

1.1. Spine imaging (QA-6)

1.1.1. Documentation sheet

Description	Number of examinations (X-ray, CT scan and MRI) by 100 000 insured population per year
Calculation	Numerator: Number of examinations (X-ray, CT scan and MRI) x 100 000 Denominator: insured population
Rationale	Low back pain (LBP) is a considerable public health problem which combines high frequency, healthcare consumption and societal cost. In Belgium, 21% of the 15 years old and over declared to have suffered from low back disorder or other chronic back defect in the past 12 months (HIS 2013). Guidelines do not recommend imaging as a diagnosis tool for aspecific low back pain (acute and chronic) unless a cluster of specific symptoms ("red flags") is observed. ^{1, 2} Public awareness campaigns ^a over medical imaging are annually set up since 2010; see also guidelines for medical imaging from the Belgian Society of Radiology. ^b Use of three imaging techniques for spine have been used as proxy for low back pain examination: X-ray, computed tomography (CT scan) and magnetic resonance imaging (MRI).
Data source	- Document N 2007-2017 for cases and expenses of insured persons (who meet selection criteria) of which age, gender, preferred scheme and district are known - Document P 2015-2017 for numbers and expenses of insured persons (who meet selection criteria) per specialisation
Technical definitions	Selection of the following INAMI – INAMI – RIZIV billing codes (nomenclature): <ul style="list-style-type: none">- 455394-455405, 455416-455420, 455475-455486, 455534-455545, 455593-455604, 466395-466406, 466410-466421, 466476-466480, 466535- 466546, 466594-466605 (X rays)- 457855-457866, 457870-457881, 457892-457903, 458835-458846, 458850-458861 (CT scan)- 457914-457925, 457936-457940, 457951-457962, 459491-459502 (MRI)
International comparability	N.A., but the number of MRI units and CT scanners in EU-15 has been added as reference.
Limitations	In certain specific cases (red flags), it may of course be necessary to prescribe spine imaging. By excluding patients with known orthopaedic problems, we focus more (but impossibly exclusively) on non-specific back pain, so that we can make a better assessment of possible overuse of imaging in these patients. MRI and CT scan codes regarding spine examination are not specific to the lumbar spine. The indicator is thus a proxy.
Dimension	Appropriateness, safety, efficiency
Related indicators	Radiation rate (see HSPA 2015 ³)

^a <https://www.pasderayonssansraisons.be/>

^b <https://www.health.belgium.be/en/node/27827>

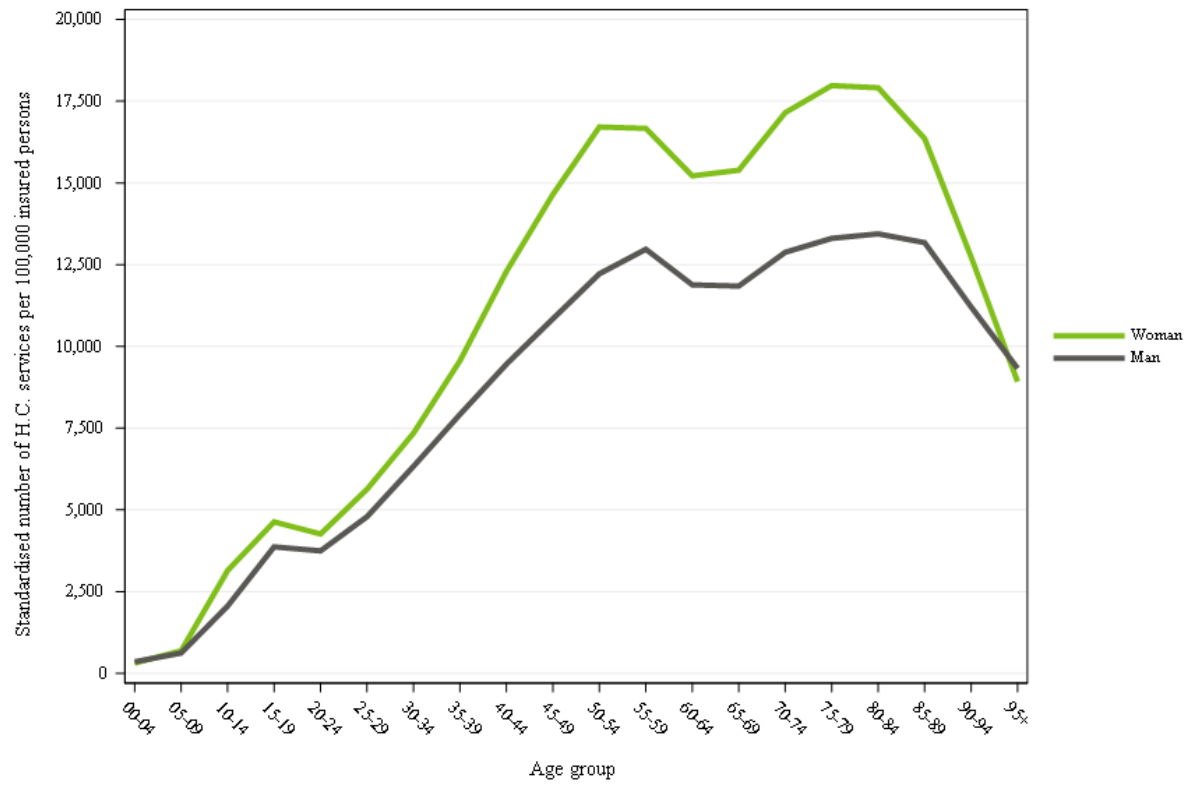
1.1.2. Results

Belgium

General practitioners are prescribing 44.0% of the imaging for spine, with a median of 26 prescriptions per GP in 2022.⁴ Over the 2012-2022 period, there are more women (58.3%) than men (41.7%) who receive spine imaging and the most frequent age category is 75-79 years old for women and 80-84 for men (Figure 1). In average, there were 9320 images taken for

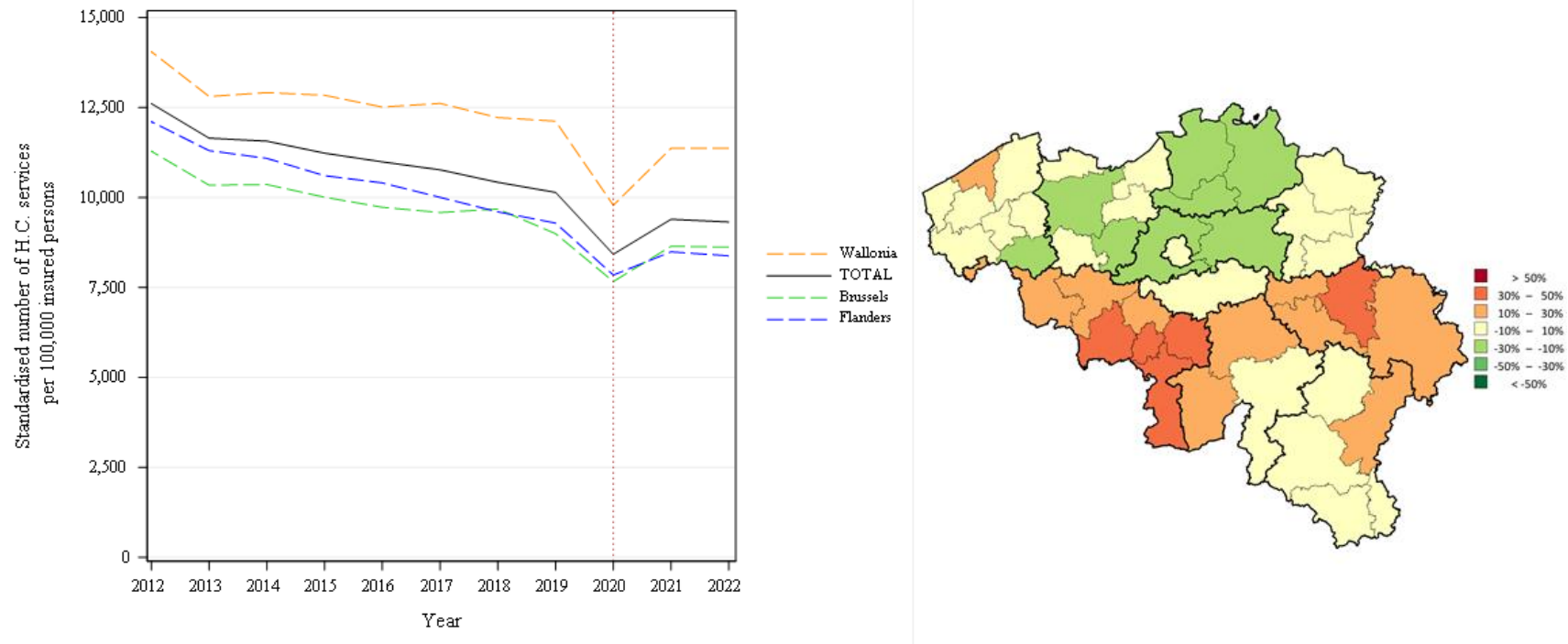
spine for 100 000 insured population per year over the 2012-2022 period. The global trend for the consumption of spine imaging is decreasing over time: -2.98% over the 2012-2022 period. Figure 2 (left) shows that in 2020, there was a dip in consumption, due to the COVID-19 pandemic.

Figure 1 – Spine imaging: age distribution for women and men (2012-2022)



Source: RIZIV – INAMI

Figure 2 – Spine medical imaging: overall consumption (2012-2022) and relative variations around the national mean per district



Source: RIZIV – INAMI

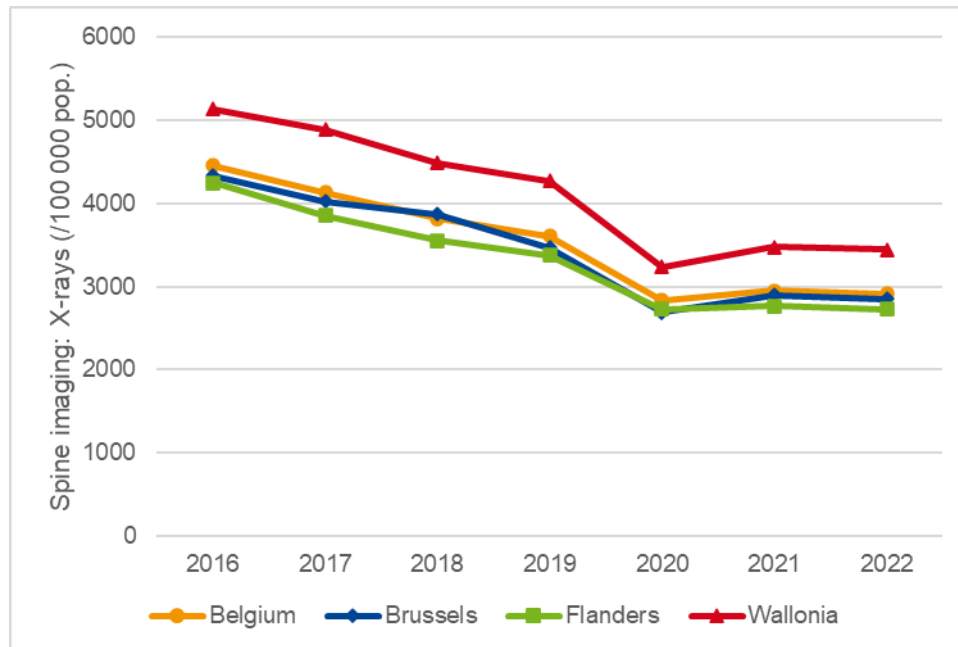
Regional comparison

The proportion of images per 100 000 insured persons is higher in Wallonia (11 370 /100 000 in 2022) than in Brussels (8618 /100 000 in 2022) and Flanders (8378 /100 000 in 2022). This is shown in Figure 2. For X-rays and CT scans, Wallonia’s consumption is above Brussels and Flanders (Figure 3 and Figure 4). The evolution over the 2016-2022 period is more pronounced in Flanders (-2.7% per year) than in Brussels (-1.8% per year) and Wallonia (-1.1% per year).

Looking separately at the three imaging techniques, it is obvious that the pattern is the same in the three regions for X-rays (Figure 3): the consumption has decreased from 2016 to 2020, then stabilised, with an annual rate of -4.9%; Wallonia’s number of X-rays per 100 000 pop. is above the other regions at 3441 (for 2851 for Brussels and 2727 for Flanders). The trend for MRI is similar for Flanders (+1.5% per year) and Wallonia (+1.5% per year) with an increase (except for 2020, due to the COVID-19 pandemic), while it is stable in Brussels (-0.1% per year, Figure 5). CT scans rate is lower (2440 CT scans/100 000 pop. in 2022) and decreasing (-3.5% per year) in Flanders, higher (5375 in 2022) and stable (+0.3% per year) in

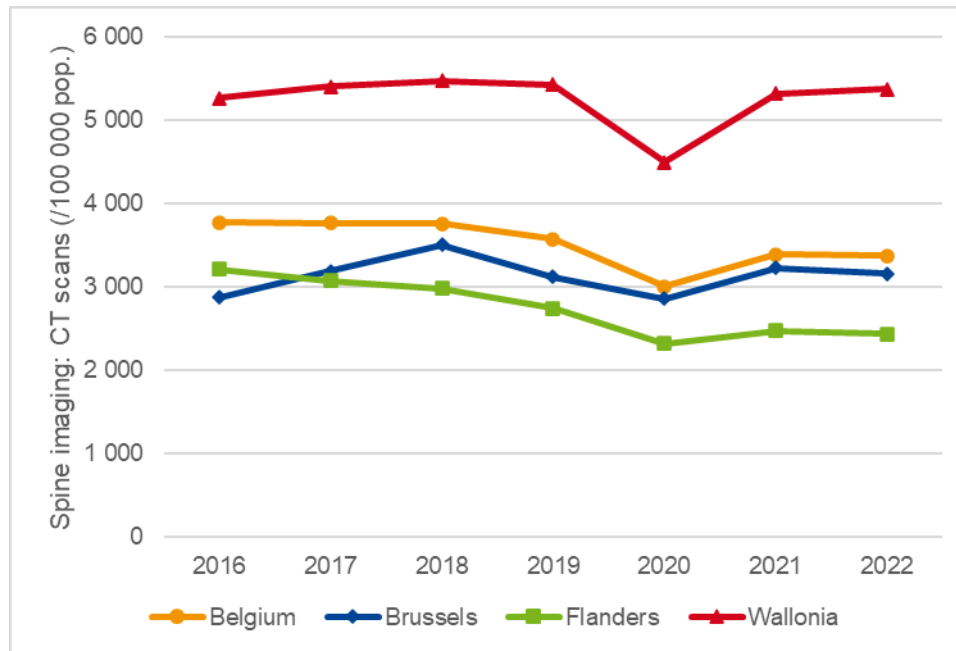
Wallonia, and in-between (3163 in 2022) and increasing (+1.4% per year) for Brussels (Figure 4).

Figure 3 – Spine imaging: X-rays by region (2016-2022)



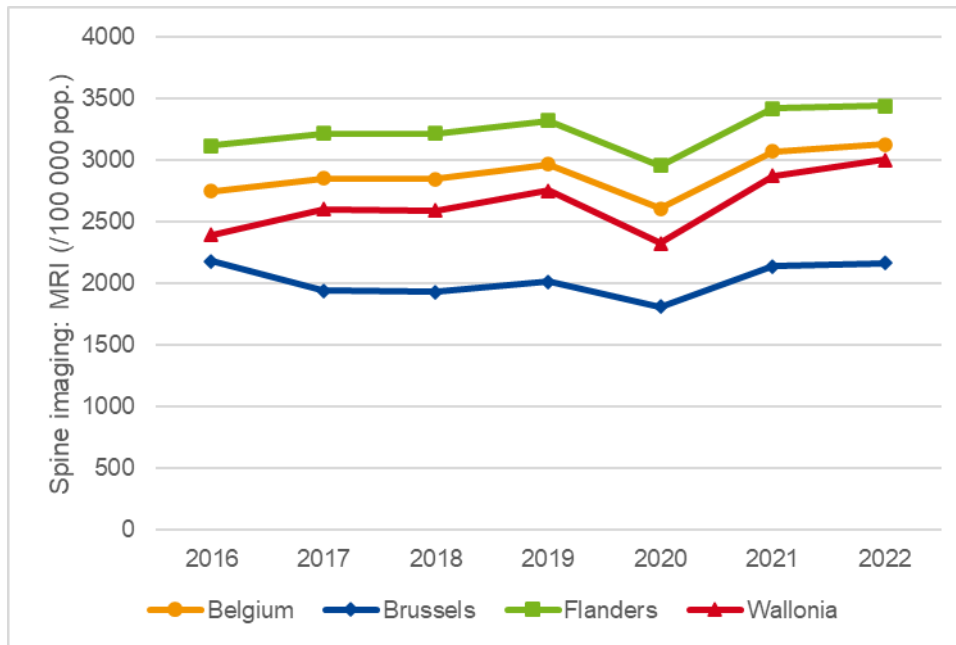
Source: RIZIV – INAMI

Figure 4 – Spine imaging: CT scans by region (2016-2022)



Source: RIZIV – INAMI

Figure 5 – Spine imaging : MRI by region (2016-2022)



Source: RIZIV – INAMI

MRI and CT scanners units

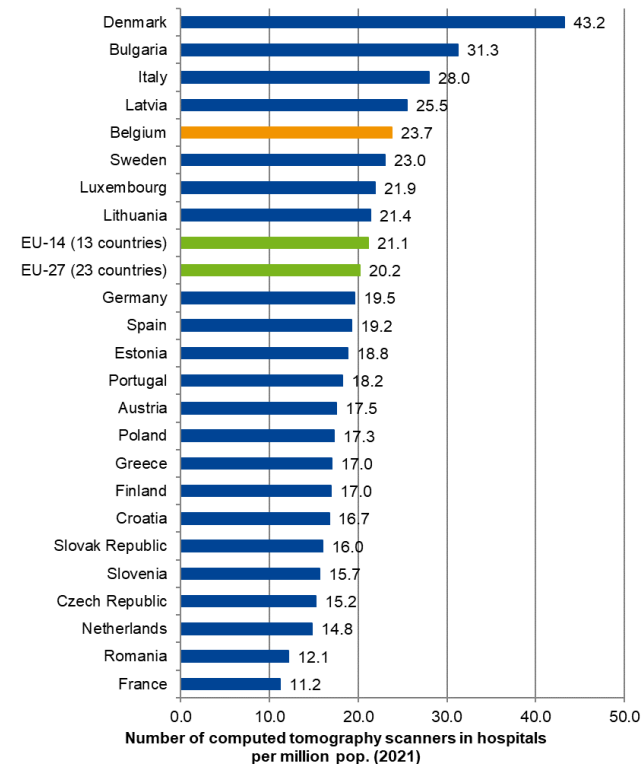
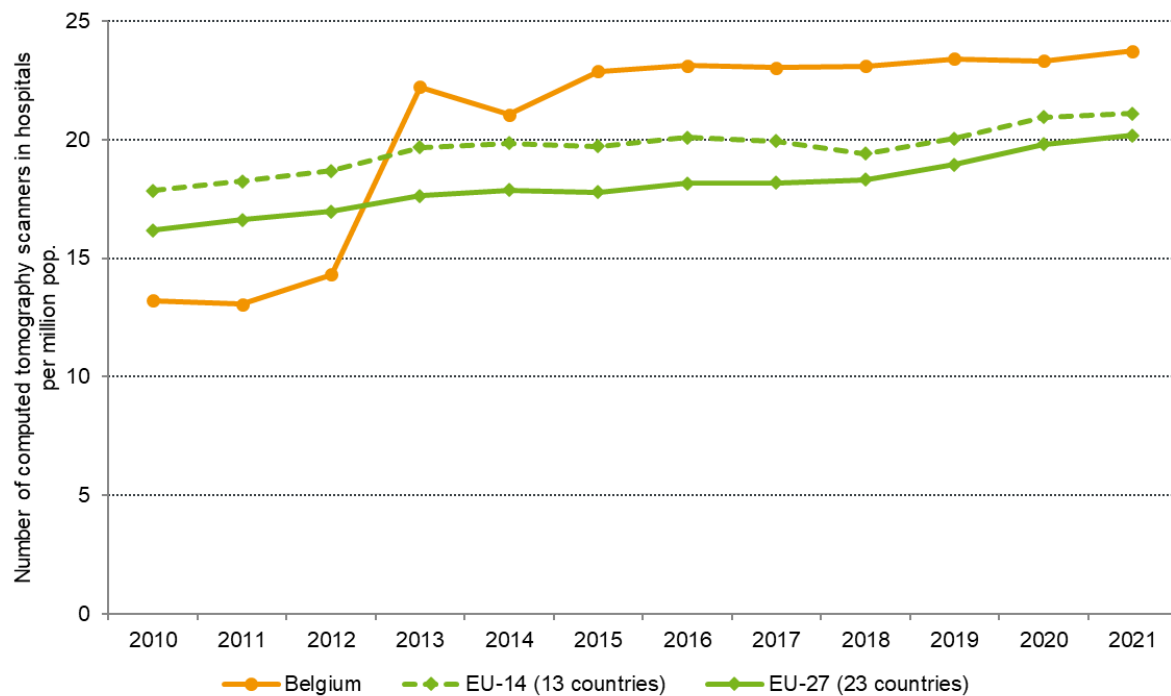
As complementary information, the number of CT scanners in hospitals and the number of MRI units per population have been compiled (Figure 6 and Figure 7) for available EU-15 countries and Belgium: since 2013^c, Belgium is a bit above the EU-14 (23.7 CT scanners per million inhabitants and 21.1, respectively in 2021) while for MRI, Belgium has the same number of units

since 2014 and a density which is now a bit below the EU-14 mean (14.7 MRI units per million inhabitants in Europe for 11.4 in Belgium in 2021). The regional distribution is shown for MRI units Figure 9: extra units were added in 2017 and 2022. CT scanner units per region figures are available in Figure 8: except for a temporary rise in Flanders in 2014, the number of units is rather stable from 2017 (263 units) to 2023 (276 units).

^c It should be noted that due to limitations in the data collection, before 2013, the figures represent the number of hospitals with at least one CT scanner

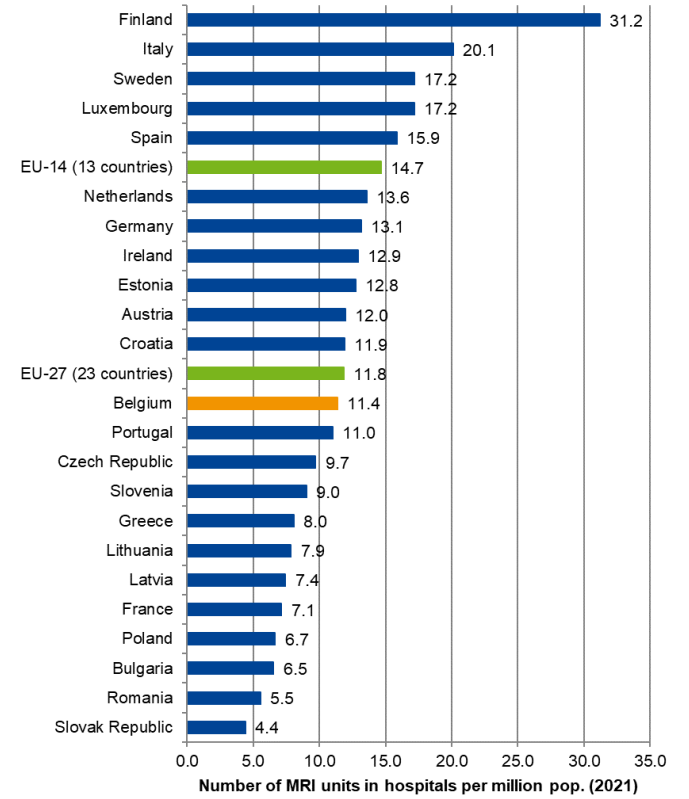
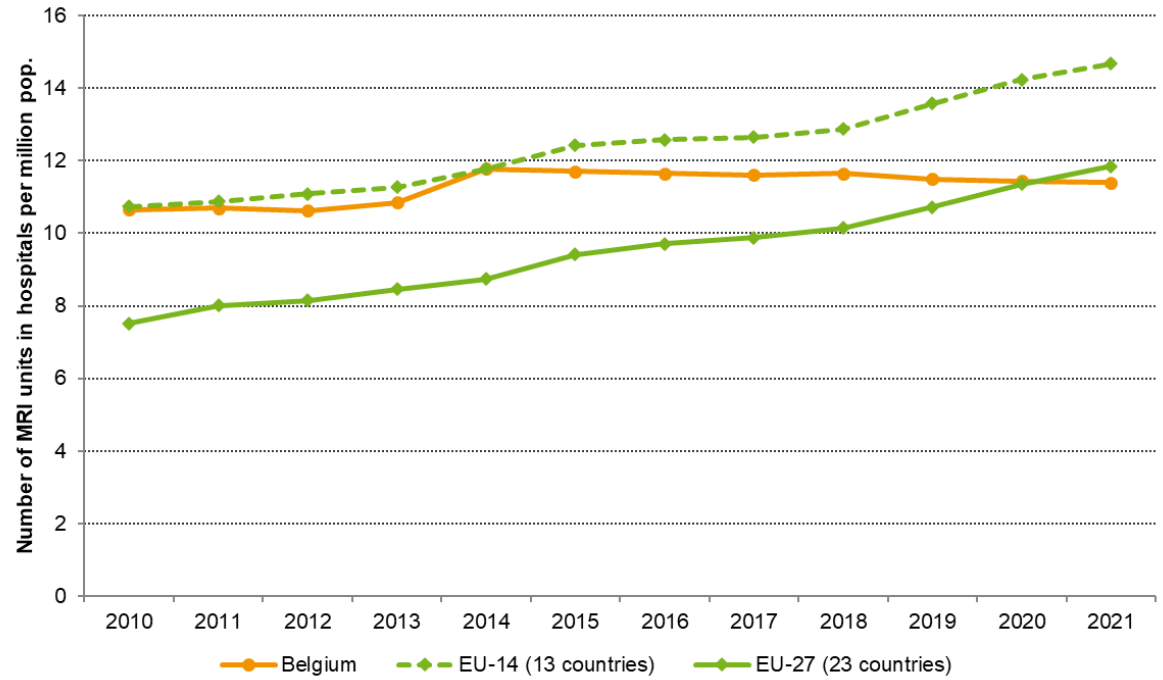
unit (per million inhabitants); from 2013 on, the figures represent the number of CT scans units per million inhabitants, as expected.

Figure 6 – Number of computed tomography scanners in hospitals per million population



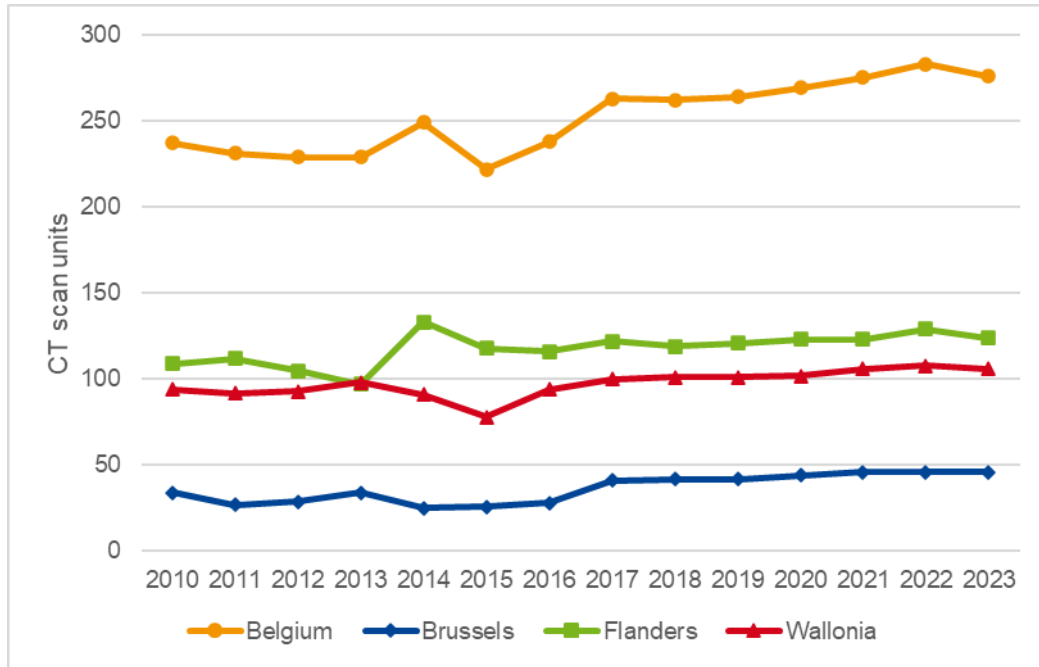
Source: OECD Health data 2023

Figure 7 – Number of MRI units in hospitals per million population



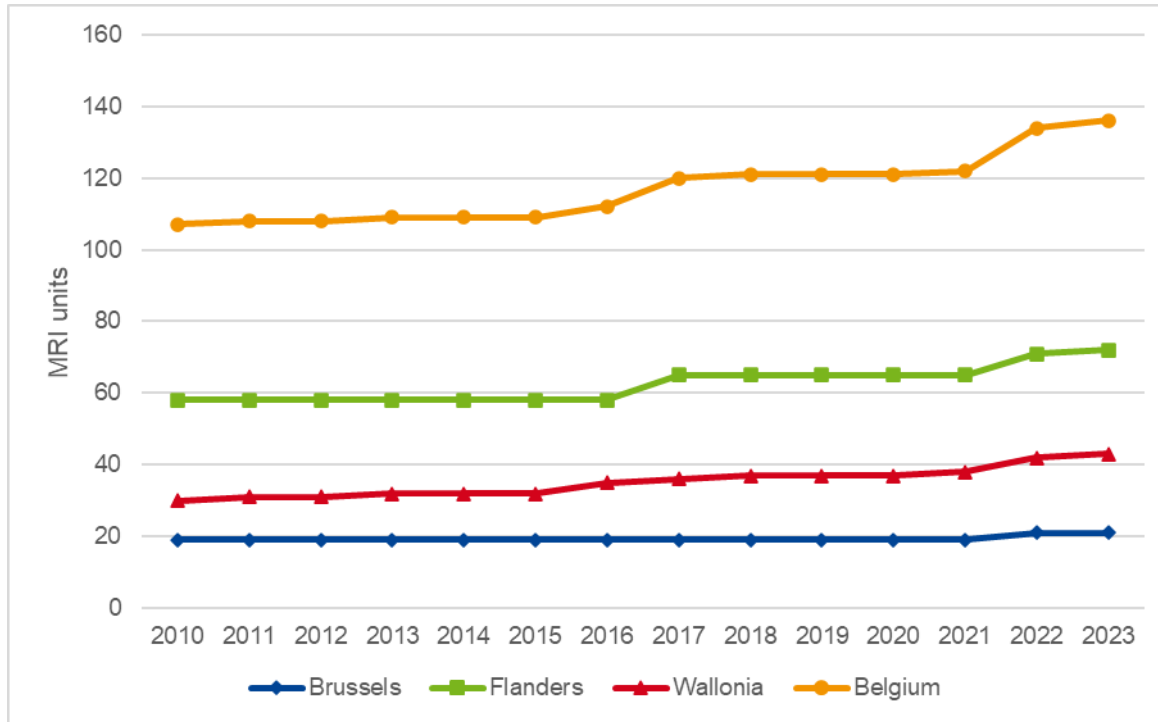
Source: OECD Health data 2023

Figure 8 – Number of CT scanner units in hospitals by region (2010-2023)



Source: SPF SPSCAE – FOD VVVL

Figure 9 – Number of MRI units in hospitals by region (2010-2023)



Source: SPF SPSCAE – FOD VVVL

Impact of COVID-19 pandemic

There was a impact of the COVID-19 pandemic on the consumption of spine imaging (see Figure 2 (left), Figure 3, Figure 4 and Figure 5).

Key points

- **Over the 2016-2022 period: global imaging of the spine decreased by 2% per year**
- X-rays imaging decreased by 4.9% per year
- CT scans have decreased by 1.5% per year
- MRI is still growing at 2.0% per year
- **Medical variations between regions remain high with high differences in utilisation rate, especially for CT scans**

References

1. Van Wambeke P, Desomer A, Ailliet L, Berquin A, Demoulin C, Depreitere B, et al. Low back pain and radicular pain: assessment and management Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017 05/2017. KCE Reports 287 (D/2017/10.273/36) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_287_Low_back_pain_Report_0.pdf
2. NICE. Low back pain and sciatica in over 16s: assessment and management. National Institute for Health and Care Excellence; 2016. Available from: <https://www.nice.org.uk/guidance/NG59>
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4. Appropriate care unit. Medical imaging (spine , medical irradiation). INAMI - RIZIV; 2022. Medical Practice Variations Available from: <https://www.healthybelgium.be/>