout the period under analysis, and the RHA of the Center remains the region with the highest density of doctors in PHC, but with the RHA of the North already very close at the end of 2022.

In the case of the HC sector, unlike PHC, the ratio of specialist doctors to population increased in all the RHA, although with very different magnitudes, with more pronounced growth in the RHA of the North. The RHA Alentejo remains the region with the lowest density of Specialist Doctors in the NHS Hospitals, but there is a shift between the Center and the North, with the RHA of the North becoming the region with the highest density of Specialist Doctors in the HC sector in 2022.

Data on additional Doctors to hire needed to eliminate regional disparities in the medical workforce is summed up in **Figure 21**.

Figure 21 – FTE needed to equalize regions in terms of NHS Doctors' densities (2022)

	North	Center	LVT	Alentejo	Algarve	Total
PHCS	139,9	0,0	652,1	76,6	39,5	908,1
HCS	0,0	139,3	1053,4	334,3	307,2	1834,2

Considering the highest regional ratio of Specialist Doctors (‰) in the PHCS and HCS in relation to the population, the findings suggest that in December 2022 there would be a shortage of 908.1 FTE specialists in primary healthcare (of which 784 in the specialty of GFM) and 1,834.2 FTE Specialist Doctors in hospital care, for a total of 2,742.3 doctors lacking, or to hire in order to harmonise the inequalities in the territorial densities, by RHA, of the distribution of these professionals. Since the ratio between FTE and NP (number of professionals) was less than 1 in the case of Specialist Doctors in 2022, the number of doctors to be hired would be 2,939 additional doctors for specific RHA of the NHS, representing an increase of around 14% in the medical workforce, to smooth out the existing regional disparities.

It should be noted that the RHA of LVT has the highest relative "shortage" of Specialist Doctors compared to the density of the other RHA: 57.4% in Hospitals and 71.8% in PHC, or, overall, around two thirds of the total number of Specialist Doctors missing in the mainland, in order to equalize the densities of NHS doctors in relation to the population in the five RHA.

Concerning the density of nurses in the NHS, data indicated that, overall, regional disparities in the distribution of nurses were worsening, although to a lesser extent than those of doctors among the RHAs.

In PHC, the share of PHC nurses in relation to the population increased gradually over the period in all RHA and at similar rates (stable disparities); the relative order of the best and worst regional allocations of PHC nurses also did not change over the period: RHALVT is the region with the worst allocation of PHC nurses in relation to the population, and RHA Alentejo, on the other hand, is the region with the highest share.

As for the hospital care sector, the situation with regard to the density of nurses by RHA is different: it also increases in all RHA, but with very different magnitudes (more marked in RHA of the North); while in 2017 the RHA with the worst (lowest) permillage of nurses was the North, in 2022, RHA of the North had moved to the second best position; RHA of the Center is the region with the highest density of nurses per inhabitant in HC, throughout the period; and LVT in 2022 moves to the worst situation in Nurses' densities, out of the five RHA.

Taking into account the RHA with the highest percentages of nurses in PHC and HC in relation to their respective populations, it can be seen in **Figure 22** that, in December 2022, there was a shortage of 4,892 nurses in PHCs and 8,899 nurses in HCCs, for a total of 13,791 FTE nurses, to harmonise the inequalities in the regional distribution of these professionals across the territory.

Figure 22 – ETC needed to equalize regions in terms of NHS Nurses' densities (2022)

	North	Center	LVT	Alentejo	Algarve	Total
PHCS	1306.2	706.7	2720.9	0.0	157.7	**4891.5**
HCS	3440.7	0.0	4403.4	515.2	540.4	**8899.7**

Considering the FTE/NP ratios calculated by region (2022), this FTE figures would demand an increase of around 27% in the workforce of this professional group, translating into a need to hire around 13,733 additional nurses, 52% of whom to make up for the relative shortage in RHA of LVT.

The RHA of LVT, the region with the largest resident population among the five RHA, is therefore the region with the greatest shortage of nurses in relation to the population in 2022, as is the case with the density of specialist doctors (particularly in PHC) and NHS professionals in general.

6. Conclusion

The Study summarised in this Note was an important first step in the extensive characterisation and analysis of the NHS workforce, making it possible to understand its diversity and the existence of very different realities in the territory and by productive sector, within the Portuguese National Health Service.

There was an expansion of the NHS workforce between 2010 and 2023, but it was not homogeneous, neither between professional groups (or medical specialties, in the case of medical professionals), nor between productive sectors of the NHS, nor between regions of the territory, facts which have multiple implications in terms of health policy.

There are evident quantitative and qualitative changes in NHS professionals between 2017 and 2023, both in their sociodemographic characteristics and in their distribution between sectors and regions, which raise questions about investment priorities by sector, about equity and territorial cohesion, and about the "desirable" diversity of proportions of the various professional groups (skill-mix) – remembering, in this regard, that work in health is, par excellence, teamwork.

Finally, it should be noted that this study aims to characterise the workforce of our NHS and does not assess, nor was it intended to assess, the overall size of the workforce, the size by professional group, its characteristics, skills profile, or the skill mix displayed, all of which we found to be highly variable by sector and by RHA. Therefore, it does not evaluate whether these factors adequately address the current health needs of the population or the demand for health professionals, nor does it address them or project them into the future. That's a separate topic which must be addressed by the relevant entities in the Ministry of Health.

It is also important to develop and enhance what has already been achieved. Firstly, by making dashboards available[12], allowing free, individualized access and use of the characterisation data mobilized here, in an exercise of transparency that should always be the pillar of public policies. Additionally, in subsequent analytical developments, we intend to deepen our analysis of the workload of NHS HR. This will yield another potential measure of HRH shortage, based on the FTE corresponding to overtime hours and the hours of outsourced medical (and clinical) services currently funded by NHS entities, categorised by care sector, region, and professional group. Future studies should also highlight comparisons with other contexts such as the density of HRH in the British NHS, specifically, or with the context of the healthcare workforce in the Regional Health Services of Madeira and the Azores, in coordination with the respective Regional Directorates and bodies responsible for planning.

In addition, in a study to be carried out throughout 2024, in partnership with the respective professional boards, the professional satisfaction factors of doctors and nurses in Portugal will be assessed, with the aim of covering both the public and private sectors, as well as analysing the retention factors of these professionals in the NHS, through what will be the first major national study in this field with this level of representativeness.

---

[12] In https://www.planapp.gov.pt/dashboards/.

It is not possible to carry out HR planning in the health sector without a thorough understanding of the sector's main players – its professionals –, in terms of their sociodemographic dimensions, their distribution in the territory and by sector, but also in terms of their desires, expectations and wishes in professional terms.

Strategic planning is a complex exercise, but objective and concrete, and it is essential that it is drawn upon a dynamic and precise knowledge of the reality of NHS professionals. This understanding must be improved through well-informed, participatory, and effective public policies.

7. References

Centro de Competências de Planeamento, de Políticas e de Prospetiva da Administração Pública (PLANAPP). (2024). Os Profissionais do SNS: Retrato e Evolução. PLANAPP.

World Health Organization. (2021). Health labour market analysis guidebook.

Annex

NHS Medical Specialists per RHA (FTE) (2023)

Medical Specialty	North	Center	LVT	Alentejo	Algarve	Total
General and Family Medicine	2 282.8	1 059.7	1 766.0	224.5	270.9	5 108.5
Internal Medicine	881.4	367.7	738.1	106.4	84.4	1 987.2
Paediatrics	549.3	215.4	456.0	32.5	34.5	1 220.6
Anaesthetics	610.0	231.7	379.0	24.9	16.4	1 220.7
General Surgery	417.1	189.9	356.7	56.5	36.3	963.7
Obstetrics and Gynaecology	323.1	163.8	222.5	10.2	25.6	745.2
Psychiatry	249.6	110.3	235.3	17.6	21.4	595.2
Trauma and Orthopaedics	281.7	136.0	165.9	21.7	9.9	583.5
Cardiology	205.4	97.0	183.0	14.3	10.1	485.3
Respiratory Medicine	157.5	98.6	174.2	6.1	18.9	430.2
Clinical Pathology	153.6	55.0	156.5	24.6	14.1	365.1
Ophthalmology	154.7	69.7	152.2	15.1	8.6	376.5
Public Health	150.8	75.3	111.2	16.9	20.2	337.2
Neurology	155.9	65.1	127.6	3.6	9.8	348.7
Radiology	120.7	64.3	131.9	7.6	13.3	316.9
Otolaryngology	128.8	46.1	120.6	2.0	9.5	295.5
Gastro-enterology	112.5	59.2	106.3	2.8	14.4	278.0
Renal Medicine	97.3	44.6	128.9	13.5	9.5	270.7
Medical Oncology	132.7	33.6	105.0	6.0	7.3	271.2
Rehabilitation Medicine	109.3	38.1	72.0	6.4	16.7	219.3
Immuno-hemotherapy	83.4	28.4	105.1	4.1	4.1	216.9
Urology	91.0	35.4	73.7	4.4	6.4	200.1
Haematology	69.2	43.2	77.6	3.1		190.0
Infectious Diseases	73.4	32.1	74.7	1.0	3.6	180.2
Intensive Care Medicine	58.8	24.9	84.7	8.2	6.9	168.3
Endocrinology and Diabetes	76.2	30.5	54.6	1.0	1.0	161.3
Anatomical pathology	65.3	24.6	65.8	4.0	3.1	155.7
Neurosurgery	59.5	23.0	51.3	2.3	7.1	133.7
Stomatology	56.3	28.3	50.6	2.0	5.8	135.2
Child and Adolescent Psychiatry	56.4	23.3	48.1	2.9	0.2	127.8
Rheumatology	47.3	31.1	39.6	1.0	4.9	117.9
Angiology and Vascular Surgery	63.0	13.1	41.7	2.0	1.0	117.8
Neuroradiology	59.9	16.9	41.0	1.0	2.0	117.7
Dermatovenereology	40.9	30.4	43.6	2.0	0.9	114.9
Plastic, Reconstructive & Aesthetic Surgery	43.8	6.6	53.4	2.0	2.1	103.8
Immunoallergology	43.5	14.9	41.2	2.0	3.5	99.5
Radiooncology	43.1	21.3	26.4	0.3		90.7
Paediatrics Surgery	33.5	11.6	29.2	0.7	3.0	74.3
Surgery Cardiothoracic	22.6	11.1	34.9			68.6
Pediatric Cardiology	13.0	11.1	25.7	0.9	1.2	49.8
Maxillofacial Surgery	15.9	11.2	22.0			49.1
Occupational Medicine	16.1	8.2	14.6	1.5		38.9
Nuclear Medicine	15.3	11.1	14.1			40.4
Medical Genetics	13.1	9.1	14.9			37.0
Cardiac Surgery	5.0	3.0	9.0			17.0
Thoracic Surgery	4.0	3.0	8.0			15.0
Clinical Pharmacology	1.0		0.5			1.5
Other	68.3	23.5	77.5	10.7	27.6	207.6
Grand Total	**8 512.3**	**3 751.2**	**7 111.6**	**669.8**	**735.8**	**19 375.0**

www.planapp.gov.pt

PlanAPP

@planapp_

Newsletter

PLANAPP
Boas Políticas Públicas
Melhor Sociedade