



Health Professionals Report 2022 (Beta version) : Capacity, Accessibility and Production

Speciality of Interest : Neurosurgery

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Introduction

This report provides a comprehensive overview per medical 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, geographical distribution, 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 :

- 2012 to 2022 for health professionals
- 2018 to 2022 for health professionals subspecialties
- 2018 to 2021 for insured coverage and patient frequentation

Each studied year N is coupled with socio-demographic data on providers as of December 31 N. Provider activity is estimated converting reimbursement amounts into hourly workload, with those surpassing a certain reimbursement threshold being treated as 1 FTE.

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

Additional information

For official information regarding the number of healthcare providers :

- NIHDI : please click [here](#)
- MOH : please click [here](#)

Contact

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Key Variables & Metrics

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

- Demographic characteristics are age (groups by 10Y), sex (M/F), contact address (not working place), 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) prestation. 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 was estimated at 0.81 per doctor because the actual FTE cannot be evaluated given the absence of activity registration. Medical homes are not included in the productivity calculation. General practitioners with "Fee for Service" in the title specifies that doctors and patients in medical homes 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 (group by 10Y), 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. Specialist 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 : contact address and working place can be in different regions, provinces, etc. which can explain differences in density between Brussels region (working place) and peripheral contact address (Brabant). By standardizing the metrics to a consistent population size, it enables fair comparisons across different regions or provinces. It has not been done in this report.
- 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 the year (see Annex 1). In addition it is not adjusted for inflation.

Speciality Metrics and Comparison : Neurosurgery and Surgical group

This sheet compares the specialty of interest (left) with a larger but similar group (right).

Neurosurgery

Code Competence	Description
10170	Specialist in neurosurgery

Neurosurgery

Surgical group

# N SubSpecialities	1	10		
# N Total	283	11,066		
# N Active	219	8,498		
# Full-Time Equivalent (FTE)	148	5,905		
€ Expenses per FTE	€ 360,737	€ 326,732		
65+	% Active	23%	% FTE	6%
Convention	% Active	72%	% FTE	67%
Accreditation	% Active	63%	% FTE	74%

Surgical group

Profession

Acute and Emergency
 Anaesthesiology
 General Surgery
 Neurosurgery
 Ophthalmology Surgery
 Orthopaedics
 Otorhinolaryngology
 Plastic Surgery
 Stomatologist
 Urology

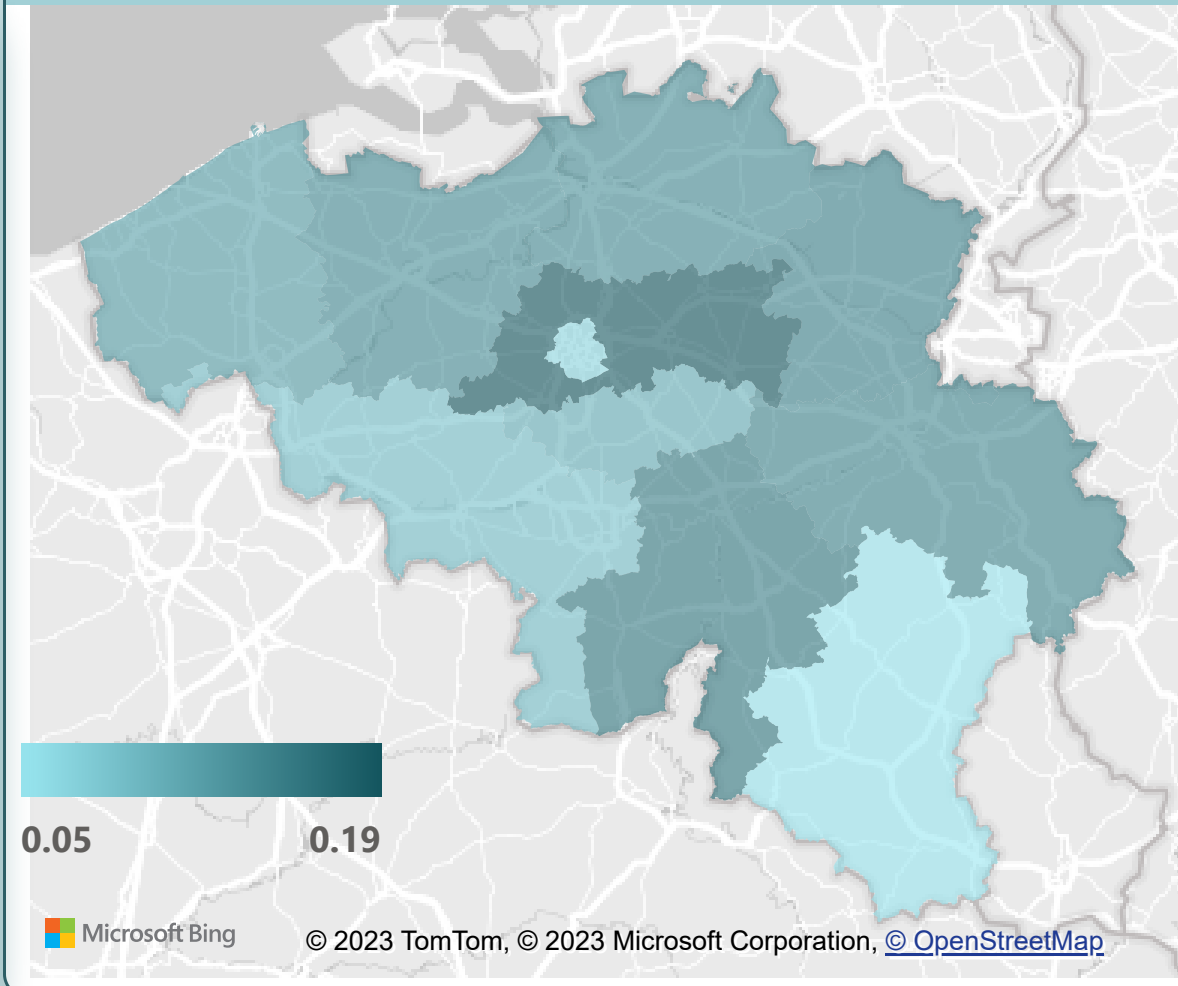
Geographical Accessibility (2022) : Neurosurgery

Geographical accessibility is measured by density, calculated by dividing the number of FTE (Full Time Equivalent) per 10.000 insured and comparing the results between provinces and regions.

Indicators :

- Geographical distribution which enables to check for homogeneity ;
- Evolution since 10 years and growth rate within the time period ;
- Comparison between FTE density and insured density to detect correlation.

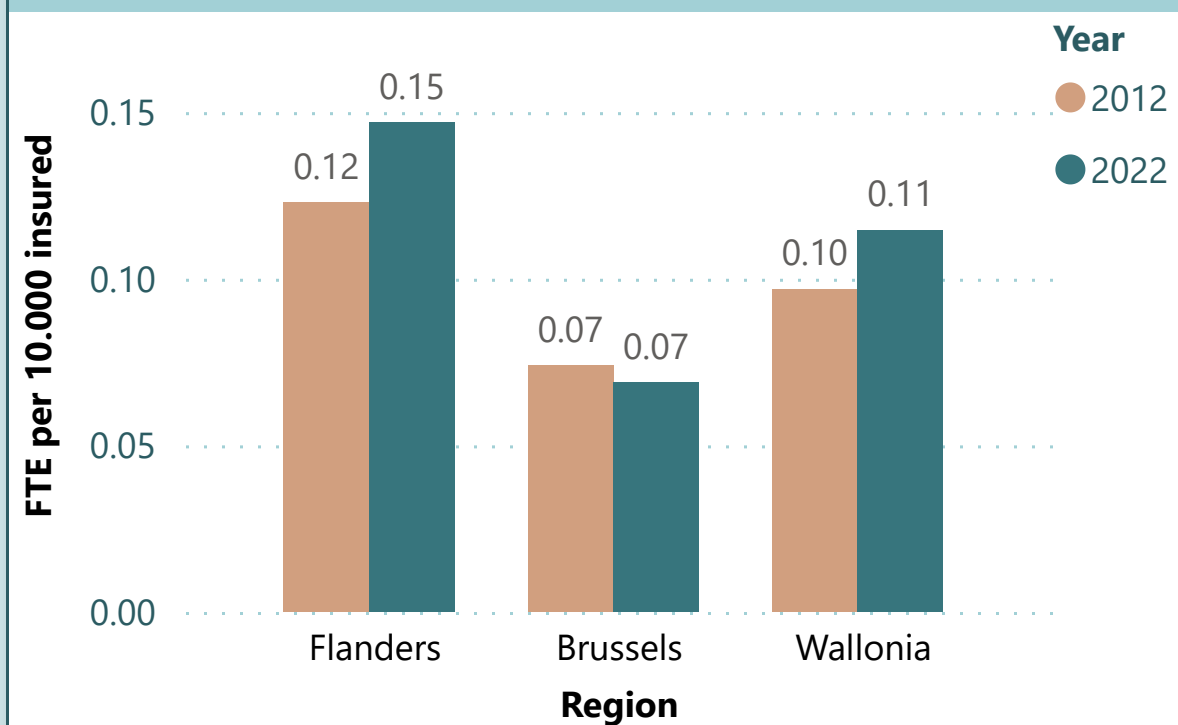
FTE per 10.000 insured by Province (2022)



Demographic Information by Province (2022)

Province	#FTE	Density (FTE per 10.000 insured)	%65+ (FTE)	%Women (FTE)
West-Vlaanderen	15	0.12	0%	7%
Oost-Vlaanderen	22	0.14	9%	13%
Antwerpen	27	0.14	1%	11%
Limburg	13	0.15	1%	8%
Vlaams-Brabant	23	0.19	3%	14%
Brussels	8	0.07	28%	15%
Brabant Wallon	4	0.10		13%
Hainaut	12	0.09	7%	32%
Namur	8	0.16	14%	12%
Liège	16	0.15	6%	11%
Luxembourg	1	0.05	13%	62%
Total	148	0.13	6%	13%

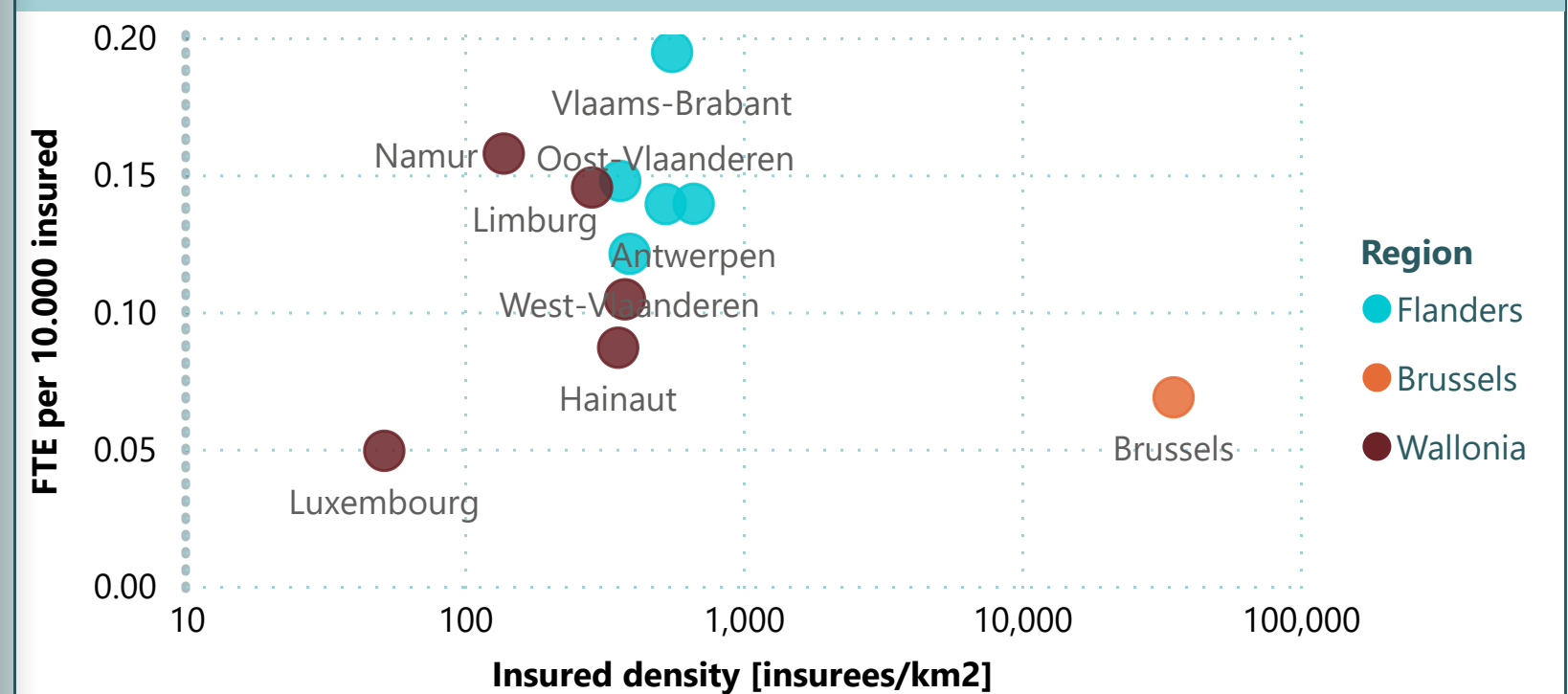
FTE per 10.000 insured, by Region (2012 vs 2022)



FTE per 10.000 insured in Belgium (2022)

0.13 ✓
2012: 0.11 (+17.59%)

FTE Density and Insured Density Relationship, by Province (2022)



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).

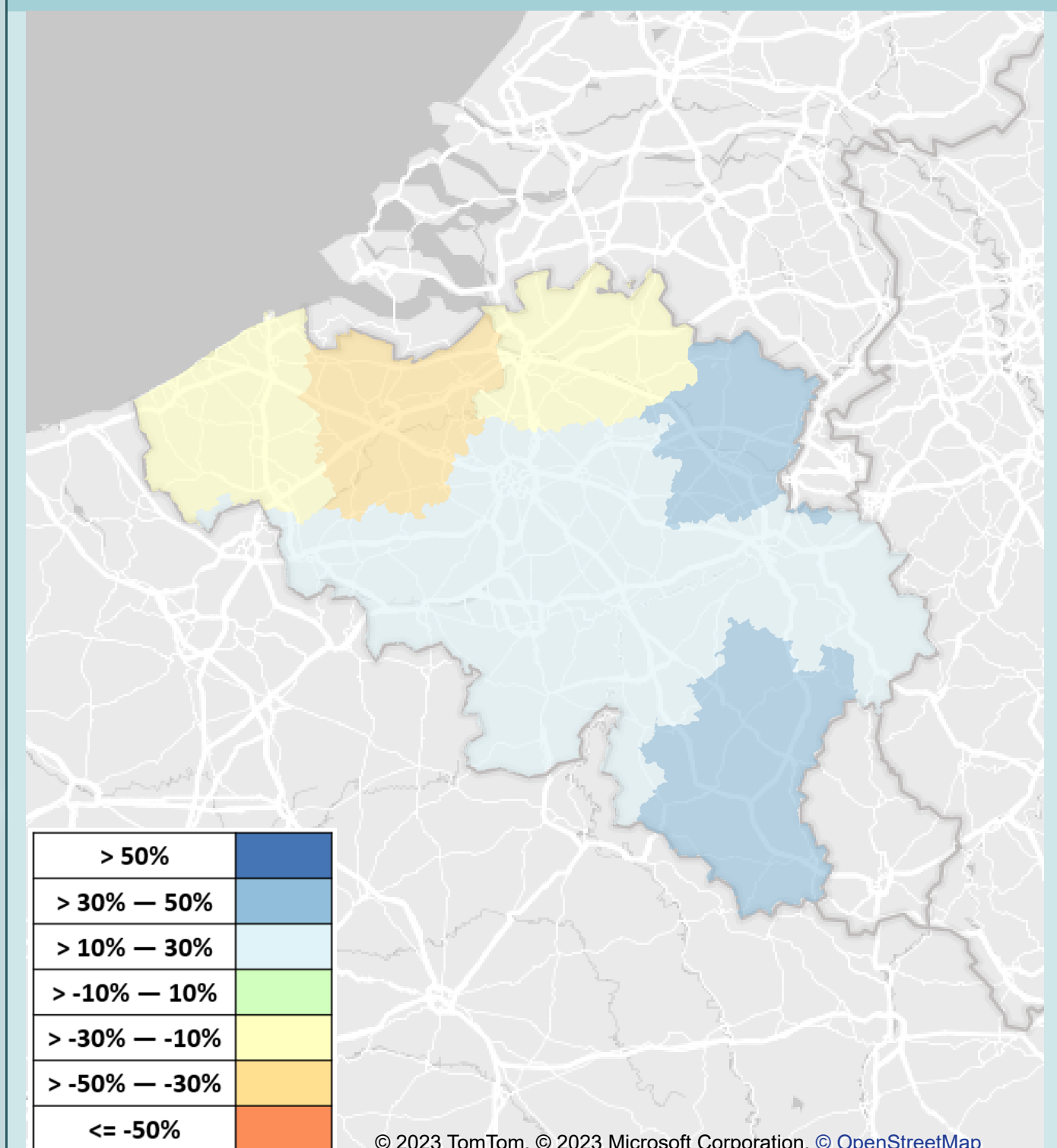
Indicators :

- % FTE meeting the criteria / total FTE
- Financial accessibility is gauged by conventioned FTE (Full Time Equivalent) per 10,000 insured.

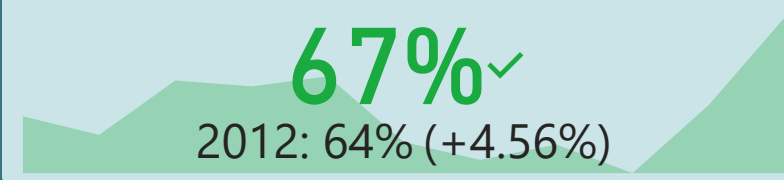
Demographic Information by Province

Province	Density (FTE per 10.000 insured)	Density (Conventioned FTE per 10.000 insured)	% Conventioned FTE
West-Vlaanderen	0.12	0.07	60%
Oost-Vlaanderen	0.14	0.05	34%
Antwerpen	0.14	0.07	53%
Limburg	0.15	0.15	100%
Vlaams-Brabant	0.19	0.15	77%
Brussels	0.07	0.05	80%
Brabant Wallon	0.10	0.08	81%
Hainaut	0.09	0.07	75%
Namur	0.16	0.12	76%
Liège	0.15	0.11	77%
Luxembourg	0.05	0.05	100%
Total	0.13	0.09	67%

% Differences Conventioned FTE by Province



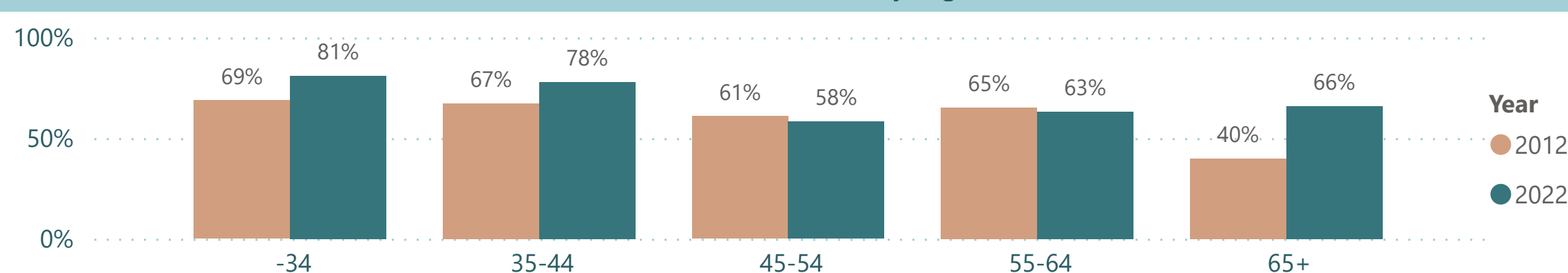
% Conventioned FTE (2022)



% Conventioned FTE by Language and Regime

Language	Part	Full	Total
FR	14%	66%	80%
NL	21%	37%	58%
Total	19%	48%	67%

Evolution of Conventioned FTE by Age (2012 vs 2022)



CPD (continuing professional development) is measured by accreditation criteria.

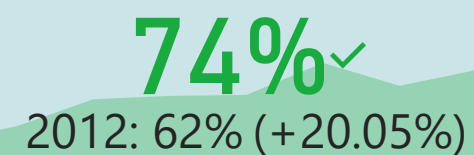
Accreditation means that the professional meets several CPD (continuous professional development) criteria (which indicates the will for quality of care).

Indicator :

- % FTE meeting the criteria / total FTE

% Accredited FTE (2022)

74% ✓
2012: 62% (+20.05%)



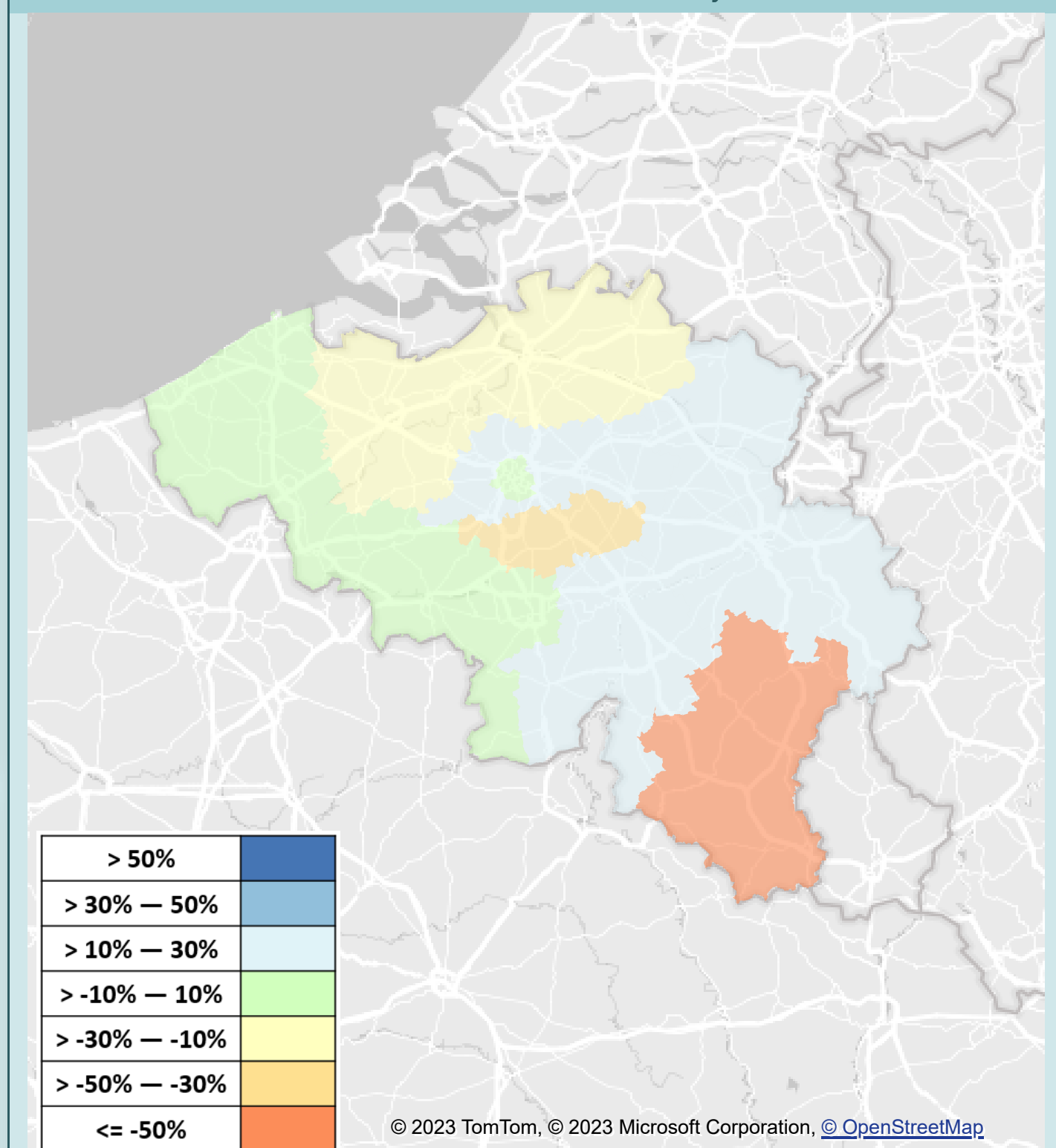
% Accredited FTE by Language and Gender

Language	F	M	Total
FR	74%	79%	78%
NL	62%	73%	72%
Total	69%	75%	74%

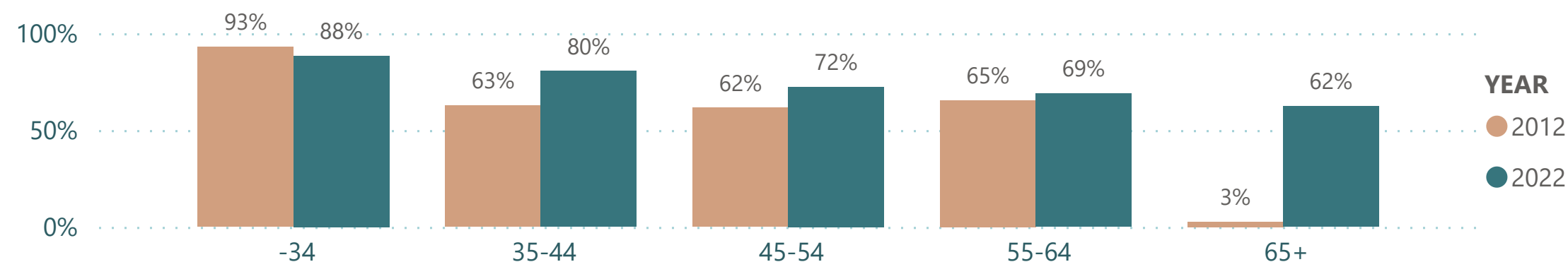
Demographic Information by Province

Province	Density (FTE per 10.000 insured)	Density (Accredited FTE per 10.000 insured)	% Accredited FTE
West-Vlaanderen	0.12	0.09	76%
Oost-Vlaanderen	0.14	0.09	62%
Antwerpen	0.14	0.08	59%
Limburg	0.15	0.14	92%
Vlaams-Brabant	0.19	0.16	83%
Brussels	0.07	0.05	69%
Brabant Wallon	0.10	0.05	45%
Hainaut	0.09	0.07	79%
Namur	0.16	0.14	89%
Liège	0.15	0.13	90%
Luxembourg	0.05	0.01	26%
Total	0.13	0.10	74%

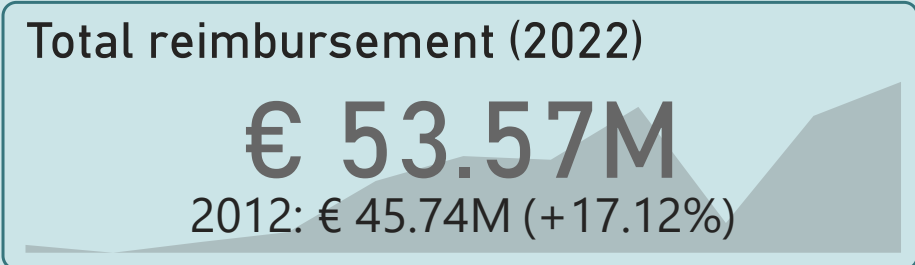
% Differences Accredited FTE by Province



Evolution of Accredited FTE by Age (2012 vs 2022)



Subspecialties Activity and Working Place (2022) : Neurosurgery



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 they are doing and where. The type of activity is described by 2 criteria: the place of work and the nature of the activity:

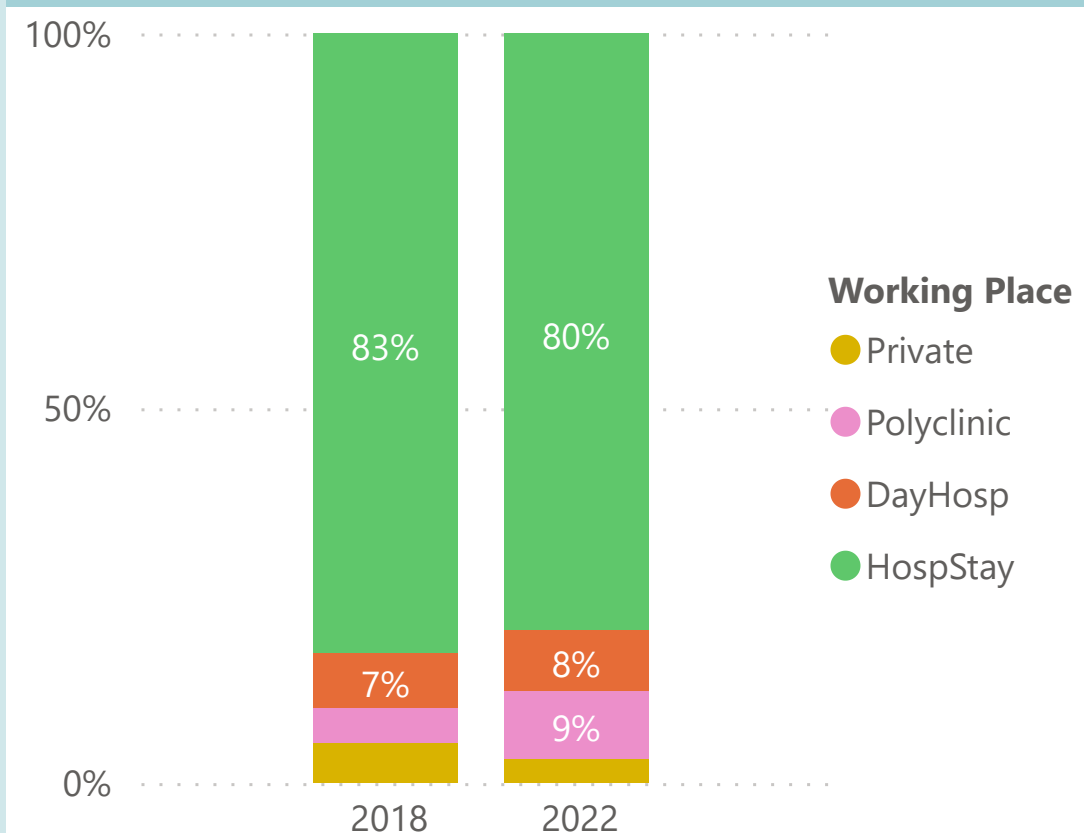
- The place of work is the place where the activity takes place (private, polyclinic, day hospital, hospital stay).
- The nature of the activity is described according to 2 logics of grouping. The traditional distribution of reimbursements within NIHDI (N01 contacts, N20 surgery, etc.) and a specific,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

Indicators :

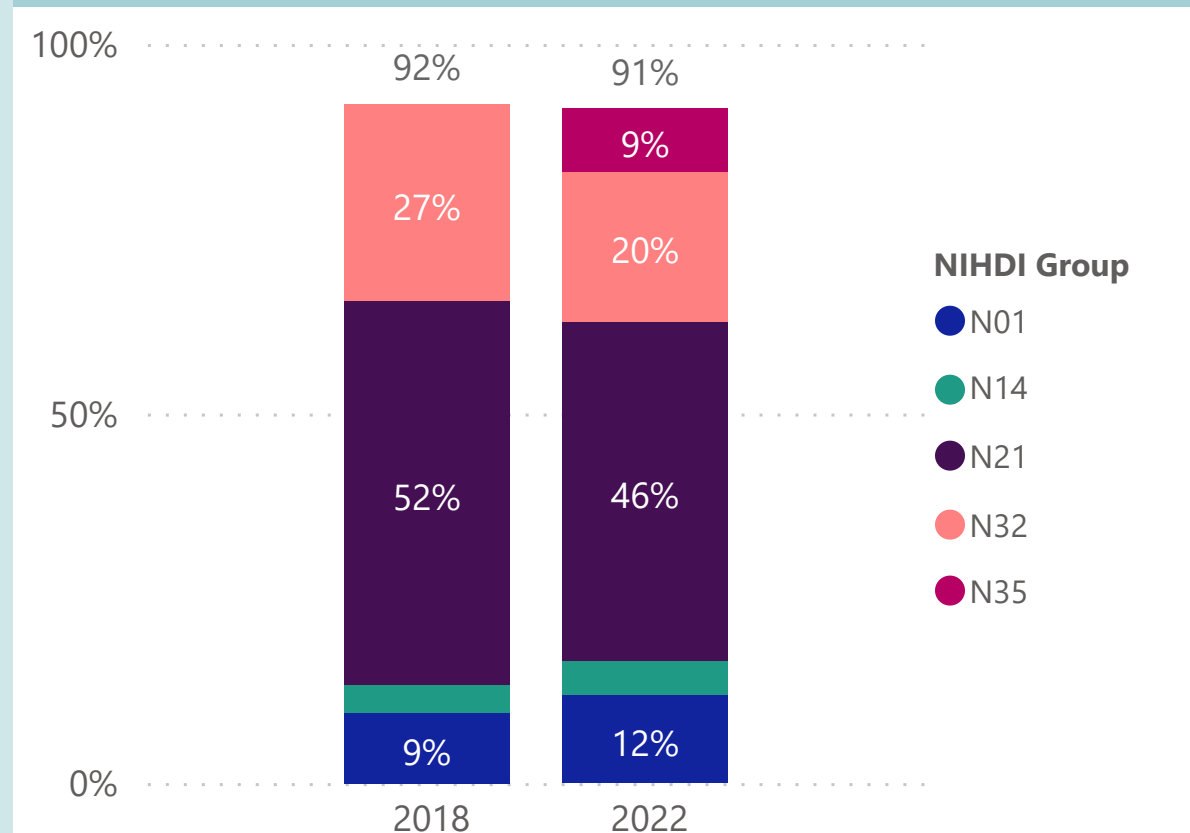
- Reimbursement (in [Million] Euros) for the specialty
- Reimbursement (in Euros) / FTE
- % Reimbursement (in Euros) by category / total reimbursement (in Euros)

The evolution provides information on the stability of the patterns of the activity comparing year N with N-4.

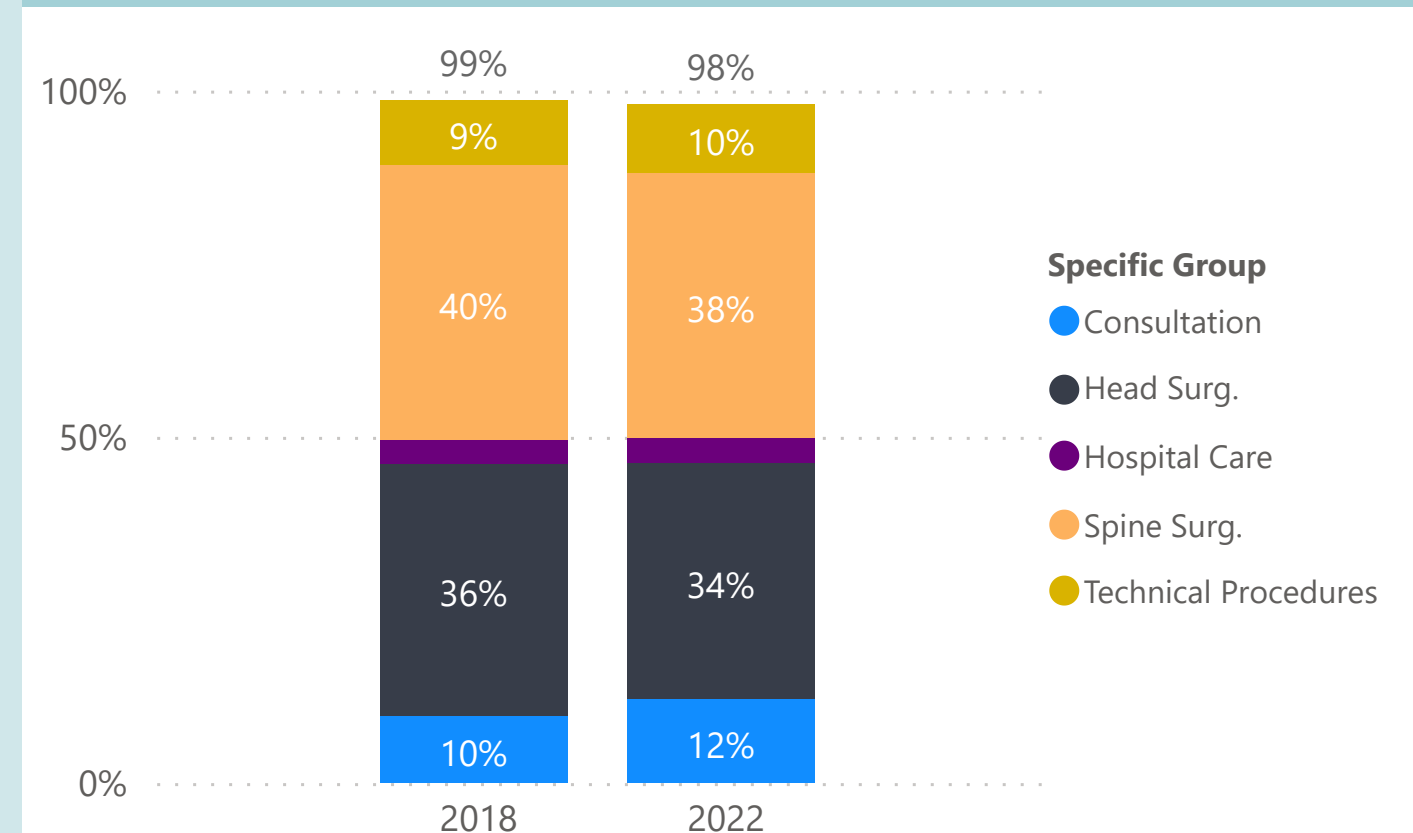
Reimbursement by Working Place (2018 vs 2022)



Top 5 Reimbursement (NIHDI Groups, 2018 vs 2022)



Top 5 Reimbursement (Specific Groups, 2018 vs 2022)



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

Specific Group	Description
Consultation	Consultation
Head Surg.	Surgery (Neuro-): Head
Hospital Care	Hospital Monitoring
Spine Surg.	Surgery (Neuro-): Spine
Spine Surg.	Surgery (Orthopedic-) : Spine
Technical Procedures	Technical Procedures

Subspecialties are identified by their working place and type of activity (see previous page): the assignment of a health care provider to a sub-specialty depends first on the type of activity exercised. An active provider with at least 10% of reimbursements in a type of activity is considered specialized in this activity. However, the most complex activities (eg transplantation) are not subject to a minimum threshold. If no particular activity has been identified for the specialty, the assignment is made 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.

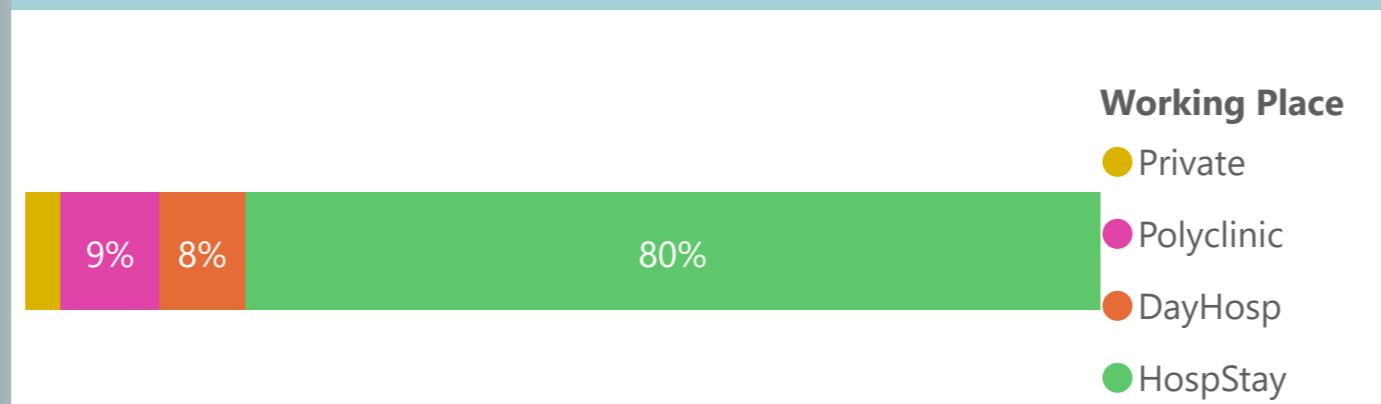
Indicators :

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

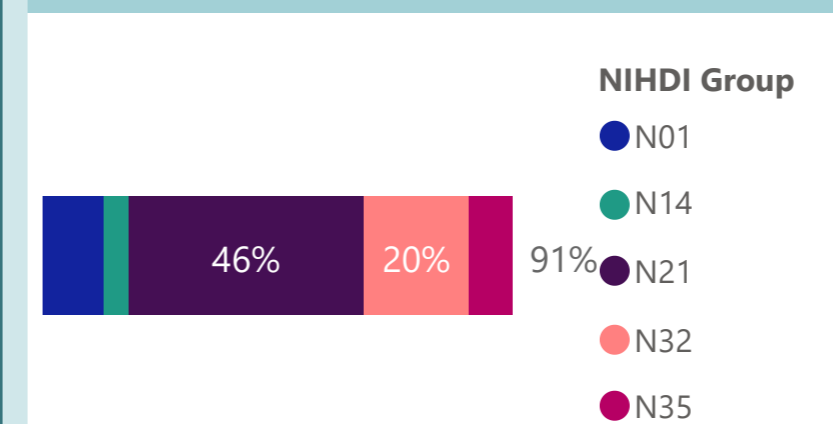
FTE and median Reimbursement by Subspecialty

Subspecialty	#FTE Cluster	% Total FTE	Median Reimb
Spine surg.	61	40%	€ 319K
Head neurosurg.	84	55%	€ 266K
Else	7	5%	€ 276K

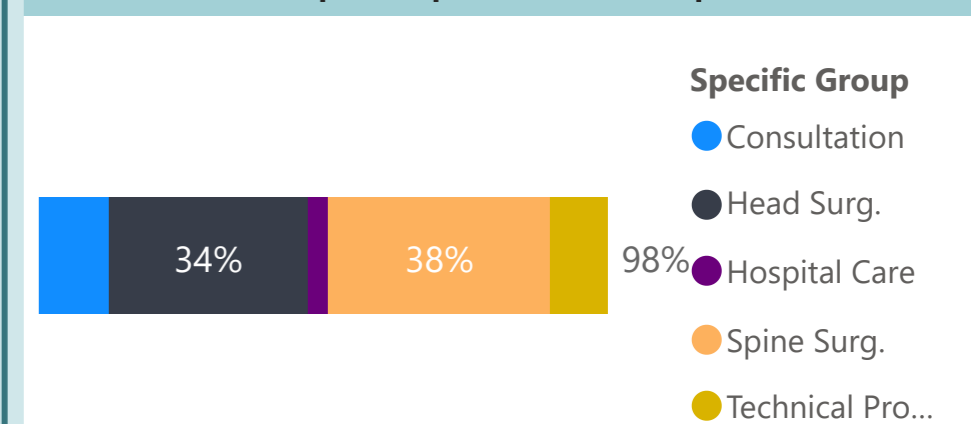
Reimbursement by Working Place



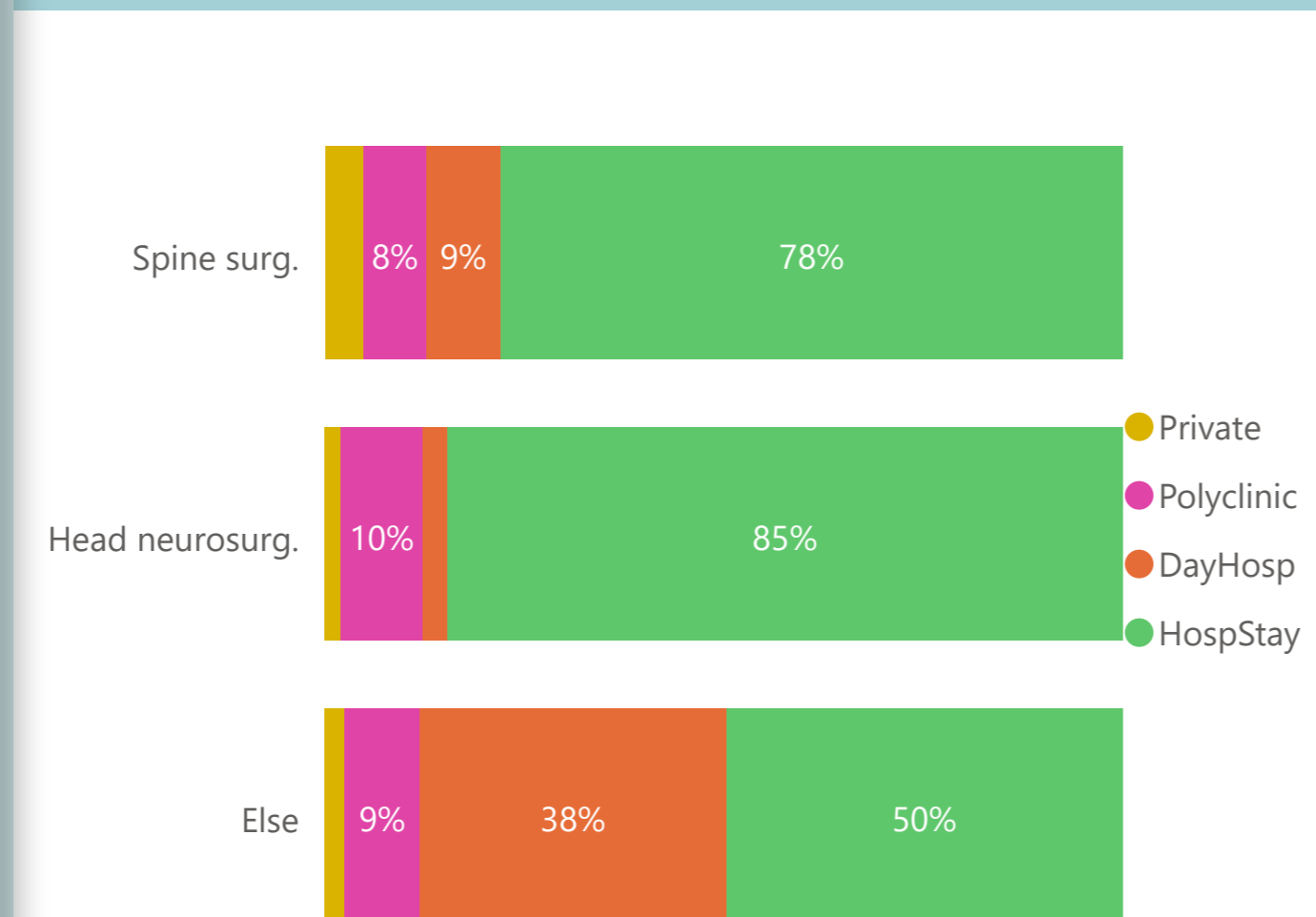
Top 5 NIHDI Groups



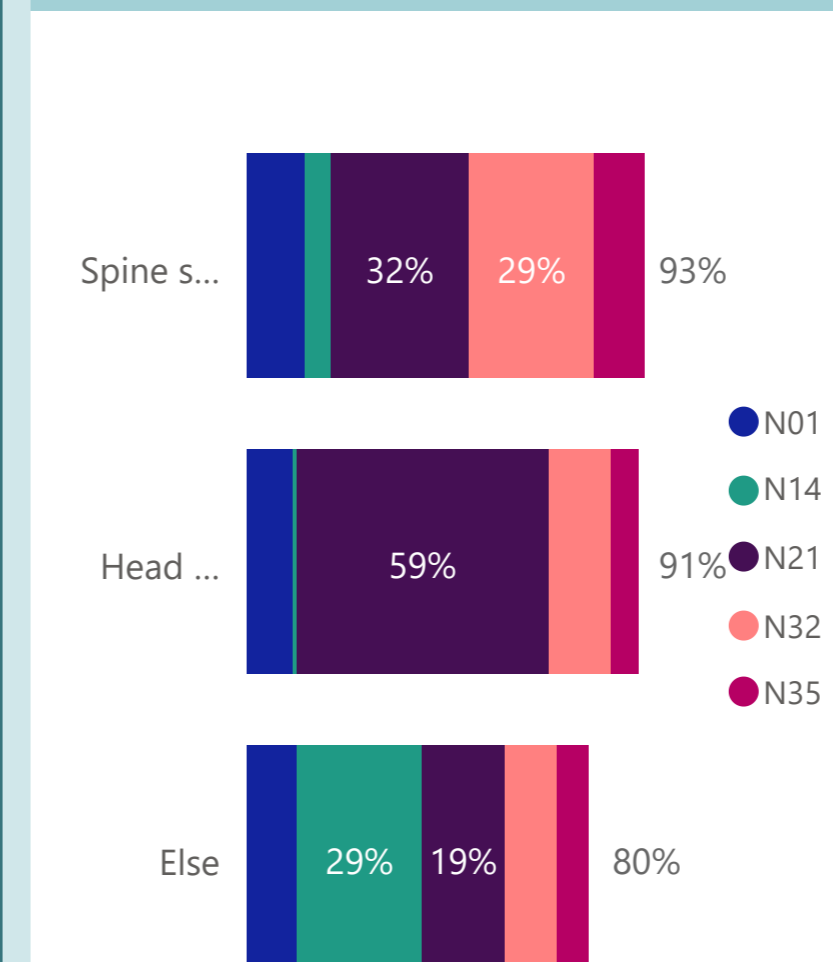
Top 5 Specific Groups



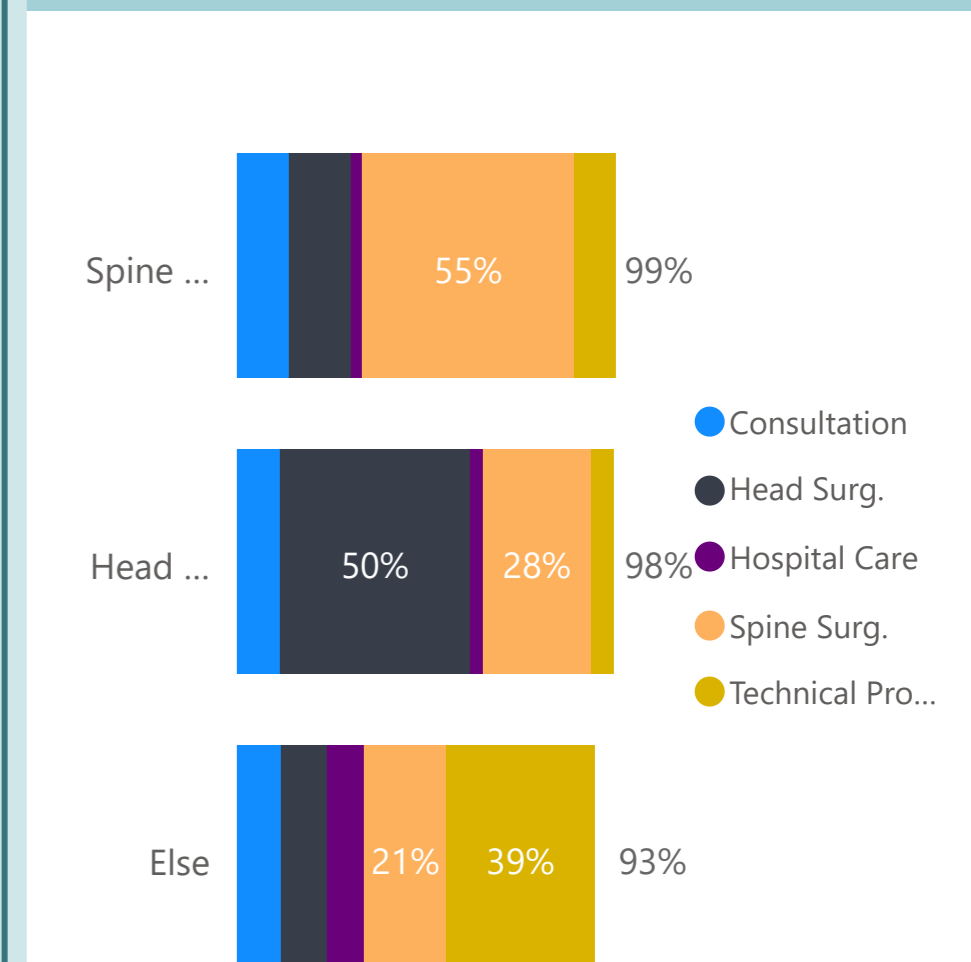
Reimbursement by Working Place, by Subspecialty



Top 5 NIHDI Groups by Subspecialty



Top 5 Specific Groups by Subspecialty



Accessibility, Insured Coverage (2021) : Neurosurgery

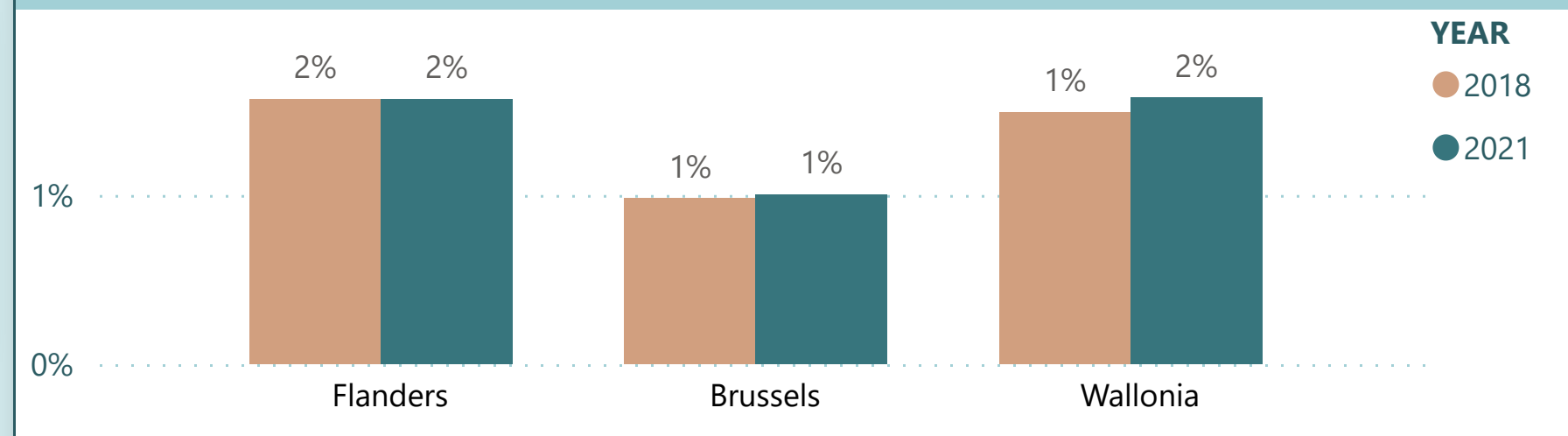
Disparities in insured coverage can help to understand accessibility.

Indicator:

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

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

Insured Coverage Evolution by Region (2018 vs 2021)



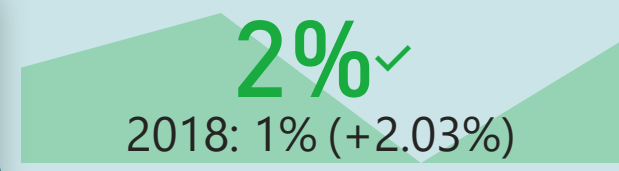
Insured Coverage by Gender



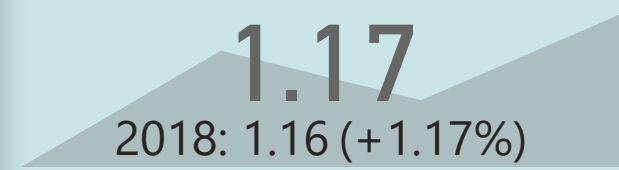
Insured Coverage by Social Status



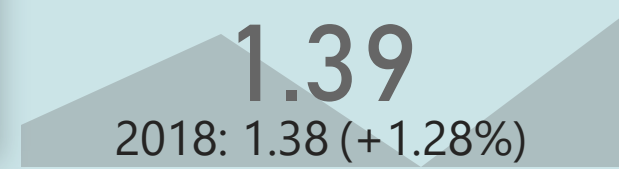
Insured Coverage (2021)



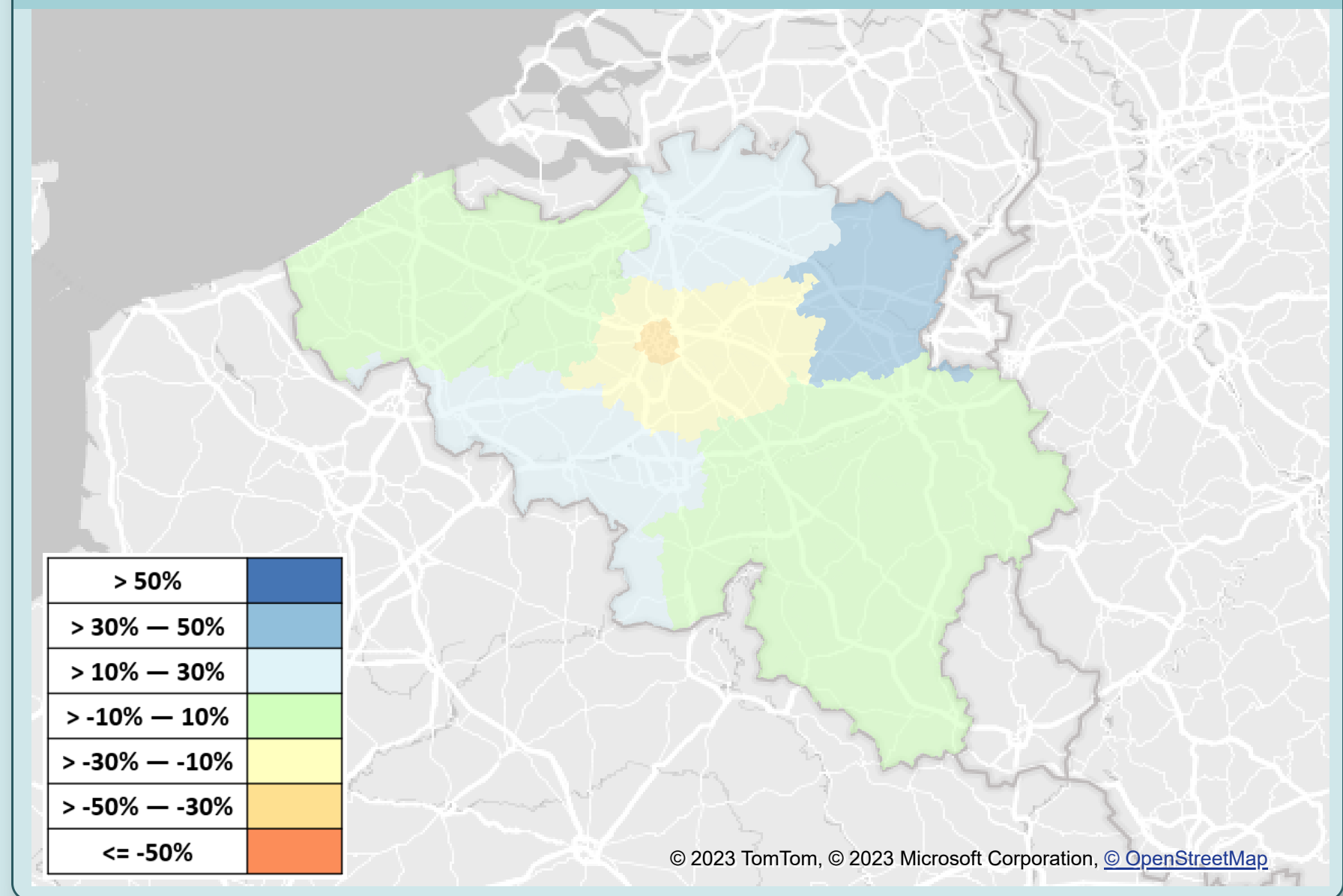
Ratio Women/Men (2021)



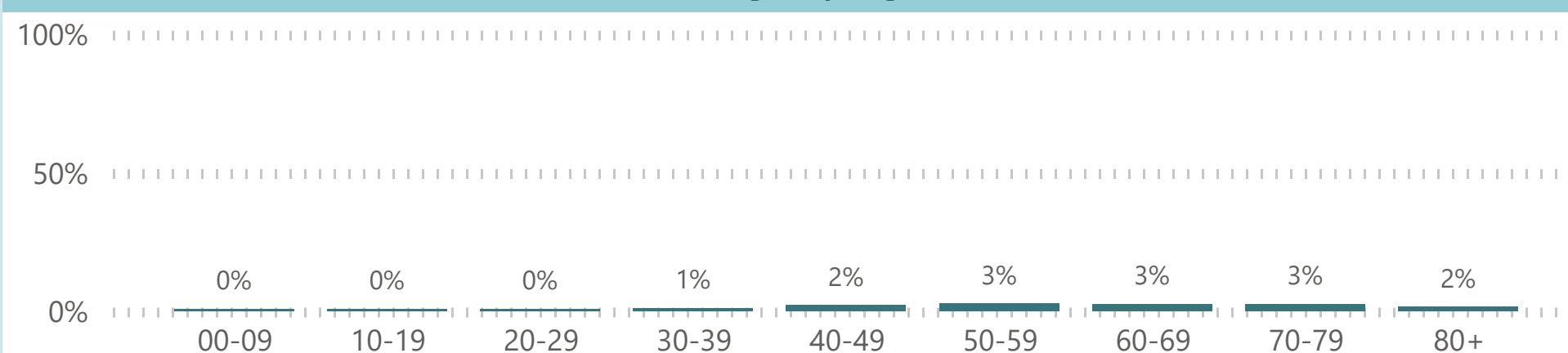
Ratio Bim/Standard (2021)



% Differences Insured Coverage between Provinces



Insured Coverage by Age of Patients

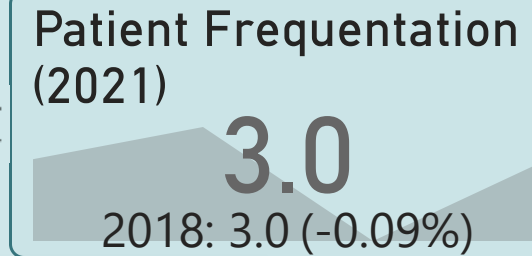
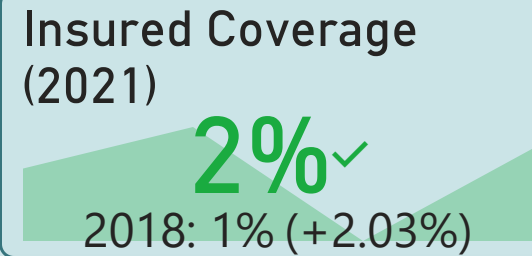
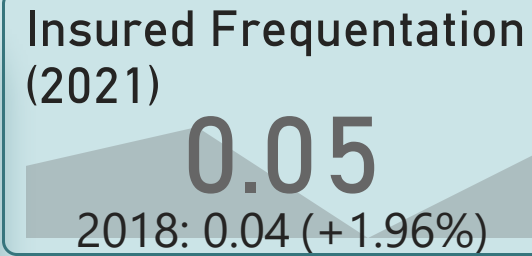


Accessibility, Patient Frequentation (2021) : Neurosurgery

Frequentation of patients (number of contacts) is a complementary measure to understand accessibility.

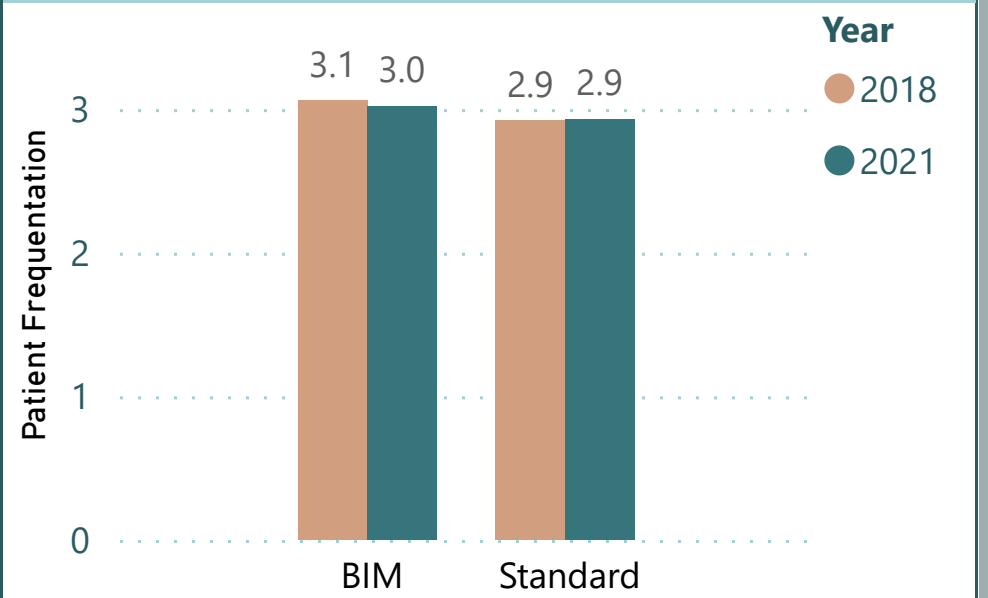
Indicator : number of contacts (by category of patient) is respectively divided
 - per insured
 - per patient (insured who at least has one contact with health provider)

Category of patients are defined by several criteria : gender, social status, age group, geographic residence, evolution.

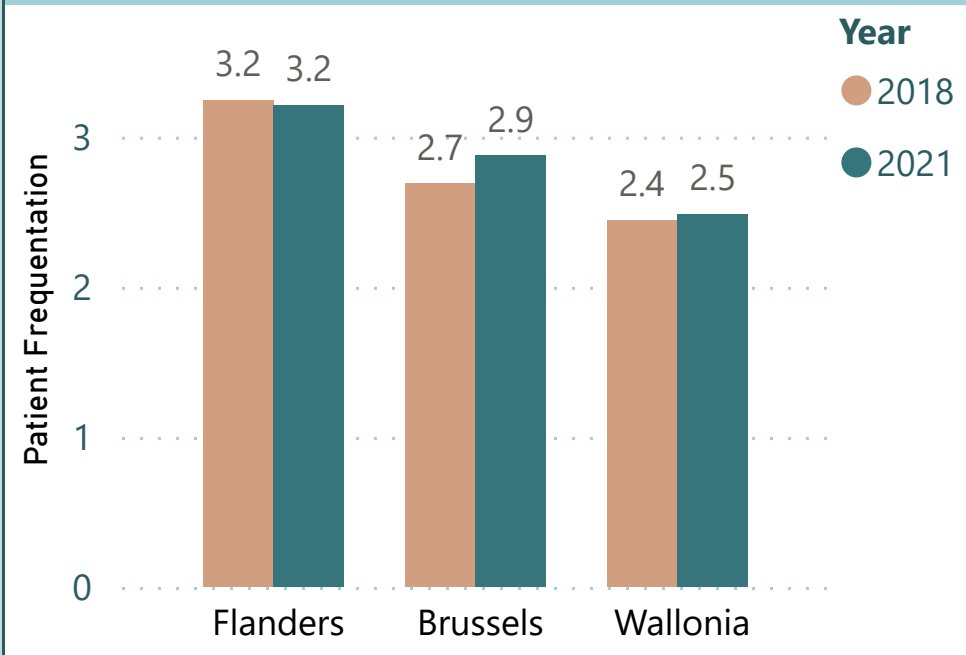


Age Class Patients	Insured Frequentation	Insured Coverage	Patient Frequentation
00-09	0.00	0%	2.0
10-19	0.00	0%	2.1
20-29	0.01	0%	2.5
30-39	0.03	1%	2.6
40-49	0.06	2%	2.8
50-59	0.08	3%	2.9
60-69	0.08	3%	3.1
70-79	0.09	3%	3.4
80+	0.05	2%	3.4

Average Patient Frequentation by Social Status (2018 vs 2021)

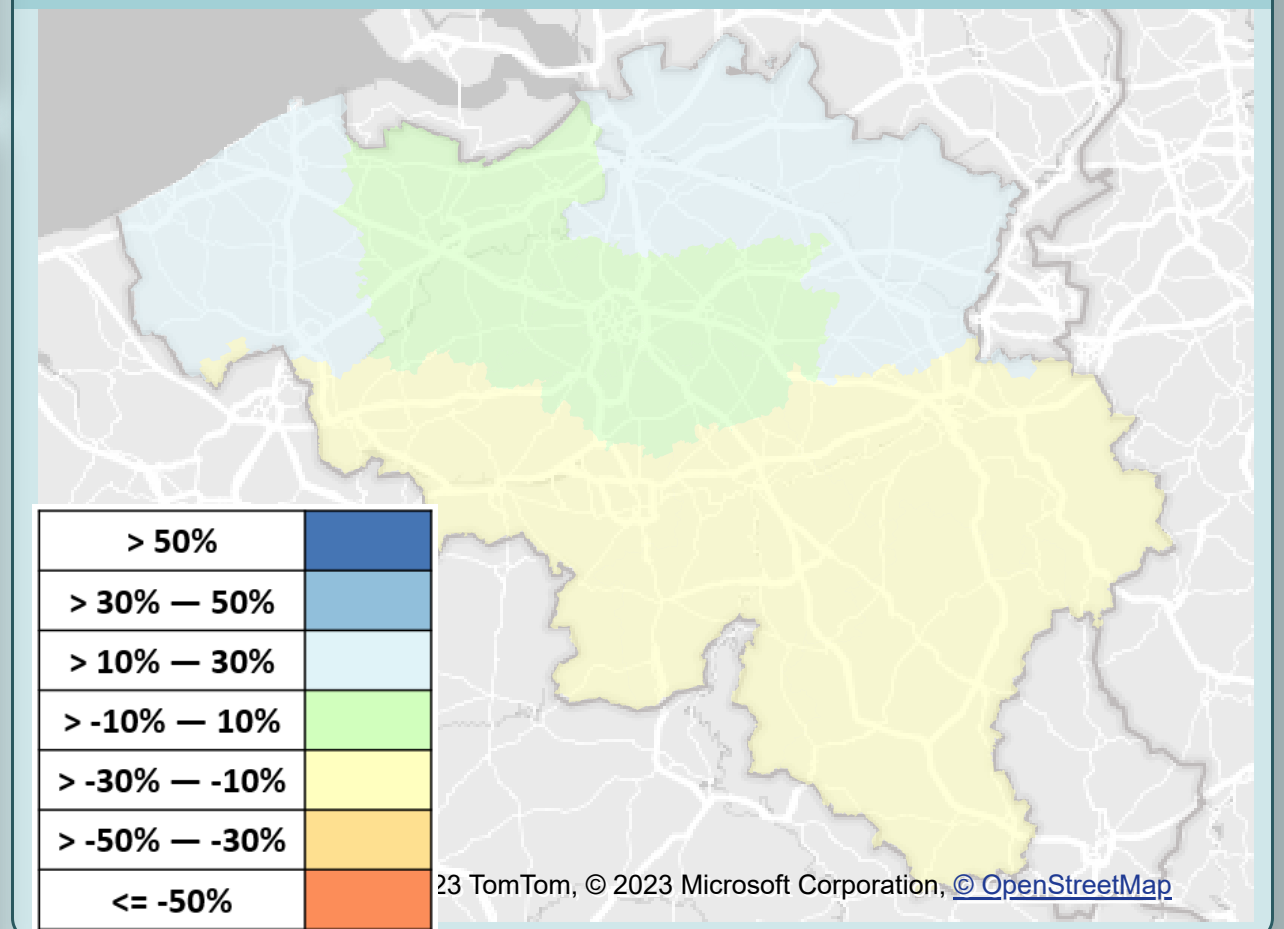


Average Patient Frequentation by Region (2018 vs 2021)



Province	Insured Frequentation	Insured Coverage	Patient Frequentation
West-Vlaanderen	0.05	1%	3.5
Oost-Vlaanderen	0.05	1%	3.1
Antwerpen	0.05	2%	3.2
Limburg	0.07	2%	3.3
Vlaams-Brabant	0.04	1%	3.0
Brussels	0.03	1%	2.9
Brabant Wallon	0.03	1%	2.7
Hainaut	0.05	2%	2.5
Namur	0.03	1%	2.4
Liège	0.04	2%	2.5
Luxembourg	0.03	1%	2.4

% Differences Patient Frequentation between Provinces



Workload by specialty provides insights into the work volume per year of the specialty by FTE and their 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. Specialist in training are excluded).

Indicators (by province)

- Workload : contacts / FTE
- Patient base population: Patients / FTE
- Patient base population turnover : Providers/ patient
- Contacts per patient per provider
- Average age of total contacts per FTE

Limitation : contact 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 have been hid.

Average Contacts per FTE (2021)

3,514
2018: 3,419 (+2.8%)

Average Patients per FTE (2021)

1,191
2018: 1,157 (+2.89%)

Average Providers per Patient (2021)

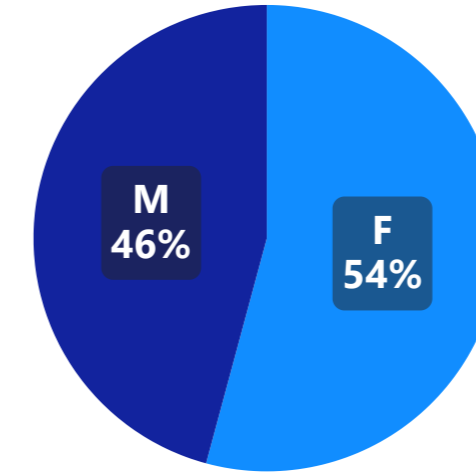
1.2
2018: 1.2 (+2.33%)

Average Contacts per Patient and Provider (2021)

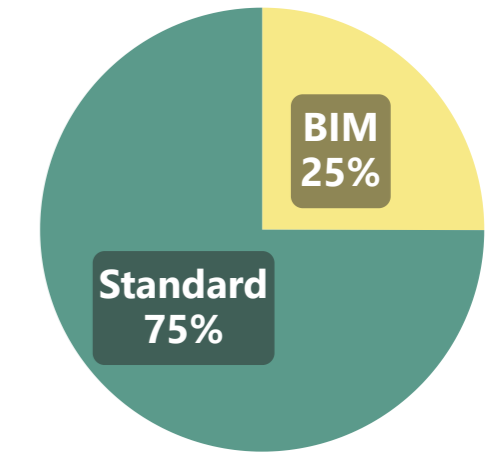
2.4
2018: 2.5 (-2.37%)

Province	Contacts per FTE	Patients per FTE	Contacts per Patient and Provider
West-Vlaanderen	4216	1194	2.9
Oost-Vlaanderen	3346	1077	2.6
Antwerpen	3686	1170	2.6
Limburg	4619	1414	2.6
Vlaams-Brabant	2062	676	2.5
Brussels	4033	1403	2.3
Hainaut	5350	2160	2.1
Namur	2081	877	2.0
Liège	2746	1094	2.1

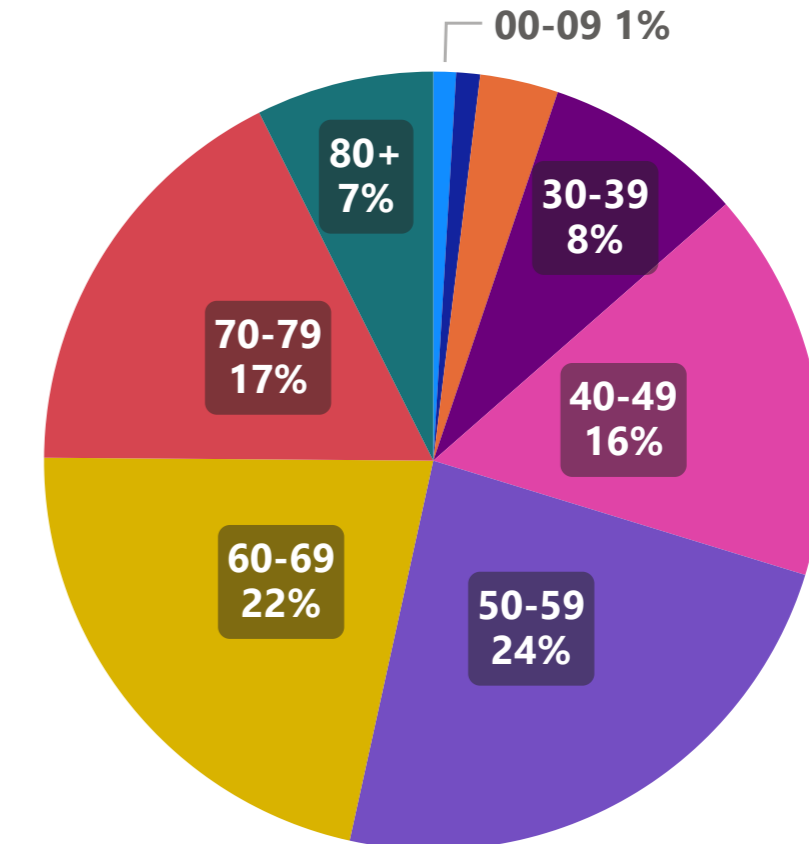
Contacts Distribution by Gender



Contacts Distribution by Social Status (Standard/BIM)



Contacts Distribution by Age of Patients



Average Age of Contact (2021)

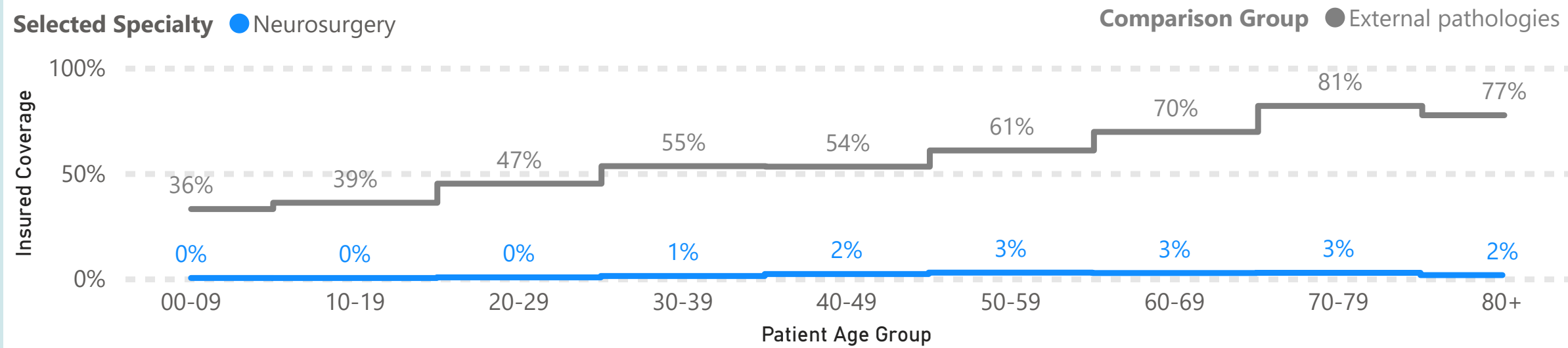
57.3
2018: 56.6 (+1.22%)

Complementarity compares the similarities in attendance (by age group of the insured/patient) between the reference specialty and the selected group of specialties considered close to the discipline.

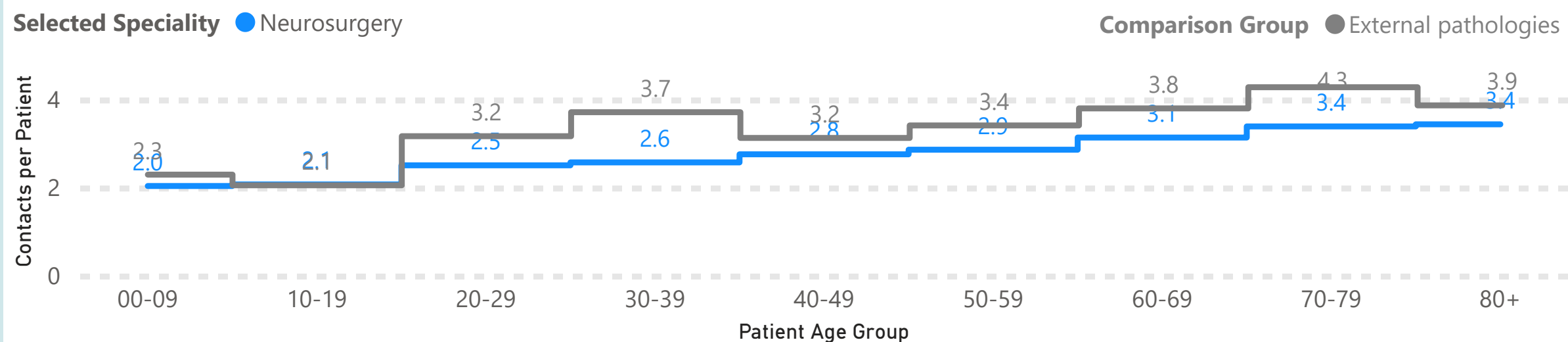
Indicators :

- Insured coverage
- Patient frequentation

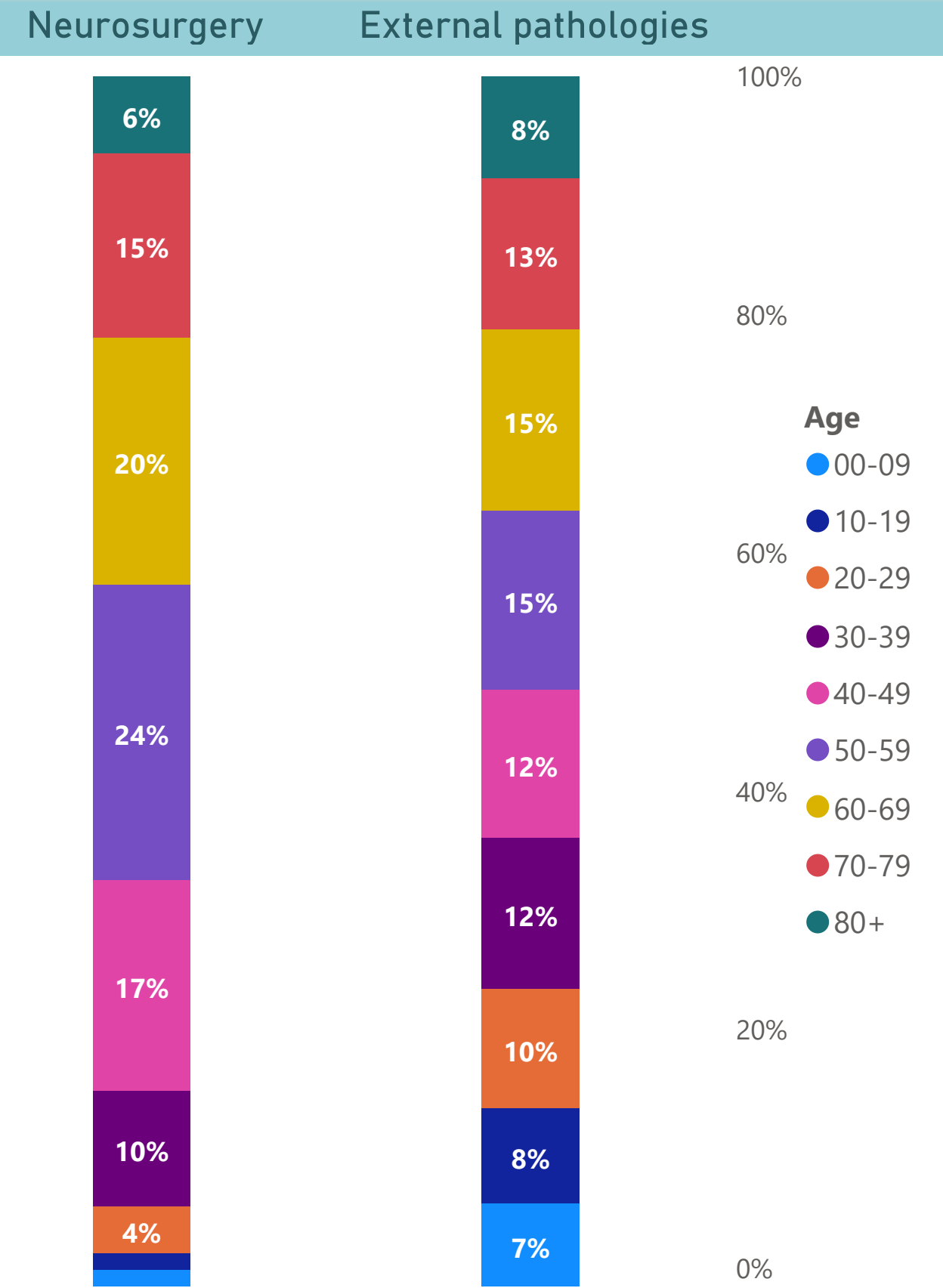
Insured Coverage by Age Group



Patient Frequentation by Patient Age Group



Age Distribution of Patients



Evolution of the Workforce Demography (2022) : Neurosurgery

Healthcare workforce demographics presents active professionals engaging in more than one activity per year on the left side of the page, while Full-Time Equivalentents (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.

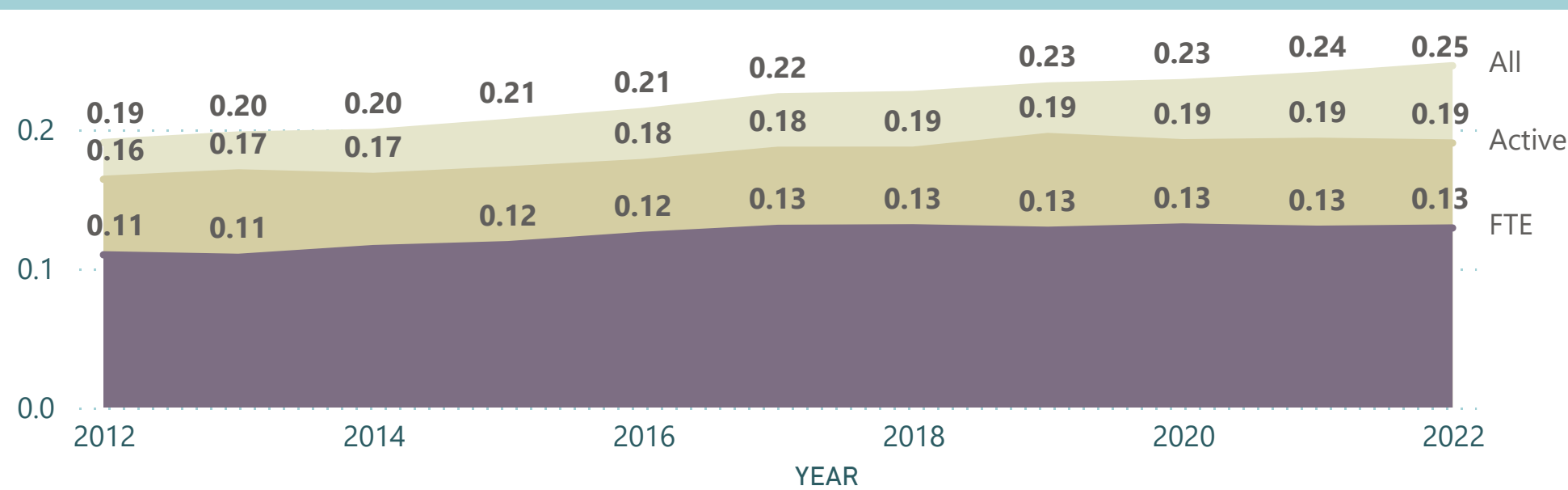
Active indicators (Left):

- Number of Actives (> 1 prestation /accounting year) and its % growth rate
- 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 to estimate the average rate)

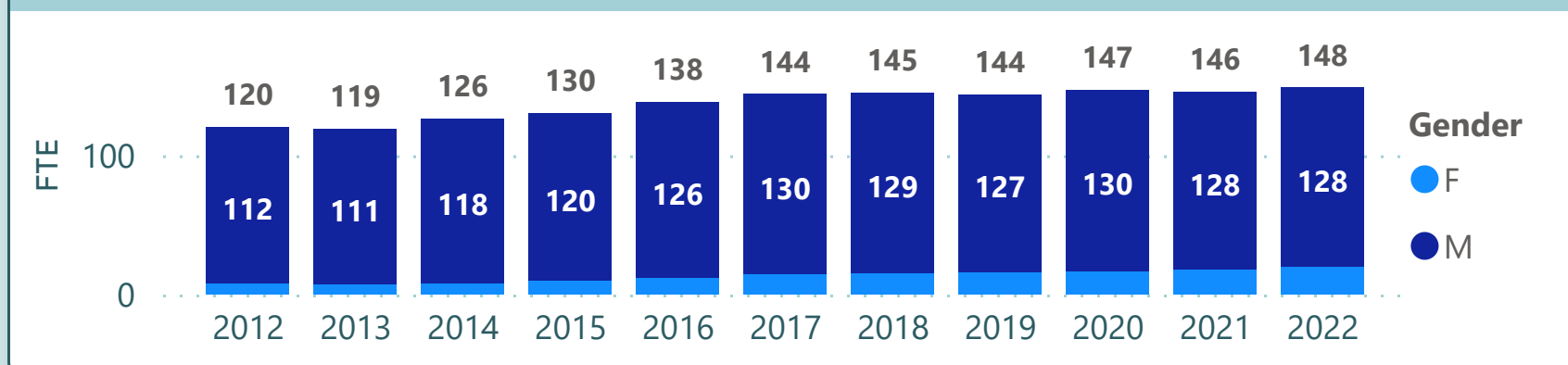
FTE indicators (Right):

- Equal proportion of gender: Indicates the percentage of women 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.

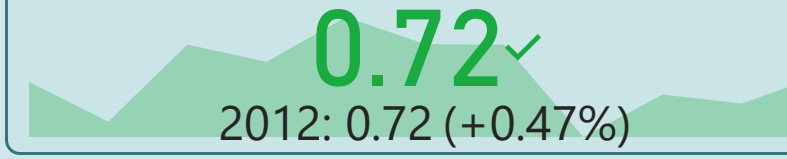
Evolution of All registered, Active Providers and FTE per 10.000 insured



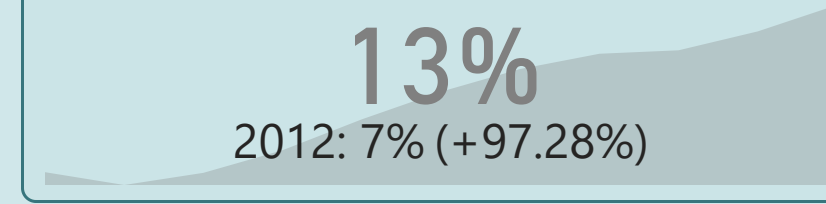
Evolution of total FTE by Gender



Avg FTE per active provider < 65y (2022)



% Women of total FTE (2022)



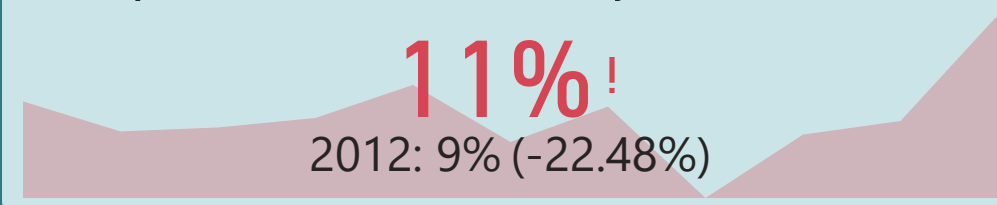
% Growth Rate of Active Providers

2.0%

Replacement Rate (Active under 55 by 55+) (2022)



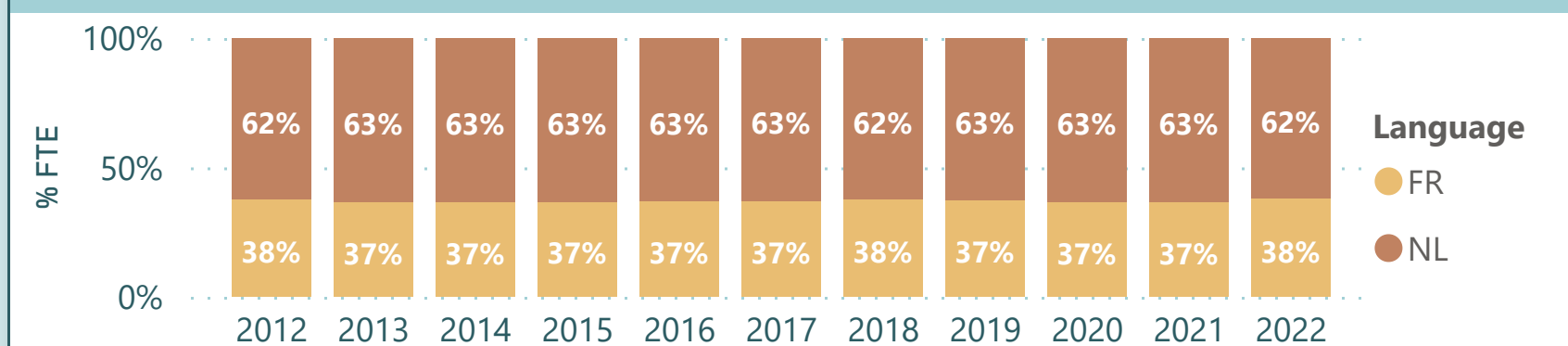
% of persons inactive < 65y (2022)



New Active Providers per Year

4

Evolution of FTE Proportions by Language

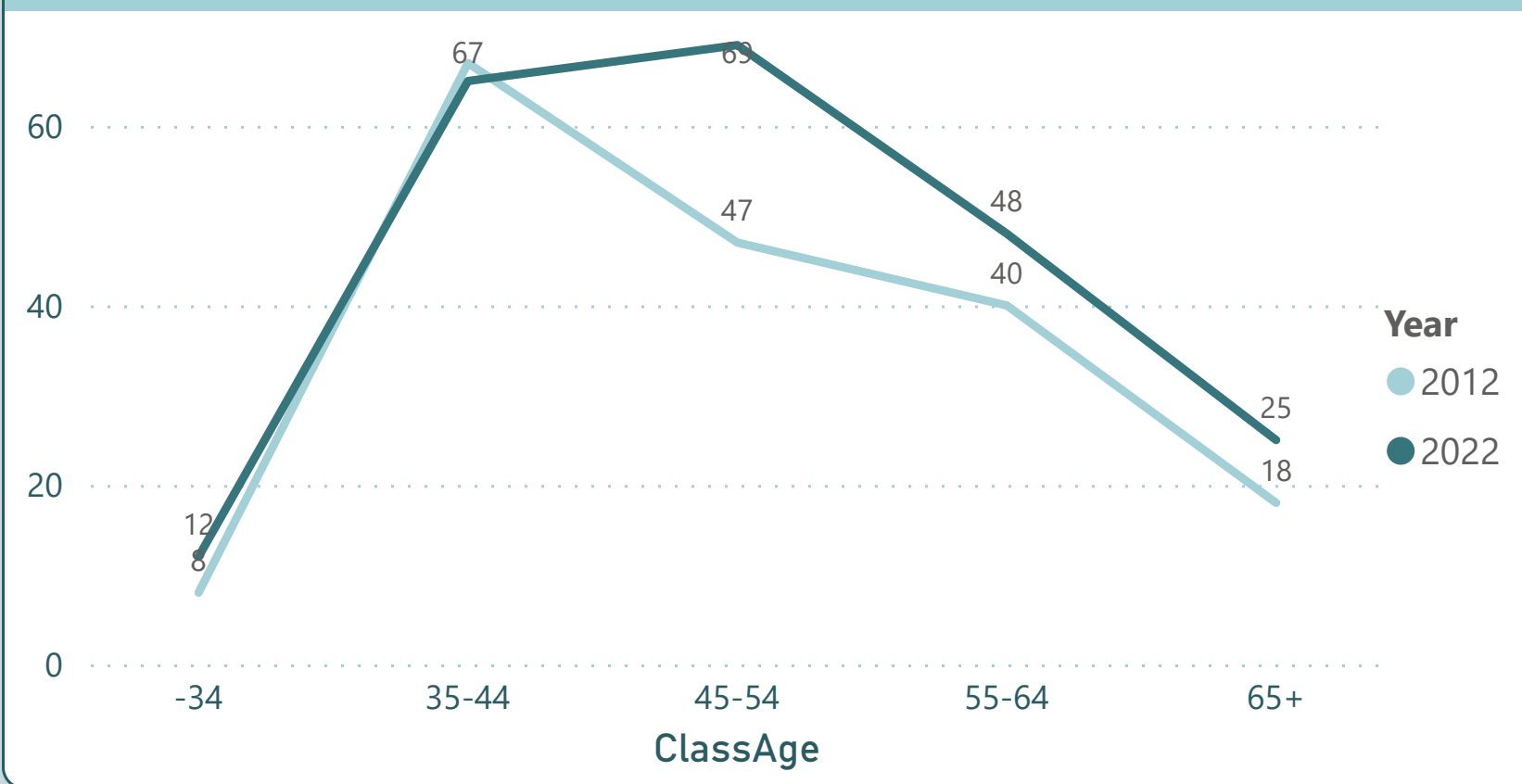


Demographic evolution by age group and activity of older professionals (provides information on the demographic stability).

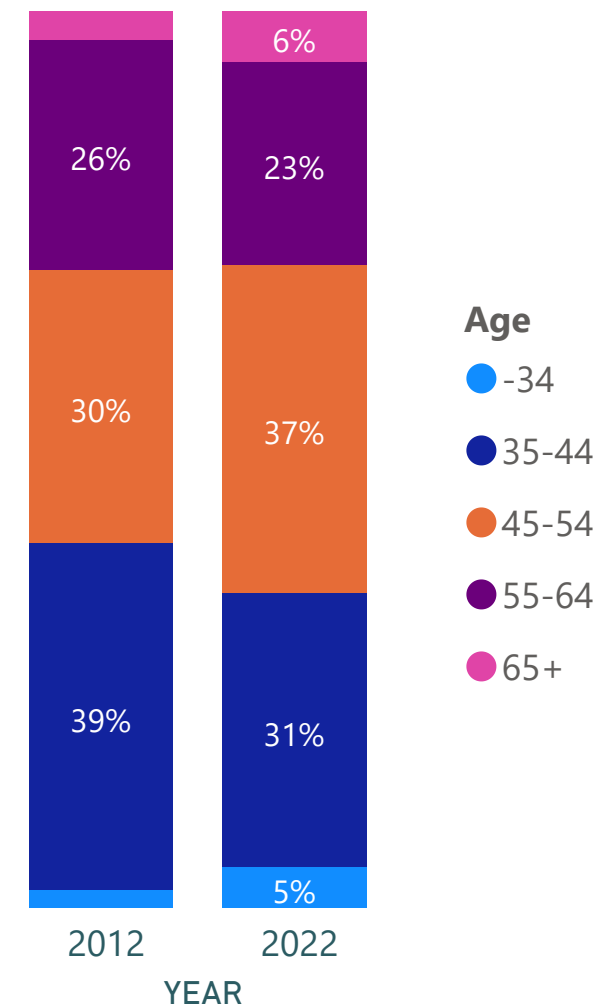
Indicators :

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

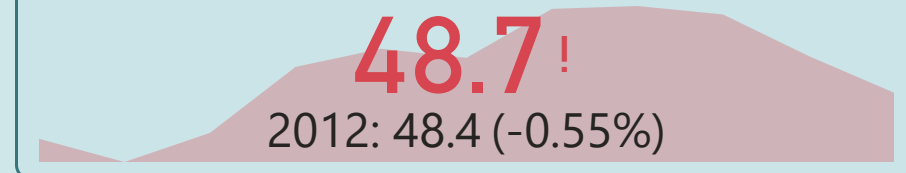
Workforce Evolution (active providers) by Age Group (2012 VS 2022)



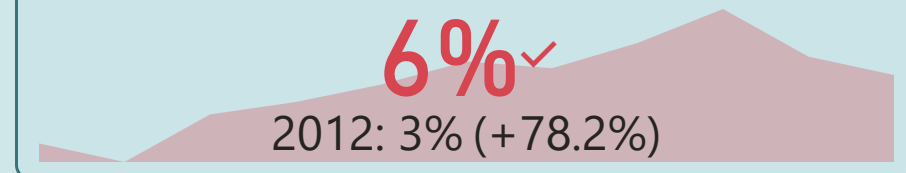
Proportion (FTE) by Age Group (2012 VS 2022)



Average Age of a FTE (2022)



% of 65+ activity of total FTE (2022)



FTE detailed by Language and Gender

Gender	F		M		Total	
Language	#FTE	%65+ (FTE)	#FTE	%65+ (FTE)	#FTE	%65+ (FTE)
FR	11		45	10%	56	8%
NL	9	0%	83	5%	92	4%
Total	20	0%	128	6%	148	6%

Annex 1: FTE Details (2022) : Neurosurgery

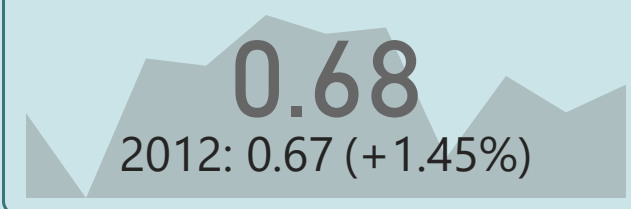
FTE (full-time equivalent) is calculated to determine the workload of a healthcare provider (= total reimbursements by provider in a given year divided by the median of reimbursements for providers aged 45 to 54 in the same specialty).

The median amount of reimbursement for providers aged 45 to 54 is calculated each year. See the evolution over the ten past years. It is not adjusted for inflation.

FTE values are capped at 1. See the the comparison per active providers by sex, language and age group.

N.B. The FTE for employed doctors in medical homes was estimated at 0.81 per doctor because the actual FTE cannot be evaluated given the absence of activity registration.

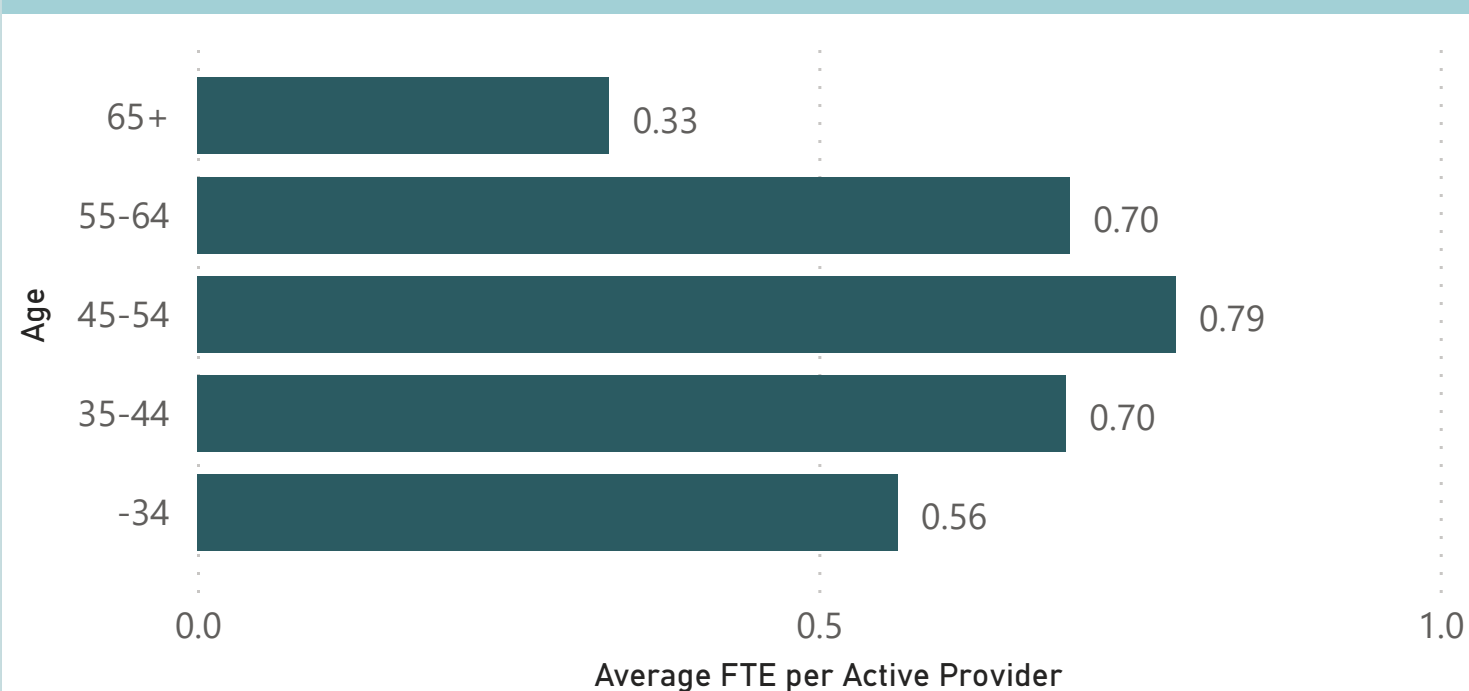
Avg FTE per Active Provider (2022)



Avg FTE per Active Provider detailed by Language and Gender

Language	F	M	Total
FR	0.58	0.65	0.63
NL	0.64	0.72	0.71
Total	0.61	0.69	0.68

FTE per Active Provider by Age



Median of Reimbursements for Providers between 45 and 54 years old

