Health Professionals Report : Capacity, Accessibility and Production

Specialty of Interest : Neurosurgeon

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Introduction

Introduction

This report provides a comprehensive overview per healthcare specialty working within the Belgian health insurance system, within hospital and ambulatory settings.

Professional perspective :

- Aspects covered are: capacity, production (numbers and financials), subspecialties, replacement rates. Those aspects are described by gender, age, geography, type of activity, workplace, evolution.

Patient perspective :

- Accessibility and frequentation are described by gender, age, social status, geographical distribution, evolution.

Data Sources & Transformations

This report draws insights from the "Doc P" database, encompassing patients who sought care in Belgium and claimed insurance reimbursement. The database spans from accounting years :

- 2013 to 2023 for health professionals
- 2018 to 2023 for health professionals subspecialties
- 2018 to 2022 for insured coverage and patient frequentation

Each studied year N is coupled with socio-demographic data on providers as of December 31 N.

To address GDPR (General Data Protection Regulation) compliance for small cell data, numbers from fewer than 5 registered providers are hidden.

Contact

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Additional information

For official information regarding the number of healthcare providers :

- NIHDI : please click here
- MOH : please click here

Key Variables & Metrics

Healthcare professional perspective (specialty is determined by grouping NIHDI competency codes) :

- Demographic characteristics are age (groups by 10Y), sex (M/F), working address (or contact address if not available), communication language (Dutch/French) , convention status (full, partly), activity status (>1 intervention/year), type of prestation (see NIHDI nomenclature).
- Numeric characteristics are number of professionals (all providers registered within INAMI-RIZIV), number and cost of (reimbursed) prestations. Evolution is available since 2012 for professionals figures and since 2018 for the study of their activity.
- FTE (full-time equivalent) is calculated to determine the workload of a healthcare provider (= total reimbursements by provider in a given year divided by the median amount of reimbursements for providers aged 45 to 54 in the same specialty, see Annex 1). FTE values are capped at 1. The FTE for employed doctors in medical homes (lump sum financing) was estimated at 0.82 per doctor because the actual FTE cannot be evaluated given the absence of activity registration. Medical homes with lumpsum are not included in the productivity calculation. General practitioners with "Fee for Service" in the title specifies that doctors and patients in medical homes with lumpsum are excluded from the analysis.
- Working place : distinction is made between private, polyclinic, day hospitals, or hospital stays, depending on the place of prestation.
- Subspecialty Clusters : Healthcare providers within a specialty can be clustered based on ([sub] group of similar) nomenclature codes reimbursed or working place.
- Indicators of Density : FTE/10.000 insured, total activity/FTE, reimbursement/FTE, number of patients/FTE.

Patient perspective :

- Demographic characteristics are age, sex (M/F), address of residence (not treatment place !) (by region, province, etc.), social status (normal and preferential regime [BIM])) , type of specialty contacted during the year.
- Patients Indicators : insured coverage (% at least 1 contact) (N.B. Specialists in training included), insured frequentation (number of contacts/insured), patient frequentation (number contacts/patient).

A KPI (Key Performance Indicator) color system is used in this report. It is shown as

- Grey for contextual information
- Green for positive performance compared to starting year
- Red for negative performance compared to starting year

Limitations & Assumptions

- Professional density : metrics in this report were not standardized to a consistent population size, which means comparisons between regions or provinces may not be entirely fair or accurate.
- Patient analysis uses actual care years, not accounting years, unlike other analyses. If the analysis year is N, the last available year for patient analysis is N-1 in order to present relevant data.
- The calculation of FTEs may be impacted by modifications of competency codes over the years. A change within a specialty affects the median of reimbursements and thus generates breaks in the evolution of FTEs (see the recognition of nephrologists since 2022 for internal medicine). The median value changes depending on the year (see Annex 1).

Speciality Metrics and Comparison (2023) : Neurosurgeon

This sheet compares the specialty of interest (left) with comparison group (right).

Neurosurgeon

Competency Code	Description
10170	Neurosurgery Specialists
10174	Neurosurgery Specialists with recognition in functional and professional rehabilitation for the disabled

	Neurosurgeon	Surgical Pathology
# N SubSpecialities	1	10
# N Total	302	11.480
# N Active	232	8.758
# Full-Time Equivalent (FTE)	153	6.090
€ Expenses per FTE	389.852	357.861
65+	% Active: 10% / % FTE: 4%	% Active: 11% / % FTE: 5%
Convention	% Active: 70% / % FTE: 56%	% Active: 71% / % FTE: 65%
Accreditation	% Active: 65% / % FTE: 77%	% Active: 77% / % FTE: 86%

Surgical Pathology

Profession
Acute Medicine and Emergency Medicine
Anesthesiologist
ENT Specialist
General Surgeon
Neurosurgeon
Ophthalmologic Surgeon
Orthopedic Surgeon
Plastic Surgeon
Stomatologist
Urologist

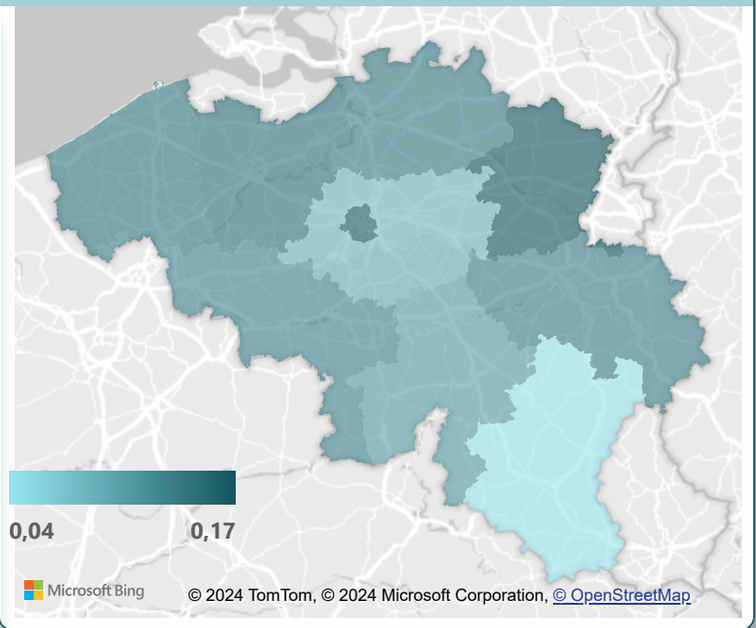
Geographical Accessibility (2023) : Neurosurgeon

Geographical accessibility is measured by density, calculated as the number of FTE (Full Time Equivalent) per 10.000 insured and comparing the results between provinces and regions. Metrics in this report were not standardized to a consistent population size.

Indicators :

- Geographical distribution which enables to check for homogeneity.
- Evolution over 10 years and growth rate within that period.
- Comparison of number of FTE and number of insured to detect correlation.

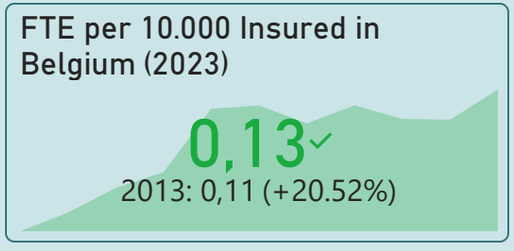
FTE per 10.000 Insured by Province



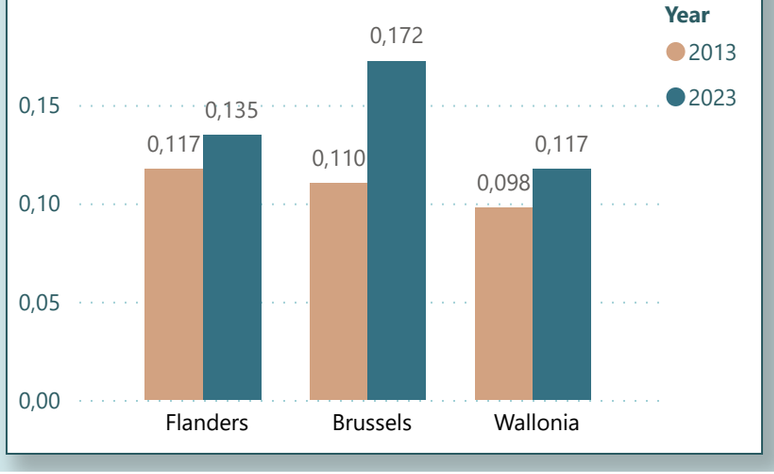
Demographic Information by Province

Province	#FTE	Density (FTE per 10.000 Insured)	%65+ (FTE)	%Women (FTE)
West-Vlaanderen	17,18	0,14	0%	6%
Oost-Vlaanderen	22,97	0,15	8%	9%
Antwerpen	26,23	0,14	1%	12%
Limburg	15,07	0,17	0%	13%
Vlaams-Brabant	9,75	0,08	3%	1%
Brussels	19,77	0,17	9%	15%
Brabant Wallon	3,71	0,09		21%
Hainaut	17,44	0,13	4%	26%
Namur	5,35	0,11	7%	9%
Liège	14,72	0,13	6%	10%
Luxembourg	0,89	0,04	11%	52%
Total	**153,08**	**0,13**	**4%**	**12%**

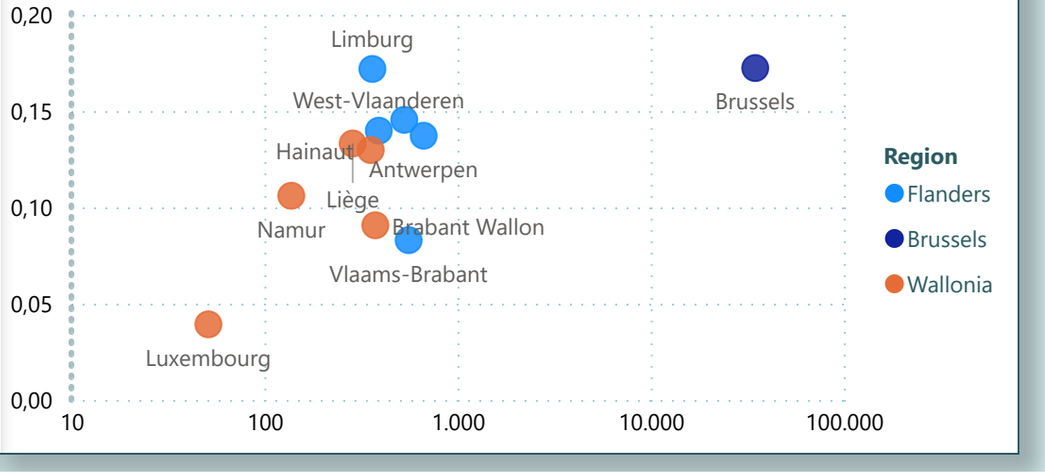
FTE per 10.000 Insured in Belgium (2023)



FTE per 10.000 Insured, by Region (2013 vs 2023)



FTE Density versus Insured Density, by Province



Financial Accessibility (2023) : Neurosurgeon

Financial accessibility is measured by the number of conventioned FTE (Full time equivalent) by 10.000 insured.
Convention means that the professional is committed to respect prices determined in the NIHDI convention. This agreement can occur partly (at specific hours during the week) or totally (all the working hours).
The conventioned FTE for partially conventioned providers is calculated as half of their total FTE.

Indicators :

- % FTE meeting the criteria / total FTE
- Financial accessibility is gauged by conventioned FTE (Full Time Equivalent) per 10.000 insured.

% Conventioned FTE (2023)

56%

2013: 56% (-0.16%)

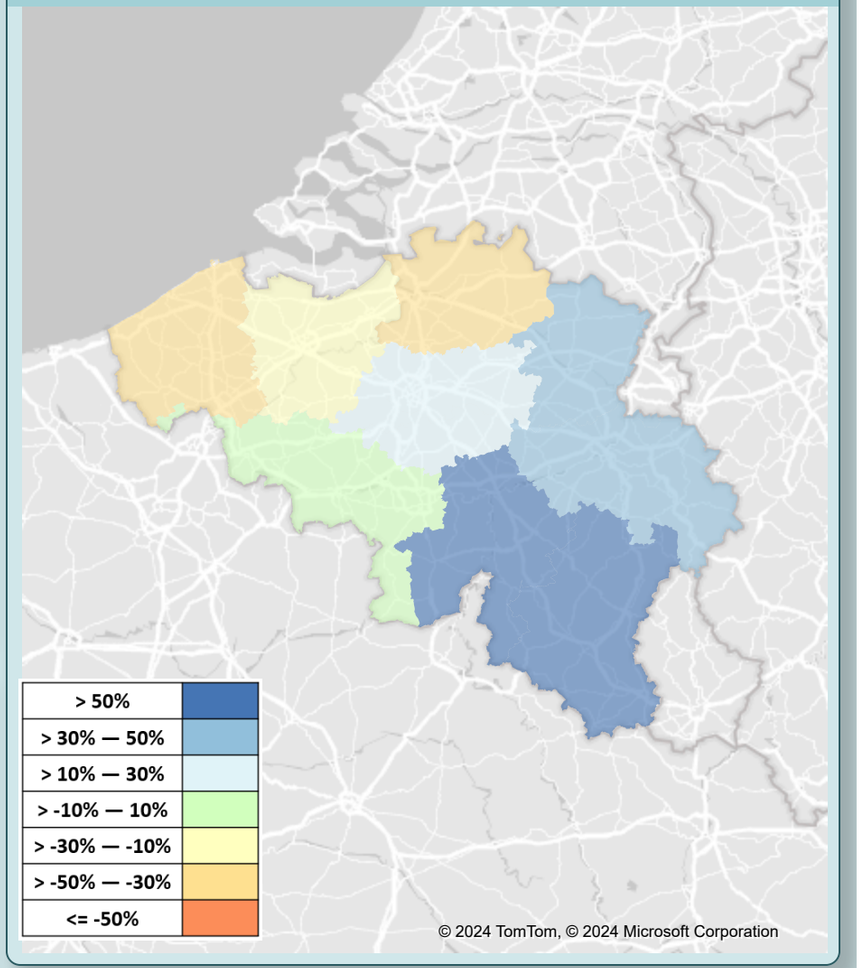
% Conventioned FTE by Language and Regime

Language	Part	Full	Total
FR	7%	66%	73%
NL	9%	36%	46%
Total	**9%**	**47%**	**56%**

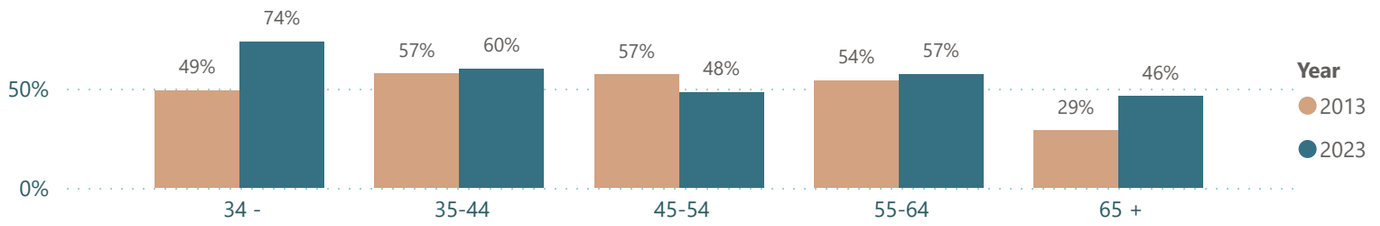
Demographic Information by Province

Province	Density (FTE per 10.000 Insured)	Density (Conventioned FTE per 10.000 Insured)	% Conventioned FTE
West-Vlaanderen	0,14	0,05	34%
Oost-Vlaanderen	0,15	0,06	41%
Antwerpen	0,14	0,05	35%
Limburg	0,17	0,13	73%
Vlaams-Brabant	0,08	0,05	64%
Brussels	0,17	0,11	66%
Brabant Wallon	0,09	0,06	69%
Hainaut	0,13	0,08	61%
Namur	0,11	0,10	96%
Liège	0,13	0,10	76%
Luxembourg	0,04	0,04	100%
Total	**0,13**	**0,07**	**56%**

% Differences Conventioned FTE by Province



Evolution of Conventioned FTE by Age (2013 vs 2023)



Continuous Professional Development (2023) : Neurosurgeon

CPD (continuous professional development) is measured by accreditation criteria.
Accreditation means that the professional meets several CPD (continuous professional development) criteria (which indicates the will for quality of care).

Indicator :
- % FTE meeting the criteria / total FTE

% Accredited FTE (2023)

77% ✓

2013: 63% (+21.24%)

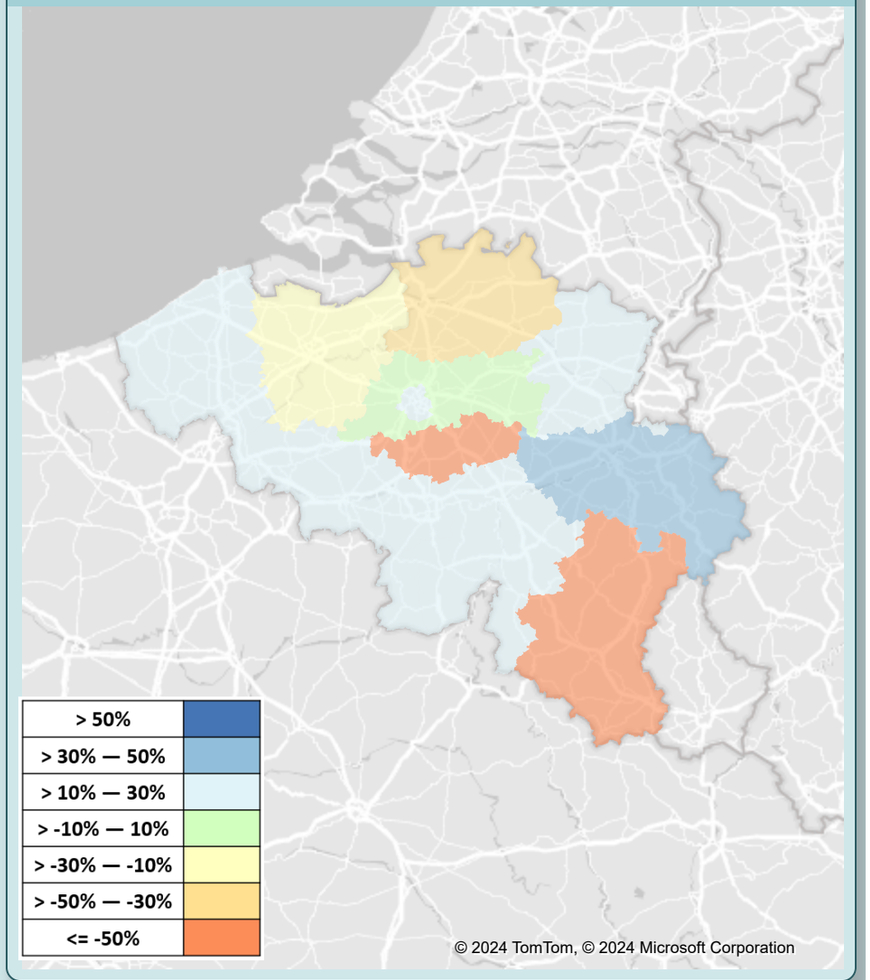
% Accredited FTE by Language and Gender

Language	F	M	Total
FR	80%	84%	**83%**
NL	73%	73%	**73%**
Total	**77%**	**77%**	**77%**

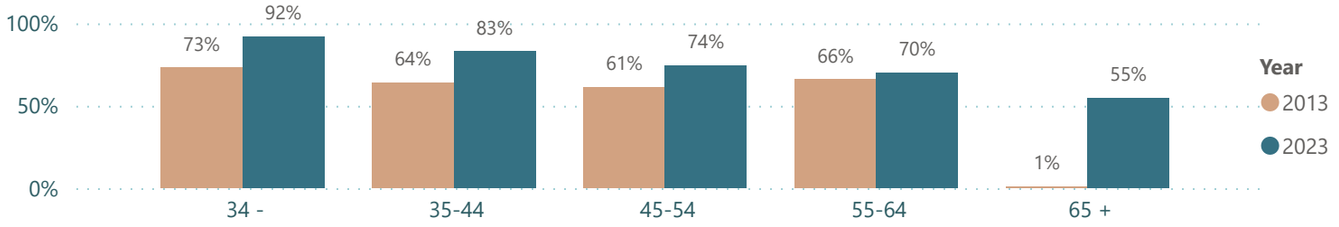
Demographic Information by Province

Province	Density (FTE per 10.000 Insured)	Density (Accredited FTE per 10.000 Insured)	% Accredited FTE
West-Vlaanderen	0,14	0,12	88%
Oost-Vlaanderen	0,15	0,09	62%
Antwerpen	0,14	0,07	53%
Limburg	0,17	0,16	93%
Vlaams-Brabant	0,08	0,07	84%
Brussels	0,17	0,15	85%
Brabant Wallon	0,09	0,01	13%
Hainaut	0,13	0,11	86%
Namur	0,11	0,09	90%
Liège	0,13	0,13	100%
Luxembourg	0,04		
Total	**0,13**	**0,10**	**77%**

% Differences Accredited FTE by Province



Evolution of Accredited FTE by Age (2013 vs 2023)



Subspecialties Activity and Working Place : Neurosurgeon

Reimbursement by FTE (2023)

390.300

2018: 343.695 (+13.56%)

The level of activity is measured by the total reimbursement amount of the specialty. The distribution of the reimbursement by specialty allows to distinguish different types of activity which are grouped to study what kind of procedures are done and where. The type of activity is described by 2 criteria: the place of work and the nature of the activity:

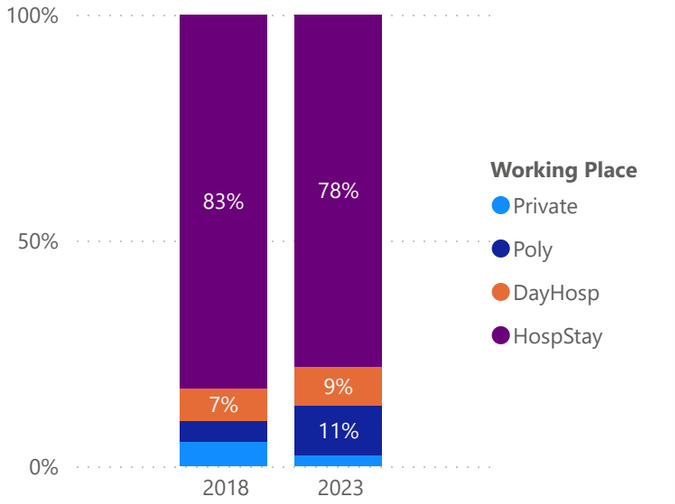
- The place of work is the place where the activity takes place (private, polyclinic, day hospital, hospital stay).
- The nature of the activity is described according to 2 logics of grouping. The traditional distribution of reimbursements within NIHDI (N01 contacts, N20 surgery, etc.) and a specific, more detailed breakdown to identify sub-specialties within the specialty (i.e. cardiac surgery within surgery).

Indicators :

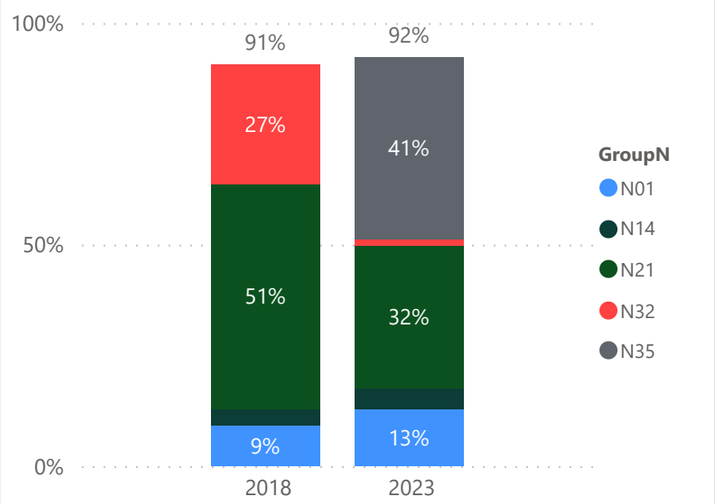
- Reimbursement (in Euros) / FTE
- % Reimbursement (in Euros) by category / total reimbursement (in Euros)

The evolution provides information on the stability of the patterns of the activity comparing year N with N-5.

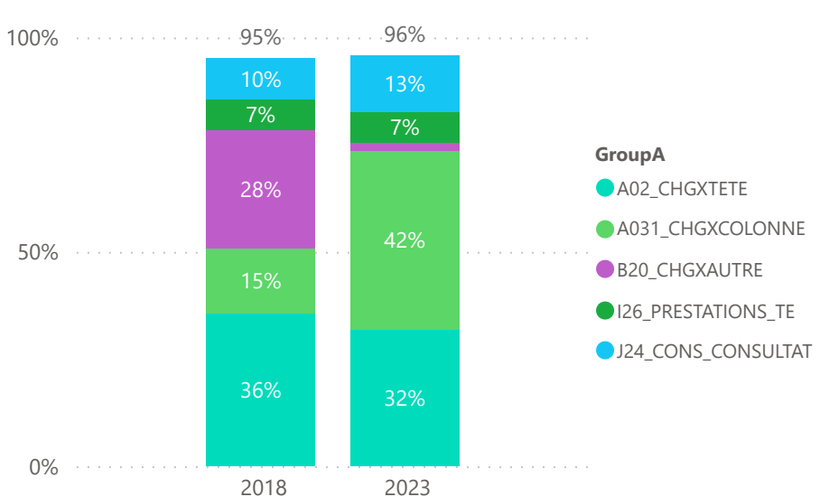
Reimbursement by Working Place (2018 vs 2023)



Top 5 Reimbursement (NIHDI Groups, 2018 vs 2023)



Top 5 Reimbursement (Specific Groups, 2018 vs 2023)



GroupN	Description
N01	Consultations visits and medical advices
N14	Anesthesiology
N21	Neurosurgery
N32	Orthopedics
N35	Orthopedic surgery and neurosurgery

GroupA	Description
A02_CHGXTETE	Head Surg.
A031_CHGXCOLONNE	Spine Surg.
B20_CHGXAUTRE	Other Surg.
I26_PRESTATIONS_TE	Technic prest.
J24_CONS_CONSULTAT	Consultation

Subspecialties Activity and Working Place (2023) : Neurosurgeon

Subspecialties are identified by the working place and/or type of activity (see previous page): the assignment of a health care provider to a sub-specialty prioritizes the type of activity exercised. In general, the type of activity with the most reimbursements, if the amount exceeds 10% of reimbursements in all types of activity, determines the specialty of the health care provider. If no particular activity was identified for the specialty, the assignment was done on the criterium of the workplace: hospital, polyclinic, private. If there is no clear distinction between the different locations, then the cluster is named "Mixed". Clusters less than 5 FTE or less than 0,5% of total FTE are left out. Comparison of clusters helps to understand differences in nature of work.

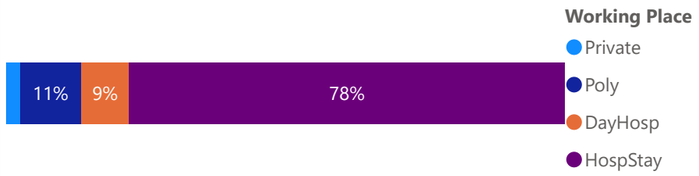
Indicators :

- % FTE by type of cluster
- % type of activity (in Euro) / total reimbursement (in euro) by cluster

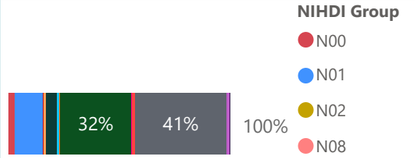
FTE and median Reimbursement by Subspecialty

Subspecialty	FTE	Reimb per Provider
Head	72	273.433
Spine	73	310.402

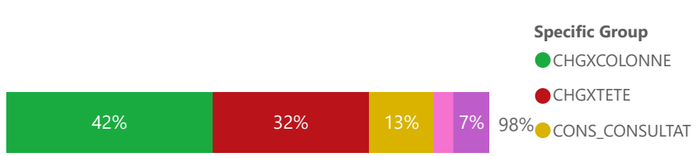
Reimbursement by Working Place



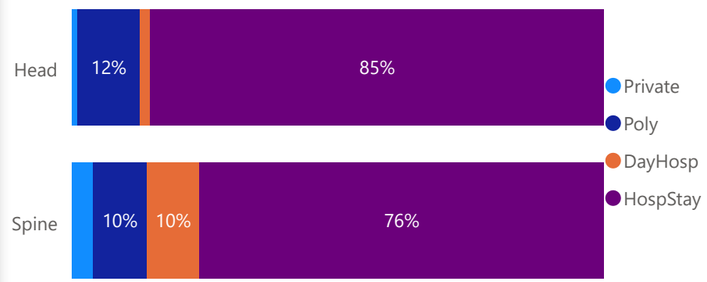
Top 5 NIHDI Groups



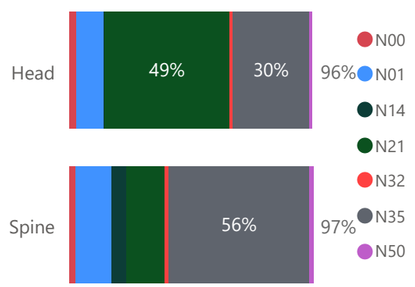
Top 5 Specific Groups



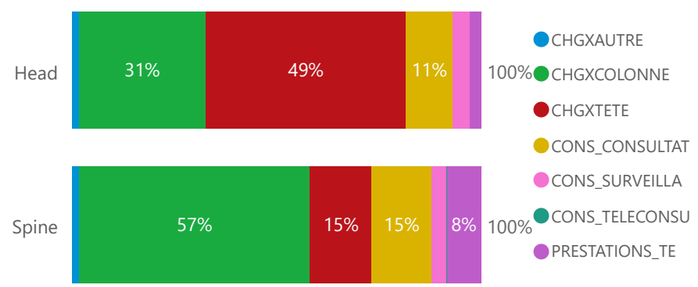
Reimbursement by Working Place, by Subspecialty



Top NIHDI Groups by Subspecialty



Top Specific Groups by Subspecialty



Accessibility, Insured Coverage (2022) : Neurosurgeon

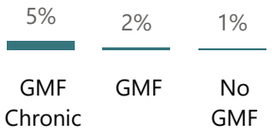
Disparities in insured coverage can help to understand accessibility.

Indicator:

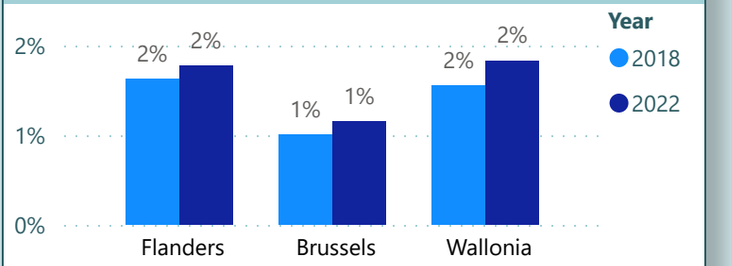
- Percentage of insured persons having at least one contact per year with the specialty (by category of patient) (N.B. Specialists in training included)

Comparison between categories of patients helps to identify possible disparities in accessibility by criterium (gender, age group, geography or socio-economic status, Global Medical File (GMF) status).

Insured Coverage by GMF Status



Insured Coverage Evolution by Region (2018 vs 2022)



Insured Coverage by Gender

Insured Coverage by Social Status

Insured Coverage (2022)

2%✓

2018: 2% (+12.34%)

Ratio Female/Male (2022)

1,14

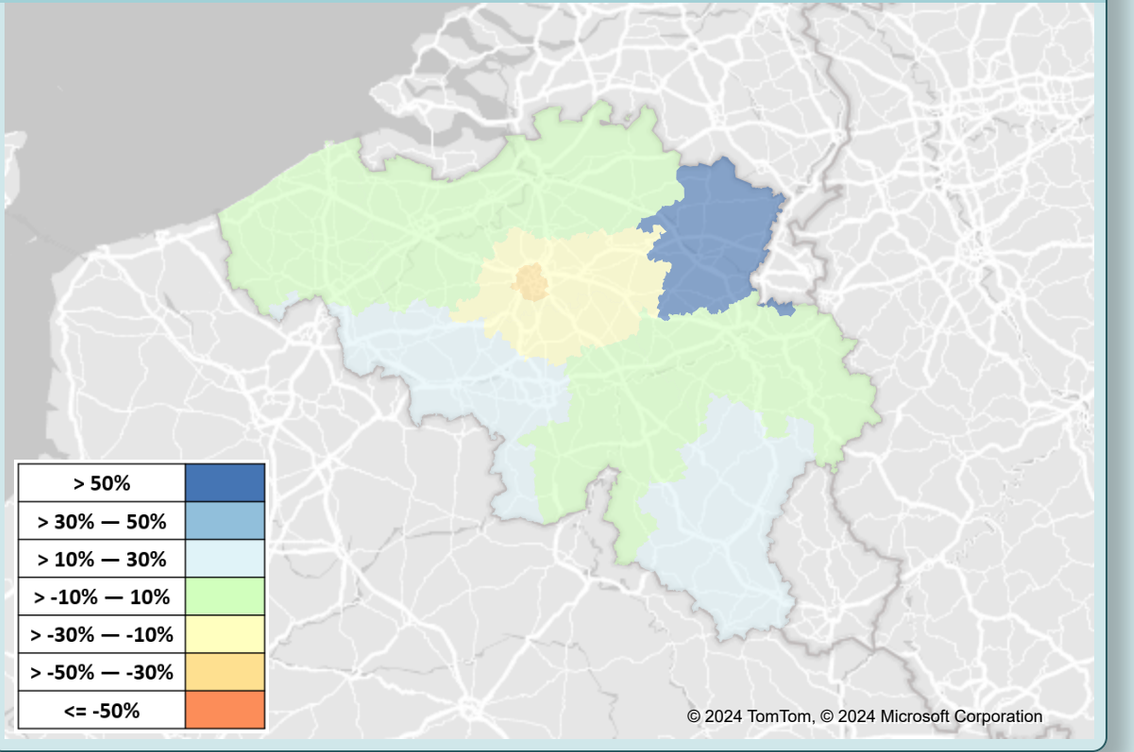
2018: 1,15 (-0.4%)

Ratio Bim/Standard (2022)

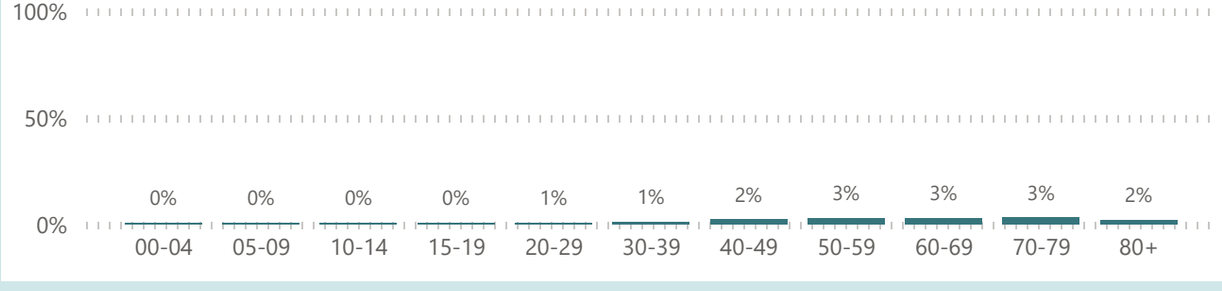
1,43

2018: 1,46 (-2.1%)

% Differences Insured Coverage between Provinces



Insured Coverage by Age of Patients



Accessibility, Contacts per Insured (2022) : Neurosurgeon

Number of contacts per insured is a complementary measure to understand accessibility.

Indicator : number of contacts (by category of insured) is respectively calculated
- per insured
- per patient (insured who at least has one contact with health provider)

Categories of insured are defined by several criteria : gender, social status, age group, residence geography.

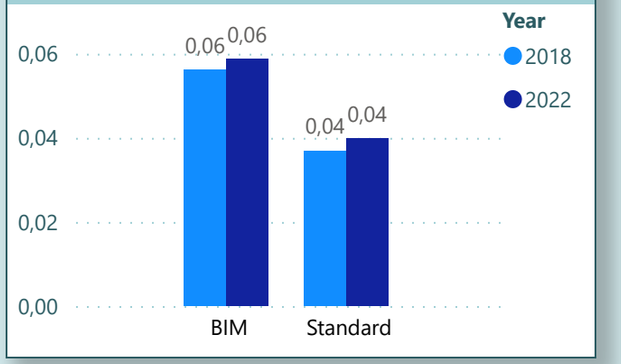
Contacts per Insured (2022) = **Insured Coverage (2022)** × **Contacts per Patient (2022)**

Contacts per Insured (2022)	Insured Coverage (2022)	Contacts per Patient (2022)
0,04	2%	2,62
2018: 0,04 (+1.66%)	2018: 2% (+2.28%)	2018: 2,64 (-0.6%)

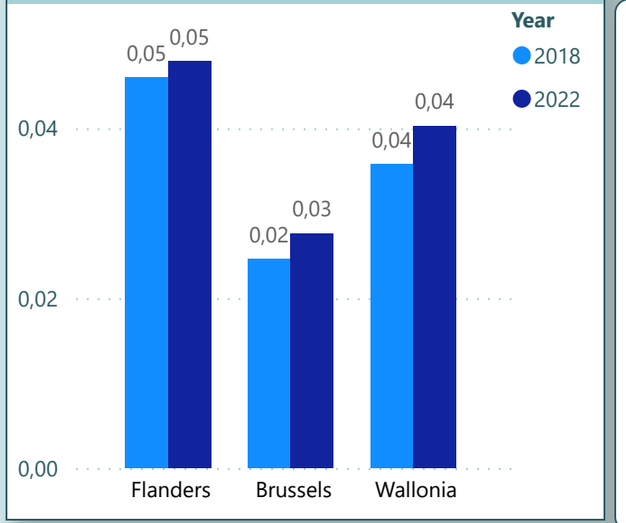
Age Patient	Contacts per Insured	Insured Coverage	Contacts per Patient
00-04	0,01	0%	1,79
05-09	0,00	0%	1,42
10-14	0,00	0%	1,62
15-19	0,01	0%	1,86
20-29	0,01	1%	2,06
30-39	0,03	1%	2,23
40-49	0,05	2%	2,42
50-59	0,08	3%	2,56
60-69	0,08	3%	2,65
70-79	0,09	3%	2,80
80+	0,05	2%	2,51

Province	Contacts per Insured	Insured Coverage	Contacts per Patient
West-Vlaanderen	0,05	2%	3,03
Oost-Vlaanderen	0,04	2%	2,60
Antwerpen	0,05	2%	2,66
Limburg	0,08	3%	2,69
Vlaams-Brabant	0,04	1%	2,56
Brussels	0,03	1%	2,39
Brabant Wallon	0,03	1%	2,38
Hainaut	0,05	2%	2,25
Namur	0,04	2%	2,17
Liège	0,04	2%	2,19
Luxembourg	0,04	2%	1,85

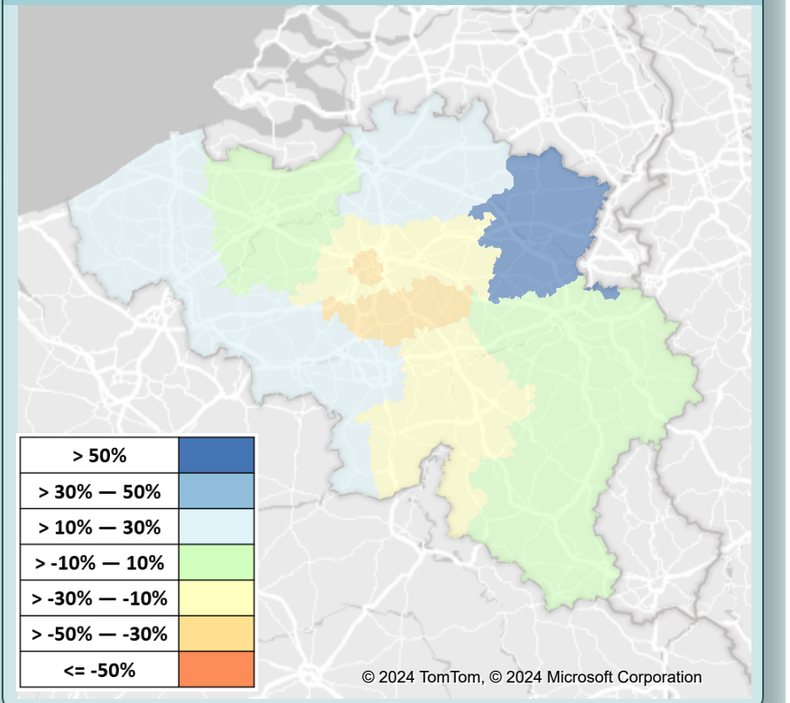
Average Contacts per Insured by Social Status (2018 vs 2022)



Average Contacts per Insured (2018 vs 2022)



% Differences Contacts per Insured between Provinces



Patient Frequentation (2022) : Neurosurgeon

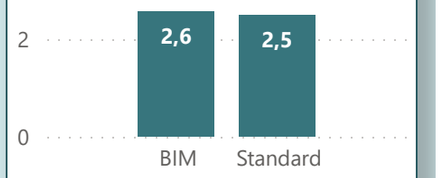
Frequentation of patients (number of contacts) is a measure to understand health consumption and workload.

Indicator : number of contacts (by patient category) is calculated per patient (insured who at least has one contact with a health provider).

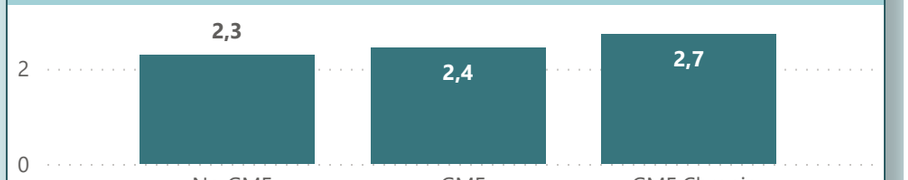
Categories of patients are defined by several criteria : gender, social status, age group, residence geography, GMF (Global Medical File) Status.

Contacts per Patient by Gender

Contacts Per Patient by Social Status



Contacts per Patient by GMF Status



Average Contacts per Patient (2022)

2,62

2018: 2,64 (-0.6%)

Average Providers per Patient (2022)

1,2

2018: 1,2 (+0.59%)

Average Age of Contacts (2022)

57,0

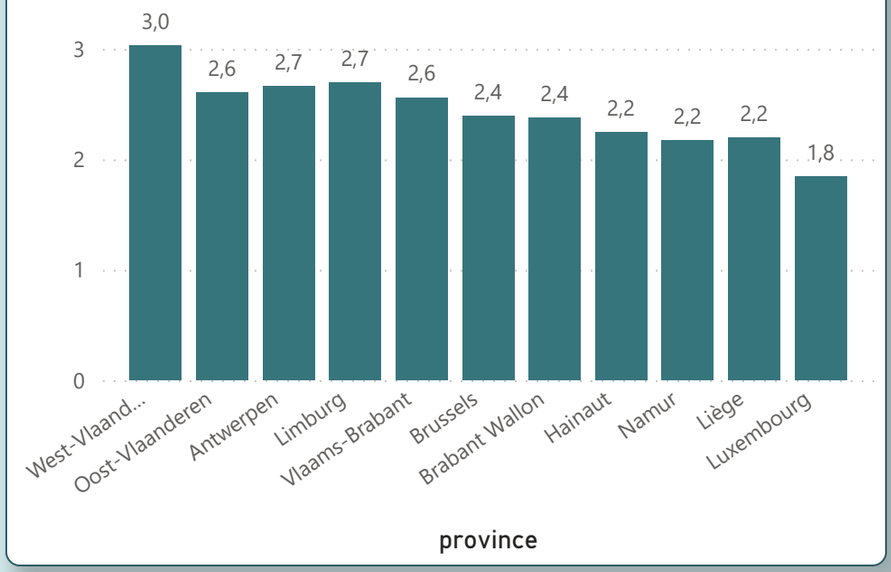
2018: 56,3 (+1.26%)

Average Age of Patients (2022)

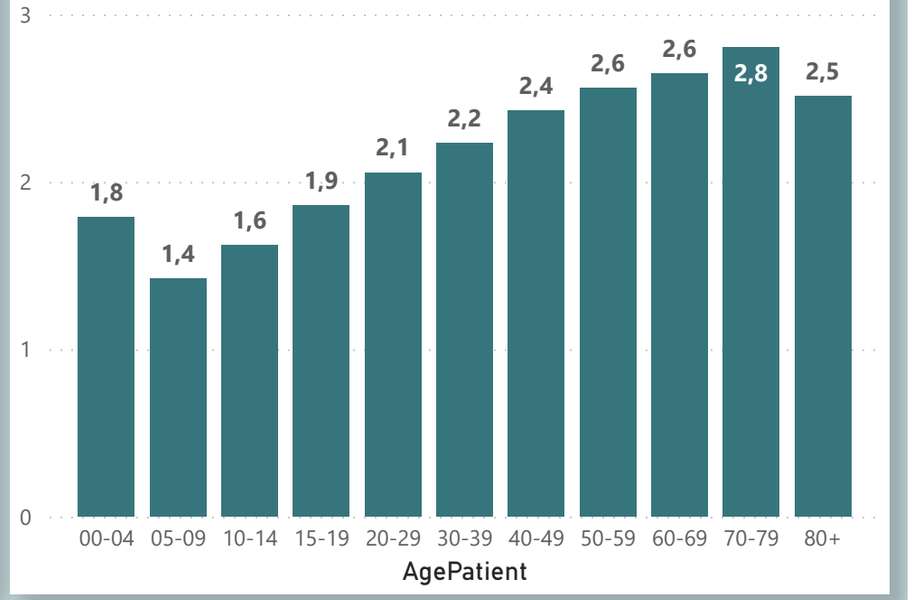
55,8

2018: 55,1 (+1.38%)

Contacts per Patient by Province



Contacts per Patient by Age of Patient



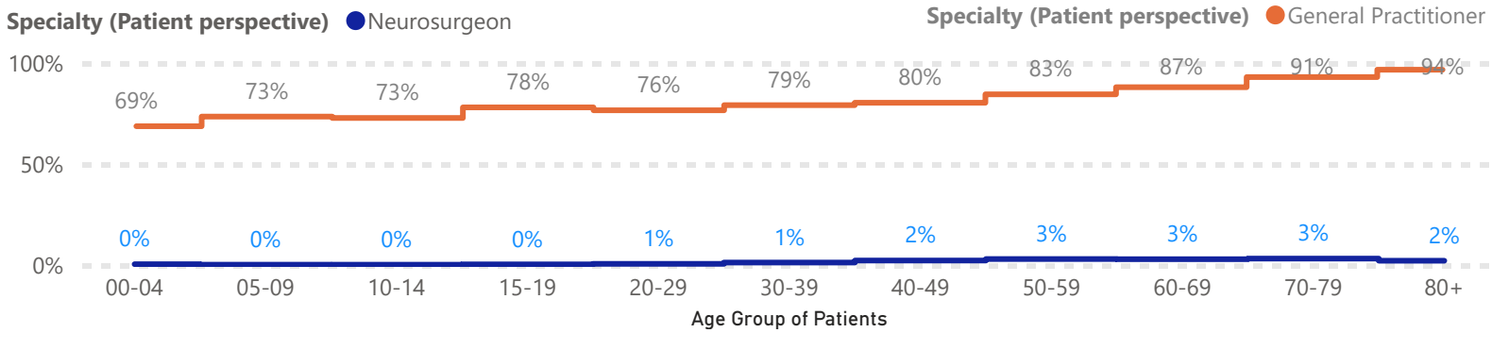
Complementarity with comparison group (2022) : Neurosurgeon

Complementarity compares on the one side insured coverage and on the other side patient frequentation (contacts per patient).

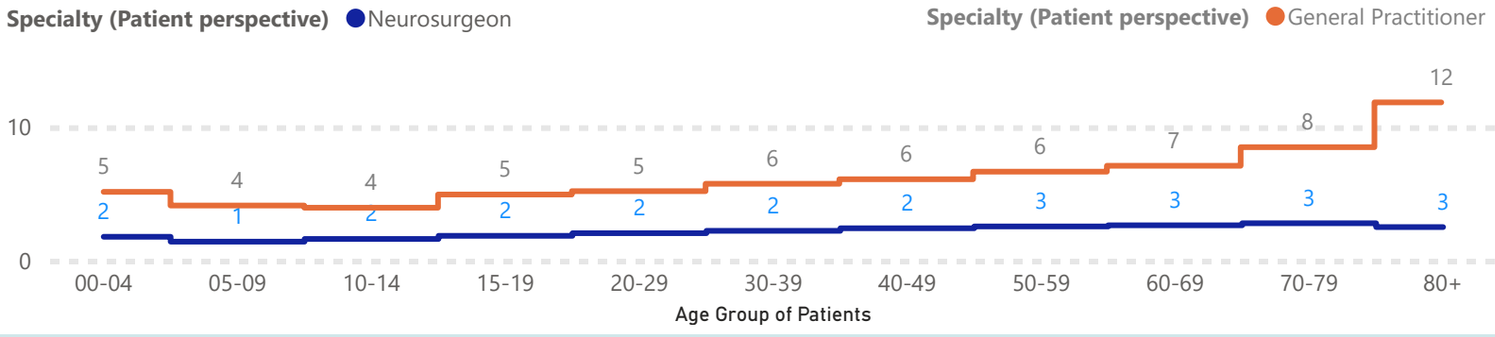
Indicators :

- Insured coverage
- Patient frequentation (contacts per patient)

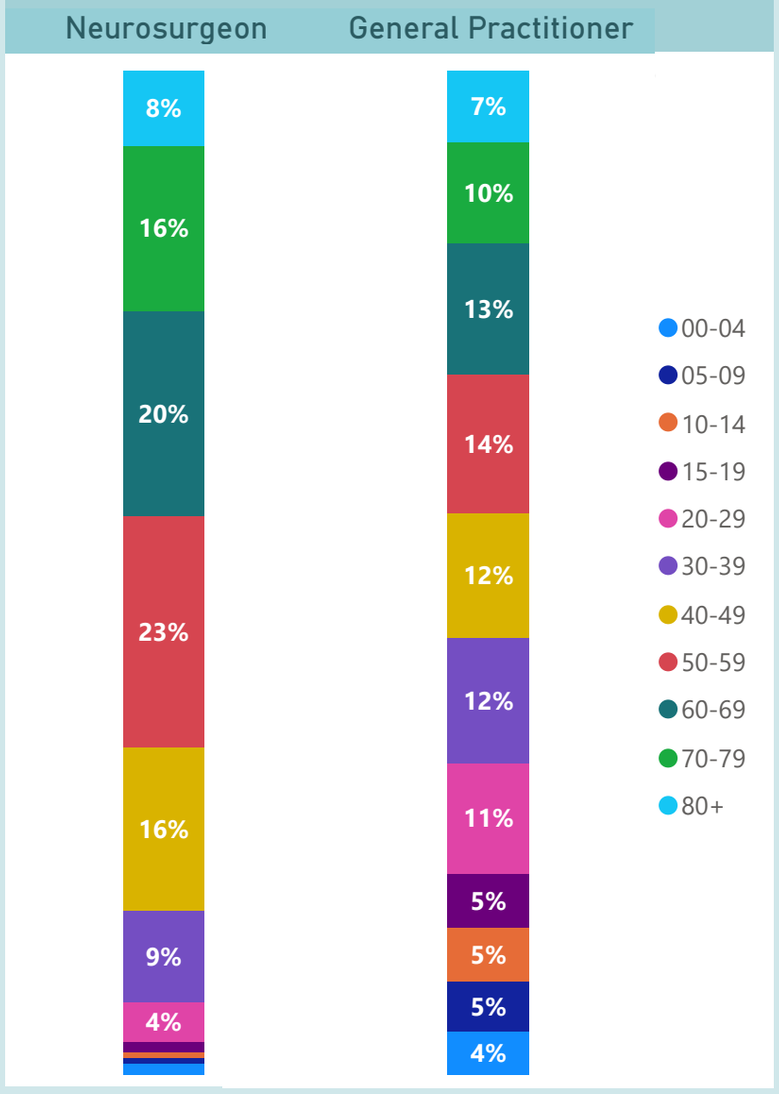
Insured Coverage by Age Group



Patient Frequentation by Patient Age Group



Age Group Distribution of Patients



Workload (2022) : Neurosurgeon

Workload by specialty provides insight into the work volume per year of the specialty by FTE and the patient base population (Individual patients are allocated to one single professional per specialty per year to build the patient base population for each single professional/ provider) (N.B. Specialists in training are excluded). The classification criteria are linked to the healthcare professional (age, language, gender, work address, convention status, accreditation)

Indicators:

- Workload : contacts / FTE
- Patient base population: Patients / FTE
- Contacts per patient per provider

Limitation : working address of health professionals can be different than the location of patients. This can explain differences in workload results (contact/FTE, patients/FTE) and lead to misinterpretation for geographical criteria (province) especially for small numbers of working professionals. Also if the number of FTE by cell is inferior to 5, contacts per FTE and patients per FTE are hidden.

Average Contacts per FTE (2022)

3.403

2018: 3119 (+9.11%)

Average Patients per FTE (2022)

1.352

2018: 1180 (+14.55%)

Average Contacts per Patient and Provider (2022)

2,1

2018: 2,3 (-5.23%)

Province	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
West-Vlaanderen	3.638	1.180	2,6
Oost-Vlaanderen	3.420	1.306	2,3
Antwerpen	3.772	1.409	2,3
Limburg	4.390	1.613	2,3
Vlaams-Brabant	2.534	1.086	1,9
Brussels	3.143	1.305	2,0
Brabant Wallon	2.306	1.005	2,1
Hainaut	3.235	1.504	1,9
Namur	2.931	1.465	1,8
Liège	2.926	1.336	1,8
Luxembourg	2.393	1.072	1,9

Age Class	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
34 -	2.886	1.163	2,1
35-44	3.270	1.241	2,2
45-54	3.631	1.475	2,1
55-64	3.358	1.353	2,1
65 +	3.571	1.462	2,1

Gender	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
F	3.234	1.381	2,0
M	3.428	1.348	2,2

Language	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
FR	3.403	1.352	2,1
NL	3.403	1.352	2,1

Convention	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
Full	2.994	1.299	1,9
No	3.701	1.395	2,3
Partial	3.925	1.413	2,3

Accredited	Contacts per FTE	Patients Per FTE	Contacts per Patient and Provider
No	3.223	1.294	2,2
Yes	3.467	1.373	2,1

Evolution of the Workforce Demography : Neurosurgeon

Healthcare workforce demographics present active professionals having more than one activity per year on the left side of the page, while Full-Time Equivalents (FTE) are displayed on the right side. The analysis spans the past decade and is segmented by professional characteristics such as age class, gender, and language.

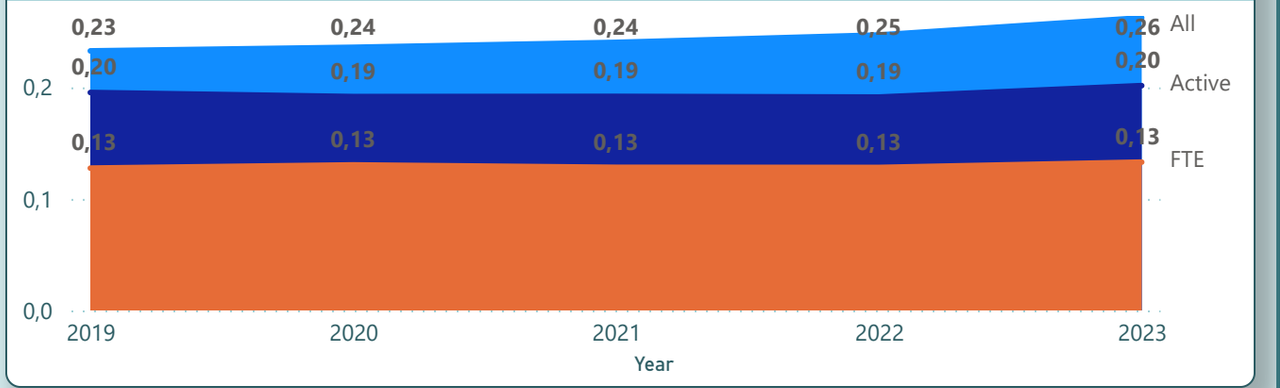
Active indicators (Left):

- Number of Actives (>1 prestation /accounting year) and its % growth rate over the past decade.
- Replacement Rate: Active professionals above 55 years compared to those below 55 years.
- Inactivity: % of inactive professionals in relation to the total.
- New Active Providers per Year: Annual influx of new providers (derived from linear regression over the past decade to estimate the average rate).

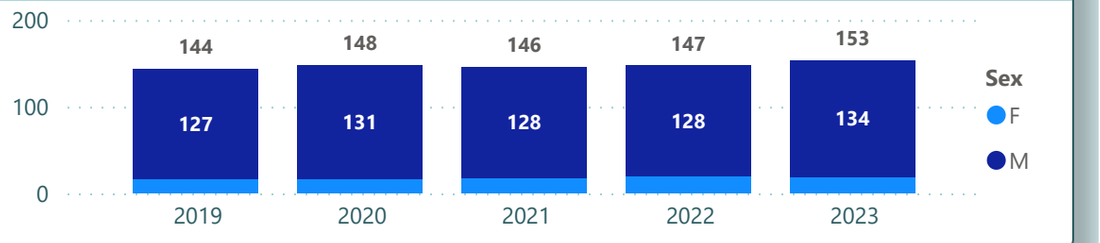
FTE indicators (Right):

- Equal proportion of gender: Indicates the percentage of female FTE in relation to the total FTE.
- Average FTE: Indicates the level of activity by dividing the FTE below 65 years with the total active workforce.

Evolution of All registered, Active Providers and FTE per 10.000 Insured



Evolution of Total FTE by Gender



% Growth Rate of FR Active Providers

0.6%

Replacement Rate (Active under 55 by 55+) (2023)

2,27✓

2013: 2,15 (+5.47%)

New FR Active Providers per Year

0.4

% Growth Rate of NL Active Providers

1.9%

% of Inactive Providers < 65y (2023)

11%✓

2013: 9% (+33%)

New NL Active Providers per Year

2.3

Avg FTE per Active Provider < 65y (2023)

0,70!

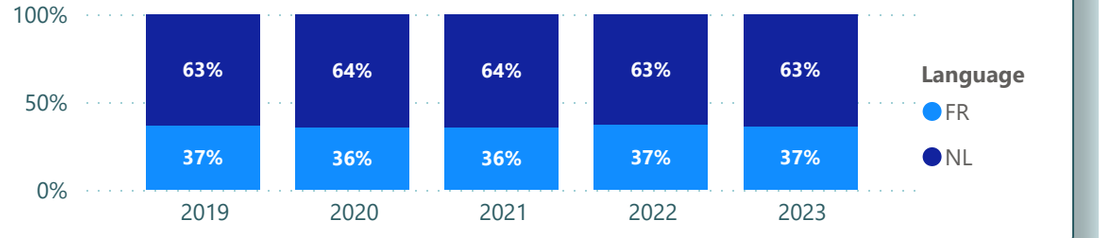
2013: 0,71 (-0.47%)

% Female among total FTE (2023)

12%

2013: 7% (+89.92%)

Evolution of FTE Proportions by Language



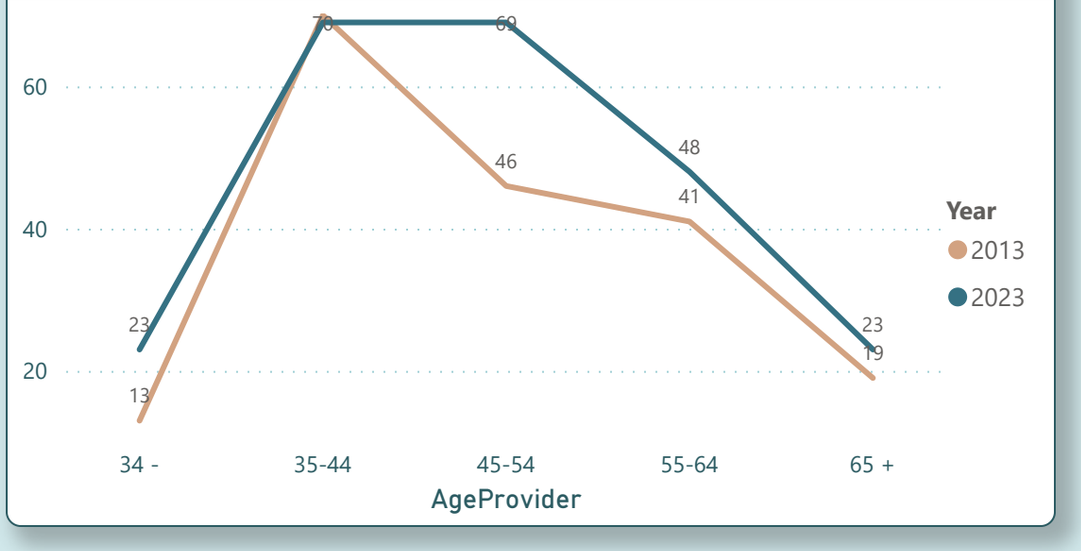
Demographic Evolution by Age Group (2023) : Neurosurgeon

Demographic evolution by age group and activity of professionals above 65 years (provides information on the demographic stability).

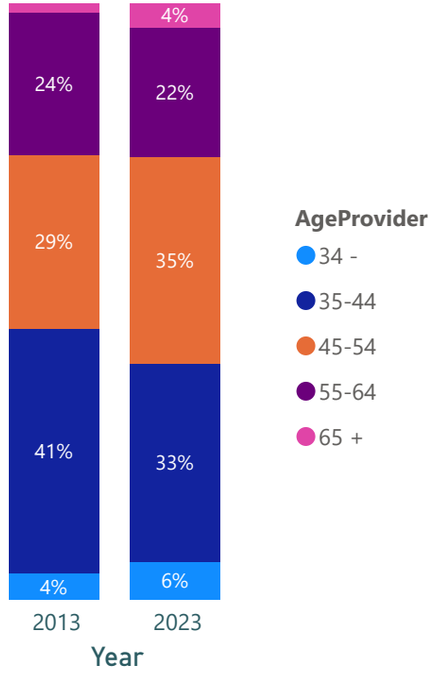
Indicators :

- Trend in age group distribution (active/FTE),
- Age FTE : average of a professional's age weighted by its corresponding Full-Time Equivalent (FTE) value, by language of the provider.
- Contribution of older practitioners to the overall activity: % 65+ FTE/ Total FTE

Workforce Evolution (Active Providers) by Age Group (2013 VS 2023)



Proportion (FTE) by Age Group (2013 VS 2023)



Average Age of a NL FTE (2023)

47,3

2013: 46,8 (+1.07%)

Average Age of a FR FTE (2023)

48,2

2013: 48,1 (+0.17%)

% of 65+ Activity of total FTE (2023)

4%

2013: 2% (+166.13%)

FTE by Language

Language	#FTE	%65+ (FTE)
FR	55,95	5%
NL	97,13	3%
Total	**153,08**	**4%**

Annex 1: FTE Details (2023) : Neurosurgeon

FTE (full-time equivalent) is calculated to determine the workload of a healthcare provider (= total reimbursements by provider in a given year divided by the median of reimbursements for providers aged 45 to 54 in the same specialty).
The median amount of reimbursement for providers aged 45 to 54 is calculated each year. Evolution is not adjusted for inflation.

FTE values are capped at 1. See the comparison per active provider by sex, language and age group.
N.B. The FTE for employed doctors in medical homes (lump sum financing) was estimated at 0,82 per doctor because the actual FTE cannot be evaluated given the absence of activity registration.

Avg FTE per Active Provider (2023)

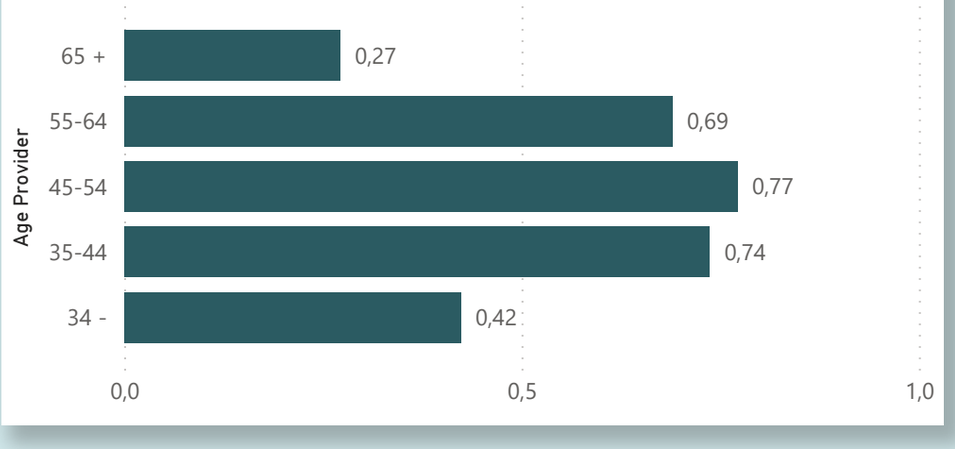
0,66

2013: 0,64 (+2.33%)

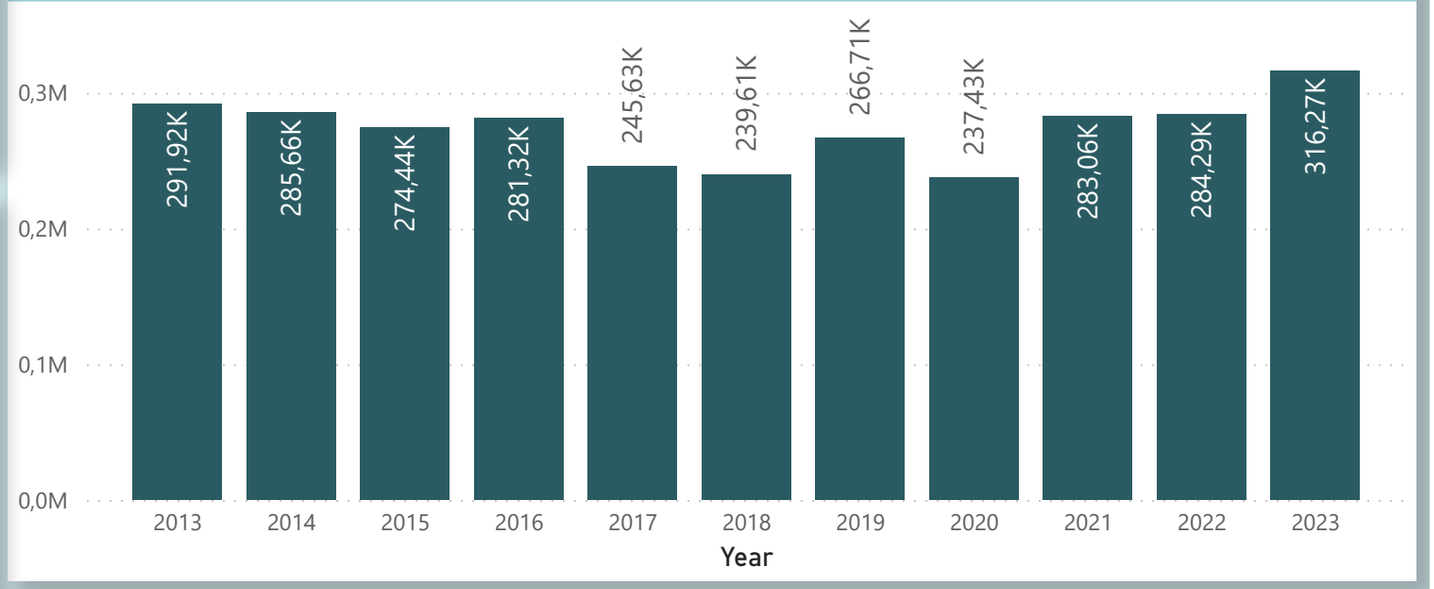
Avg FTE per Active Provider by Language and Gender

Language	F	M	Total
FR	0,58	0,62	**0,61**
NL	0,50	0,71	**0,69**
Total	**0,54**	**0,68**	**0,66**

FTE per Active Provider by Age



Median of Reimbursements for Providers between 45 and 54 years old



Annex 2: Type of Practice (2023) : Neurosurgeon

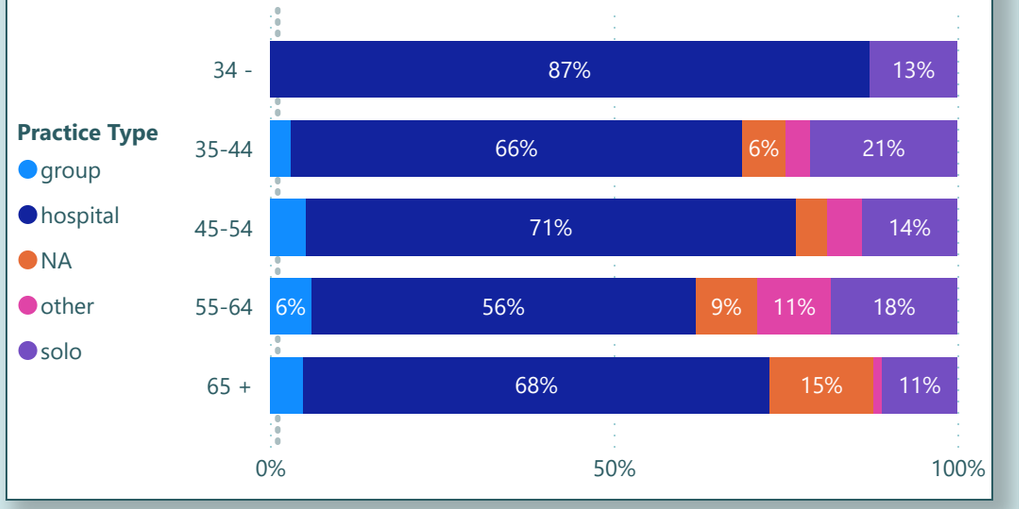
Type of practice (FTE) by age group and region. Evolution and trends

5 types of practices are represented:

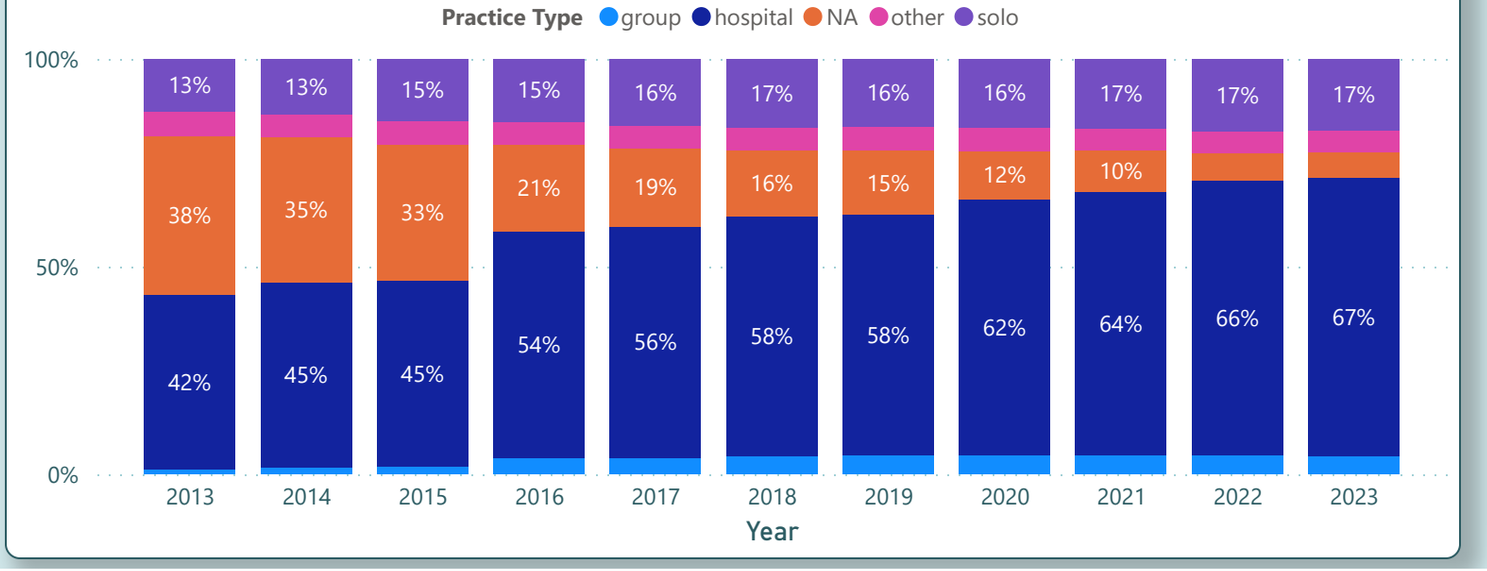
- Nursing home: represents care facilities for the elderly or individuals requiring psychiatric care.
- Group: represents collective practices or facilities where professionals work together (ex: medical house with lumpsum, mental health center, day care center, public pharmacies, medical laboratories, bandagist/orthopedist workshops).
- Hospital: represents hospitals or medical establishments (ex: general hospitals, psychiatric hospitals, hospital pharmacies)
- Solo: represents individual practitioners or private addresses.
- Other: represents facilities or organizations not falling into the above categories (ex: physiotherapy office, tariff office, organizations with a registered business number)

N.B. Not Available (NA) values are decreasing over time as the database becomes increasingly complete.

Workforce (FTE) Distribution by Age Group



Workforce Evolution (FTE) by type of Practice



Workforce Distribution (FTE) by Region