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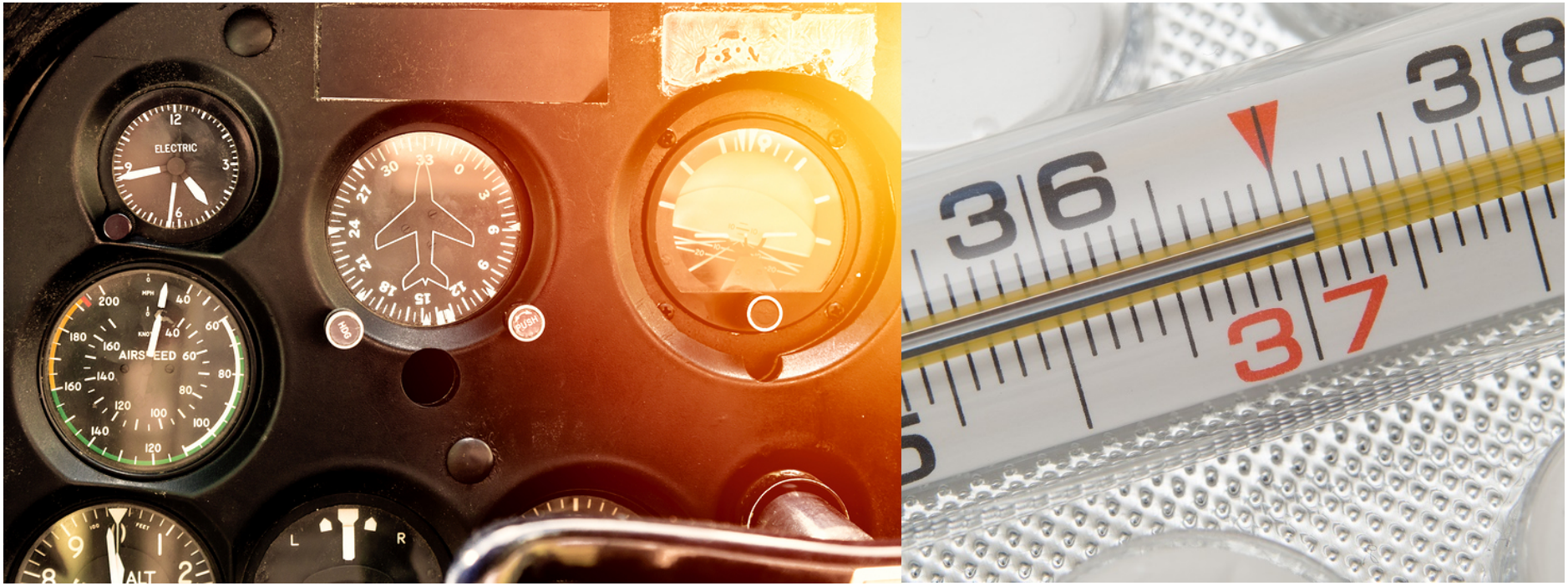
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Federaal Kenniscentrum voor de Gezondheidszorg
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Belgian Health Care Knowledge Centre

KCE REPORT 313S

PERFORMANCE OF THE BELGIAN HEALTH SYSTEM – REPORT 2019

SUPPLEMENT: TECHNICAL SHEETS FOR INDICATORS



KCE REPORT 313S
HEALTH SERVICES RESEARCH

Federaal Kenniscentrum voor de Gezondheidszorg
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- **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.**
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1. QUALITY OF CARE: EFFECTIVENESS

1.1. Hospital admissions for asthma (QE-1) and hospital admissions for uncontrolled diabetes or complication of diabetes (QE-2)

1.1.1. Documentation sheet

Description	A. Number of hospital admissions for asthma in people aged 15 years and over, per 100 000 population B. Number of hospital admissions for uncontrolled (or complication of) diabetes in people aged 15 years and over, per 100 000 population
Calculation	See technical definition section below. The indicator for diabetes admission is based on the sum of three indicators: admissions for short-term complications, for long-term complications and for uncontrolled diabetes without complications.
Rationale	Asthma and diabetes are two widely prevalent long term conditions. Common to both conditions is the fact that the evidence for effective treatment is well established and much of it can be delivered at the primary care level. A high performing primary care system can to a significant extent, therefore, avoid acute deterioration in people living with asthma, or diabetes and prevent their admission to hospital.[1] High hospital admission rates for these two conditions can thus serve as a proxy for pointing to poor effectiveness of primary care, as well as poor co-ordination or continuity of care.
Primary data source	RHM – MZG (hospital administrative discharge data), FPS Public Health
Source of results	FPS Public Health and OECD health data for international comparison. These indicators belong to the set of indicators on quality of care that are published in Health at a Glance by OECD.[2] A 2015 report from OECD on "Quality of care in cardiovascular diseases and diabetes" also discusses these indicators[3] The OECD set of "avoidable hospital admission" also contains indicators of admissions for hypertension, heart failure and COPD, but these have not been retained in this report to keep the number of indicators manageable.
Technical definitions	From OECD website: Definitions for Health Care Quality Indicators 2012-2013 HCQI Data Collection.[4] All ICD-9 CM and ICD-10 CM codes can be found on the OECD Quality indicator website. **Indicator A: Hospital admission for asthma** Coverage: Population aged 15 and older Numerator: All non-maternal/non-neonatal hospital admission with principal diagnosis code of asthma in a specified year Denominator: Population count Exclude cases: Transferring from another institution; MDC 14 (pregnancy, childbirth and puerperium); MDC 15 (newborn and other neonates); with cystic fibrosis and anomalies of the respiratory system diagnose code in any field; same day/day only admissions. **Indicator B: Admission of uncontrolled diabetes or complication of diabetes** Coverage: Population aged 15 and older Numerator: All non-maternal/non-neonatal hospital admission with principal diagnosis code of - Uncontrolled diabetes

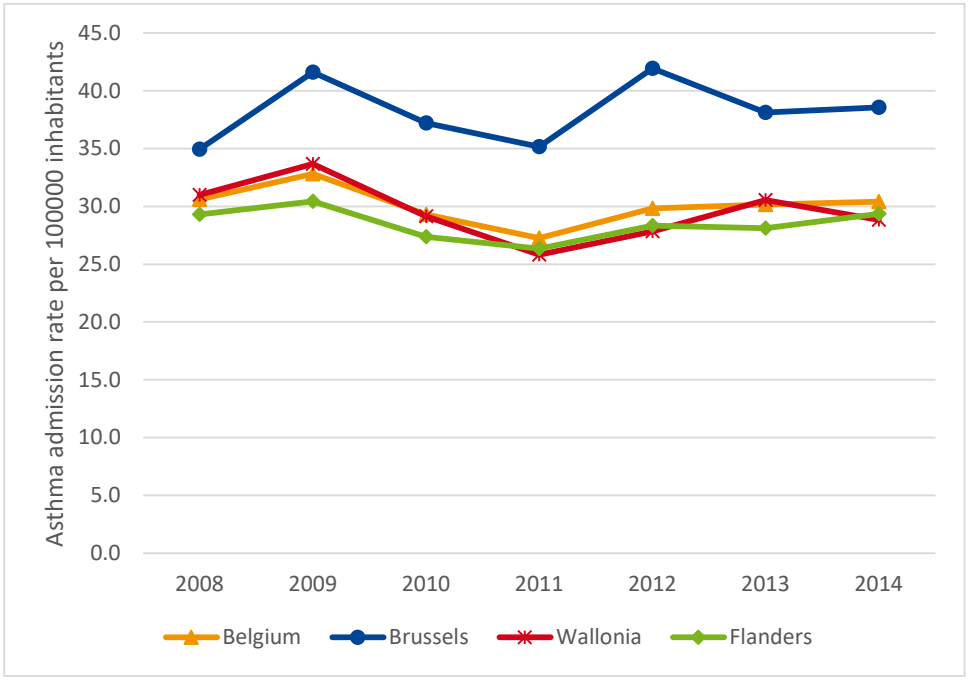
	- Diabetes Short-term complication (i.e. ketoacidosis, hyperosmolarity) - Long term complication (i.e. renal, eye; neurological, circulatory, or complication not otherwise specified). Denominator: Population count Exclude cases: Transferring from another institution; MDC 14 (pregnancy, childbirth and puerperium); MDC 15 (newborn and other neonates); Same day/day only admissions.
International comparability	These indicators do not take into account underlying differences in the prevalence of the different conditions. For example, with regard to diabetes, it is not always clear whether lower admission rates are due to a lower prevalence of diabetes in the population or a better management of people with diabetes. However, there are several ongoing OECD initiatives that focus on coding practices, dataset structure and data specification, with the aim of making the indicators more useful for international comparison. [5]
Dimensions	Effectiveness + Continuity (Management)

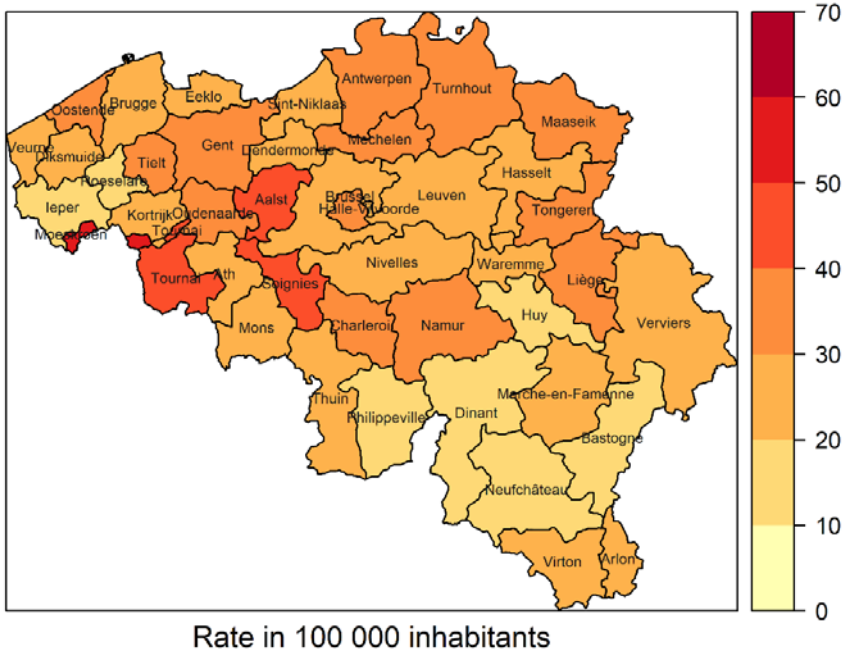
1.1.2. Results

1.1.2.1. Admissions at hospital for asthma

Data on asthma admissions on the 2008-2014 period show a stagnation (Figure 1): from 30.4 / 100 000 inhabitants in 2008 to 30.2 / 100 000 inhabitants in 2014, which is also observed in other EU countries (Figure 2). Rates are similar in Wallonia (28.8) and Flanders (29.4), but higher in Brussels (38.6) (Figure 1).

Figure 1 – Hospital admissions for asthma rate by patient's region per 100 000 population aged 15 years and older (2008-2014) and per district (2014)

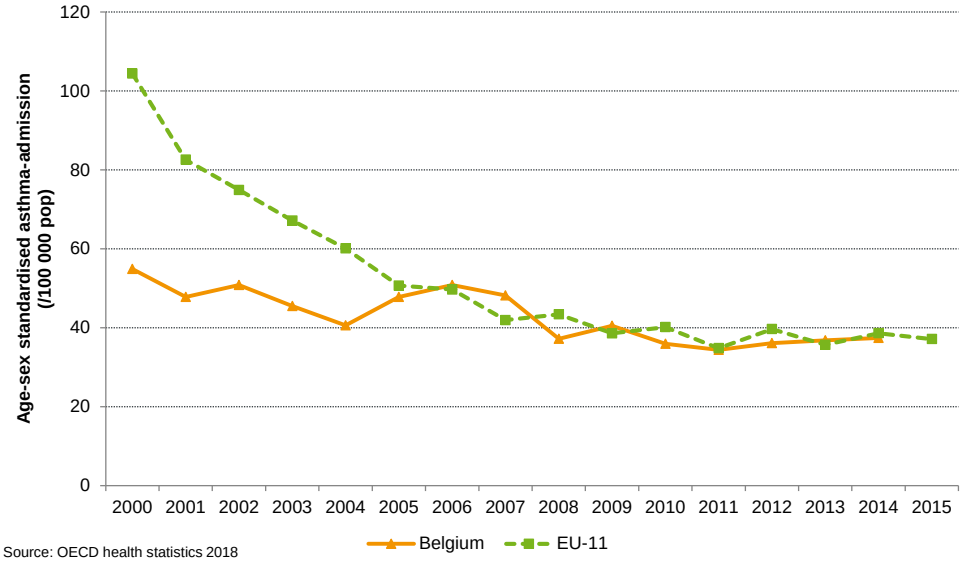




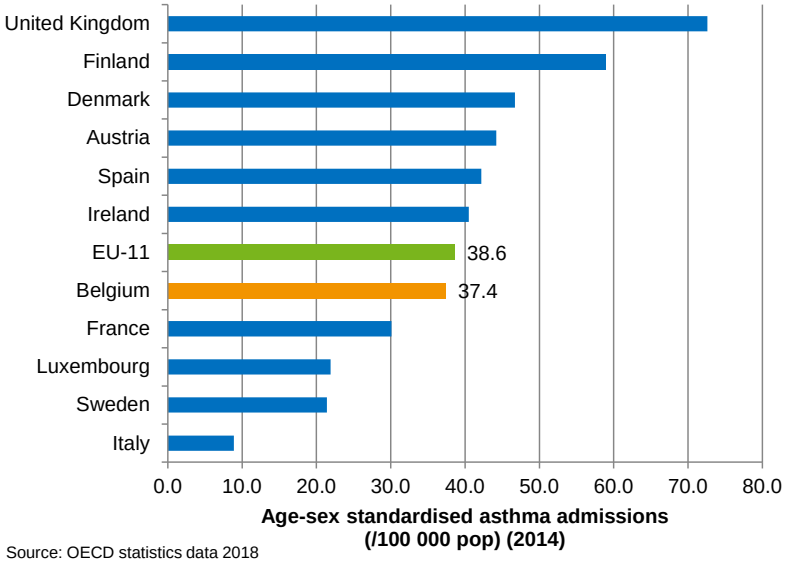
Source: FPS Public Health, hospital administrative discharge data

When comparing with other European countries, we see that rates have declined over time and that there is also variation across European countries (Figure 2).

Figure 2 – Age-sex standardized hospital admissions for asthma (for population aged 15 years and older): international comparison (2000-2015)



Source: OECD health statistics 2018



Source: OECD statistics data 2018

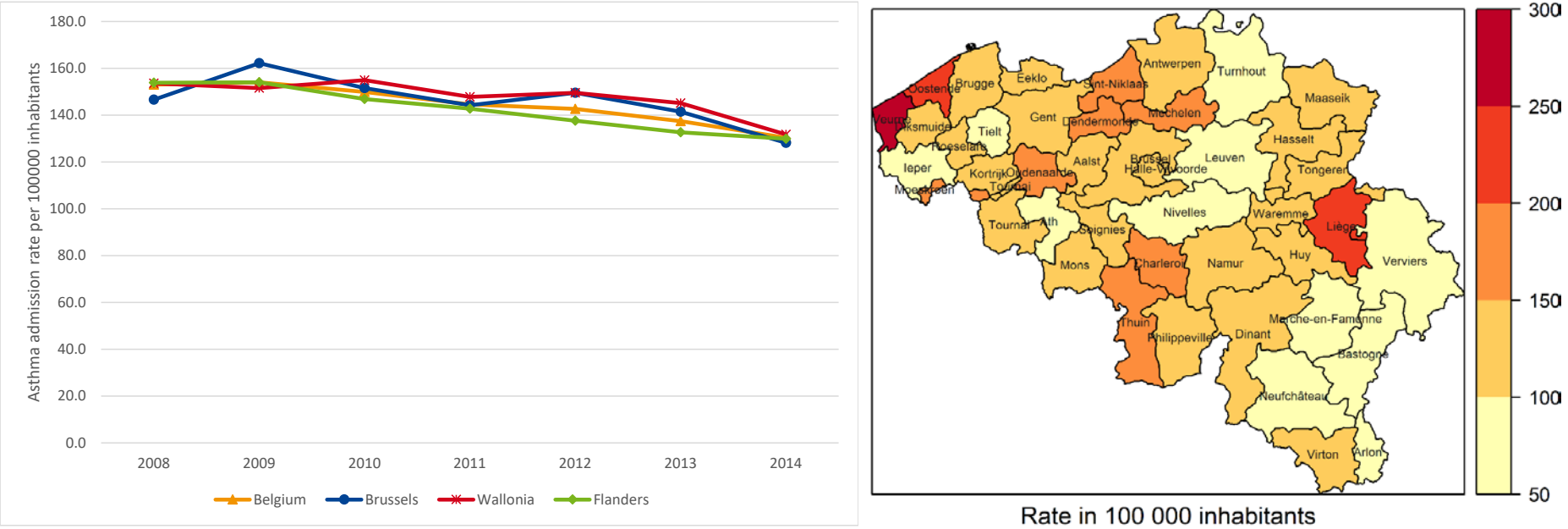
Source: OECD health statistics 2018.

1.1.2.2. *Admissions at hospital for uncontrolled diabetes, or complications of diabetes*

Data on diabetes admission (for uncontrolled diabetes or for complication of diabetes) exhibit a slow decrease in the recent years (2008-2014,Figure 3) which is also observed in other European countries (Figure 3).

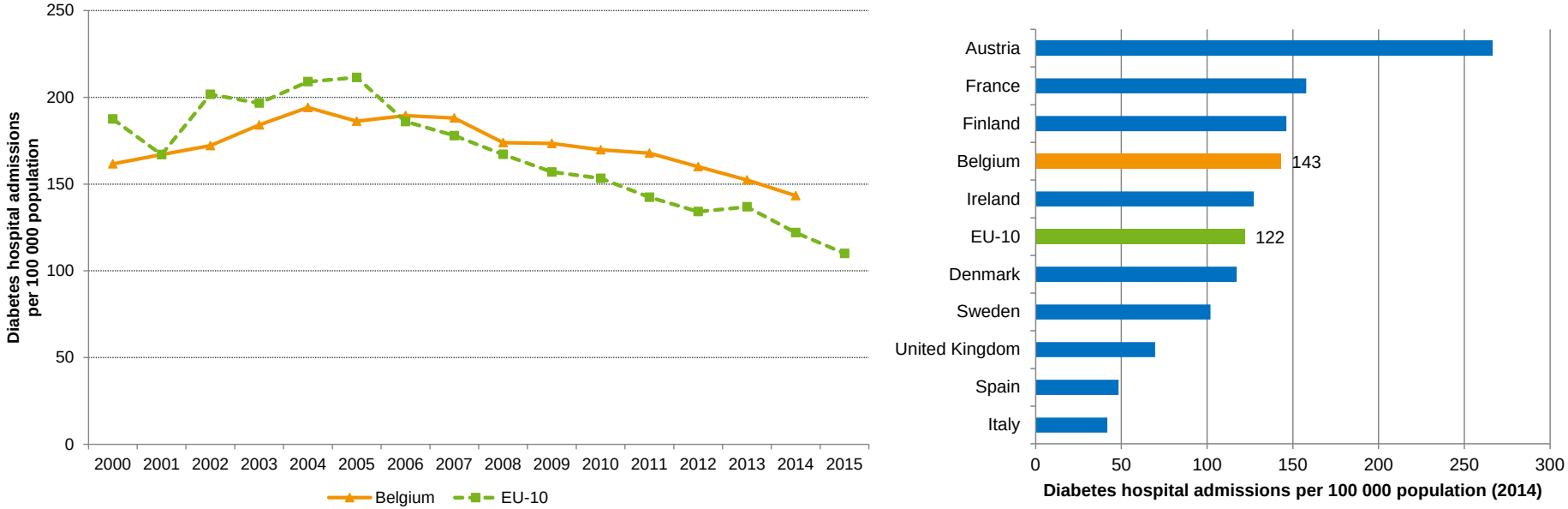
Rates are very similar in the 3 regions for the latest available year, around 130 admissions per 100 000 inhabitants (Figure 3).

Figure 3 – Hospital admissions for (complications of) diabetes rate by patient's region (per 100 000 population aged 15 years and older) (2008-2014) and by patient district (2014)



Source: FPS Public Health, hospital administrative discharge data

Figure 4 – Age-sex standardized hospital admissions for diabetes (for population aged 15 years and older): international comparison (2000-2014)



Source: OECD Health Statistics 2018

At European level the rates declined more rapidly that the rates for Belgium (Figure 4).

Key points

- **The relative rates of hospital admission for asthma and diabetes are often used as a measure of the extent to which people can access primary care and preventive care, and the quality of this care.**
- **For both indicators on avoidable hospital admissions, trends over time report a reduction in admission rates over recent years, which may represent an improvement in the quality of primary care. These decreasing trends are also observed in other European countries.**
- **Belgium is situated around the EU-15 average for both indicators, but this is not very informative, as differences between countries can be due to many other factors than quality of care. Trends over time are more informative in this case.**

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1.2. 5 year relative survival after breast cancer (QE-3) and after colorectal cancer (QE-4)

1.2.1. Documentation sheet

Description	5-year relative survival by stage after a diagnosis of breast or colorectal cancer.
Rationale	In Belgium, breast cancer is the most frequent cancer type in females, and also the leading cause of death by cancer in females. Colorectal cancer is the third and second most frequent cancer type in males and females respectively. [1] In Belgium, for these two types of cancer, well-developed screening programmes exist, and evidence-based treatment strategies have been recommended in the national guidelines. [2-4] An increase in cancer survival reflects advances in public health interventions, such as greater awareness of the disease, successful screening programmes, and improved treatments.
Calculation	The 5-year relative survival is computed as the 5-year observed survival for the population diagnosed with the specified type of cancer (=proportion of people surviving 5 years after the diagnosis), divided by the 5-year expected survival of a comparable group from the general population residing in Belgium. The relative survival is expressed as a percentage, and estimates the excess mortality that can be attributed to the cancer. A 100% 5-year relative survival indicates that patients who were diagnosed with cancer had a mortality rate similar to the general population of the same age, sex and region.
Data source	Belgian Cancer Registry (BCR): incidence years 2004-2015.

	Kruispuntbank - Banque Carrefour for mortality data (vital status of patients diagnosed with cancer): 2004- July 1st, 2017. Therefore, to allow 5 year follow-up, 5-year survival rates can be calculated for patients diagnosed between January 1st, 2004 and July 1st, 2012.
Technical definition	Selection of patients: new diagnoses of cancer registered in the BCR, with the following ICD-10 codes: • Breast cancer (for women only): C50 • Colorectal cancer: C18-C20 The following exclusion criteria have been applied: • If the cancer is a subsequent cancer (only the first cancer for each patient is taken into account) • If for a patient, the date of death or the date of lost to follow-up equalled the day of incidence • If the patient had an unknown social security number (INSZ – NISS) • If the patient was younger than 15 years old • If the patient has no Belgian residence The relative survival is computed using the Ederer II method. [5] The Region corresponds to the region of the place of residence of the patients at time of their diagnosis.
International comparability	OECD study for international comparisons. Belgian survival rates published in the OECD Health Statistics may be different from those published by the Belgium Cancer Registry, [6] because in the OECD data relative survival rates are age standardized to allow comparison across countries, while in alignment with most of the data presented by the BCR, this standardization was not carried out for the present analyses. The impact of the standardisation on the estimate (increase or decrease) is hard to predict, and depends of the age distribution, within a country. Moreover, the comparison of survival estimates between countries often remains challenging in case of cancer types for which screening is organised. Between-countries differences in screening coverage will tend to bias the survival comparisons considering that screening artificially increases the survival time (by advancing the date of diagnosis, i.e. lead time bias, and by discovering not evolving tumours, i.e. overdiagnosis). The solution to this bias is to include a comparison of the stage-distributions and a comparison of survival by stage, but this is currently not possible with the OECD data.
Limitation	5-year relative survival can only be computed for patients diagnosed from 2004 to 2012, because follow-up is available until July 1st, 2017. The specific impact of screening or treatment on the survival can hardly be disentangled. Evolution of survival by stage reflects better the impact of treatment alone.
Dimension	Quality, Effectiveness of care
Related indicators	Coverage of target group for breast cancer screening and colorectal cancer screening. Percentage of patients with cancer discussed at the multidisciplinary team meeting (MDT)

1.2.2. Results

An overview of the 1-year, 3-year and 5-year relative survival is provided in the following tables, for breast cancer (Table 1) and colorectal cancer (Table 2). Survival data are presented by year of incidence, combined stage[a], Region (or residence of the patient at diagnosis) and sex (when appropriate).

1.2.2.1. Breast

Belgium

For female breast cancer patients diagnosed between 2004 and 2012, 5-year relative survival is relatively stable over the years: 89.8% for the whole cohort, and 89.9% for patients diagnosed in 2012 (Table 1). The majority of patients is diagnosed at early stages (I (40.3%) or II (34.7%)), and for those groups relative survival at 5-year is the same as in the general (i.e. not having breast cancer) population (stage I, 100.5%), or slightly lower (stage II, 94.3%). For the women diagnosed at stage III, 12% of the breast cancer population, a notable increase of survival was observed over the years (72.0% in 2004 to 77.3% in 2012, see Figure 29). For the small group of patients diagnosed at stage IV (6%), 5-year relative survival only reaches 32.5% on the whole cohort, and increased from 32.2% in 2004 to 34.6% in 2012. A large decrease in survival is observed for patients for which stage at diagnosis was unknown in the BCR database, from 76.9% in 2004 to 71.7% in 2012. This can partially be explained by the fact that in earlier incidence years there were % proportionally more unknown stages (11.7% in 2004 vs 6.0% in 2012), but this group was more heterogeneous in earlier years whereas the cancers for whom stage remains unknown nowadays, probably reflect more advanced diseases explaining the decrease in survival for this special category of patients.

On the whole cohort, differences of maximum 1 percentage point are observed between regions: Wallonia (90.3%), Flanders (89.6%) and Brussels Capital Region (89.6%).

International Comparison

Results from the international comparisons (Figure 6), show lower 5-year survival rates for Belgium than displayed in Table 1: in this study, 5-year relative survival for Belgium is only 86.4% (compared to 89.8% in Table 1), and place Belgium just above the European average of EU-15 countries (86.2%, Figure 6). Explanations for this difference are provided in the technical fiche, under heading international comparison.

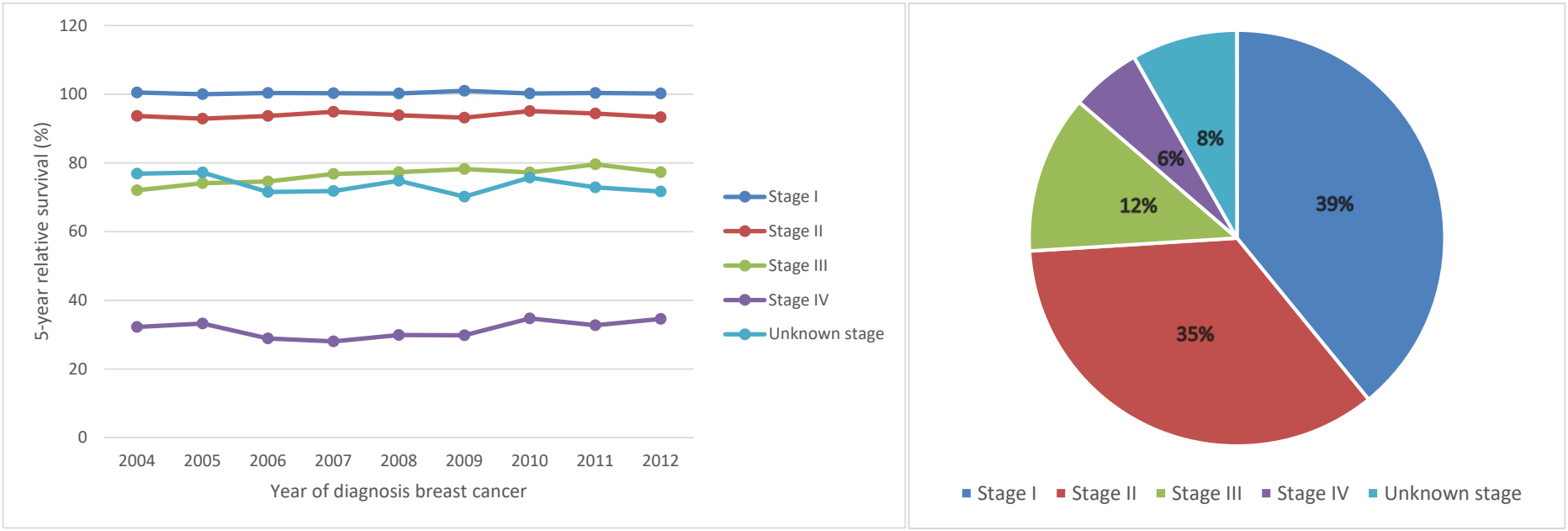
[a] Combined stage: because the clinical stage and/or pathological stage is lacking for some patients, a combined stage is defined. To determine this combined stage, a known pathological stage prevails over known clinical stage, except when there is clinical proof of distant metastasis. When only pathological stage or clinical stage is known, the available stage is considered as the combined stage. Otherwise, when pathological stage and clinical stage are unknown, the combined stage also remains unknown.

Table 1 – One-, 3- and 5-year relative survival for breast cancer, by year of incidence, stage and Region (2004-2015)

		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		**1-y RS**	**95% CI**	**3-y RS**	**95% CI**	**5-y RS**	**95% CI**
Overall	114 499	97.6	[97.4, 97.7]	93.5	[93.2, 93.7]	89.8	[89.6, 90.1]
Incidence year							
2004	9135	96.9	[96.5, 97.4]	92.4	[91.6, 93.1]	88.3	[87.3, 89.1]
2005	9084	97.6	[97.2, 98.0]	92.8	[92.1, 93.5]	88.4	[87.5, 89.3]
2006	9155	97.3	[96.9, 97.7]	93	[92.2, 93.6]	88.9	[88.0, 89.8]
2007	9292	97.1	[96.6, 97.5]	93.1	[92.4, 93.8]	89.5	[88.6, 90.3]
2008	9198	97.5	[97.0, 97.9]	93	[92.3, 93.7]	89.4	[88.5, 90.2]
2009	9179	97.5	[97.1, 97.9]	93	[92.3, 93.7]	89.2	[88.3, 90.1]
2010	9465	97.5	[97.1, 97.9]	93.3	[92.6, 94.0]	90.3	[89.5, 91.2]
2011	10 064	97.5	[97.1, 97.9]	93.7	[93.0, 94.4]	90.6	[89.8, 91.5]
2012	10 049	97.7	[97.3, 98.1]	93.9	[93.2, 94.6]	89.9	[89.0, 90.8]
2013	10 165	97.9	[97.5, 98.3]	94.2	[93.5, 94.8]		
2014	9916	97.8	[97.3, 98.1]	94.1	[93.4, 94.8]		
2015	9797	98.1	[97.7, 98.5]				
Stage							
I	46 112	100.5	[100.4, 100.6]	100.7	[100.5, 100.9]	100.5	[100.3, 100.8]
II	39 701	99.6	[99.5, 99.8]	97	[96.7, 97.3]	94.3	[93.8, 94.7]
III	13 855	96.3	[95.9, 96.7]	85.9	[85.2, 86.6]	76.8	[75.9, 77.7]
IV	6369	76.3	[75.1, 77.4]	50.8	[49.5, 52.2]	32.5	[31.1, 33.9]
Unknown	8462	89.4	[88.7, 90.2]	80.6	[79.6, 81.7]	73.9	[72.6, 75.1]
Region							
Brussels-Capital Region	10 447	97.3	[96.9, 97.7]	93.1	[92.4, 93.8]	89.6	[88.7, 90.5]
Flemish Region	66 199	97.7	[97.5, 97.8]	93.4	[93.1, 93.6]	89.6	[89.3, 90.0]
Walloon Region	37 853	97.4	[97.2, 97.6]	93.7	[93.3, 94.0]	90.3	[89.8, 90.7]

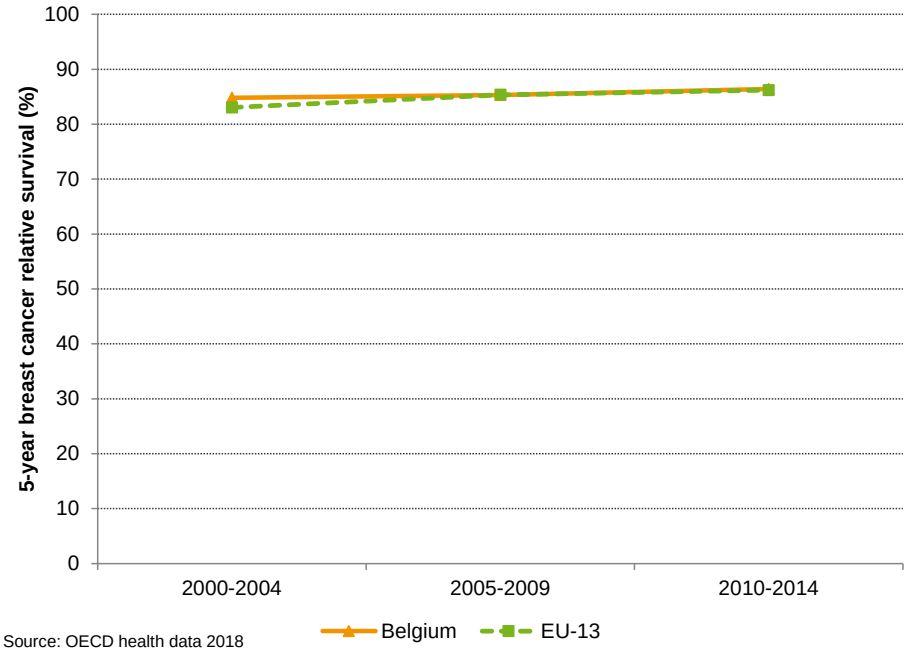
Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

Figure 5 – Five-year relative survival for breast cancer, by stage and year of incidence and distribution of patients across stages (2004-2012)

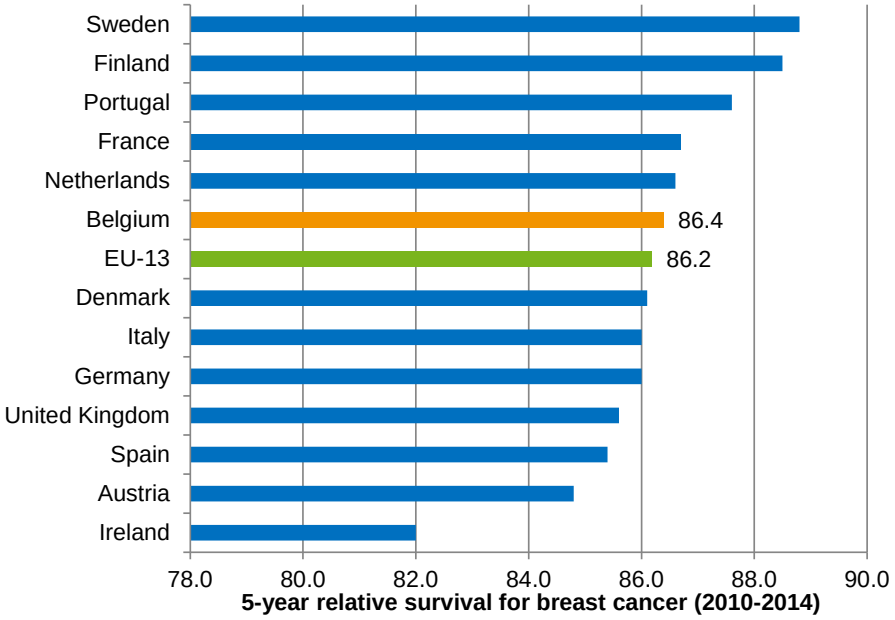


Source: Belgian Cancer Registry

Figure 6 – Five-year relative survival for breast cancer: international comparison (%, 2000-2014)



Source: OECD health data 2018



Source: OECD health data 2018

Source : OECD Health Statistics 2018

1.2.2.2. Colorectal cancer

Belgium

For patients diagnosed with colorectal cancer between 2004 and 2012, overall 5-year relative survival slightly increases from 63.7% for patients diagnosed in 2004 to 67.5% for patients diagnosed in 2012 (Table 2). Survival is highly dependent on the stage, with 95.5% 5-year relative survival for patients diagnosed at stage I and 17.5% for patients diagnosed at stage IV. The majority of patients is diagnosed either at stage II (27%) or III (26%). For stage II, the 5-year relative survival decreases slightly from 2004 to 2012 (from 84.3% to 83.4%) while for stage III the 5-year relative survival increases notably (61.2% to 71.9%) over the same period, see Figure 7.

Small regional differences are observed for the 5-year relative survival for colorectal cancer: survival is 3 percentage points higher in Flanders (68.6%) than in the Wallonia (65.6%), with even lower rates in the Brussels-Capital Region (64.2%). In all three regions overall survival rates improved between 2004 and 2012, with the most impressive improvement observed in Flanders (64.3% in 2004 versus 69.0% in 2012).

International Comparison

Results from the international comparisons (OECD Health Statistics) are presented for colon cancer (Figure 8) and rectal cancer (Figure 9) separately, and show slightly lower 5-year survival rates for Belgium than displayed in Table 2 (67.8% for colon cancer, 66.6% for rectal cancer). Differences between OECD Health Statistics and results published in Table 2 are explained in the technical fiche, under the heading international comparison. Keeping in mind these limitations, the OECD places Belgium at the highest survival rate of EU-15 countries.

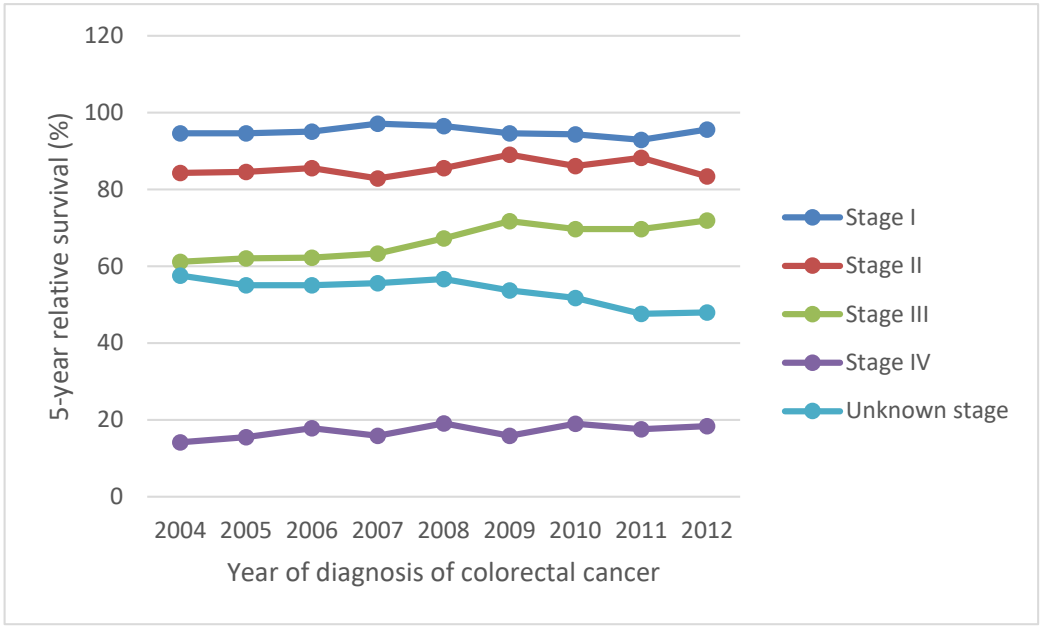
Table 2 – One-, 3- and 5-year relative survival for colorectal cancer, by year of incidence, stage and Region (2004-2015)

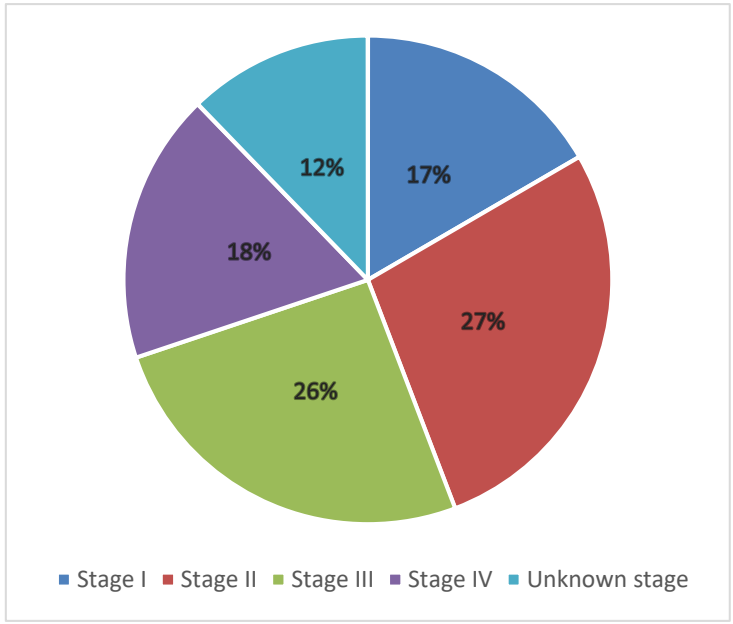
		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		1-y RS	95% CI	3-y RS	95% CI	5-y RS	95% CI
Overall	86381	85.1	[84.8, 85.3]	73.1	[72.7, 73.4]	67.4	[66.9, 67.8]
Incidence year							
2004	6939	82.8	[81.8, 83.8]	69.5	[68.2, 70.8]	63.7	[62.2, 65.2]
2005	6837	83.5	[82.5, 84.5]	70.5	[69.2, 71.8]	64	[62.5, 65.4]
2006	6916	83.2	[82.2, 84.2]	70.8	[69.4, 72.0]	64.8	[63.3, 66.3]
2007	6901	83.6	[82.6, 84.6]	70.3	[69.0, 71.6]	64.8	[63.3, 66.3]
2008	7177	84.1	[83.1, 85.0]	72.4	[71.2, 73.7]	66.6	[65.1, 68.0]
2009	7102	84.8	[83.8, 85.7]	73.3	[72.0, 74.5]	67.9	[66.4, 69.3]
2010	7211	85.2	[84.3, 86.1]	72.5	[71.2, 73.7]	66.9	[65.5, 68.3]
2011	7283	84.5	[83.6, 85.5]	72.6	[71.3, 73.8]	66.9	[65.5, 68.3]
2012	7240	85.6	[84.6, 86.5]	73.9	[72.6, 75.1]	67.5	[66.0, 68.9]
2013	7308	86.3	[85.4, 87.2]	74.7	[73.5, 75.9]		
2014	8189	88.8	[88.0, 89.6]	78.4	[77.2, 79.5]		
2015	7278	87.5	[86.6, 88.3]				
Stage							
I	16 097	97.7	[97.3, 98.0]	97.2	[96.6, 97.8]	95.5	[94.6, 96.3]
II	23 407	93.5	[93.1, 94.0]	89.9	[89.3, 90.5]	86.8	[86.0, 87.6]
III	22 021	89	[88.5, 89.5]	75.8	[75.1, 76.5]	67.9	[67.1, 68.8]
IV	15 545	62.9	[62.1, 63.7]	28.9	[28.1, 29.7]	17.5	[16.8, 18.3]
Unknown	9311	69.7	[68.6, 70.7]	57.9	[56.7, 59.1]	54.9	[53.6, 56.2]
Region							
Brussels-Capital Region	6550	82.5	[81.4, 83.5]	69.5	[68.1, 70.9]	64.2	[62.5, 65.8]
Flemish Region	54 365	86	[85.6, 86.3]	74.3	[73.9, 74.8]	68.6	[68.0, 69.1]

Walloon Region	25 466	83.8	[83.3, 84.3]	71.3	[70.6, 72.0]	65.6	[64.7, 66.4]
Sex							
Males	46 880	85.8	[85.5, 86.2]	73.7	[73.2, 74.2]	67.2	[66.6, 67.8]
Females	39 501	84.2	[83.8, 84.6]	72.4	[71.8, 72.9]	67.6	[66.9, 68.2]

Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

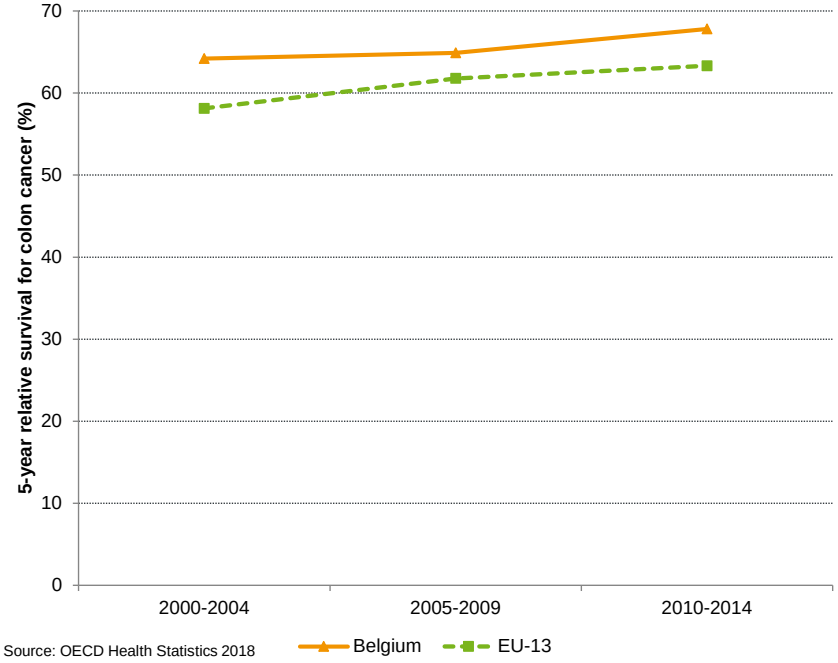
Figure 7 – Five-year relative survival for colorectal cancer, by stage and incidence year and distribution of patients across stages (2004-2012)



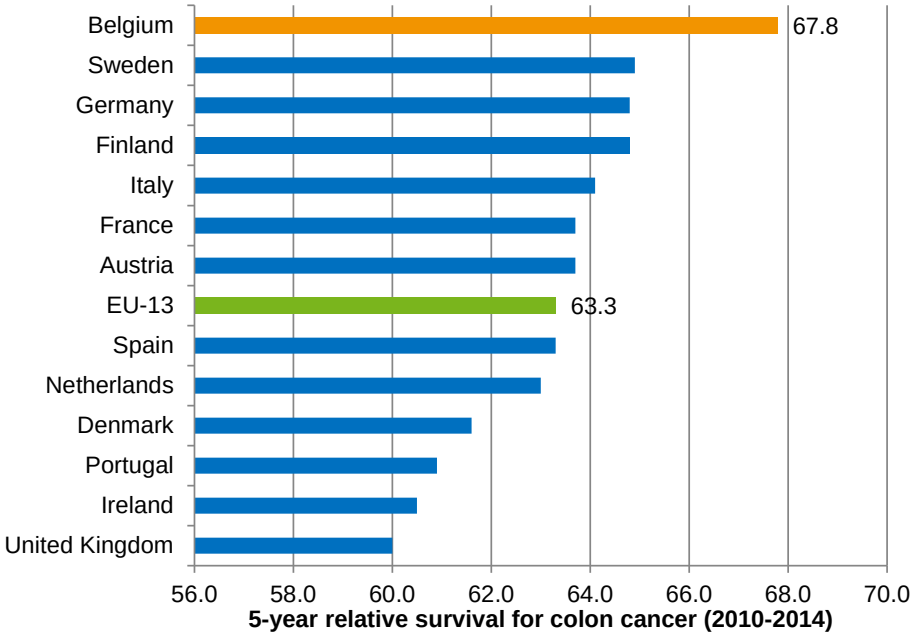


Source: Belgian Cancer Registry

Figure 8 – Five-year relative survival for colon cancer: international comparison



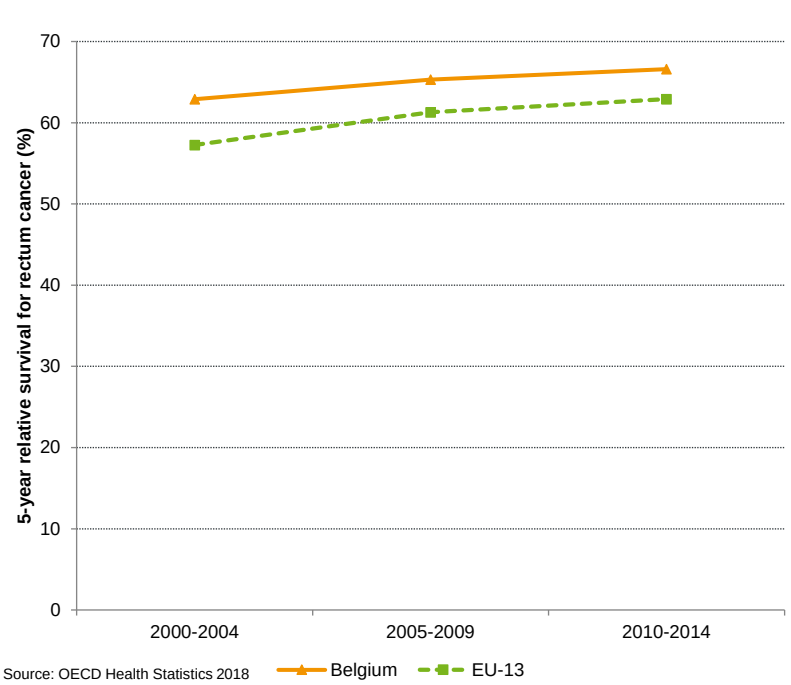
Source: OECD Health Statistics 2018

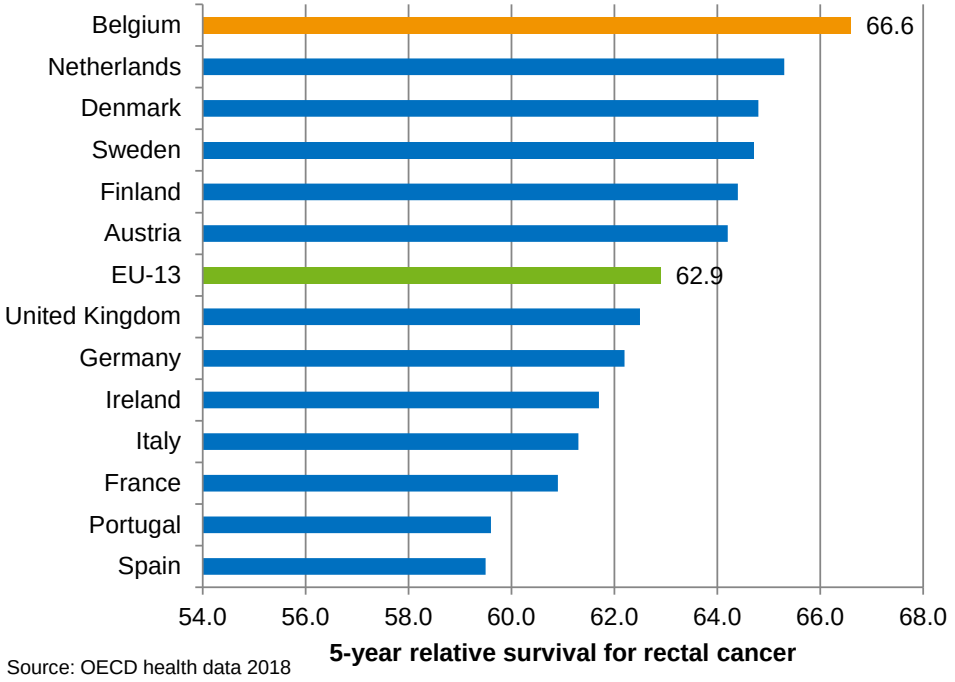


Source: OECD health data 2018

Source: OECD Health Statistics 2018

Figure 9 – Five-year relative survival for rectal cancer: international comparison





Source: OECD Health Statistics 2018

Key points

- **The relative survival 5 years after the diagnosis of breast cancer and colorectal cancer is respectively 89.9% and 67.5%, based on the cohort of patients diagnosed in 2012. For both cancers, survival is mainly determined by the extent of disease at diagnosis (i.e. the stage). For breast cancer, the majority of patients (75%) are diagnosed at early stages (i.e. stage I or II), while for colorectal cancer diagnosis mainly (53%) occurs at later stages (i.e. II or III), this information is indispensable when interpreting the difference in prognosis between these two cancers.**
- **Trends over time (period 2004-2012) show stable relative survival rates for breast cancer patients, and an increase for colorectal cancer patients. A notable increase is particularly observed for stage III patients with colorectal cancer.**
- **No regional differences in relative survival rates are observed for breast cancer. Colorectal cancer survival shows lower survival rates in Brussels and Wallonia compared to Flanders, but this requires further analysis (taking into account possible differences in patient populations) before drawing conclusions on regional differences in quality of care.**
- **Comparison of Belgian survival results with other European countries is complicated by several data and methodological limitations, and thus should be interpreted with caution. In the most recent data from OECD Health Statistics, Belgium has outstanding 5-year survival rates for colon and rectal cancer, 67.8% for colon cancer and 66.6% for rectal cancer, compared to the European average of 63.3% and 62.9%. Belgian results for breast cancer survival are 86.4%, very close to the average European results for breast cancer patients (86.2%). These results are based on a cohort of patients diagnosed between 2010 and 2014.**

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2. Wildiers H, Stordeur S, Vlayen J, Scholten R, van de Wetering F, Bourgain C, et al. Breast cancer in women : diagnosis, treatment and follow-up. Brussels: Belgian Health Care Knowledge Centre (KCE); 2013. KCE Reports 143 (D/2013/10.273/38) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_143_Breast_cancer.pdf
3. Peeters M, Van Cutsem E, Bielen D, Bols A, Demetter P, D'Hoore A, et al. Guideline on the management of rectal cancer: update of capita selecta – Part: 1 Introduction and Methodology. Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE); 2016 18/01/2016. KCE Reports 260 Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_260_Rectalcancerupdateofcapitaselecta_part1.pdf
4. Peeters M, Leroy R, Robays J, Veereman G, Bielen D, Ceelen W, et al. Colon Cancer: Diagnosis, Treatment and Follow-Up. Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE); 2014 17/01/2014. KCE Reports 218 (D/2014/10.273/15) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_218_Colon_cancer.pdf
5. Ederer F, Heise H. Instructions to IBM 650 programmers in processing survival computations. Bethesda MD: National Cancer Institute; 1959. Methodological Note No.10
6. Belgian Cancer Registry. Cancer Survival in Belgium. Brussels: 2012.

1.3. In hospital mortality after admission for acute myocardial infraction (QE-5) or ischaemic stroke (QE-6)

1.3.1. Documentation sheet

Description	A. In-hospital case-fatality rate following admission for acute myocardial infarction (AMI) B. In-hospital case-fatality rate following admission for ischaemic stroke
Calculation	A. Proportion of people who die within 30 days of being admitted (including same day admissions) to hospital with an AMI. B. Proportion of people who die within 30 days of being admitted (including same day admissions) to hospital with an ischaemic stroke.
Rationale	From the OECD report "Health at a Glance":[1] Mortality due to coronary heart diseases has declined substantially over the past few decades. Important advances in both public health policies, including reductions in smoking and improved treatment for heart diseases, have contributed to these declines. Clinical practice guidelines such as those developed by the European Society of Cardiology have helped optimise treatment. Despite these advances, acute myocardial infarction (AMI or heart attack) remains the leading cause of cardiovascular deaths across European countries, making further improvements a priority. Across EU countries, some 610 000 stroke events occurred in 2015 and the number is expected to rise by one-third by 2035 due to population ageing and increases in some risk factors. Stroke is the second leading cause of death after heart disease, and is also the second leading cause of disability after depression. Another report from OECD on "Quality of care in cardiovascular diseases and diabetes "also discusses these indicators.[2]
Primary data source	RHM – MZG (hospital administrative discharge data), FPS Public Health
Source of results	FPS Public Health and OECD health data for international comparison.
Technical definitions	From OECD website: [3] (Definitions for Health Care Quality Indicators 2012-2013 HCQI Data Collection) **Indicator A: Admission based AMI 30 day in-hospital (same hospital) mortality** **Indicator B: Admission based ischaemic stroke 30 day in-hospital (same hospital) mortality** Coverage: patients aged 45 and older Numerator: number of deaths in the same hospital that occurred within 30 days of hospital admission with primary diagnosis of (A) acute myocardial infarction [ICD9 410 or ICD-10 I21, I22] (B) ischaemic stroke [ICD-9 433, 434, 436 or ICD-10 I63-I64] in a specified year. Denominator: number of admissions to hospital with primary diagnosis of (A) acute myocardial infarction (B) ischaemic stroke in the specified year The same day hospital episodes are included in both the numerator and the denominator.
International comparability	These are two types of OECD quality of care indicators for acute conditions such as AMI and stroke: the patient-based rates and the admission-based rates. Ideally, rates should be based on individual patients (patient-based rates). However, not all countries have the ability to track patients in- and –out-of-hospital or even within the same hospital because they do not currently use a unique patient identifier. Some countries (Denmark, Finland, Sweden, the Netherlands…) present also data on the more robust and comprehensive indicator of 30-day case fatality rate, patient based.

	In order to increase country coverage, this indicator is also presented based on unique hospital admissions and restricted to mortality within the same hospital (admission-based). When counting the number of admissions for AMI (indicator A) or stroke (indicator B), transfers to other hospitals are excluded from the analysis.
Limitation	The indicator is influenced not only by the quality of care provided in the hospitals but also by differences in hospital transfers, average length of stay and AMI/stroke severity.
Dimension	Quality – effectiveness of care

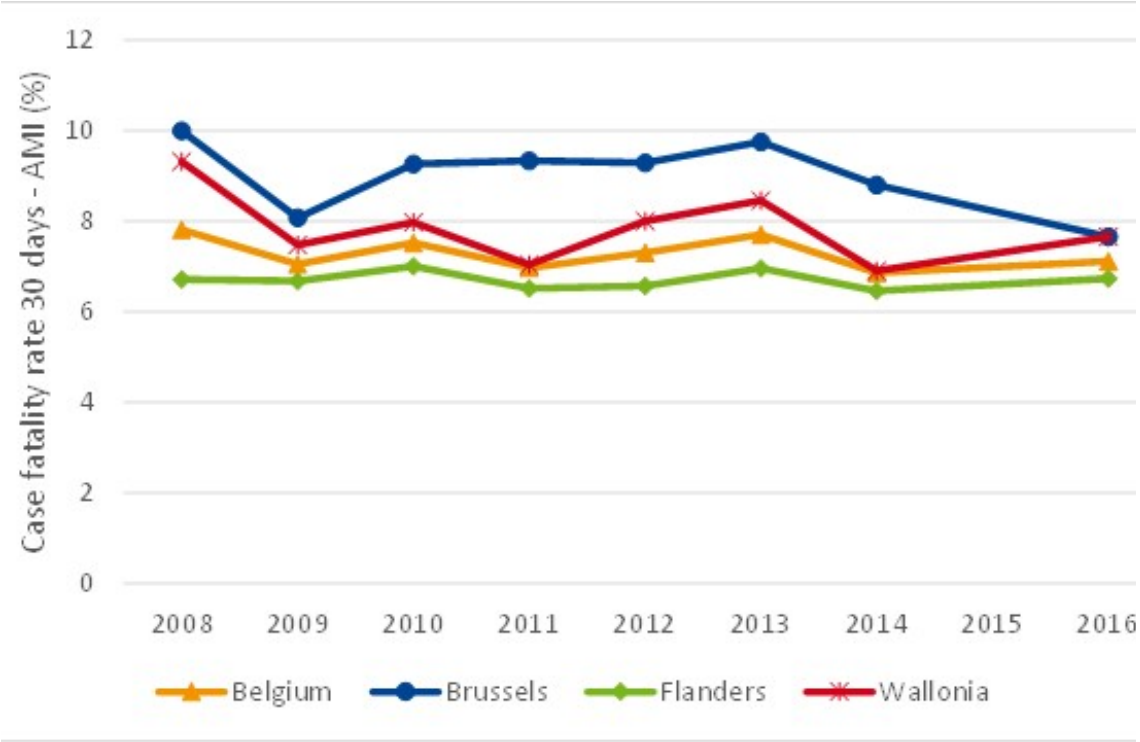
1.3.2. Results

1.3.2.1. Case Fatality Rate after hospital admission for Acute Myocardial Infarction

In Belgium, approximately 19 000 patients are admitted every year at the hospital for an episode of acute myocardial infarction. From 2008 to 2016, the case-fatality rate of AMI has slightly decreased in Belgium, from 7.8% in 2008 to 7.1% in 2016. Rates are lower in Flanders (6.7%) than in Wallonia and Brussels (7.7% each) (Figure 10).

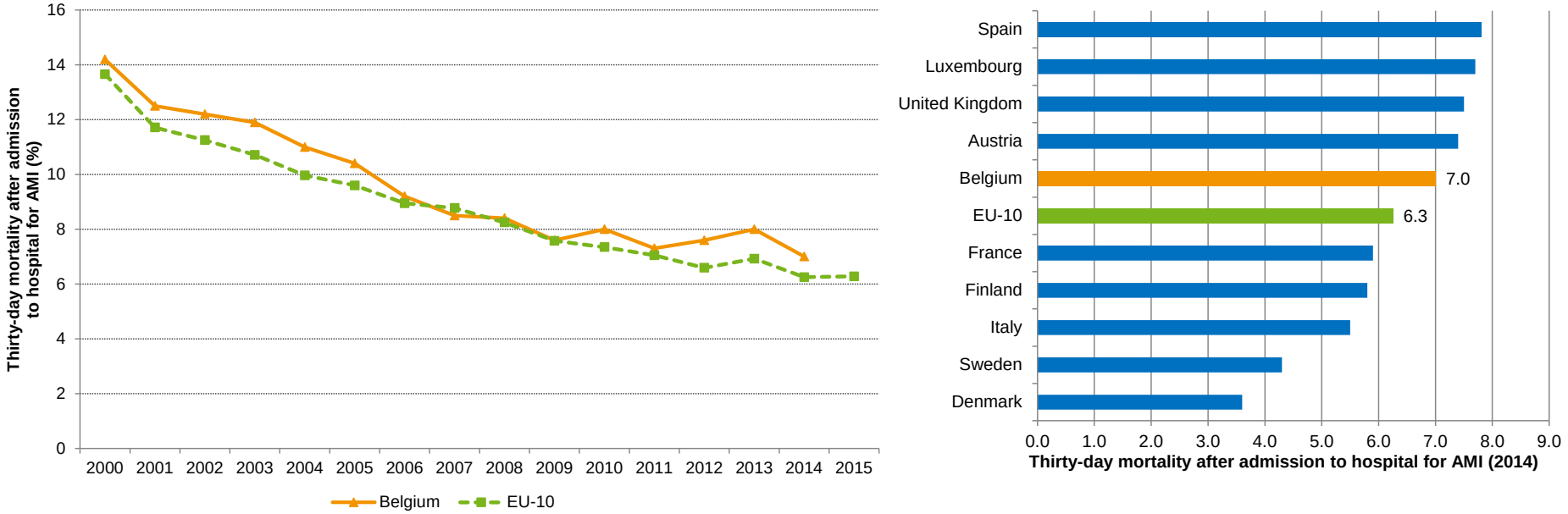
Rates in European countries vary by a factor two for AMI-case fatality rates: from the lowest rates observed in Denmark (3.6%) to highest in Spain (7.8%). In 2014, Belgium (7.0%) was slightly above the European average of 6.3% (Figure 11). The trend over a longer period shows a steep slope: the rate has been halved between 2000 and 2015.

Figure 10 – Case-fatality within 30 days after admission for AMI, admission-based (same hospital) by hospital region (2008-2016)



Source: RCM-MKG and RHM-MZG
Note: This indicator reports in-hospital death within the hospital of initial admission.

Figure 11 – Case-fatality within 30 days after admission for AMI, admission based (same hospital): international comparison (2000-2014)

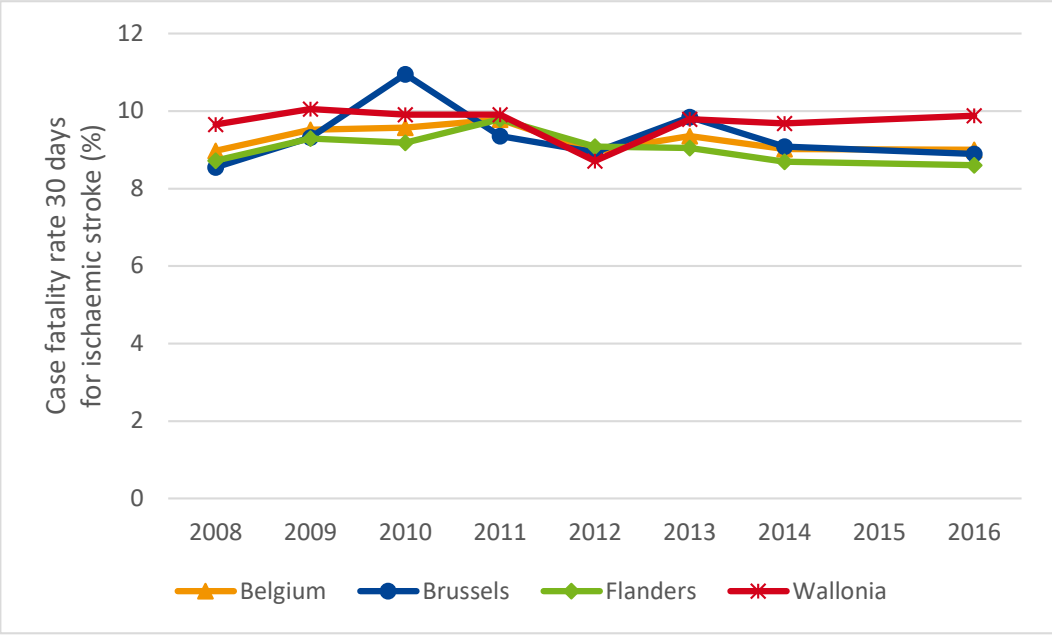


Source: OECD Health Statistics 2018

1.3.2.2. Case Fatality Rate after admission for Ischaemic Stroke

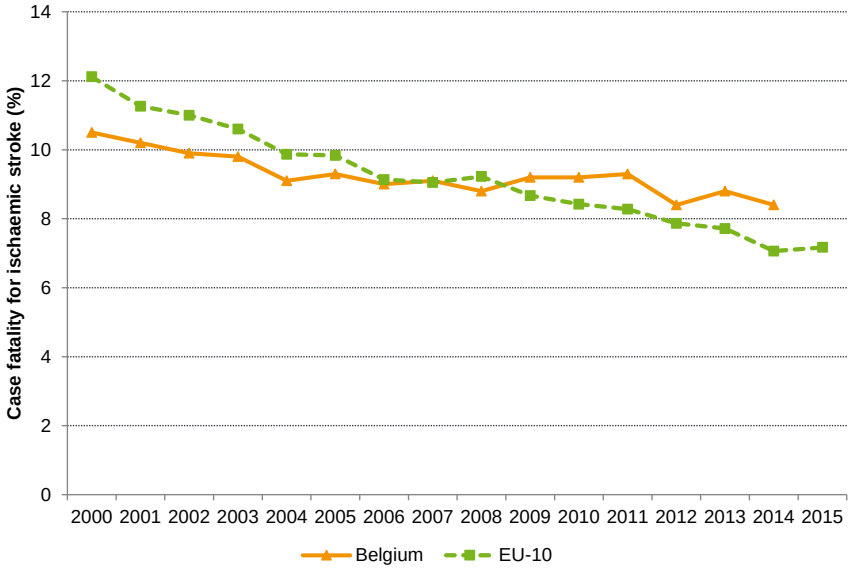
In Belgium, approximately 21 000 patients are admitted every year at the hospital for an episode of ischaemic stroke. In opposition to long term trends in case-fatality after AMI, case-fatality after ischaemic stroke was only slightly reduced during the 2000-2015 period, both in Belgium and in European countries (see Figure 12 and Figure 13): 10.1% in 2000, 9.0% in 2016, with small differences between the Regions (Flanders 8.6%, Wallonia 9.9%, Brussels 8.9%, see Figure 12).

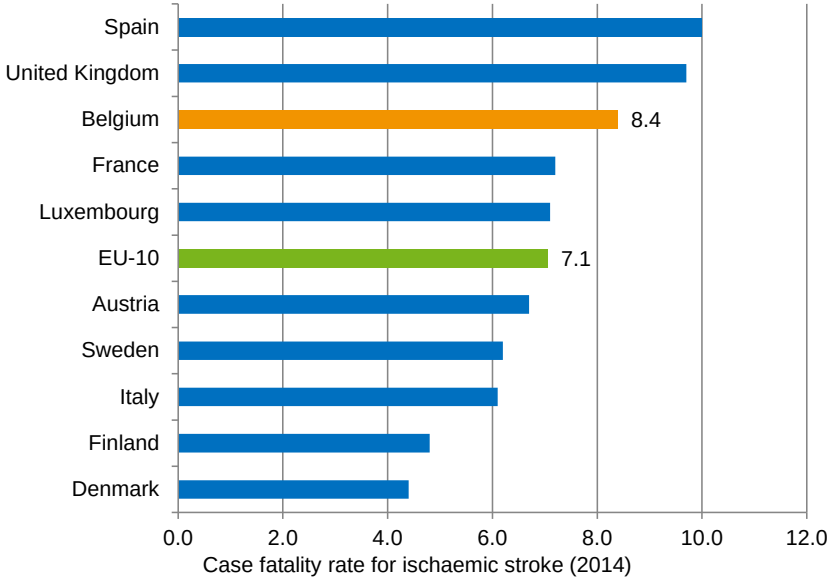
Figure 12 – Case-fatality within 30 days after admission for ischaemic stroke, admission based (same hospital), by hospital region (2008-2016)



Source: RCM-MKG and RHM-MZG
Note: This indicator reports in-hospital death within the hospital of initial admission.

Figure 13 – Case-fatality within 30 days after admission for ischaemic stroke, admission based (same hospital): international comparison (2000-2014)





Source: OECD Health Statistics 2018.

Key points

- **Case-fatality after acute myocardial infraction decreased sharply in Belgium between 2000 and 2015, following the trend of all other European countries. Mortality results are lower in Flanders than in the two other regions, but the gap is closing.**
- **Case-fatality after ischaemic stroke decreased slightly in Belgium between 2000 and 2016, following the trend of all other European countries. Results are similar across Regions, except for Wallonia where rates are slightly higher in recent years.**
- **For international comparisons, case fatality rates are above EU-15 average for both indicators.**

References

[1] OECD. Health at a Glance: Europe 2018. OECD Publishing; 2018.

[2] OECD. Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care. Paris: OECD; 2015. OECD Health Policy Studies

[3] OECD. Health statistics 2018 [Web page].2018. Available from: http://www.oecd.org/els/health-systems/health-data.htm

1.4. In hospital mortality after colorectal surgery (QE-7)

1.4.1. Documentation sheet

Description	Case fatality within 30 and 90 days after primary tumour-directed surgery for colorectal cancer
Calculation	C. 30 days and 90 days postoperative mortality in colon cancer D. 30 days and 90 days postoperative mortality in rectal cancer
Rationale	Colorectal cancer is the second most frequently occurring cancer for men and the third for women in Belgium, with 8468 cases reported in 2016 [1]. In the majority of cases treatment for colorectal cancer includes surgery (curative or palliative intent).[b] Case fatality rates within 30 days and 90 days after a surgery to treat the colorectal cancer are indicators of the quality of acute care delivered to patients. [2, 3]
Primary data source	Belgian Cancer Registry (BCR): incidence years 2011-2015. IMA-AIM data Kruispuntbank - Banque Carrefour for mortality data (vital status of patients diagnosed with cancer): 01/01/2011- 01/07/2015.
Source of results	Belgian Cancer Registry (BCR).
Technical definitions	Selection of patients: new diagnoses of cancer registered in the BCR, with the following ICD-10 codes: **Indicator A (colon): C18-C19** **Indicator B (rectum): C20** Exclusion criteria: • Patients without official residence in Belgium at date of diagnosis • Patients with uncertain incidence date • Patients with no social security number (INSZ – NISS) known • Patients with no IMA data available in incidence year Numerator: number of deaths that occurred within 30-/90- days after radical colorectal surgery with primary diagnosis of (A) colon cancer (B) rectal cancer in a specified year. Denominator: number of radical colorectal surgeries (1 month before to 9 months after the incidence date) with primary diagnosis of (A) colon cancer (B) rectal cancer in the specified year The selection of nomenclature codes for the radical colorectal surgeries is the following: 243036-243040, 243051-243062, 244016-244020, 244031-244042, 244053-244064, 244753-244764, 243014-243025, 244075-244086, 244790-244801, 243073-243084, 243095-243106, 243110-243121, 243272-243283.

[b] https://www.cancer.be/les-cancers/types-de-cancers/cancer-du-gros-intestin-colorectal/traitements

International comparability	None.
Limitations	The results that are demonstrated here are unadjusted, this means that there was no correction carried out for underlying differences in patient- or tumour-characteristics such as sex, age, performance score, stage of disease.
Dimension	Quality – effectiveness of care

1.4.2. Results

1.4.2.1. Postoperative mortality in colon cancer

In Belgium, over the period 2011-2015, 31 390 colon tumours were studied (30 556 patients), in 80.8% of them a radical primary tumour-directed surgery was performed. Overall 30- and 90-days postoperative mortality rates are 3.9% and 6.7 % respectively (Table 3).

The mortality at 30 days decreased from 4.6% to 4.1% during the period of observation (with a lower rate in 2013 and 2014, see Table 3) while the mortality at 90 days decreased from 7.6% to 6.7% (also with lower rates in 2013 and 2014). Flanders has an overall lower mortality (3.3% at 30 days and 5.7 at 90 days) than Wallonia (4.9% at 30 days and 8.3% at 90 days) and Brussels (5.4% at 30 days and 9.5% at 90 days).

Table 3 – Postoperative mortality in colon cancer (2011-2015)

Year	Belgium			Flanders			Wallonia			Brussels		
	Number of patients getting surgery	postoperative mortality at		Number of patients getting surgery	postoperative mortality at		Number of patients getting surgery	postoperative mortality at		Number of patients getting surgery	postoperative mortality at	
		30 days (%)	90 days (%)		30 days (%)	90 days (%)		30 days (%)	90 days (%)		30 days (%)	90 days (%)
2011	4813	4.6	7.6	2995	4.2	6.8	1425	5.3	8.7	393	5.1	9.2
2012	4866	4.1	7.2	3124	3.7	6.4	1399	4.9	8.2	343	5.0	10.5
2013	4981	3.5	6.5	3107	3.1	5.8	1524	4.0	7.4	350	5.1	9.4
2014	5670	3.3	5.5	3923	2.4	3.9	1407	5.1	9.4	340	5.9	9.1
2015	5020	4.1	6.7	3268	3.4	5.9	1410	5.1	8.0	342	5.9	9.1
2011-2015	25350	3.9	6.7	16417	3.3	5.7	7165	4.9	8.3	1768	5.4	9.5

Source: Belgian Cancer Registry (BCR)

1.4.2.2. Postoperative mortality in rectal cancer

Rectal cancer is less common than colon cancer, 12 149 were studied between 2011 and 2015 (for 12 138 patients). A radical primary tumour directed surgical intervention has been recorded in 71.1% of the cases. Overall 30- and 90-days postoperative mortality rates are 2.1% and 4.2% respectively (Table 4).

The observed postoperative mortality rates are stable throughout the period of observation. Postoperative mortality rates are lower in Flanders (1.7% and 3.6% for 30 days and 90 days, respectively) than in Wallonia (3.0% for 30 days and 5.3% for 90 days) and Brussels (3.2% for 30 days and 4.8% for 90 days.

Table 4 – Postoperative mortality in rectal cancer (2011-2015)

Year	Belgium			Flanders			Wallonia			Brussels		
	Number of patients getting surgery	postoperative mortality at 30 days (%)	90 days (%)	Number of patients getting surgery	postoperative mortality at 30 days (%)	90 days (%)	Number of patients getting surgery	postoperative mortality at 30 days (%)	90 days (%)	Number of patients getting surgery	postoperative mortality at 30 days (%)	90 days (%)
2011	1741	2.1	4.1	1110	1.6	3.6	513	3.1	4.9	118	2.5	5.9
2012	1738	2.5	5.0	1083	2.0	4.3	554	3.1	6.3	101	4.0	5.0
2013	1741	2.1	4.3	1124	1.4	3.7	521	3.3	5.2	96	4.2	5.2
2014	1813	1.7	3.3	1222	1.5	2.9	508	2.2	4.5	83	1.2	2.4
2015	1601	2.4	4.1	1016	1.8	3.4	483	3.3	5.6	102	3.9	4.9
2011-2015	8634	2.1	4.2	5555	1.7	3.6	2579	3.0	5.3	500	3.2	4.8

Key points

- **The overall postoperative mortality rate at 30 days and 90 days is respectively 3.9% and 6.7% for colon cancer, and 2.1% and 4.2% for rectal cancer.**
- **Radical primary tumour-directed surgical interventions are recorded in 80% of colon cancers and 70% of rectal cancers, as part of the treatment.**
- **The evolution of the mortality rate over the period 2011-2015 is favourable (i.e. mortality decrease) for colon cancer and stable for rectal cancer.**
- **The mortality rates are similar in Brussels and Wallonia, but in Flanders lower rates are documented; this requires further analysis (taking into account possible differences in patient populations, e.g. age/sex/performance score/stage at diagnosis) before drawing conclusions on regional differences in quality of care.**

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1.5. Avoidable mortality: amenable mortality (QE-8) & preventable mortality (QE-9)

Description	This sheet describes the two sub-indicators constituting the "avoidable mortality": 1. The amenable mortality 2. The preventable mortality The concept of **avoidable mortality** [1] is based on the idea that certain deaths (for specific age groups and according to specific causes of death) could be 'avoided' or that their number could be reduced, if there had been more effective medical and public health interventions in place. • A death is said **amenable** if, in the light of medical knowledge at the time of death, all or most deaths from that cause could have been avoided through good **quality health care**. Deaths from appendicitis, pneumonia, peptic ulcus are three examples of cause of death that are said to be amenable. • A death is said **preventable** if, in the light of understanding the determinants of health at the time of death, it could have been avoided by **public health policies** focusing on wider determinants of public health, such as lifestyles, socioeconomic status and environmental factors. Deaths from road accident, lung cancer, alcohol-related diseases are three examples of deaths that are said to be preventable. These two types of avoidable mortality are not mutually exclusive: some causes of death are considered to be both amenable and preventable: for instance, tuberculosis or breast cancer are causes of death considered to be both amenable and preventable. Although avoidable mortality almost exclusively refers to deaths occurring below 75 year (excepted for accidents), it differs from premature mortality since it only includes causes that could potentially be avoided by appropriate health care or policies.
Calculation	Number of cases: Avoidable deaths are all those defined as preventable or amenable (or both), where each death is counted once. Where a cause of death falls within both subcategories (amenable and preventable), all causes of deaths from that cause are counted in both subcategories when they are presented separately. Due to the overlap between the subcategories, the avoidable death cannot be computed by summing up the subcategories amenable and preventable deaths. Age-specific rates (by direct standardisation method) are then calculated by dividing the number of case in each age-group by the population of the same age-group. These age-specific rates are weighted according to the chosen standard population, then summed up and divided by the total standard population to obtain age-standardized rates, that allow for regional or between countries comparisons. The "potential years of life lost" indicator (PYLL) measures the number of years of life that have been lost due to a premature death. PYLL weights the deaths occurring at younger age groups more heavily than the ones occurring in older people. The calculation of PYLL involves summing up deaths occurring at each age and multiplying this with the number of remaining years to live up to a selected age limit (here, 75 years). Age-standardized PYLL rates are calculated the same way as age-standardized rates. It has to be noted that this indicator puts an huge weight on newborns' deaths, which leads many authors to calculate them from 1 year of age.
Rationale	In the framework of HSPA, the all-cause premature mortality is not a specific outcome, because many other factors than the health system influence the premature mortality rate. There was a need for an indicator that might be more legitimately attributed to health care intervention. The amenable mortality is an aggregated indicator pooling the causes of premature deaths that are supposed to be influenced by the health care system; as such, it is supposed to be an indicator of the health system's effectiveness.

	The preventable mortality is an aggregated indicator pooling the causes of premature deaths that are supposed to be influenced by public health policies; as such, it is supposed to be an indicator of (late) health promotion outcomes. There is a quite large overlap between the subcategories of avoidable mortality, meaning that many causes of deaths are considered to be both amenable and preventable.
Primary data source	Statistics Belgium, causes of deaths (COD) database
Indicator source	For Belgium: own calculations (based on Statistics Belgium COD database) For international comparisons : Eurostat of EU Commission This can lead to slightly different results in national calculations versus the Belgian results in the EU calculations
Technical definitions	Since the introduction of the concept in the 80ths, many lists of causes for so called "avoidable deaths" have been proposed, none of them having reached a consensus. The EU adopted since 2013 the list of the UK Office National of Statistics[1], which more or less pooled the list of Nolte and the one of Tobias [2;3]. We used this current EU/ONS-UK list in the present report. However it is now already under revision. In the current EU/ONS-UK definition, for most causes, the upper age limit is 75 years. For external causes of deaths, there is no upper age limit. However, for technical reasons, calculations made at BE level were all made on deaths occurring below 75 years (also for external cause of deaths). This leads to a small underestimation of the number of preventable deaths, but has very little impact on the rate. At EU level, cross-countries comparisons include all ages for external causes of deaths.
Limitations	The choice of the causes, and moreover the attribution of the causes to a category (amenable, preventable, or both) is sometimes discussable. Indeed, the list is currently under revision**.** **Amenable mortality:** • The validity of the amenable mortality to measure the health system performance assessment has not yet been demonstrated [4]. Nolte points out that "it was never intended to be more than an indicator of potential weaknesses in health care that can be investigated more in depth. It was not intended to be a source of evidence in differences in effectiveness in health care"[2], meaning that this indicator is probably used to tell more than it actually can do. • It is an aggregate measure that provides only global information, but does not indicate what is to be addressed when there is evidence of suboptimal quality. This needs a more in-depth analysis (including a cause-specific mortality analysis and a qualitative assessment of the process)[5]. • The amenable mortality indicator does not take into account all the benefits of the health care interventions that are not only preventing death but meanwhile improving the quality of life. **Preventable mortality**: the same limitation as for amenable mortality with respect to the aggregated nature of the indicator can be made for preventable mortality.
International comparability	Availability: yes (Eurostat) Validity: the validity of the comparison are hampered by (at least) two major causes: 1. Differences between countries can be partly due to differences in certification and coding of the cause death; moreover there are important differences between the countries in the quality of coding. Countries with a large proportion of poorly determined causes of deaths will have consequently fewer specified causes of deaths, those latter only constituting the avoidable deaths. 2. The 'amenable mortality' does not account for differences in the underlying prevalence/incidence of the diseases.

1.5.1. List of available conditions

Office for National Statistics (ONS), UK, 2011

Condition group and cause	ICD-10 codes	Age	Amenable	Preventable
Infections				
Tuberculosis	A15-A19, B90	0-74	X	X
Selected invasive bacterial and protozoal infections	A38-A41, A46, A48.1, B50-B54, G00, G03, J02, L03	0-74	X	
Hepatitis C	B17.1, B18.2	0-74	X	X
HIV/AIDS	B20-B24	All	X	X
Neoplasms				
Malignant neoplasm of lip, oral cavity and pharynx	C00-C14	0-74		X
Malignant neoplasm of oesophagus	C15	0-74		X
Malignant neoplasm of stomach	C16	0-74		X
Malignant neoplasm of colon and rectum	C18-C21	0-74	X	X
Malignant neoplasm of liver	C22	0-74		X
Malignant neoplasm of trachea, bronchus and lung	C33-34	0-74		X
Malignant melanoma of skin	C43	0-74	X	X
Mesothelioma	C45	0-74		X
Malignant neoplasm of breast	C50	0-74	X	X
Malignant neoplasm of cervix uteri	C53	0-74	X	X
Malignant neoplasm of bladder	C67	0-74	X	
Malignant neoplasm of thyroid gland	C73	0-74	X	
Hodgkin's disease	C81	0-74	X	
Leukaemia	C91, C92.0	0-44	X	
Benign neoplasms	D10-D36	0-74	X	
Nutritional, endocrine and metabolic				
Diabetes mellitus	E10-E14	0-49	X	X

Drug use disorders				
Alcohol related diseases, excluding external causes	F10, G31.2, G62.1, I42.6, K29.2, K70, K73, K74 (excl. K74.3-K74.5), K86.0	0-74		X
Illicit drug use disorders	F11-F16, F18-F19	0-74		X
Epilepsy and status epilepticus	G40-G41	0-74	X	
Rheumatic and other valvular heart disease	I01-I09	0-74	X	
Hypertensive diseases	I10-I15	0-74	X	
Ischaemic heart disease	I20-I25	0-74	X	X
DVT with pulmonary embolism	I26, I80.1-I80.3, I80.9, I82.9	0-74		X
Cerebrovascular diseases	I60-I69	0-74	X	
Aortic aneurysm and dissection	I71	0-74		X
Influenza (including swine flu)	J09-J11	0-74	X	X
Pneumonia	J12-J18	0-74	X	
Chronic obstructive pulmonary disorder	J40-J44	0-74		X
Asthma	J45-J46	0-74	X	
Gastric and duodenal ulcer	K25-K28	0-74	X	
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis/lithiasis, pancreatitis, hernia	K35-K38, K40-K46, K80-K83, K85, K86.1-K86.9, K91.5	0-74	X	
Nephritis and nephrosis	N00-N07, N17-N19, N25-N27	0-74	X	
Obstructive uropathy and prostatic hyperplasia	N13, N20-N21, N35, N40, N99.1	0-74	X	
Complications of perinatal period	P00-P96, A33	All	X	
Congenital malformations, deformations and chromosomal anomalies	Q00-Q99	0-74	X	
Transport Accidents	V01-V99	All		X
Accidental Injury	W00-X59	All		X
Suicide and self-inflicted injuries	X60-X84, Y10-Y34	All		X
Homicide/Assault	X85-Y09, U50.9	All		X
Misadventures to patients during surgical and medical care	Y60-Y69, Y83-Y84	All	X	X

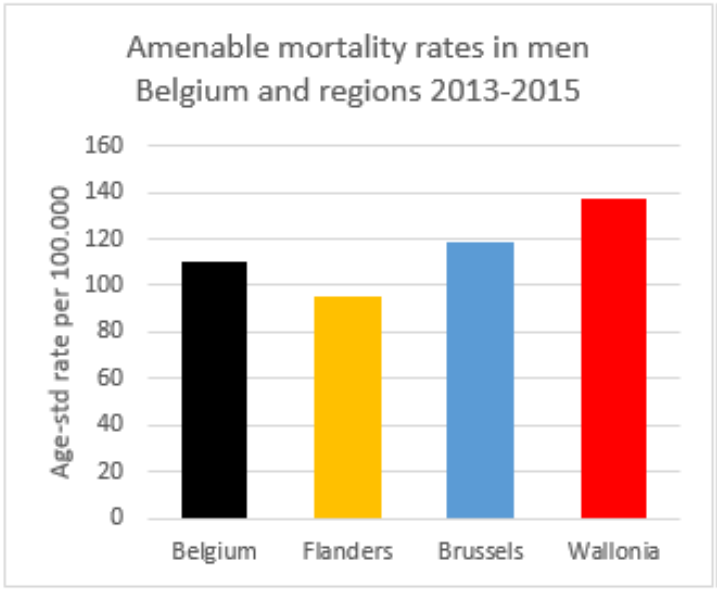
1.5.2. Amenable mortality

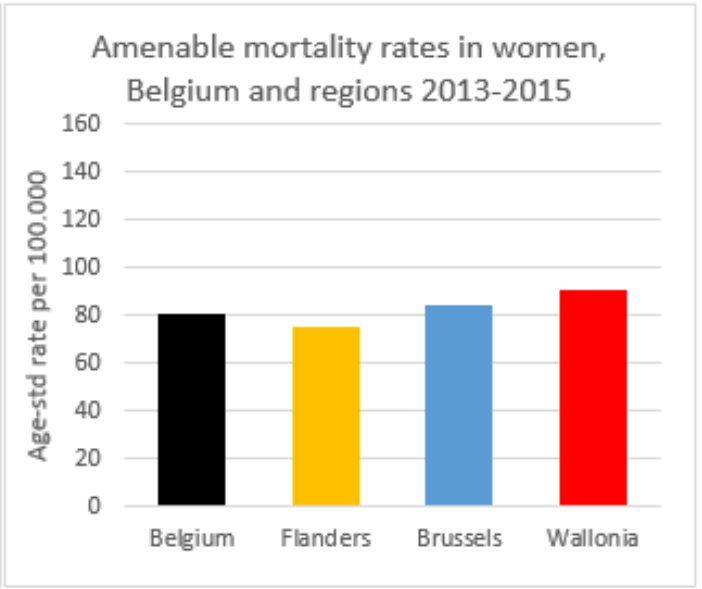
1. Rates by sex and region

The age-standardized amenable mortality rate (average 2013-2015) is higher in men than in women (sex ratio 1.37).

The amenable mortality is higher in Wallonia and in Brussels than in Flanders, and this difference in mortality is more pronounced in men. The sex ratio is more important in Wallonia, intermediate in Brussels and the lowest in Flanders.

2013-2015	Belgium	Flanders	Brussels	Wallonia	ratio BX/FL	ratio Wal/FL
Males	110.6	95.7	118.7	137.6	1.24	1.44
Females	81.0	75.4	84.3	90.7	1.12	1.20
Sex ratio	1.37	1.27	1.41	1.52		

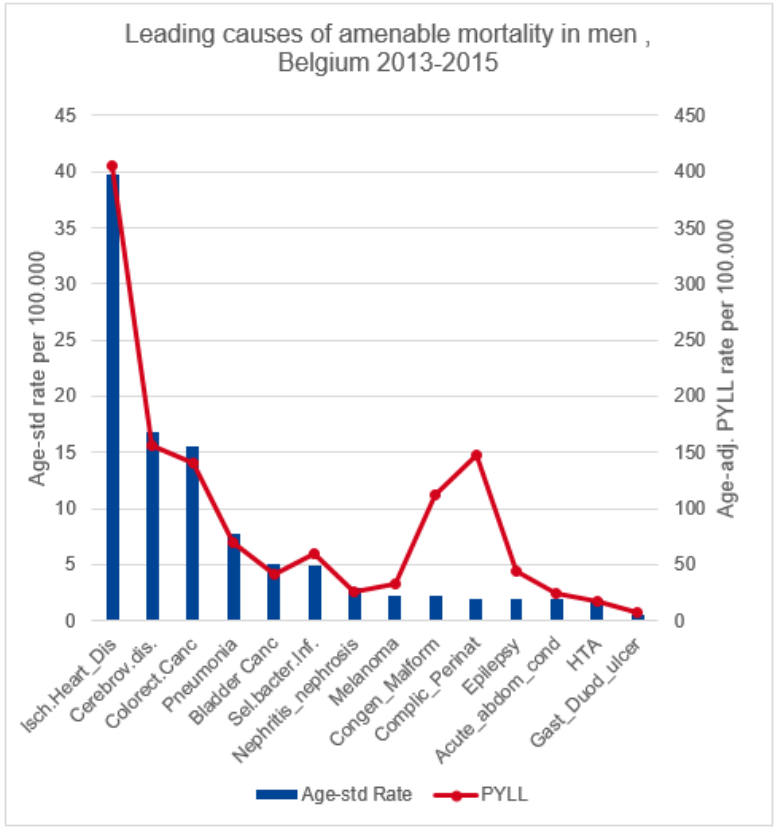


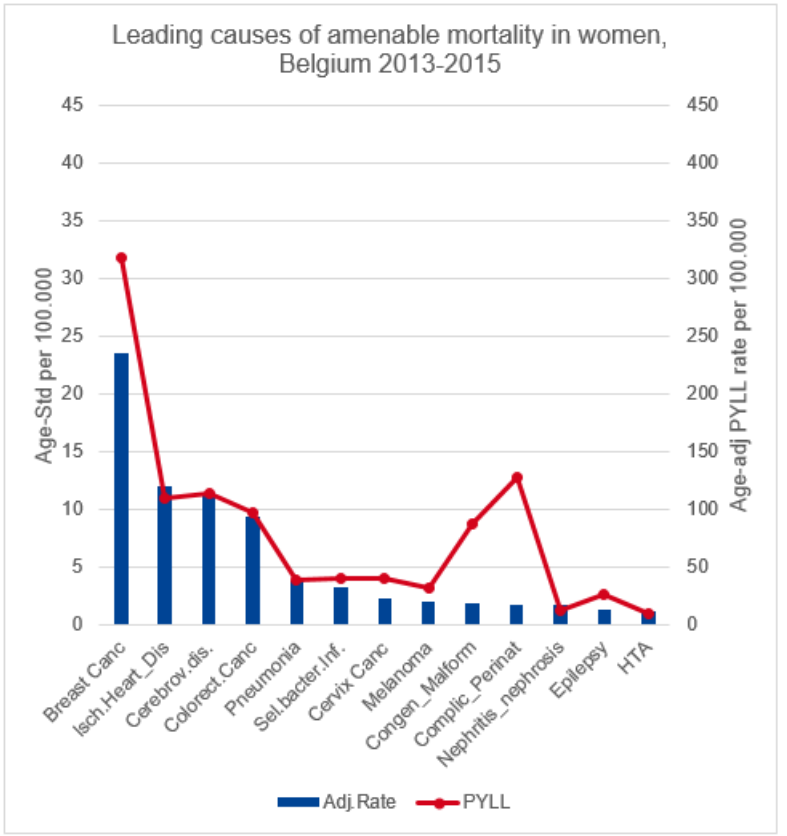


Source = author's calculation from Statbel causes of deaths database

2. Leading causes of amenable mortality

The leading causes of amenable deaths in men in 2013-2015 were: ischemic heart diseases, cerebrovascular diseases and colorectal cancer; in women it was breast cancer, ischemic heart diseases and cerebrovascular diseases.

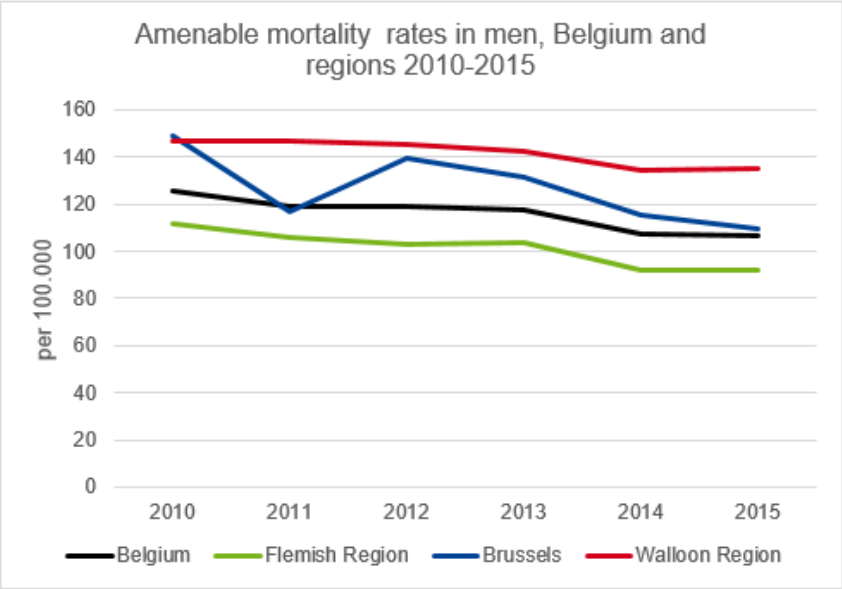


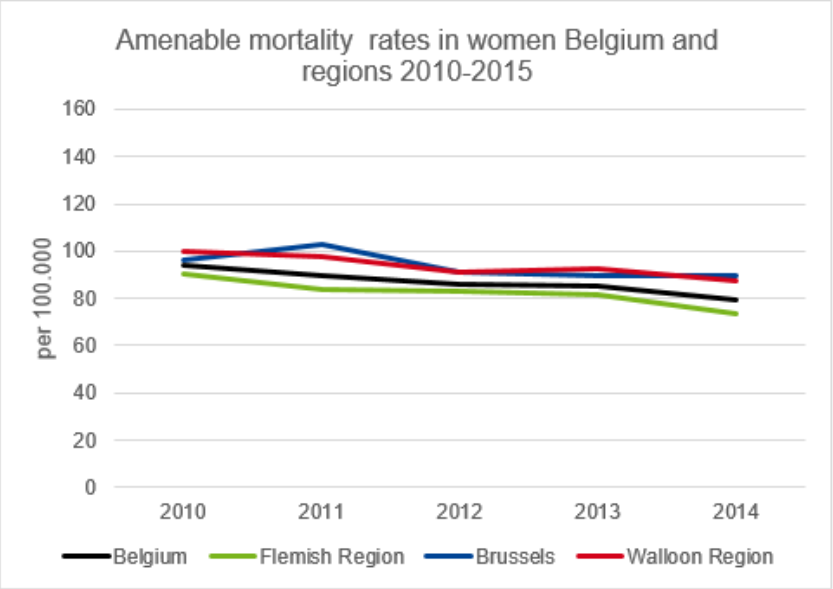


Source = author's calculation from Statbel causes of deaths database

3. Evolution by sex and region over time

The amenable mortality decreases in all regions and for both sexes. Some fluctuations are seen in Brussels, probably due to small numbers.

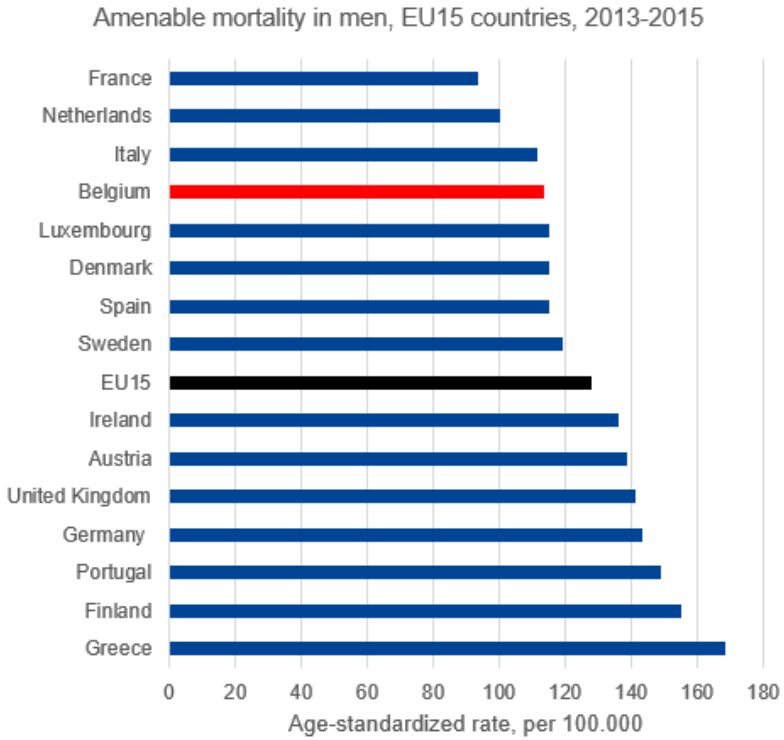


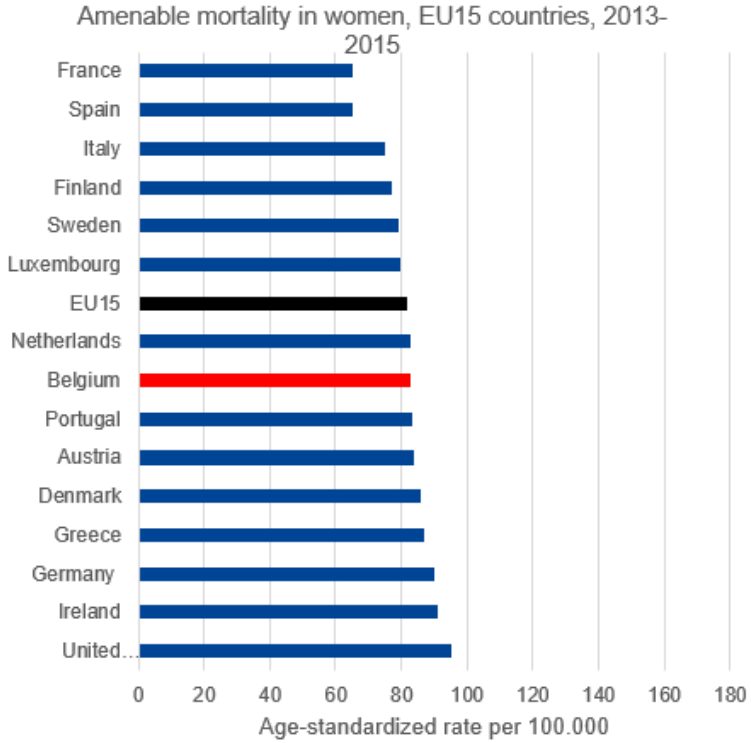


Source= author's calculation from Statbel causes of deaths database

4. European comparison, amenable mortality in EU 15 countries, 2013-2015

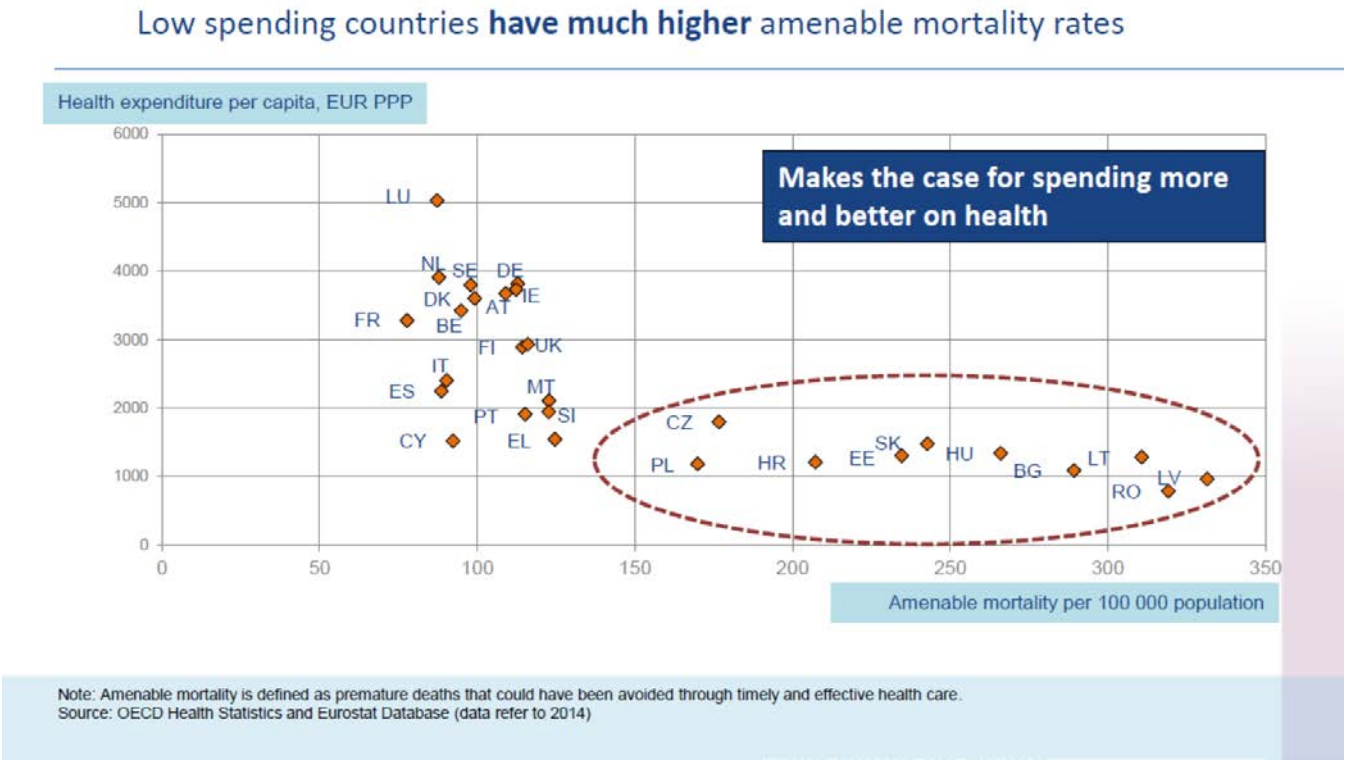
The amenable mortality is lower than the EU15 average in men but slightly higher in women.





Source : Eurostat

A report from OECD and European Observatory of health system and policies stated that low spending countries for health expenditure per capita have much higher amenable morality rates. This is mainly the case for countries of Eastern Europe. The situation of Belgium is shown on the following table. Belgium has relatively high health expenditure per capita. Comparing with the countries having the same level of amenable mortality(IT, ES, CY), the level of health expenditure is rather high.



1.5.3. Preventable mortality

1. Rates by sex and region

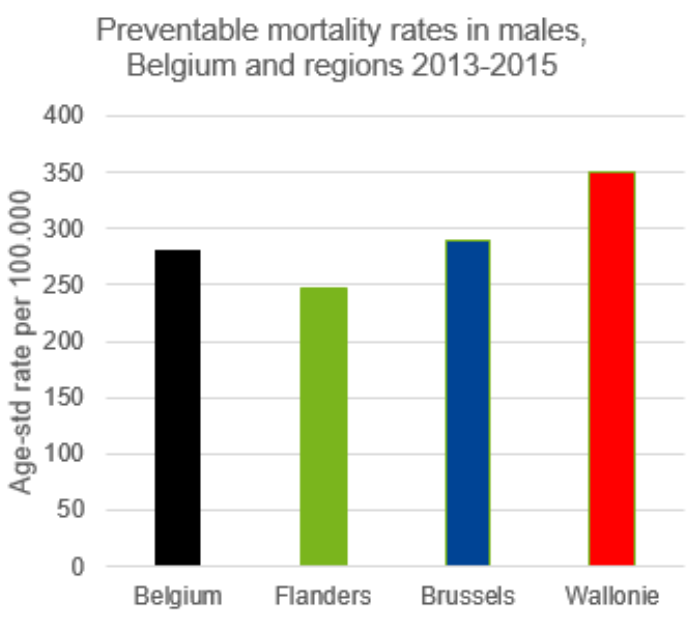
Note: the preventable mortality rates at Belgian and regional levels are calculated for deaths occurring below 75 (see metadata).

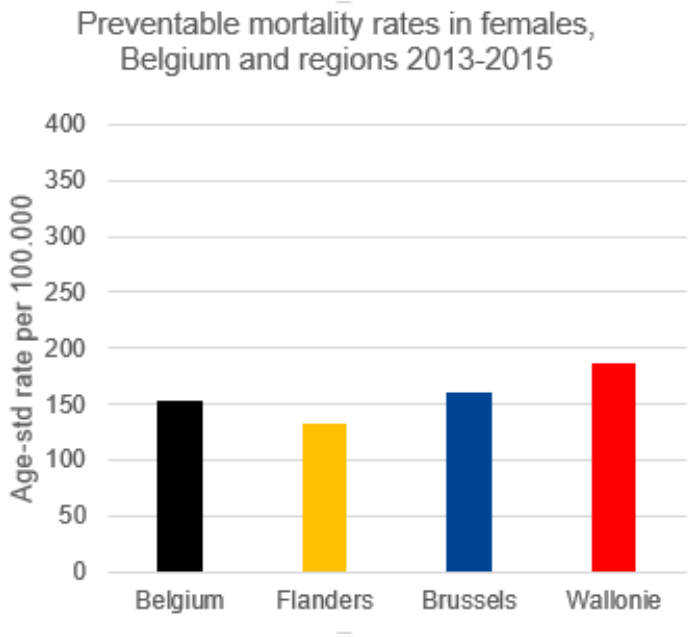
The age-standardized preventable mortality rate (average 2013-2015) is much higher in men than in women (sex ratio 1.8).

The preventable mortality is higher in Wallonia and in Brussels than in Flanders; the regional disparity is equal in both genders.

The sex ratio for preventable mortality the same in all regions.

	Belgium	Flanders	Brussels	Wallonia	ratio Bxl/Fla	ratio Wal/Fla
Men	281.4	246.3	288.5	349.6	1.17	1.42
Women	152.4	132.7	161.3	186.7	1.21	1.41
Sex ratio	1.8	1.9	1.8	1.9		



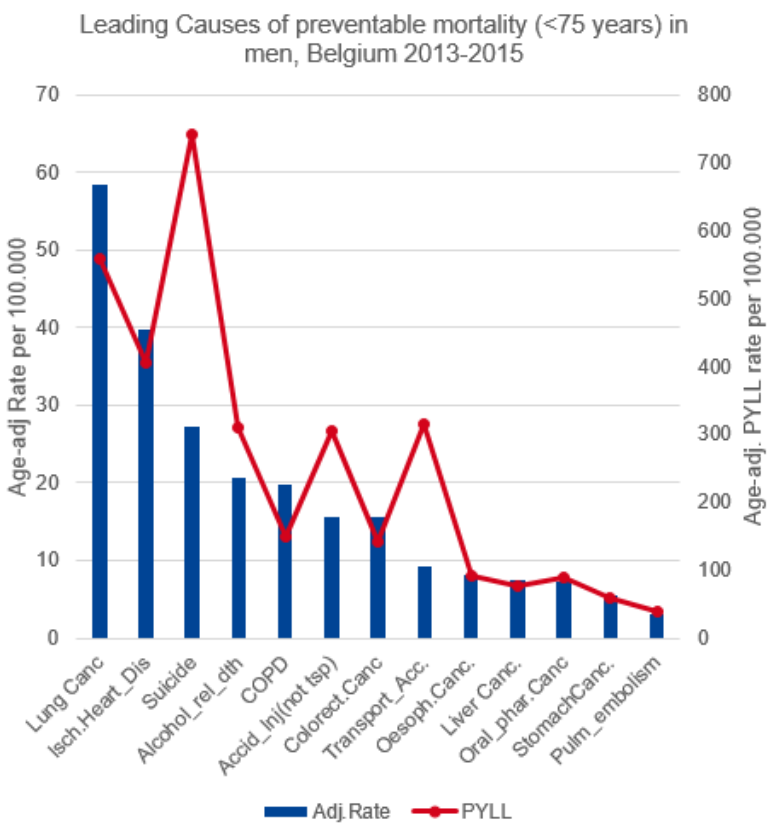


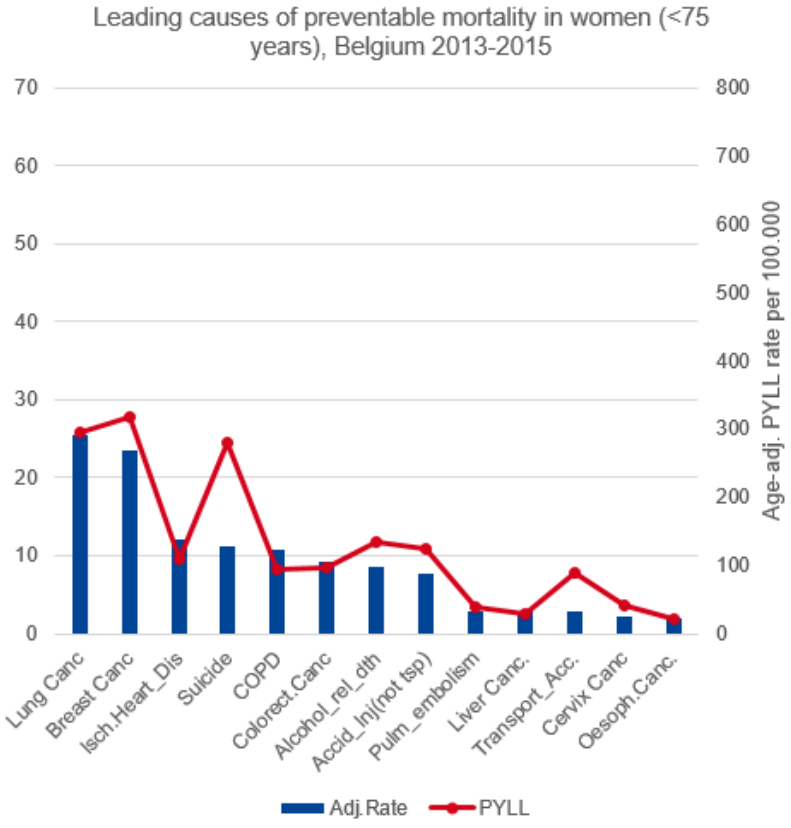
Source = author's calculation from Statbel causes of deaths database

2. Leading causes of preventable mortality

The leading causes of preventable mortality in men (before 75 years) are lung cancer, ischemic heart disease and suicide. If we look at the number of potential years of life lost (PYLL), then suicide is the leading cause, since it occurs more frequently at younger age than lung cancer or ischemic heart disease deaths.

In women (below 75), the leading causes of preventable deaths are lung cancer, breast cancer and ischemic heart disease. The PYLL in women are highest for breast cancer, lung cancer and suicide.

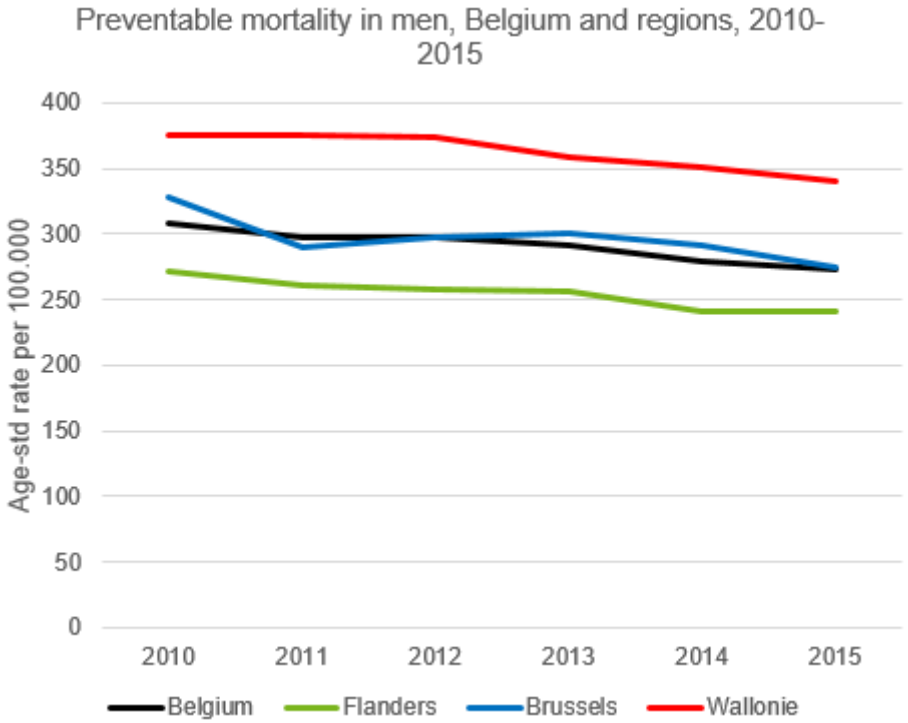


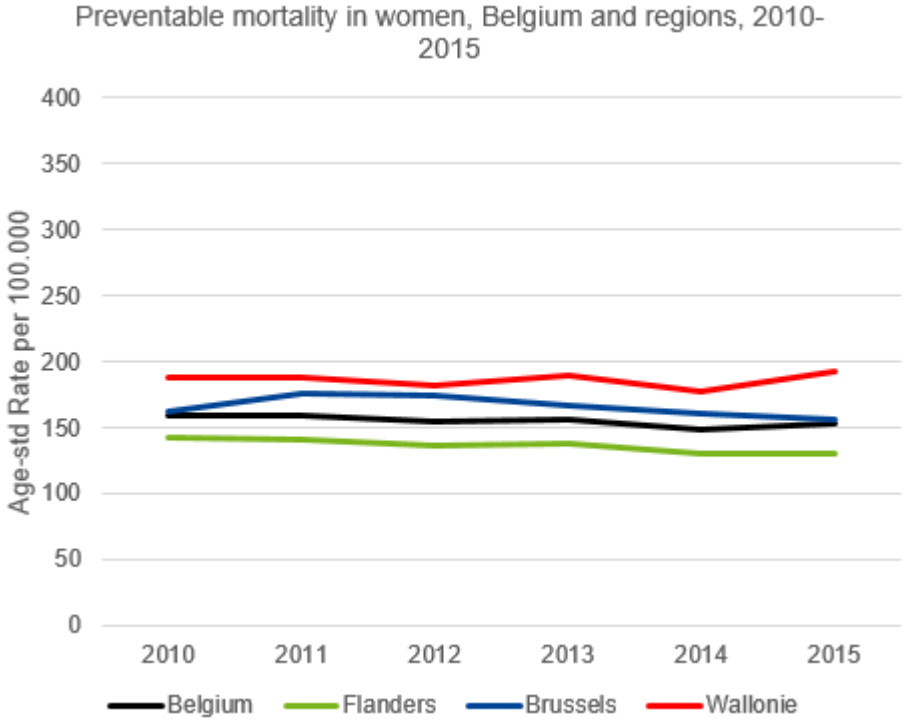


Source = author's calculation from Statbel causes of deaths database

3. Evolution by sex and region over time

The preventable mortality (below 75) decreases slowly in men, but remains almost stable in women (slight decrease in Flanders and increase in Wallonia). This is mainly due to the progression of lung cancer mortality in women.

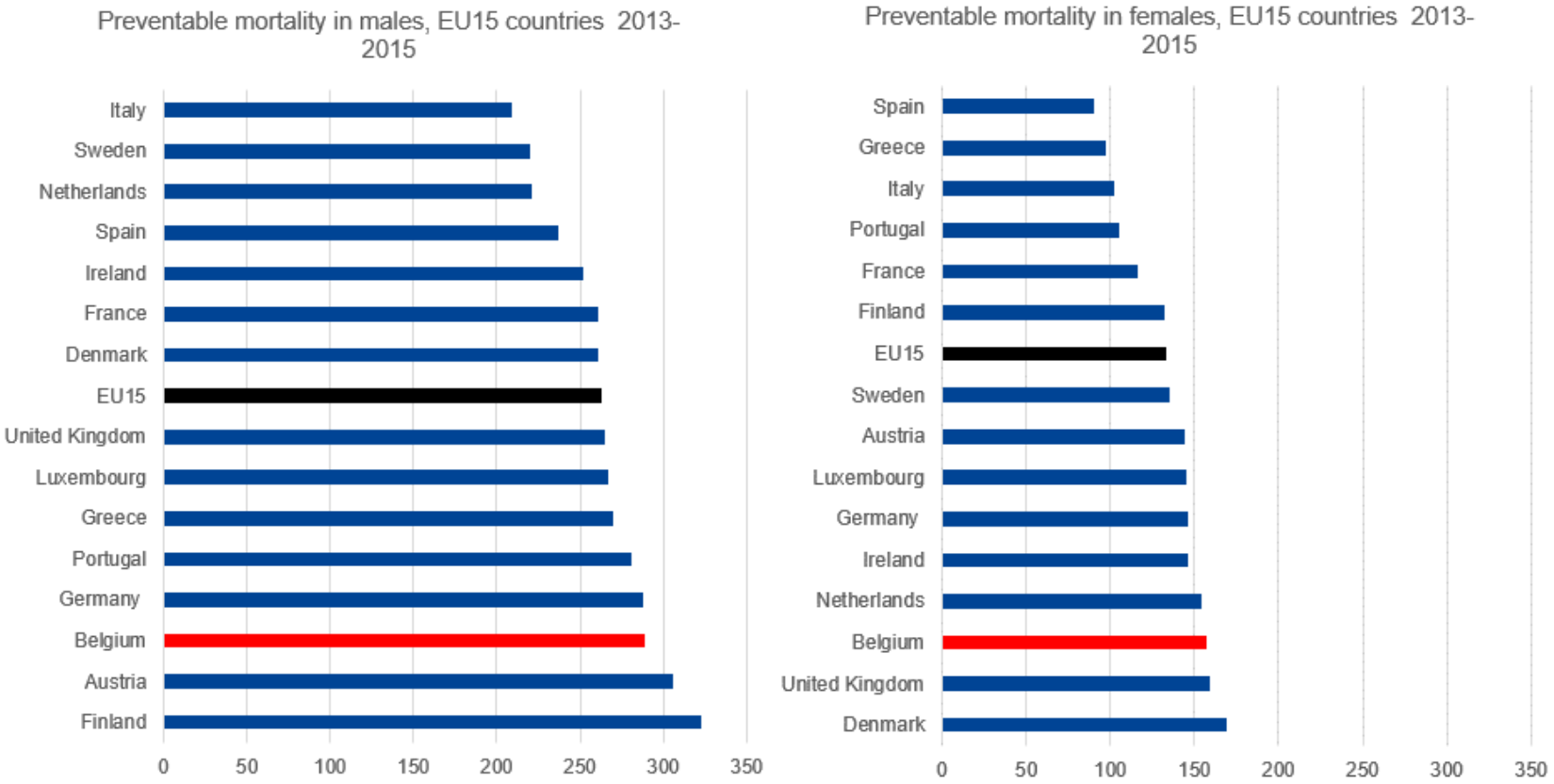




Source = author's calculation from Statbel causes of deaths database

4. European comparison, preventable mortality in EU 15 countries, 2013-2015

Belgium ranks poor for preventable mortality for both sexes.



Source: Eurostat

Key messages :

Mortality regarded as potentially amenable through the health care system ranks rather good among men (as compared to EU15), in contrast women have rates similar to the EU average.

Like all types of mortality, it is higher in men than in women (sex ratio : 1.37), and higher in Wallonia and Brussels compared to Flanders.

It decreases slowly but steadily over time.

Mortality regarded as potentially preventable through health policies ranks very poor 13/15) among the EU15 countries, and this in both genders.

It is much higher in men than in women (sex ratio : 1.8)

It is 40% higher in Wallonia and 20% higher in Brussels than in Flanders in both genders.

It decreases slightly over time in men, whereas for women there are different trends across the 3 regions (decrease in Flanders and increase in Wallonia).

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2. QUALITY OF CARE: APPROPRIATENESS OF CARE

2.1. Appropriate follow-up of diabetic patients (QA-1, QA-2)

2.1.1. Documentation sheet

Description	Quality of diabetic patients follow-up based on different criteria
Calculation	Numerator: Number of diabetic patients who received the five following tests in the past 15 months: - at least two records of HbA1c - at least four records of glycaemia measurement - at least one record of lipid profile - at least one record of microalbuminuria - at least a consultation by an ophthalmologist Denominator: number of patients with any type of diabetes identified through their drugs prescription.
Rationale	Diabetes is a chronic disease characterised by high levels of glucose in the blood. People with diabetes are at greater risk of developing cardiovascular diseases such as heart attack and stroke if the disease is left undiagnosed or poorly controlled. They also have higher risks of sight loss, foot and leg amputation, and renal failure. [1] In Belgium, prevalence of diabetes in adults aged 20-79 years is estimated to be 6.1% in 2017. [2] All type 1 diabetic patients are on insulin while most type 2 diabetic patients may be on a treatment which may or may not include insulin; overall 5-10% of all diabetic patients are suffering from type 1 diabetes, while type 2 diabetes make out the majority of the other diabetics. The majority of the type 2 diabetics do not receive insulin. In diabetics, it is recommended to measure at least twice a year the level of glycated haemoglobin (HbA1c), every 3 months the glycemia, and once a year the microalbuminuria and to make a lipid profile. It is also recommended that an ophthalmologist performs a dilated fundus examination once a year to detect ocular complications at an early stage. [3]
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	Numerator: Test 1: HbA1c : nomenclature code 540750-540761, 571830-571841 (measure of glycated haemoglobin in haemolysate) at least twice over the period Test 2: lipid profile: (LDL (billing codes: 542231-542242) AND HDL (billing codes: 540293-540304) AND triglycerides (billing codes: 541376-541380, 572272-572283)) OR (total cholesterol (billing codes: 540271-540282) AND HDL AND triglycerides) at least once over the period Test 3: albumin measurment (billing codes: 543712-543723, 433554-433565) to check microalbuminuria or total protein measurement (billing codes: 125532-125543) to check proteinuria, at least once over the period [4] Test 4: glycaemia (120050-120061, 125053-125064) at least 4 times over the period [5] Test 5 (ophthalmology): ophthalmologist consultation (billing codes: 102012, 102535 and specialist qualification code: 037, 370, 371, 374, 378 or 397) at least once over the period

	These tests have been selected for the feedback to the GPs concerning diabetic patients follow-up.[c] Denominator: Diabetics selected on Pharmanet: class ATC A10 drugs prescription. Two distinct subgroups are considered : 1) Insulin-dependent diabetic patients (ATC=A10A): A10A prescription >37.5 DDDs. 2) Non-insulino-dependent diabetic patients (ATC=A10B): A10B prescription >=270 DDD (and 0≤A10A<270 DDD). For this subgroup, an inferior age limitation was set at 50 years to exclude patients taking metformin to lose weight instead of stabilizing a diabetes. Compared to our previous report, [6] the micro-albuminuria testing was reintroduced instead of creatinine, lipid profile and glycemia measurement added, and the DDD for the denominators adapted.
Limitations	Patients with diabetes controlled with diet only are not identified.
Dimensions	Appropriateness of care, and Continuity of Care
International	These indicators were selected in the early phases of the OECD quality indicators project [7] but have been abandoned in the recent phases because of the poor availability of data in the majority of countries. [8] Hence, there are no international comparison available for this indicator.

2.1.2. Results

Recommendations for glycated haemoglobin and cholesterol level monitoring measures are followed properly in diabetics under insulin (Figure 15): 88.5% and 90.5% of them were measured with these respective tests in the last 15 months (last results available for 2016). The three other tests are less properly followed over the same period: check for microalbuminuria (71.2%), ophthalmological consultation (68.2%) and glucose measures (56.9%).

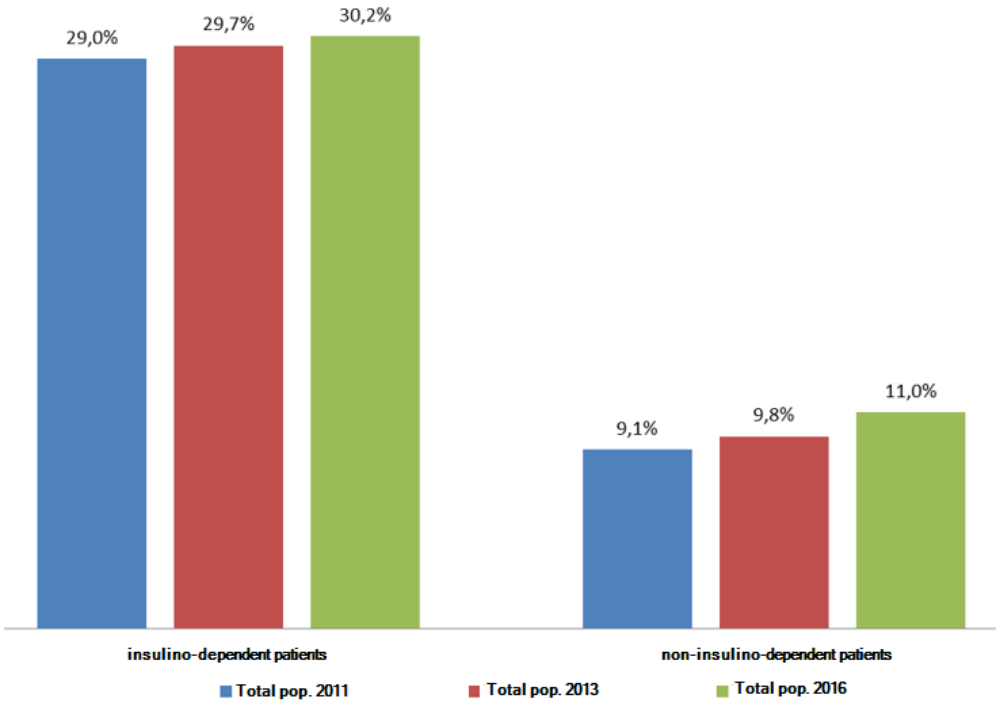
Recommendations are followed less properly by diabetics not under insulin (under oral antidiabetics or taking glucagon-like peptide-1 analogues) aged 50 and over: while cholesterol level is tested in 86.5% of the patients and glycated haemoglobin in 72.8% of them, the three other tests are monitored in less than half of the patient population: ophthalmologist consultation (47.8%), glucose measurement (42.9%) and proteinuria (34.2%).

The composite endpoint of all five tests being evaluated as a quality indicator for follow-up of diabetes was only 30.2% in 2016 for insulin-dependent patients, (coming from 29.0% in 2011, cf, Figure 14) and 11.0% (also improving, since in 2011 it was 9.1%) for the non-insulino-dependent patients, which is lower than the quality indicator used in the 2015 report (67.8 and 43.4% respectively, for 2013) 6. However in the previous evaluation, the primary quality indicator was only based on a composite three tests (HbA1c, creatinine, and annual follow-up by ophthalmologist). Moreover in the current composite quality indicator (consisting the parameters: HbA1c, glycaemia, microalbuminuria testing, lipids and ophthalmology evaluation), the previously used parameter of creatinine was removed and replaced by microalbuminuria testing. Reality in clinical practice probably is that annual microalbuminuria testing is much less frequently performed than the annual check of creatinine. This, together with the fact that the current composite indicator contains 5 tests, instead only 3 previously, very likely is the reason for the lower overall performance observed in this report.

Regional differences are small, but a bit bigger between some provinces (Figure 17).

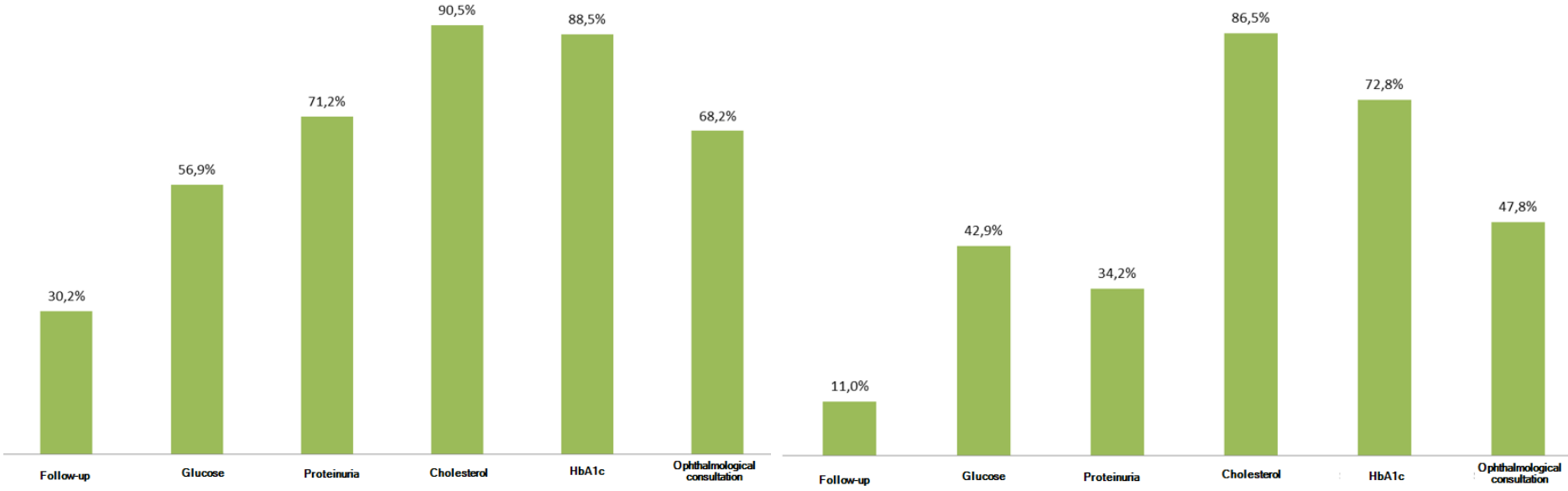
[c] https://www.inami.fgov.be/fr/professionnels/sante/medecins/qualite/feedback/Pages/default.aspx

Figure 14 – Proportion of diabetic patients getting the combination of five tests over 15 months): insulin-dependent patients (left) vs 50+ non-insulin-dependent patients (right)



Source: EPS (IMA – AIM), calculation: INAMI – RIZIV

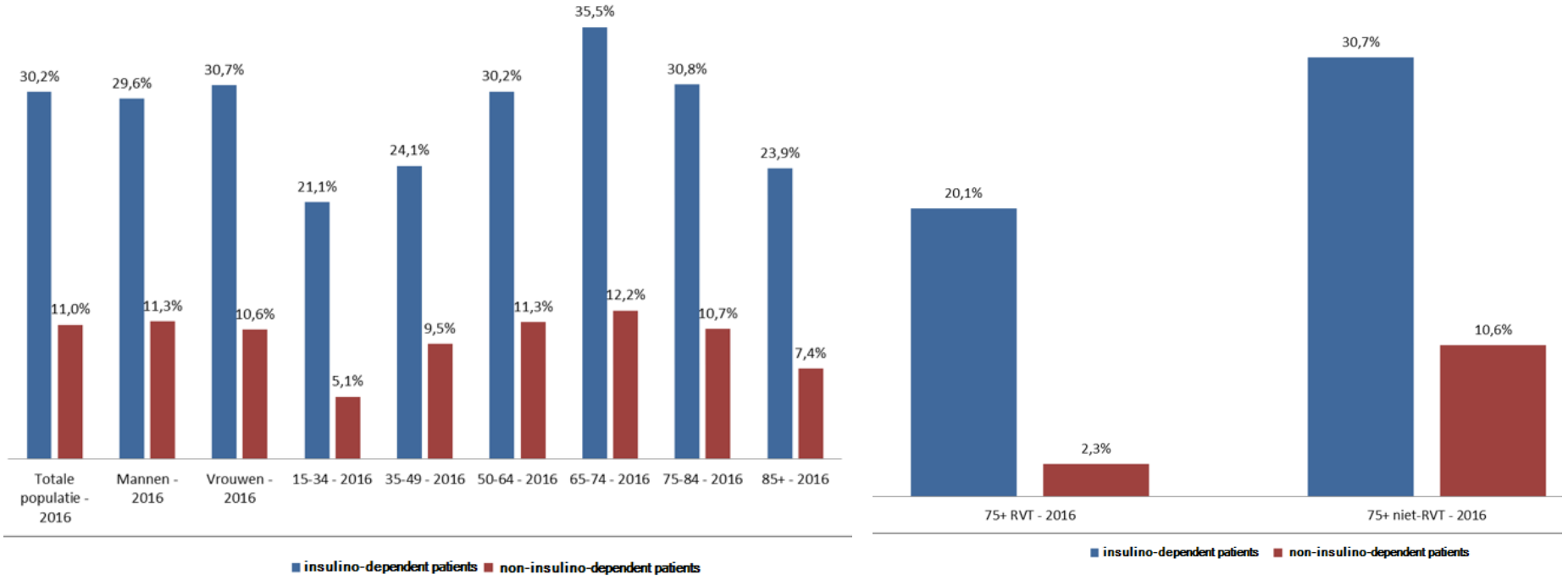
Figure 15 – Follow-up of diabetic patients: five tests for patients under insulin (left) and patients not under insulin (right) in 2016



Source: IMA – AIM (EPS), calculation: INAMI – RIZIV

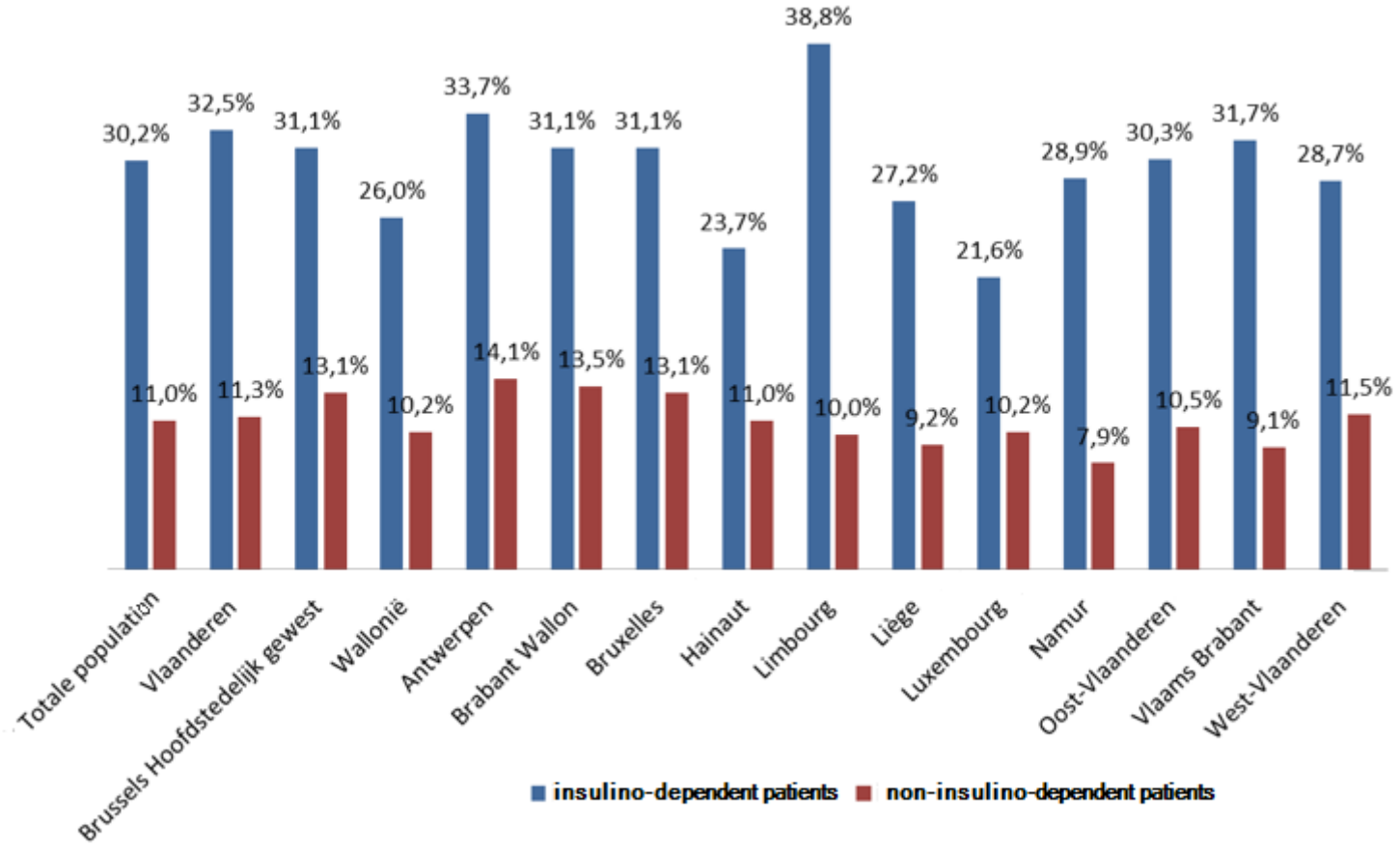
There is no difference in follow-up between male and female, and patients aged 65-74 years are the most compliant (Figure 16, left). Patients aged 75 or over in a nursing home have a smaller proportion of patients have the 5 tests than the patients not in nursing home: the difference between the two is important and for both insulin-dependent patients and non-insulin-dependent patients (Figure 16, right).

Figure 16 – Proportion of diabetic patients getting the combination of five tests within 15 months by age category (left) and for patients 75+ in nursing house or not (2016)



Source: EPS (IMA – AIM), calculation: INAMI – RIZIV

Figure 17 – Proportion of diabetic patients getting the combination of five tests within 15 months by region and province (2016)



Source: EPS (IMA – AIM), calculation: INAMI – RIZIV

Key points

- **The five tests selected to assess the quality of diabetes follow-up are done for 30.2% of the diabetic patients under insulin; this rate is much lower than in the previous report, where only 3 tests had been selected (glycated haemoglobin and creatinine measurements as well as an annual visit with an ophthalmologist). The glycated haemoglobin and cholesterol measures are very well covered, but the annual consultations with an ophthalmologist, microalbuminuria and glucose measurements are less frequent.**
- **For the diabetic population not depending on insulin, the coverage of the five tests combined is much lower: 11.0%, again mainly due to a lower coverage of the annual visit with an ophthalmologist, proteinuria (microalbuminuria) and glucose.**
- **Patients aged 75+ years have a better follow-up at home than in nursing home for both subgroups.**
- **Regional differences are small for both subgroups population; differences can be bigger at the provincial level.**

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2.2. Prudent prescription of antibiotics in the ambulatory care sector (QA-3, QA-4, QA-5)

2.2.1. Documentation sheet

Description	Three indicators and two sub-indicators are used to assess the prudent prescription of antibiotics in the ambulatory care sector: **1. Volume in Defined Daily Dose (DDD) of antibiotics prescribed in the ambulatory care sector** 2. Proportion of patients with at least one antibiotic prescribed in the year **3. The ratio of second line antibiotics, compared to the total of DDDs prescribed** **3.1. The ratio amoxicillin to amoxicillin – clavulanate** **3.2. The proportion of quinolone use**
Calculation	See technical definition section for calculation details.
Rationale	Rising rates of antimicrobial resistance, i.e. the ability of microorganisms to resist antimicrobial products, is a growing concern. Antimicrobial resistance is primarily driven by non-prudent use of antimicrobials, including antibiotics, in human health, agriculture and livestock production and by contamination of the environment. In May 2015, the World Health Assembly[d] endorsed a global action plan to tackle antimicrobial resistance which is also reflected in several national strategies. In Europe, the European Centre for Disease Prevention and Control (ECDC) monitors antibiotic use in Europe, among others through the European Surveillance of Antimicrobial Consumption network (ESAC-Net[e]). The Belgian Antibiotic Policy Coordination Committee (BAPCOC) is active since 1999 to approach the problem; it defined several targets for the 2014-2019 period.[f] One of them is to decrease total antibiotic use in the ambulatory sector (from more than 800 prescriptions per 1000 inhabitants per year in 2014 to 600 prescriptions by 2020 and 400 prescriptions by 2025); a second target is the increase of the amoxicillin versus amoxicilline-clavulanate ratio (from about 50/50 in 2014 to 80/20 by 2018); a third objective from the BAPCOC strategic plan is a reduction of the quinolone use by 50% by 2018 (from 10% of the total DDD of antibiotics to 5%)[1]. The total volume of antibiotics prescribed, and the second line antibiotics used as a proportion of total volume of antibiotic prescribed, have been designated by BAPCOC as markers of quality in the primary care setting.
Data source	RIZIV – INAMI (Pharmanet – Farmanet database, i.e. ambulatory reimbursement database) for indicator 1, IMA – AIM (KCE calculation) for indicators 2 and 3, KCE report entitled “proposals for a more effective *antibiotics policy* in Belgium” (expected publication in April 2019) for subindicators 3.1 and 3.2.

[d] World Health Assembly addresses antimicrobial resistance, immunization gaps and malnutrition; available at: https://www.who.int/mediacentre/news/releases/2015/wha-25-may-2015/en/ (last access: 31 January 2019)

[e] Antimicrobial consumption interactive database (ESAC-Net); available at: https://ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks/esac-net (last access: 31 January 2019)

[f] Plan stratégique BAPCOC 2014-2019, available at: https://organesdeconcertation.sante.belgique.be/fr/documents/plan-strategique-bapcoc-2014-2019 (last access: 9 January 2019) [1]

Technical definitions

1. Amount antibacterials for systemic use (ATC group J01) prescribed within ambulatory care and expressed in DDD per 1000 insured persons and per day. DDDs are calculated according to the ATC classification and the data source is Pharmanet (ambulatory reimbursement database, including GPs, specialists and dentists).

ATC code	DENOMINATION
J01A	TETRACYCLINES
J01B	AMPHENICOLS
J01C	PENICILLINS
J01D	OTHER BETA-LACTAM ANTIBACTERIALS
J01E	SULFONAMIDES AND TRIMETHOPRIM
J01F	MACROLIDES, LINCOSAMIDES AND STREPTOGRAMINS
J01G	AMINOGLYCOSIDE ANTIBACTERIALS
J01M	QUINOLONE ANTIBACTERIALS
J01R	COMBINATIONS OF ANTIBACTERIALS
J01X	OTHER ANTIBACTERIALS

2. Number of patients with at least one prescription of antibiotics (ATC = J01) delivered by a pharmacy open to the public (per year)
3. Number of DDDs with criteria (criteria = prescription second line antibiotic (i.e. amoxicillin – clavulanate, cephalosporin, quinolones and macrolides)) among all other antibiotic DDDs.
   3.1 Ratio of amoxicillin (ATC code J01CA04) DDDs vs. amoxicillin – clavulanate (ATC code J01CR02) DDDs.
   3.2 Number of quinolones (ATC code J01M) DDDs on the total number of DDDs.

Limitation

The defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults.[2] DDDs are standardized doses provided as part of the Anatomical Therapeutic Chemical drug classification system maintained by the WHO Collaborating Centre for Drug Statistics Methodology (www.whocc.no/atcddd). [3] The DDD is an internationally accepted unit for measuring medicine use and for making comparisons between countries. Yet, it must be realised that the DDD does not necessarily reflect the recommended or Prescribed Daily Dose in the specific country. Only one DDD is assigned per ATC code and route of administration (e.g. oral intake). The DDD is sometimes a 'dose' that is rarely if ever prescribed, because it might be an average of two or more commonly used doses and is based on an adult body weight of 70kg.[4] Drug utilization data presented in DDDs only give a rough estimate of consumption and not an exact picture of the actual antibiotic use in a specific country. For instance, as DDDs do not take into account the dosage used in children, measures in DDDs should not include children.[4] However, DDDs provide a fixed unit of measurement independent of price, currencies, package size, strength (i.e. amount of drug per unit) and molecule, as one day of treatment receives approximately equal weight whatever the drug.[5] This enables the researcher to assess trends in drug use and to perform comparisons between population groups.[2]

Indicator 3 slightly differs from the international indicator. The Dutch HSPA report 2014 [6] includes the following indicator: total DDD beta-lactam antibacterials + total DDD quinolones prescribed divided by the total DDD antibiotics prescribed. Since the range of second line AB prescribed in

	ambulatory setting is large in Belgium, this indicator has been adapted as follows: total DDD of cephalosporin, quinolones, amoxicillin-clavulanate and macrolides prescribed divided by the total DDD antibiotics prescribed.
International comparability	ESAC-Net and OECD have data on the ambulatory pharmaceutical consumption by daily defined dose, according to the ATC classification. Indicator 3 (proportion of second line antibiotic): the Netherlands uses a similar indicator.
Dimension	Quality – appropriateness; Safety
Related indicators	Incidence of MRSA

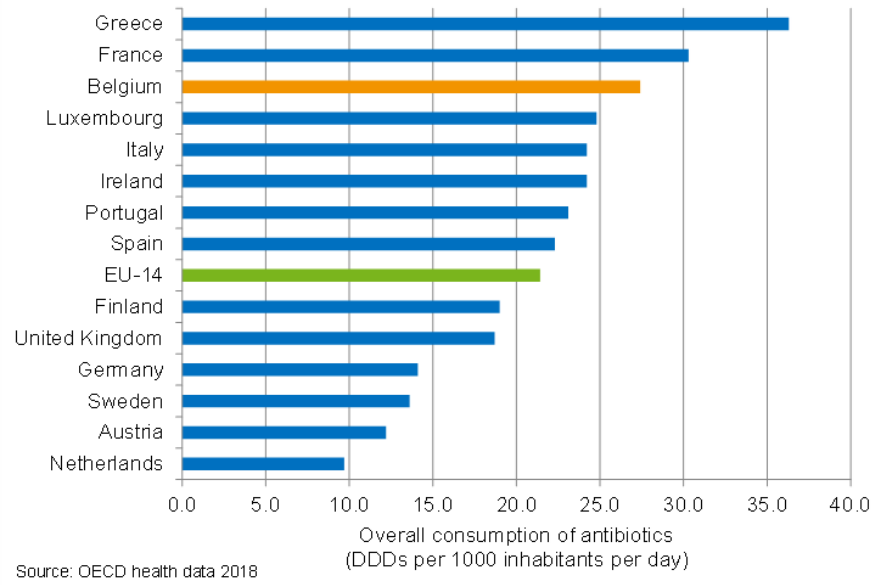
2.2.2. Results

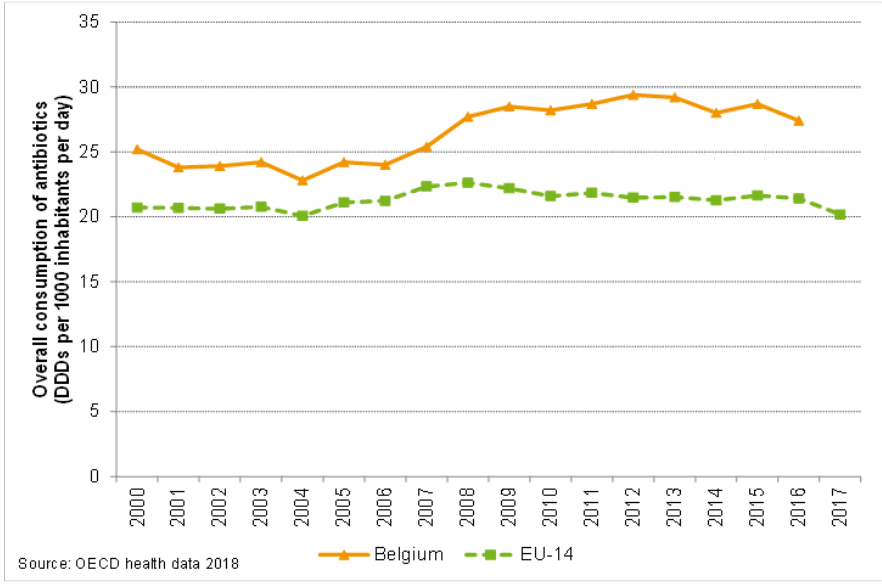
Volume of antibiotics prescribed in ambulatory care sector (DDDs per 1000 inhabitants per day)

Since 2000, the Belgian government information campaigns inform population, pharmacists and practitioners about the correct use of antibiotics and the danger of antibiotic resistance. Antibiotics only need to be prescribed if necessary. Second choice antibiotics (i.e. amoxicillin – clavulanate, cephalosporin, quinolones and macrolides) should not be used in first intention and be kept in reserve. General practitioners (GPs) are in first line to inform the patient about the risk of misuse or overconsumption of antibiotics and to follow the recommendations.

In 2016, antibiotic consumption in the Belgian ambulatory sector equalled 27.7 Defined Daily Doses (DDD) per 1000 inhabitants and per day (DID). However, the volume of antibiotics remains one of the highest in OECD countries, similar to France. In comparison, the consumption in the Netherlands is much lower: 9.7 DDDs per 1000 inhabitants per day.[7] The change in trend observed at the national level in 2015-2017 should be confirmed (Figure 18).

Figure 18 – Overall volume of antibiotics, DDD AB per day per 1000 inhabitants, international comparison, 2016



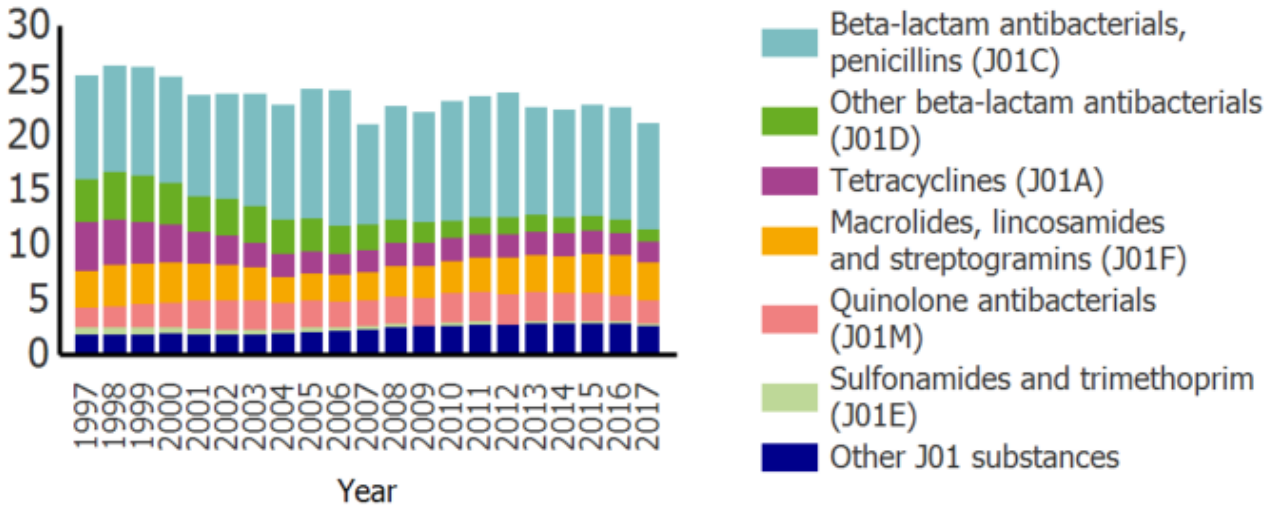


Source: OECD Health Statistics 2018

Between 2007 and 2012, the total use of antibiotics in the ambulatory sector in Belgium expressed as DDD per 1000 inhabitants per day fluctuated, increased and decreased again in 2013-2017. Proportions of tetracyclines (J01A) and other beta-lactam antibacterials (J01D) decreased from 1997 to 2017 (Figure 19).

Note: due to a bug in the TESSy data, the data for the period 1997-2006 are presented based on the 2018 ATC/DDD index; at the moment of the editing of this report ECDC was still working on a solution.(ECDC, personal communication) Data for the other years are presented based on the 2019 ATC/DDD index.

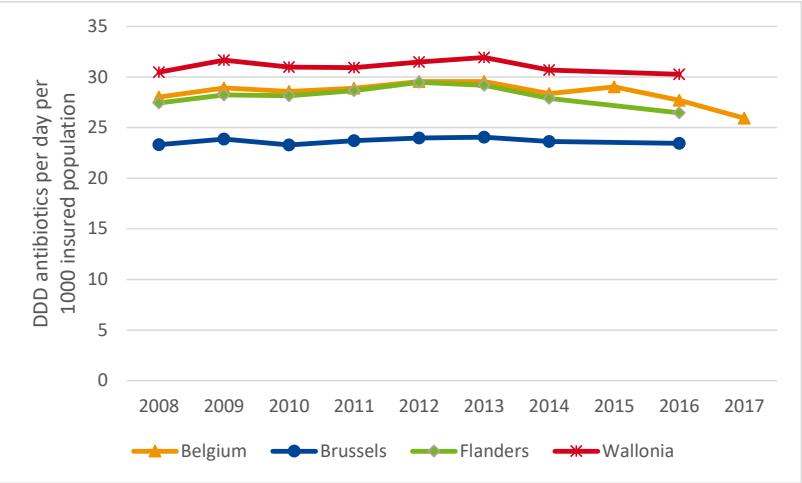
Figure 19 – Trend in the consumption of antibiotics for systemic use (ATC group J01) in ambulatory care (DDD per 1000 inhabitants per day, 1997-2017)



Source: ESAC-Net

Differences between regions are important and stable: Wallonia is continuously above 30 DDDs per 1000 inhabitants per day, Brussels under 25 DDDs per 1000 inhabitants per day and Flanders in between (Figure 20)

Figure 20 – Overall volume of antibiotics delivered, DDD per 1000 inhabitants per day, by region, 2008-2017



Source: RIZIV – INAMI; data are presented based on the 2018 ATC/DDD index

Table 5 – Antibiotic use in the ambulatory sector, by ATC code and by age-group, 2016

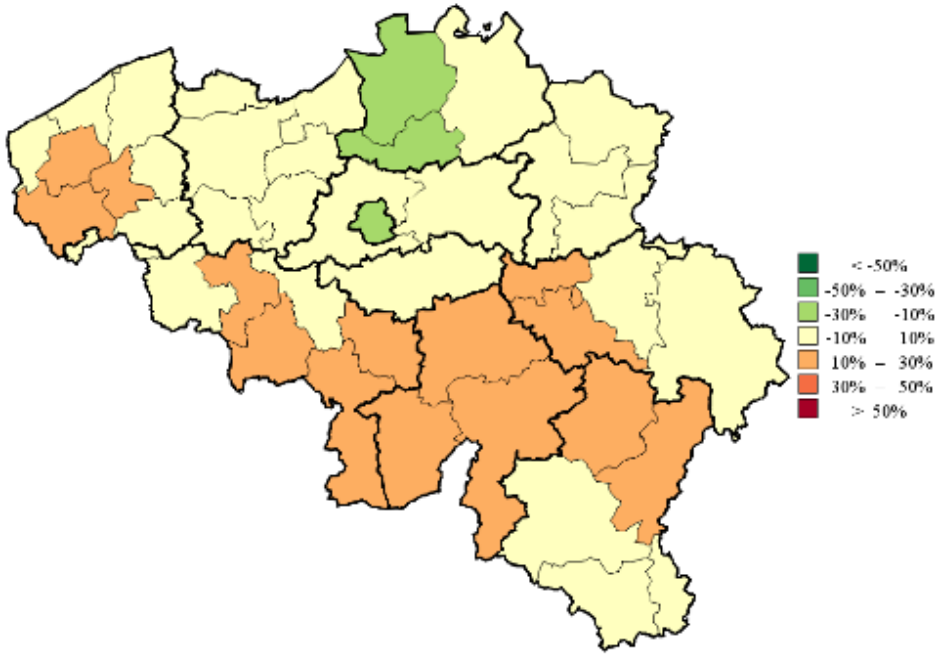
ATC code	0-14 years % total DDD	15-64 years % total DDD	65 + % total DDD
Tetracyclines (J01A)	4.5%	11.2%	4.9%
Amphenicols (J01B)	0.1%	<0.1%	<0.1%
Penicillins (J01C)	70.4%	46.5%	35.8%
Other beta-lactam antibacterials (J01D)	4.2%	6.0%	6.2%
Sulfonamides and trimethoprim (J01E)	0.4%	0.8%	1.4%
Macrolides, lincosamides and streptogramins (J01F)	17.5%	16.6%	14.7%
Aminoglycoside antibacterials (J01G)	0.2%	0.1%	0.0%
Quinolone antibacterials (J01M)	0.6%	9.9%	15.2%
Other antibacterials (J01X)	2.0%	9.2%	21.8%

DDD: Defined Daily Dose, Data source: KCE report on proposals for a more effective antibiotics policy *in Belgium (expected publication: April 2019)*

In 2016 the highest ratio penicillin to total antibiotic use expressed in DDD, was observed in the age group 0-14 years (Table 5). Most commonly used penicillins in children (0-14 years) were amoxicillin (75% of total penicillin DDD in 0-14 years) and the association amoxicillin and a beta-lactamase inhibitor such as clavulanate (23.6% of total penicillin DDD in 0-14 years). It should be noted that DDD is a metric based on an adult dosage and DDD in children are thus more difficult to interpret.

When looking at the variations per district, once the figures have been standardised (Figure 21), it appears that Brussels, Antwerp and Mechelen districts are below the national mean, and that most of the districts in Wallonia (but not all of them) along with some districts in West-Vlaanderen (Dixmuide, Roeselaere and Ieper) have antibiotic use at least 30% over the national mean.

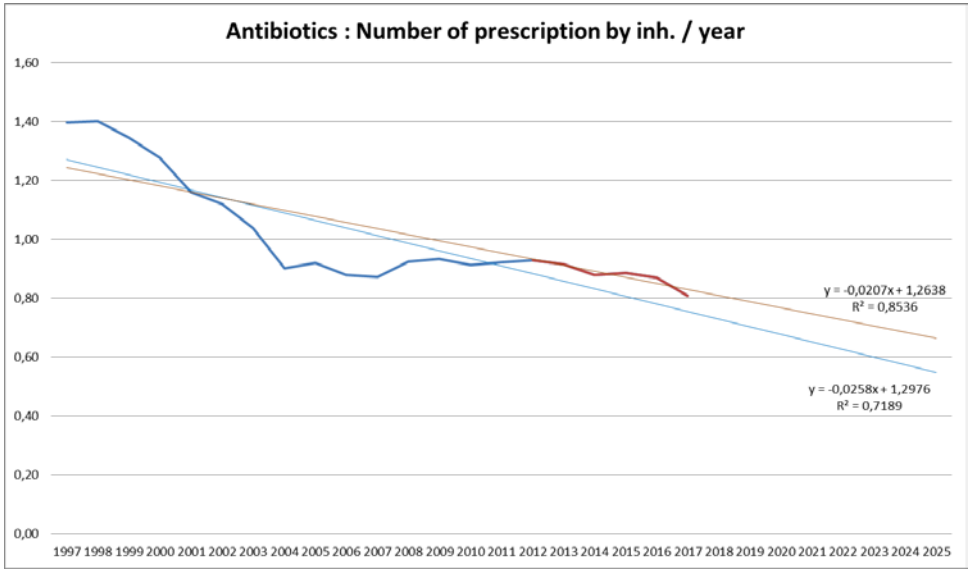
Figure 21 – DDD antibiotics delivered in the ambulatory sector, DDDs per day per 1000 insured population, standardised relative variations around the national mean, per district, 2016



Source: INAMI – RIZIV

The Belgian Antibiotic Policy Coordination Committee (BAPCOC) uses another indicator consisting in the number of antibiotics treatments per 1000 inhabitants per year. In its 2014-2019 policy paper, BAPCOC has set a target of 400 by 2025 (starting from more than 800 in 2014). The current trend will not make it possible to reach the goal for 2025 (Figure 22): after an initial decrease from 1.40 in 1997 to 0.9 in 2004, the evolution has stagnated (0.8 in 2017).

Figure 22 – Number of antibiotic treatments per inhabitant per year

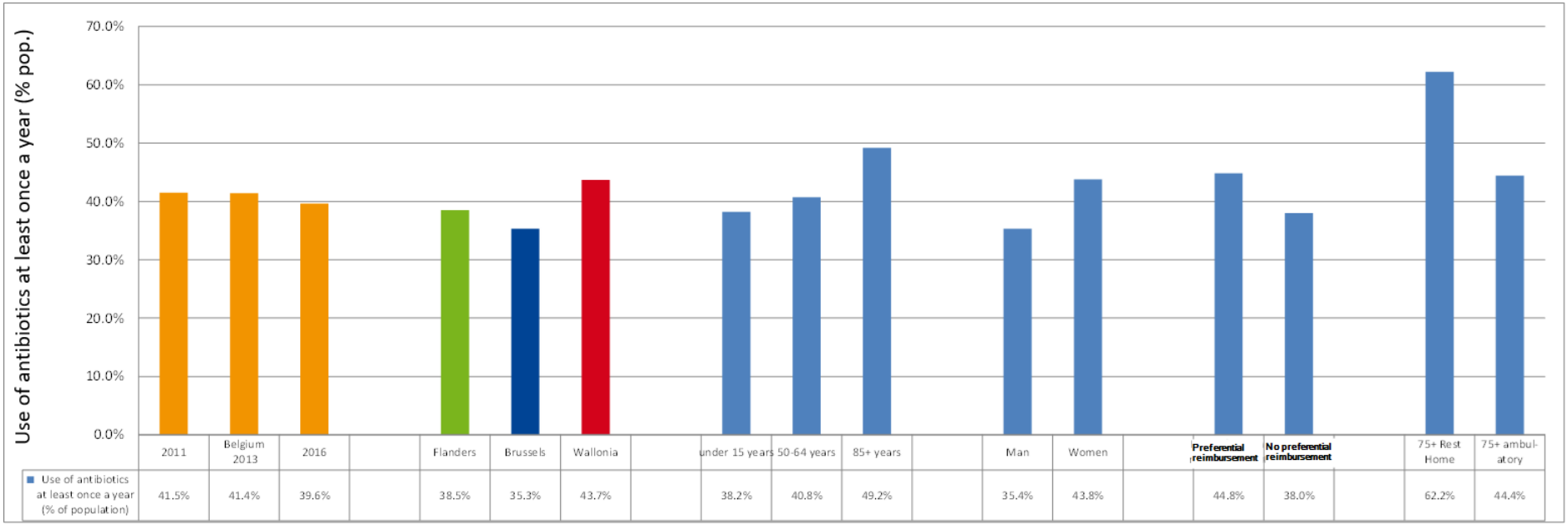


Source: INAMI – RIZIV

Proportion of patients with at least one antibiotic prescription a year

In 2016, 39.6 % of patients have received at least one antibiotic prescription. This is a slight improvement over the period 2010-2013 which had values around 41 to 42%. There are large differences between regions: 43.7% in Wallonia, 38.5% in Flanders and 35.3% in Brussels (Figure 23, Table 6).

Figure 23 – Percentage of patients with antibiotics, by patient region and characteristics



Source: INAMI – RIZIV (when not specified, data refer to 2016)

Table 6 – Proportion of patients with at least one antibiotic prescription, by patient characteristics, 2016

Variable	Category	Percentage with antibiotics
Age (years)	0-14	38.2%
	15-34	36.7%
	35-49	38.7%
	50-64	40.8%
	65-74	42.9%
	75-84	45.2%
	>=85	49.2%
Gender	Female	43.8%
	Male	35.4%
Entitlement to increased reimbursement (18 years or more)	No	38.0%
	Yes	44.8%
Place of residence (75 years old or more)	Institutions	62.2%
	Not in institutions	44.4%
Province	Antwerpen	36.0%
	Brabant Wallon	39.1%
	Brussels	35.3%
	Hainaut	45.2%
	Liège	43.8%
	Limburg	42.7%
	Luxembourg	42.4%
	Namur	43.9%
	Oost-Vlaanderen	37.5%
	Vlaams Brabant	38.4%
	West-Vlaanderen	40.9%

Source: IMA-AIM (EPS); calculation: INAMI – RIZIV

Women (43.8%), inhabitants older than 65 years (44.6%), and among the elderly (≥ 75 years) those in nursing homes (62.2%) and citizens from Hainaut (45.2%) were most frequently exposed to at least one antibiotic in 2016 (Table 6).

The ratio of second line antibiotics, compared to the total of DDDs prescribed

Even if it is improving slightly over time, the proportion of second line antibiotics is still quite high in Belgium: 52% in 2016 (60% in 2006). In comparison, the same indicator in the Netherlands is 16 % for the same year.[g] This indicator scores badly even by children (35%), and all over the country (Table 7).

Table 7 – Proportion of volume (DDD) antibiotics for amoxicillin clavulanate, cephalosporin, quinolones and macrolides related to total antibiotics by patient characteristics, 2016

Variable	Category	Percentage with 2nd line antibiotics
Age (years)	0-14	35.0%
	15-34	44.7%
	35-49	54.1%
	50-64	58.4%
	65-74	57.8%
	75-84	55.1%
	>=85	51.8%
Gender	Female	43.8%
	Male	35.4%
Entitlement to increased reimbursement (18 years or more)	No	49.2%
	Yes	55.9%
Place of residence (75 years old or more)	Institutions	49.4%
	Not in institutions	55.1%
Province	Antwerpen	50.1%
	Brabant Wallon	52.0%
	Bruxelles-Capitale	47.9%
	Hainaut	58.9%
	Liège	46.3%

g Dutch performance report [6] p.128, figure 5.11.

Variable	Category	Percentage with 2nd line antibiotics
	Limburg	57.8%
	Luxembourg	56.2%
	Namur	52.7%
	Oost-Vlaanderen	50.9%
	Vlaams Brabant	47.5%
	West-Vlaanderen	50.1%

Source: IMA data, INAMI – RIZIV calculation.

The ratio amoxicillin to amoxicillin – clavulanate

An objective in the BAPCOC 2014-19 plan was to reach an amoxicillin to amoxicillin – clavulanate ratio of 80/20 by 2018, [1] as amoxicillin – clavulanate has a limited role as first-line treatment for ambulatory infections. The analysis of the data indicate a slight improvement of this ratio from 2014 (0.86) to 2016 (1.02), but the ratio in 2016 was still far from the BAPCOC objective. For this indicator important differences exist between age groups: in the 0-14 years old, this ratio has progressively increased to 3.16 in 2016, thus close to BAPCOC's objective (Table 8).

Table 8 – Ratio amoxicillin to amoxicillin – clavulanate in the ambulatory sector, by year and age-group

Age-group	2014	2015	2016
0-14 years	2.65	2.86	3.16
15-64 years	0.84	0.86	0.98
65 + years	0.53	0.55	0.63
Total	**0.86**	**0.88**	**1.02**

Data source: KCE report on proposals for a more effective antibiotics policy *in Belgium (expected publication: April 2019)*

The proportion of quinolone use

An objective in the BAPCOC's 2014-19 plan was to decrease the quinolone use in the ambulatory sector from 10% of the total antibiotic use in 2014 to 5% by 2018.[1] In 2016 the quinolone use was still 10.7% of the total DDD for the ambulatory sector, hence far away from the BAPCOC objective (Table 9). The highest ratio quinolone to total antibiotic use expressed in DDD was observed in the age group ≥ 65 years (Table 9). Stratification by province of the prescriber indicates that the geographical variation is limited (Table 10).

Table 9 – Antibiotic use in the ambulatory sector, by ATC code, 2016

ATC code	Proportion of total DDD
Tetracyclines (J01A)	8.8%
Amphenicols (J01B)	0.0%
Beta-lactam antibacterials; penicillins (J01C)	45.3%
Other beta-lactam antibacterials (J01D)	5.8%
Sulfonamides and trimethoprim (J01E)	0.9%
Macrolides, lincosamides and streptogramins (J01F)	16.1%
Aminoglycoside antibacterials (J01G)	0.1%
Quinolone antibacterials (J01M)	10.7%
Other antibacterials (J01X)	12.3%

DDD: Defined Daily Dose, Data source: KCE report on proposals for a more effective antibiotics policy *in Belgium (expected press release, April 2019)*

Table 10 – Proportion of quinolone of the total DDD in the ambulatory sector, by province of the prescriber, 2016

Province	Proportion quinolones (ATC code J01M) of total DDD
Antwerpen	11.1%
Brabant Wallon	10.2%
Brussels	9.5%
Hainaut	10.3%
Liège	9.7%
Limburg	11.3%
Luxembourg	9.2%
Namur	9.8%
Oost-Vlaanderen	11.3%
Vlaams Brabant	11.1%
West-Vlaanderen	11.4%

DDD: Defined Daily Dose, Data source: KCE report on proposals for a more effective antibiotics policy *in Belgium (expected press release, April 2019)*

Key points

- **In 2016, antibiotic consumption in the Belgian ambulatory sector equalled 27.7 Defined Daily Doses (DDD) per 1000 inhabitants and per day (DID), compared to other European countries (e.g. the Netherlands with 9.7 DDDs) Belgium ranks poorly.**
- **Geographical variation within Belgium is also observed: Wallonia has a consumption above 30 DDDs per 1000 inhabitants and per day while Brussels is at 23.4 DDDs and Flanders in between.**
- **In 2016 40 % of Belgian citizens received at least one antibiotic prescription. Again, differences between the regions were observed (44% in Wallonia, 39% in Flanders and 35% in Brussels). The proportion of citizens with at least one antibiotic prescription was highest among elderly (i.e. 75+ years old) residing in nursing homes (i.e. 62%).**
- **The amount of second line antiobiotics expressed in DDD, even if improving slightly through the time are quite high in Belgium, about 52 % (60% in 2006). In comparison, the same indicator in the Netherlands is about 15 %. This indicator score badly even by children (> 35%) and all over the country.**
- **The ratio amoxicillin to amoxicillin – clavulanate improved slightly from 0.86 in 2014 to 1.02 in 2016.**
- **In 2016 the quinolone use was still 10.7% of the total DDD for the ambulatory sector, hence far away from the BAPCOC objective. The highest ratio quinolone to total antibiotic use expressed in DDD was observed in the age group ≥ 65 years.**

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2. World Health Organization. International language for drug utilization research [Web page].2018 [updated 17 October 2018; cited 1 November 2018]. Available from: https://www.whocc.no/
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7. OECD/EU Health at a Glance: Europe 2018: State of Health in the EU Cycle. Paris: OECD; 2018.

2.3. Medical imaging for spine (QA-6)

2.3.1. 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). Recent 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[h] over medical imaging are annual set up since 2010; see also guidelines for medical imaging from the Belgian Society of Radiology.[i] 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): - 455394-455405, 455416-455420, 455475- 455486, 455534- 455545, 466395-466406, 466410-466421, 466476-466480, 466535-466546 (X rays) - 458835-458846, 458850-458861 (CT scan) - 459491-459502 (MRI)
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.
International comparability	N.A., but the number of MRI units and CT scanners in EU-15 has been added as reference.
Dimension	Appropriateness, safety, efficiency
Related performance indicators	Radiation rate (see HSPA 2015 [3])
Keywords	Medical imaging, spine, medical radiation

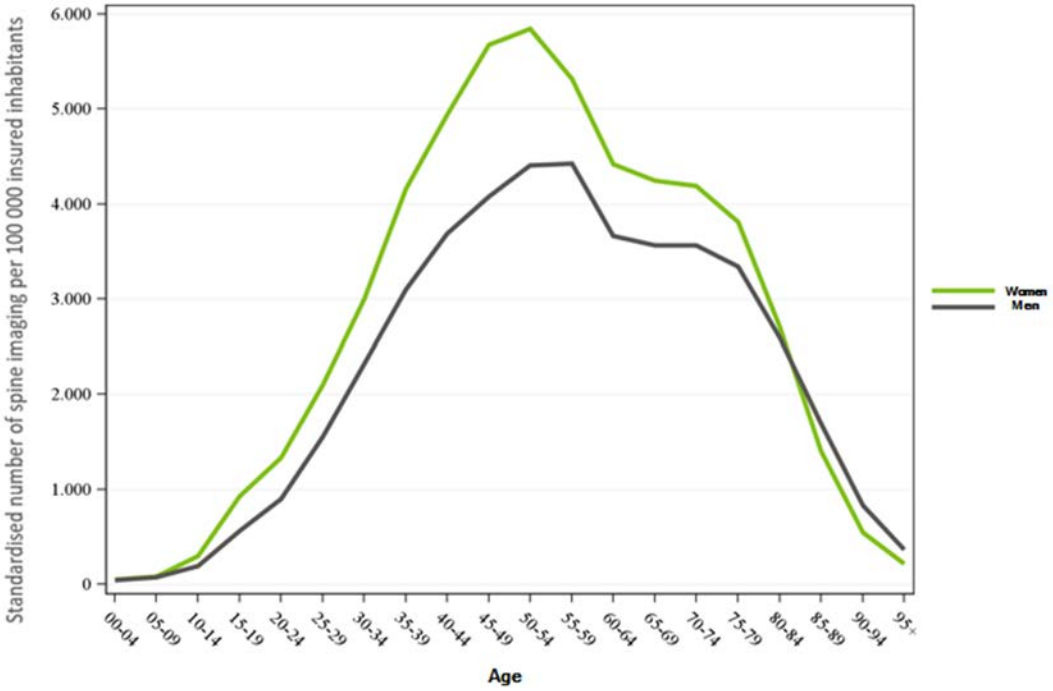
h https://www.pasderayonssansraisons.be/

i https://www.health.belgium.be/en/node/27827

2.3.2. Results

General practitioners are prescribing 45% of the imaging for spine, with a median of 30 prescriptions per GP per year. [4] There are more women (57.2%) than men (42.8%) who receive spine imaging and the most frequent age category is 50-54 years old (Figure 24). In 2017, there were 10 620 images taken for spine for 100 000 insured population; the proportion is higher in Wallonia (12 314 /100 000) than in Brussels (9436 /100 000) and Flanders (9944 /100 000).

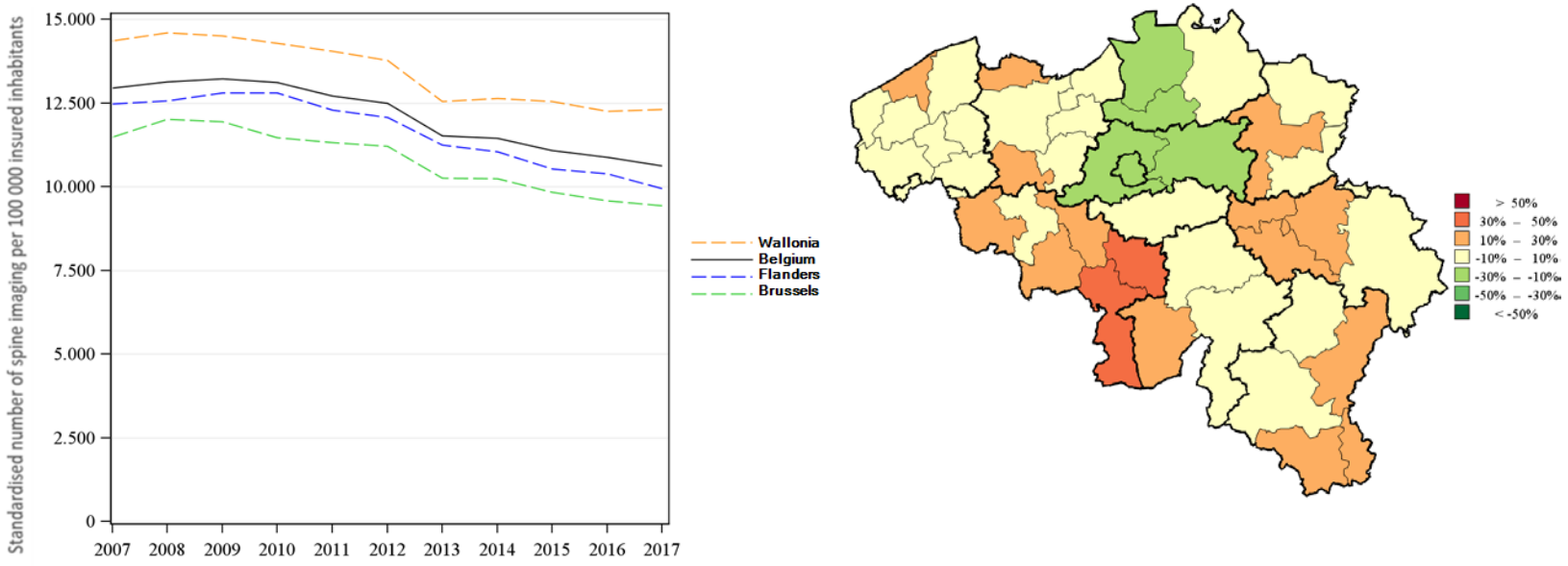
Figure 24 – Spine imaging: age distribution for women and men (2015-2017)



Source: INAMI – RIZIV

The global trend for the consumption of spine imaging is decreasing (-2% per year over the period 2007-2017) with stronger decline from 2012 to 2013. Regional trends are similar except for the stabilisation since 2013 in Wallonia, but Brussels and Flanders have less spine imaging than Wallonia altogether (Figure 25).

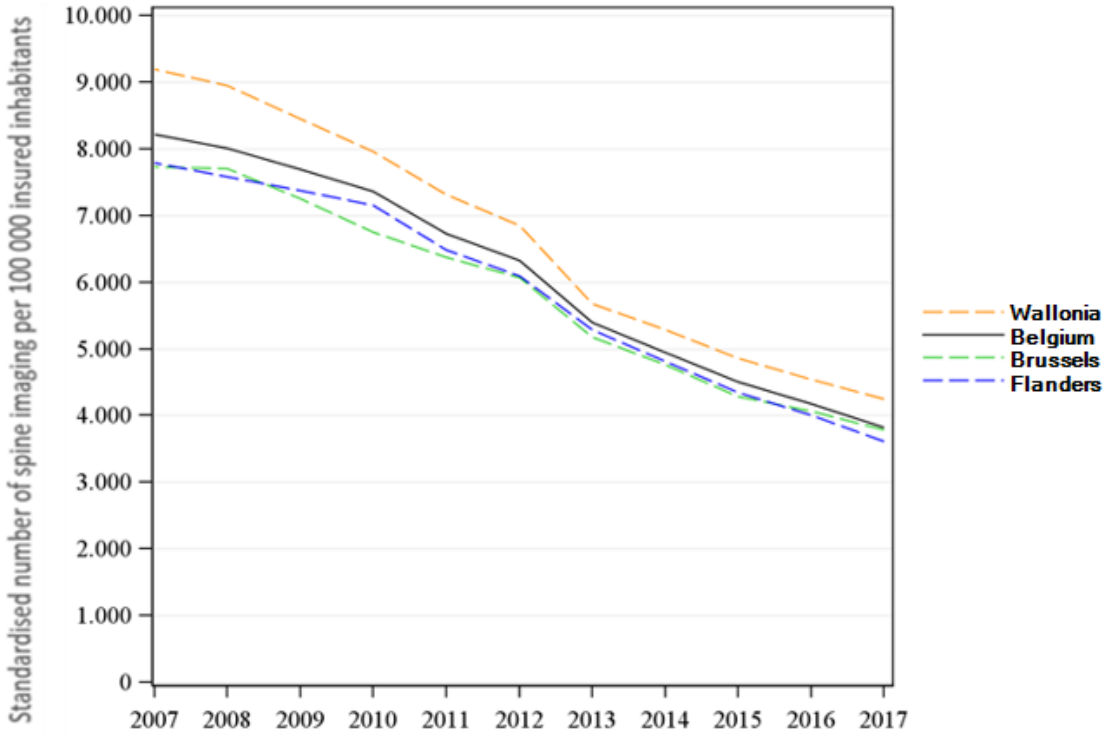
Figure 25 – Spine medical imaging: overall consumption (2007-2017) and relative variations around the national mean per district (2015-2017, standardised)



Source: INAMI - RIZIV

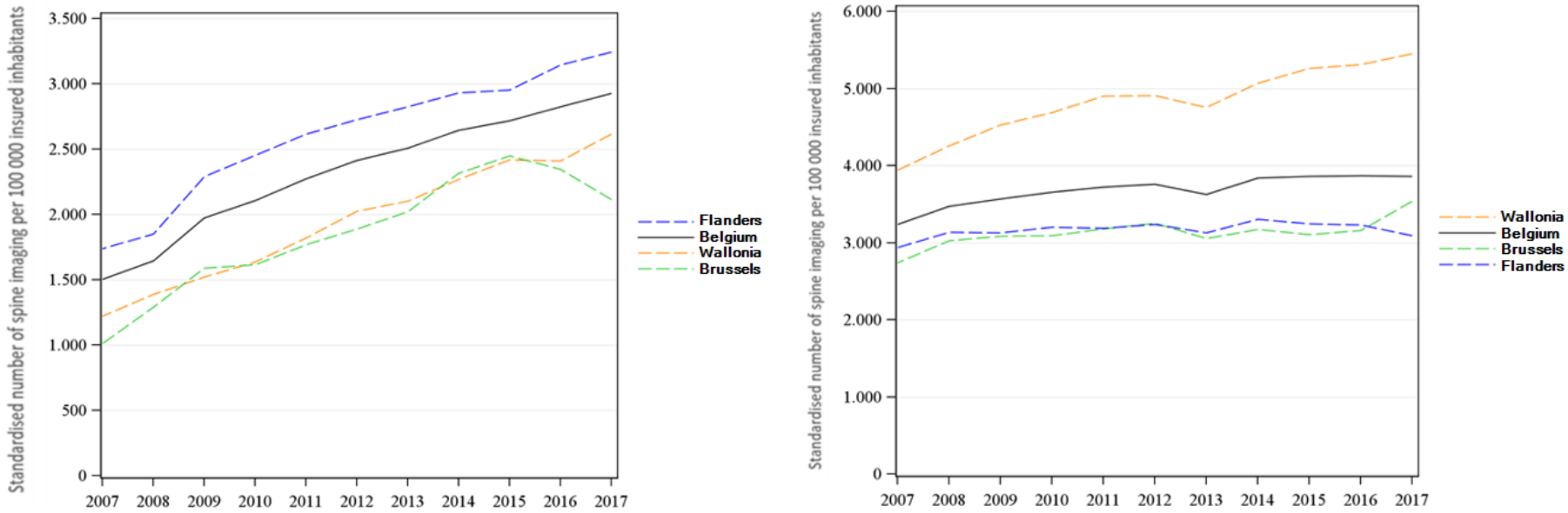
Looking separately at the three imaging techniques, it is obvious than that the pattern is the same in the three regions for X-rays: the consumption has halved for spine X-rays over the period 2007-2017 (Figure 26, -7.35% per year), with Wallonia's rate a bit above the other regions. The trend for MRI is also similar for the three regions over the period 2007-2015 with a steady increase, that goes on for Flanders and Wallonia, but a decrease is observed in Brussels after 2015; Flanders' consumption is more important than Brussels' and Wallonia's (Figure 27). CT scans rate is higher (and increasing) in Wallonia than in the other two regions where is it stable over the period 2007-2017, except for 2017 where a decrease is observed in Flanders (Figure 27).

Figure 26 – Spine imaging consumption (X rays, 2007-2017)



Source: INAMI – RIZIV

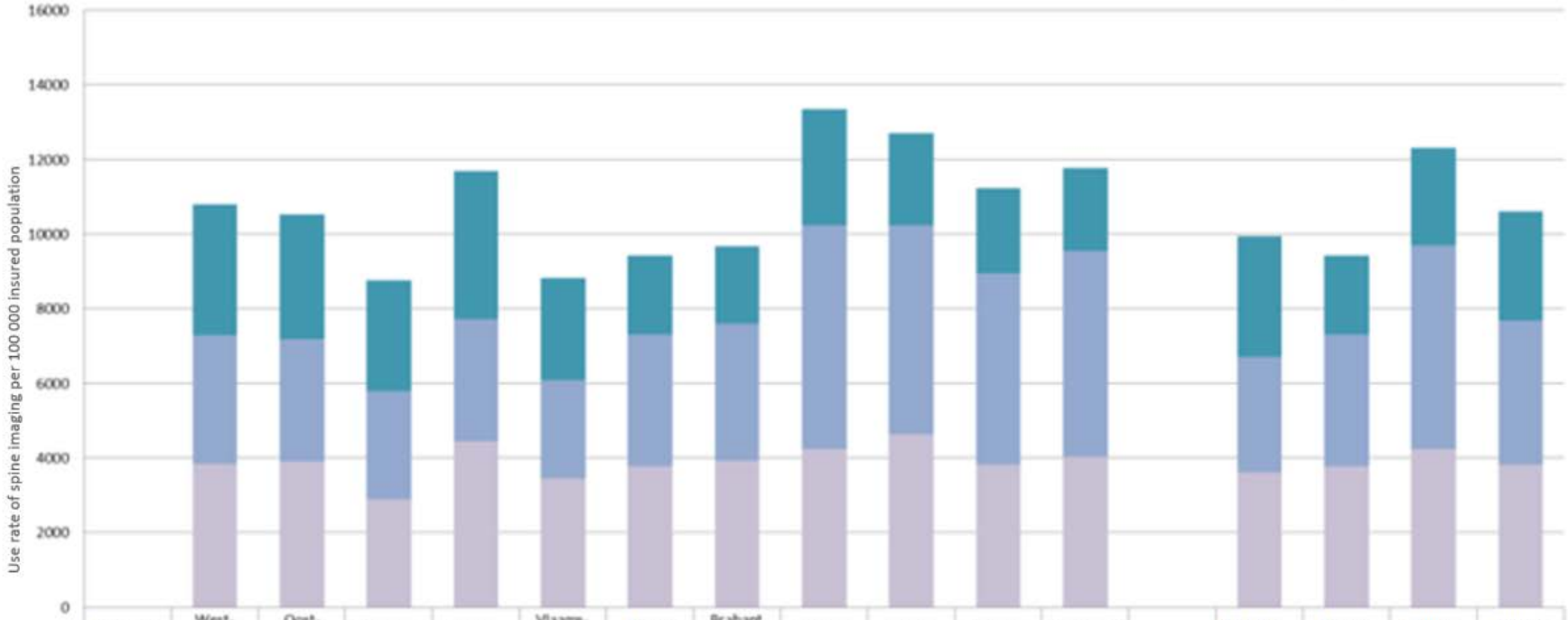
Figure 27 – Spine imaging consumption (2007-2017): MRI (left) and CT scan (right)



Source: INAMI – RIZIV

Figure 28 shows the distribution between the 3 imaging techniques by region and province for 2017: X-rays rate is somewhat higher in Wallonia, MRI rate is higher in Flanders (and lower in Brussels) and CT scans rate is higher in Wallonia. In 2017, the MRI imaging has decreased in Brussels for the first time, while the CT scan imaging has risen (it was stable before 2017).

Figure 28 – Rate of imaging spine use per 100 000 insured population) by region and by province (2017)



Province	West-Vlaanderen	Oost-Vlaanderen	Antwerpen	Limburg	Vlaams-Brabant	Brussels	Brabant Wallon	Hainaut	Liège	Namur	Luxembourg	Flanders	Brussels	Wallonia	Belgium
RMN	3.499	3.330	2.974	3.957	2.740	2.115	2.094	3.108	2.464	2.266	2.229	3.243	2.115	2.617	2.928
CT	3.456	3.284	2.899	3.280	2.636	3.537	3.676	5.993	5.605	5.130	5.533	3.091	3.537	5.448	3.863
RX	3.838	3.908	2.900	4.456	3.447	3.784	3.920	4.245	4.634	3.832	4.025	3.610	3.784	4.249	3.828

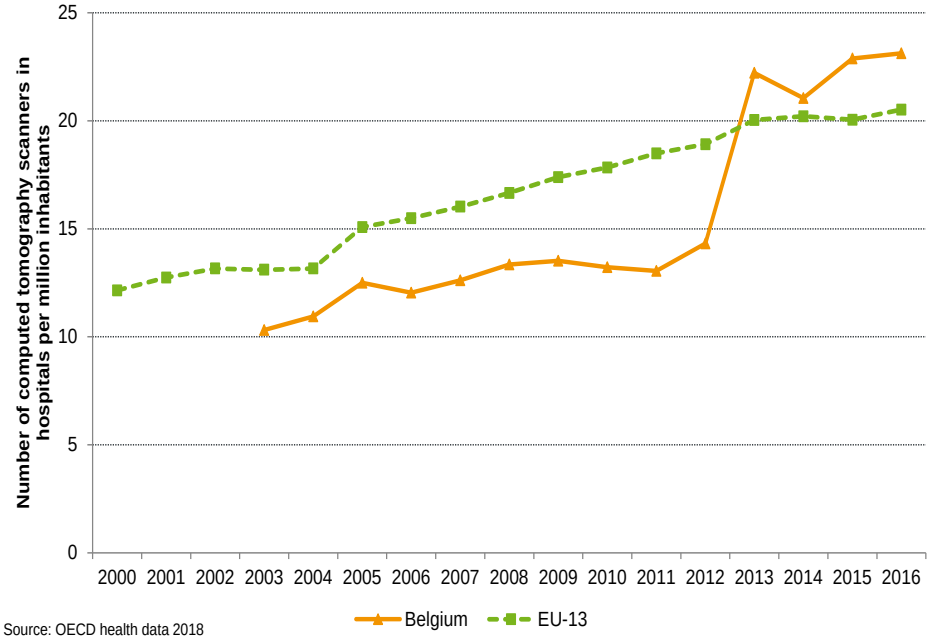
Source: INAMI – RIZIV

As complementary information, the number of CT scanners in hospitals and the number of MRI units per population have been compiled (Figure 29 and Figure 30) for available EU-15 countries and Belgium: since 2012j, Belgium is a bit above the EU-15 ((23.1 CT scanners per million inhabitants and 20.5, respectively in 2016) while for MRI, Belgium has the same number of units since 2014 and a density which is now a bit below the EU-15 mean (12.6 MRI units per million inhabitants in Europe for 11.7 in Belgium in 2016. The regional distribution is shown for MRI units in Figure 31: many units have been added in 2008, this might partly explain the steep rise observed between 2008 and 2009 in the consumption of MRI imaging (see Figure 32, left). CT scanner units per region figures are available in Figure 32: except for a rise in Flanders in 2014, the number of units is stable. Eighteen extra MRI units will be available in Belgian hospitals between 2021 and 2022, to limit the CT scanner use whenever is it possible.[k]

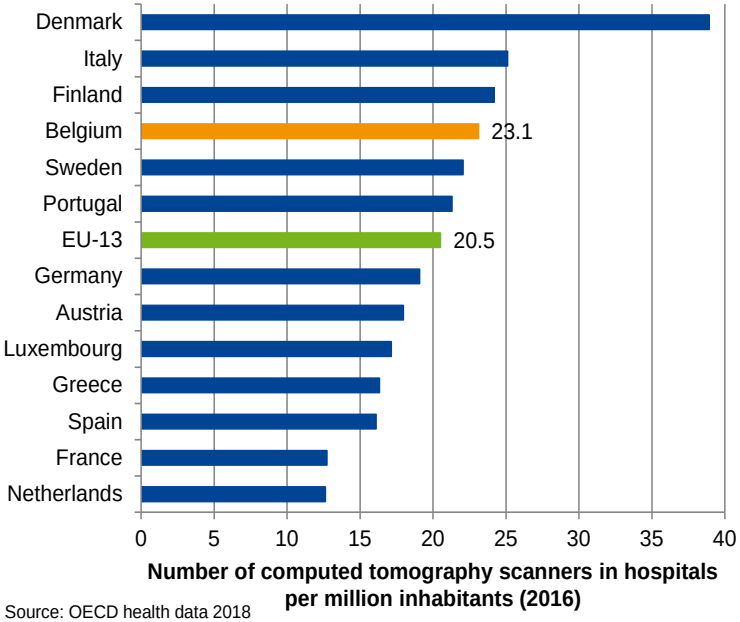
j It should be noted that due to limitations in the data collection, before 2013, the figures represent the number of hospitals with at least one CT scanner unit (per million inhabitants); from 2013 on, the figures represent the number of CT scans units per million inhabitants, as expected.

k https://www.maggiedeblock.be/akkoord-over-18-nieuwe-mri-toestellen/

Figure 29 – Number of computed tomography scanners in hospitals per million inhabitants

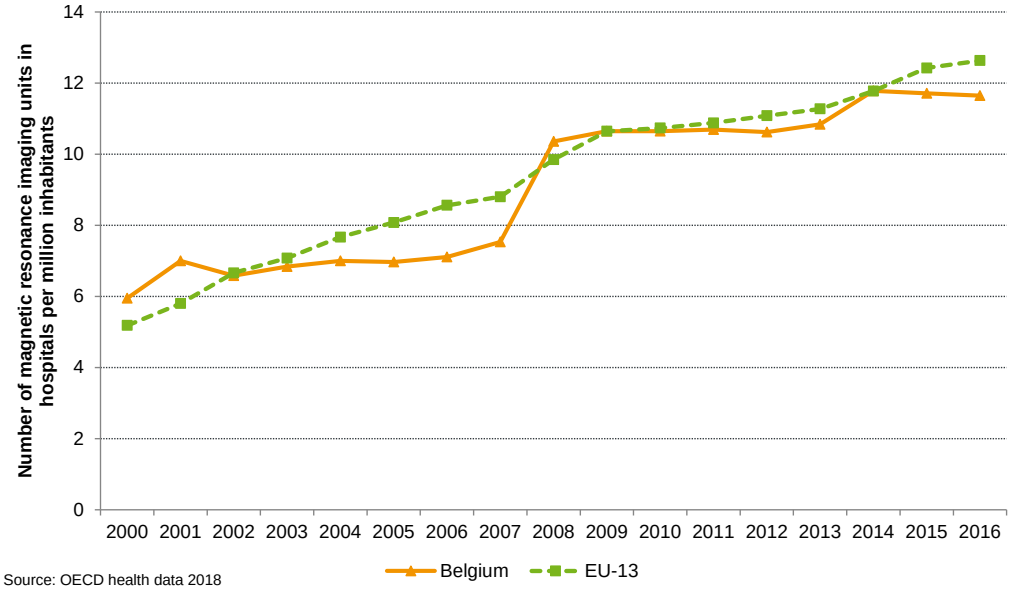


Source: OECD health data 2018

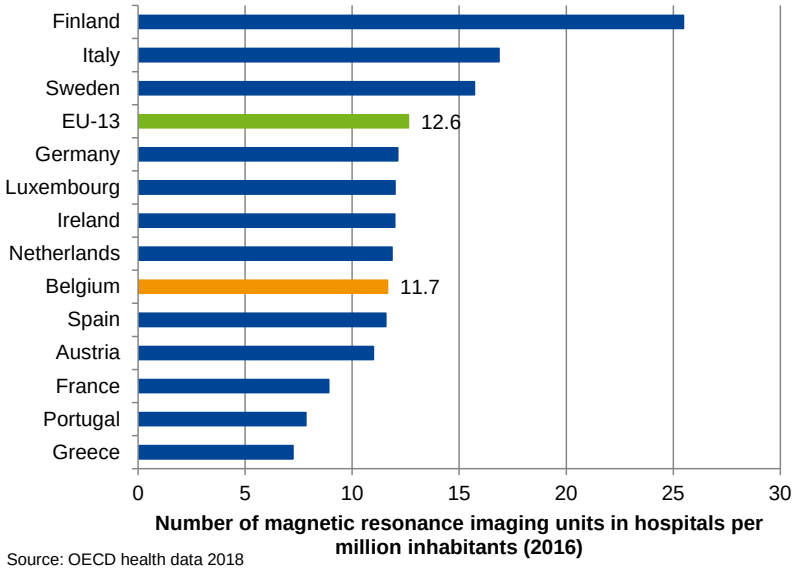


Source: OECD health data 2018

Figure 30 – Number of MRI units in hospitals per million inhabitants

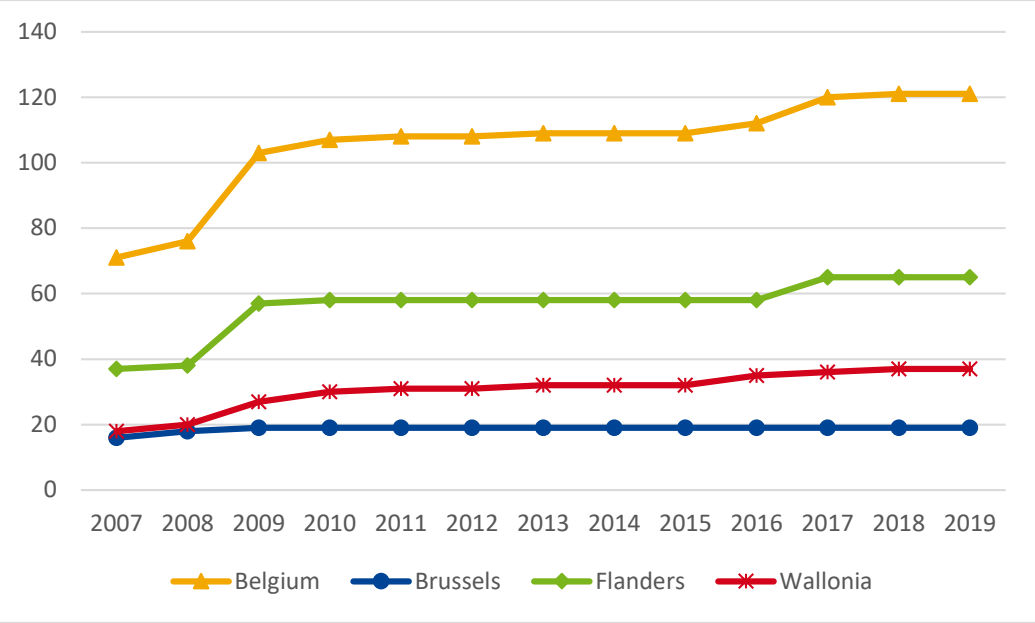


Source: OECD health data 2018



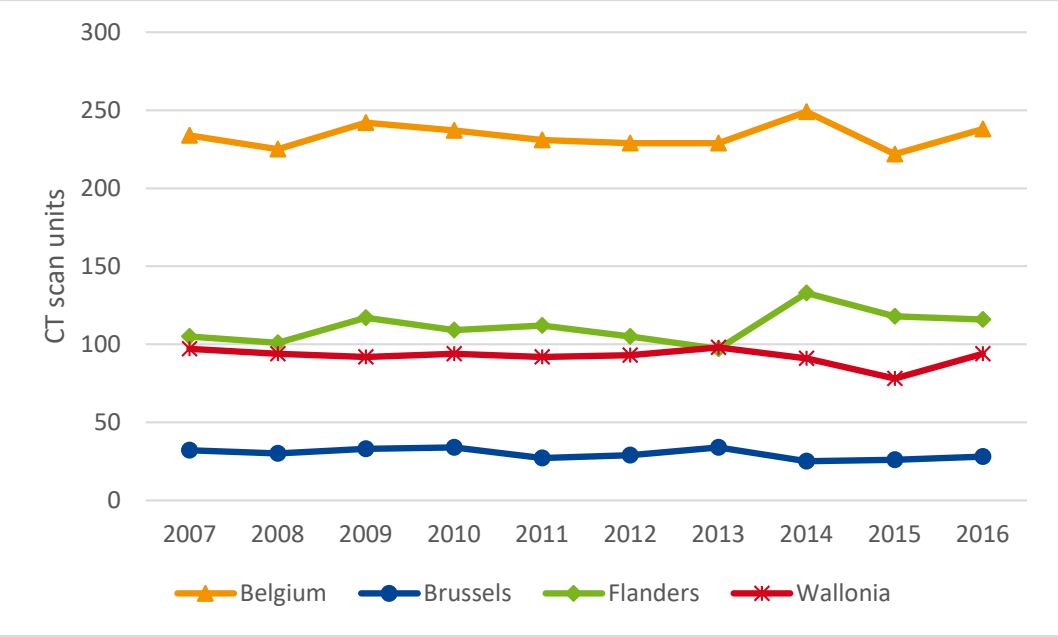
Source: OECD health data 2018

Figure 31 – Number of MRI units in hospitals in Belgium (on 1 January, 2007-2019)



Source: SPF SPSCAE – FOD VVVL

Figure 32 – Number of CT scanner units in hospital in Belgium (on 31 December, 2007-2016)



Source: SPF SPSCAE – FOD VVVL

Key points

Since 2010 recurring information campaign warns population about the problematic of medical radiation in Belgium.

The level of medical irradiation due to outdated examination[I] is estimated at 1.85 mSV by insured person, a level deemed too high; most of this irradiation comes from imaging for spine examination in case of low back pain, which is not recommended in most of the cases of aspecific pain. Improvement have been observed since 2010:

- **Global imaging of the spine decreased by 2% per year from 2007 to 2016**
- **X-rays imaging is declining by nearly 8% per year since 2015**
- **CT scan has stabilised since 2015**
- **MRI is still growing, but the rate is decreasing from 6.8% to 3.8% per year**
- **The overall radiation has decreased by 1% between 2015 and 2017**

Medical variations between regions remain high with high differences in utilisation rate, especially for CT scans, i.e. the irradiation level can vary by a factor of two from one district to another for spine imaging

References

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3. Vrijens F, Renard F, Camberlin C, Desomer A, Dubois C, Jonckheer P, et al. Performance of the Belgian Health System - Report 2015. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2016. KCE Reports (259)
4. Appropriate care unit. Medical imaging (spine , medical irradiation). INAMI - RIZIV; 2018. Medical Practice Variations Available from: https://www.healthybelgium.be/

[I] https://www.inami.fgov.be/SiteCollectionDocuments/imagerie-medicale-campagne-sensibilisation-brochure.pdf

2.4. Breast cancer screening for women younger than the recommended age target group for screening (QA-7)

2.4.1. Documentation sheet

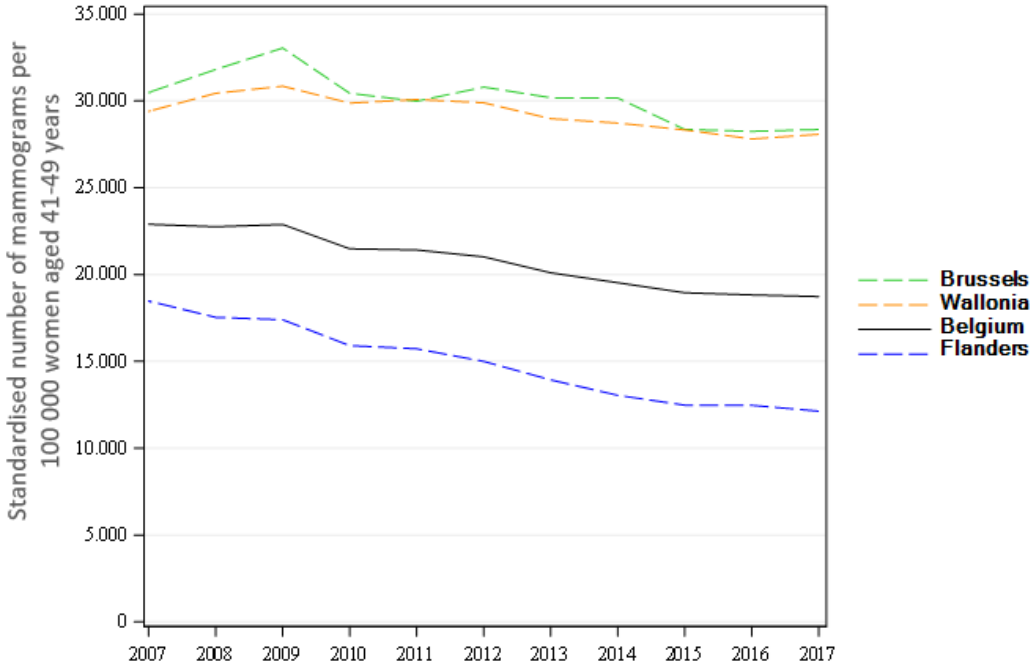
Description	Proportion of women aged 41-49 having had a mammogram within the last two years.
Calculation	Numerator: number of women aged 41-49 in a given year who are still alive at the end of that year, having had a mammogram within the past two years. Denominator: total number of women aged 41-49 affiliated to a sickness funds in a given year who are still alive at the end of that year
Rationale	Since 2001 in Flanders and 2002 in Brussels and Wallonia, a national breast cancer screening programme exists for women aged 50-69. Guidelines do not recommended the extension of the scope of this programme to the younger (40-49) category in Belgium [1] and aids for better informed decision have been published. [2] This indicator measures in which extent screening is performed in inappropriate (too young) age groups.
International comparability	This is not an international indicator
Primary data source	EPS (IMA – AIM) and Doc N (INAMI – RIZIV)
Indicator source	KCE calculation
Technical definitions	INAMI – RIZIV billing codes: 450096-450100, 461090-461101 (mammograms including any axillary images) and, since 2016, 450354-450365 (mammograms performed as part of breast cancer screening in asymptomatic women with a very high risk profile). In the IMA database only the year of birth is available and not the exact date of birth. Therefore, it is impossible for an individual woman to verify if she undergoes a mammography within the 2 years prior to her 41st – 49th birthday. It is only possible to verify if a woman undergoes a mammography in the year of her 41st – 49th (T) and the year before (T-1).
Limitations	It is impossible to distinguish opportunistic mammograms (i.e. mammogram used for opportunistic screening outside the screening programme) from diagnostic mammograms (i.e. mammogram used for diagnostic reasons, e.g. in women with symptoms or [before 2016] at high risk). So the target rate for this indicator should not reach zero.
Performance dimensions	Quality (as an indicator of non-appropriateness);
Related indicators	Coverage of target group for breast cancer screening (within and outside the organised screening programme); Breast cancer 5-year survival rate

2.4.2. Results

The percentage of women aged 41-49 years who had a mammogram in the last 2 years has slightly increased between 2011 and 2016 (from 33.1% to 35.4%), but the number mammograms per 100 000 women is decreasing since 2010, especially in Flanders (Figure 33).

The median age is 45 years old, there a more mammograms for women aged 45-49 (36.5% in 2013) than for women aged 41-45 (29.2% in 2013) [3].

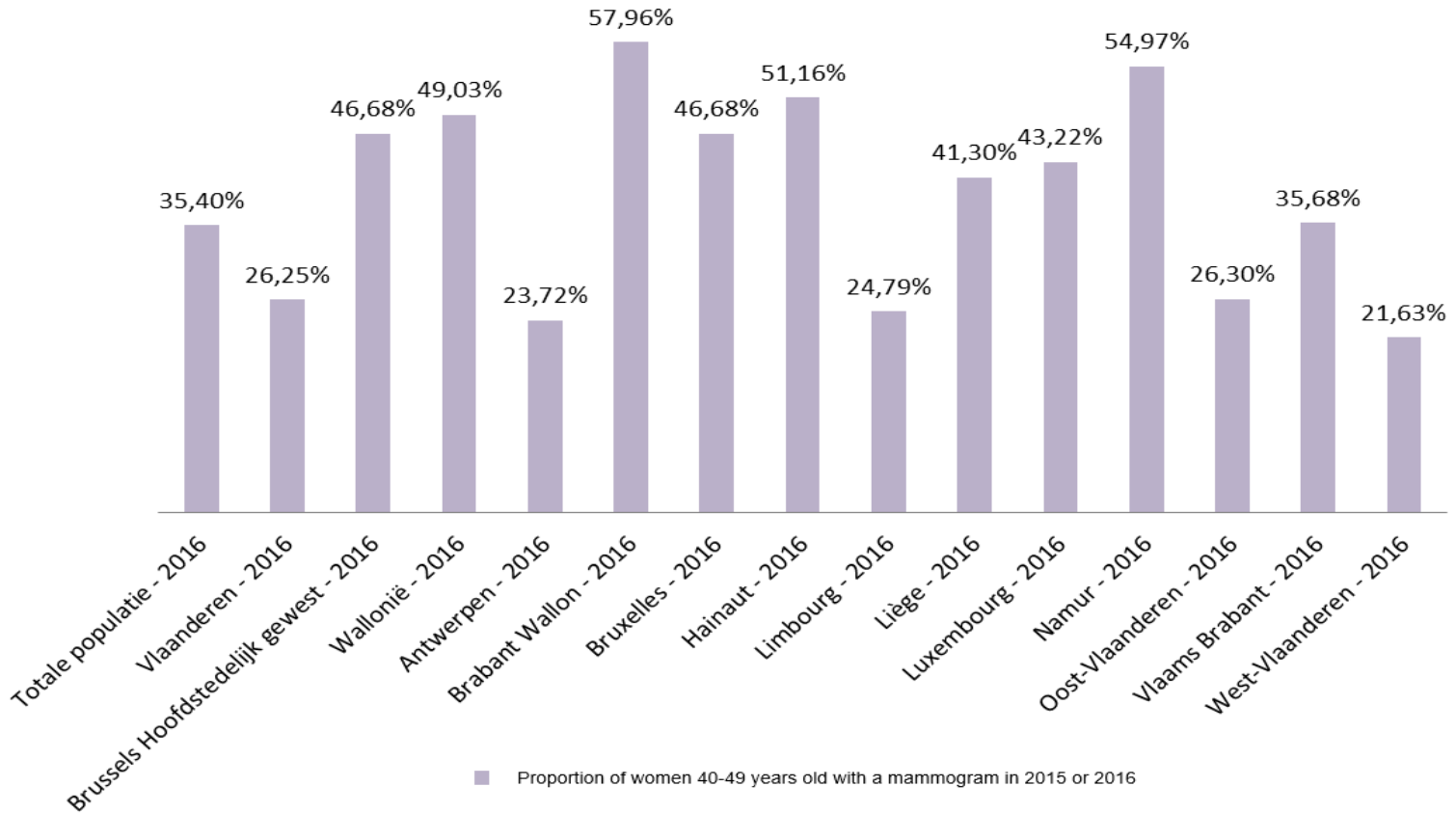
Figure 33 – Number of mammograms per 100 000 women aged 41-49 years



Source: INAMI – RIZIV (Doc N)

The geographical variations of the indicator are important: for 2016, Flanders has a lower proportion (26%) than Brussels (47%) or Wallonia (49%), see Figure 34

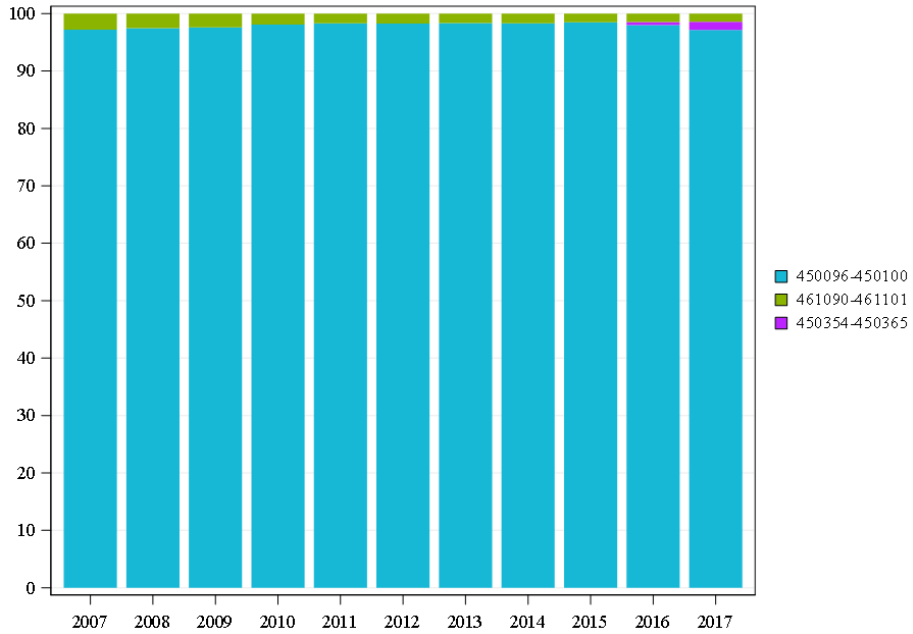
Figure 34 – Breast cancer screening for women 40-49 years old by region and province (2016)



Source: IMA – AIM (EPS); calculation: INAMI – RIZIV.

The new billing codes introduced in February 2016 for at-risk women (450354-450365, mammograms performed as part of breast cancer screening in asymptomatic women with a very high risk profile) are still a small proportion of the screening (Figure 35).

Figure 35 – Evolution of the billing codes distribution for mammograms for women 40-49 years old (2007-2017)



Source: EPS, calculation: INAMI – RIZIV

Key points

- **In Belgium, breast cancer screening is recommended only for women aged 50-69 years. However, a third of women aged 41-49 years are screened. There are important regional disparities, Flanders has a lower proportion than Brussels and Wallonia.**
- **Evolution over time shows a slight declining trend in Flanders (above 30% in 2007, 26% in 2016). No evolution is observed neither in Wallonia (49% in 2016) nor in Brussels (47% in 2016) between 2007 and 2016.**

References

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3. Vrijens F, Renard F, Camberlin C, Desomer A, Dubois C, Jonckheer P, et al. Performance of the Belgian Health System - Report 2015. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2016. KCE Reports (259)

3. QUALITY OF CARE: SAFETY

3.1. Prevalence of healthcare-associated infections (QS-1)

3.1.1. Documentation sheet

Description	Proportion of patients with at least one healthcare-associated infections (HAI) on any day in acute care hospitals.
Calculation	The prevalence of HAIs was reported as the Proportion of patients with at least one HAI over the total number of patients, based upon a point prevalence survey (PPS).
Rationale	Healthcare-associated infections represent a threat (burden) to the safety of patients (morbidity, mortality, length of stay, treatment costs).
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance (www.nsih.be); in collaboration with ECDC
Source of results	2011 Point Prevalence Survey: European Centre for Disease Prevention and Control (ECDC)[1] 2017 Point Prevalence Survey: Vandael et al., 2018[2]
Technical definitions	An active infection was defined as healthcare-associated (associated with acute care hospital stay only) when: 1. The onset of the signs and symptoms was on Day 3 of the current admission or later (with Day 1 being the day of admission); OR 2. The signs and symptoms were present on admission or became apparent before Day 3, but the patient had been discharged from an acute care hospital less than two days before admission; OR 3. The signs and symptoms of an active surgical site infection were present on admission or started before Day 3, and the surgical site infection occurred within 30 days of a surgical intervention (or in the case of surgery involving an implant, a deep or organ/space surgical site infection that developed within a year of the intervention); OR 4. The signs and symptoms of a *Clostridium difficile* infection were present on admission or started before Day 3, with the patient having been discharged from an acute care hospital less than 28 days before the current admission.
International comparability	Yes: the PPS is conducted by different EU member states in collaboration with ECDC, following a standardised protocol.
Limitation	Limited periodicity; so far only two point prevalence surveys have been conducted.
Dimensions	Quality (safety)
Related indicators	Incidence of post-operative sepsis; Incidence of hospital-acquired MRSA (methicillin resistant Staphylococcus aureus) infections

3.1.1. Results

Belgium

In total, 47 Belgian acute care hospital sites (33 mergers, participation rate 32.4%) participated in the ECDC PPS 2017. In these hospitals, 11 800 patients were included.

In the ECDC PPS 2017, 911 HAIs were registered. The crude prevalence of having at least one HAI was 7.3% (95% CI 6.8-7.7%). This is a status quo in comparison with the Belgian results of the ECDC PPS 2011 (7.1%, 95% CI 6.1-8.3)[1].

The HAI prevalence ranged from 0.0% to 18.1% in the participating hospitals. In total, 856 patients (mean age 66.4 years ±20.7, 51.5% male) had at least one HAI (patients ≥65 years: 8.6% (95% CI 7.9-9.3%), <65 years: 5.7% (95% CI 5.1-6.3%)). In 53 (6.2%) patients, two HAIs were detected, and 1 patient (0.1%) had three HAIs.

The most frequently registered HAIs were pneumonia (N=197, 21.6%), urinary tract infections (N=194, 21.3%), surgical site infections (N=154, 16.9%), blood stream infections (N=105, 11.5%) and gastro-intestinal infections (N=87, 9.6%; including 30 (3.3%) with *Clostridium difficile*). One-fifth of the HAIs (N=190, 20.9%) was linked to an invasive device. Most of the HAIs were linked to the current hospital (N=810, 88.9%) and the current ward (N=617, 67.7%).

Overall 721 microorganisms were reported. The top 10 most commonly isolated microorganisms were *Escherichia coli* (N=162, 17.8%), *Staphylococcus aureus* (N=81, 8.9%), *Pseudomonas aeruginosa* (N=47, 5.2%), *Enterococcus faecalis* (N=44, 4.8%), *Klebsiella pneumonia* (N=38, 4.2%), *Enterobacter cloacae* (N=38, 4.2%), *Staphylococcus epidermidis* (N=37, 4.1%), *Clostridium difficile* (N=30, 3.3%), *Proteus mirabilis* (N=20, 2.2%), and *Candida albicans* (N=19, 2.1%).

Regional coverage

No information available.

International comparisons

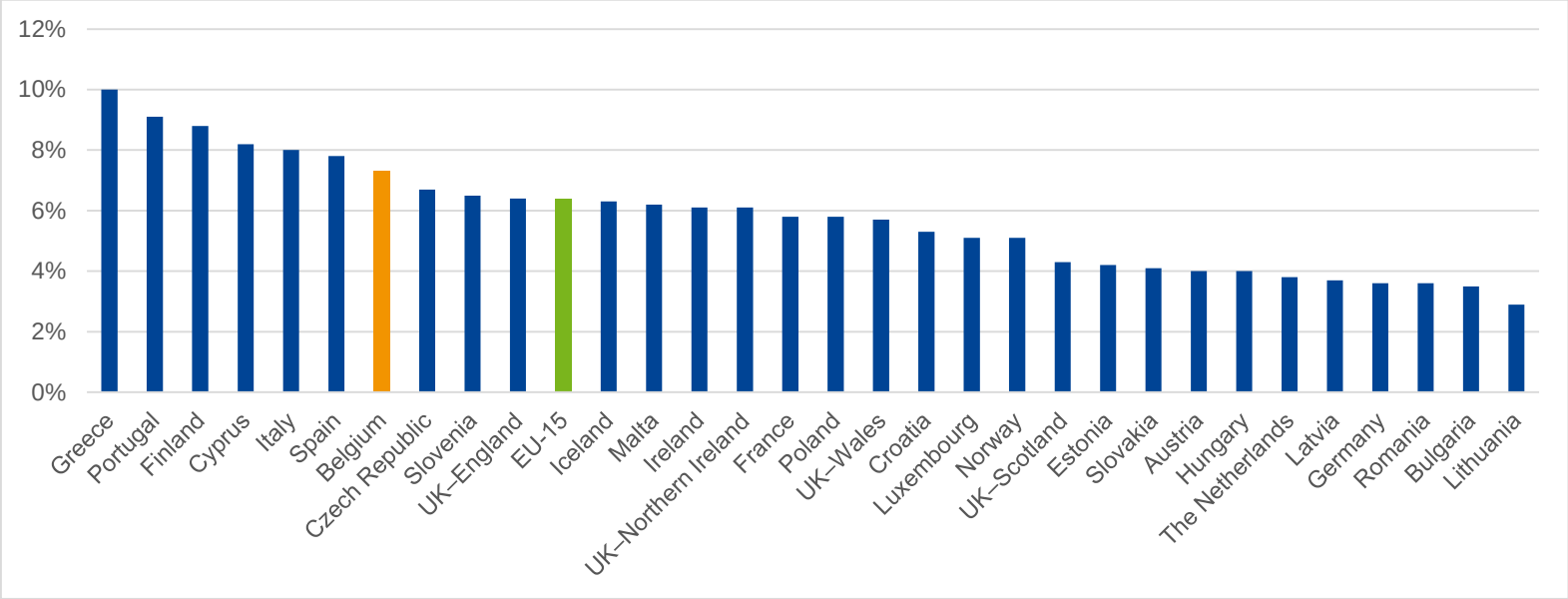
In total, 1735 hospitals from 28 EU/EEA countries and one EU candidate country (Serbia) participated in the ECDC PPS of HAI and antimicrobial use in European acute care hospitals in the period 2016 to 2017[3]. However, it is important to note that the comparability of HAI prevalence percentages between European countries needs to be improved. Before making comparisons between countries in HAI prevalence, including case-mix adjusted prevalence, considerable efforts should be taken to harmonise the interpretation of case definitions, validate results and enhance diagnostic capacity in many EU/EEA Member States. Direct comparison of HAI prevalence percentages between countries were not an objective of the ECDC PPS.

The prevalence of HAIs is known to be influenced by a variety of factors such as the type of hospital and healthcare system, the severity of the patient case mix (co-morbidities), methodological differences such as different interpretations of the case definitions for HAIs, differences in availability of diagnostic tests, differences in the level of training and skills of healthcare workers (surveillance, hand hygiene compliance, antimicrobial stewardship, bundle care…) applying the definitions and differences in reporting behaviour between hospitals and between countries. The latter are largely determined by possible legal or financial incentives or disincentives for reporting HAIs. Some of these determinants were included in the protocol and were used to interpret the observed HAI prevalence results, but others were not measured in the PPS and therefore their influence could not be assessed.

Comparing crude prevalence percentages of HAI between countries without taking into account differences in case mix, representativeness and confidence intervals and differences in sensitivity and specificity is therefore not meaningful. Representativeness of the PPS data by country are evaluated based on compliance with the recommended sampling methodology of hospitals and sample size. In the ECDC PPS 2017, counting UK administrations separately, the country representativeness of the sample was optimal in 20 countries, good in 10, and poor in 2 countries (Bulgaria and the Netherlands).

Figure 36 compares the estimates obtained in the 31 EU/EEA countries. The prevalence of patients with at least one HAI ranged from 2.9% in Lithuania to 10.0% in Greece. The HAI prevalence in the EU-15 (excluding Denmark and Sweden) was 6.4%. The prevalence of patients with HAIs in Belgium was 7.3% (95% CI 6.4–8.3%), thus higher than the European mean estimates.

Figure 36 – Prevalence of healthcare-associated infections in European acute care hospitals, 2016–2017



Source: Suetens et al., 2018[3]

Discussion

After adjusting for case-mix, Belgium has a higher than expected HAI prevalence, implying progress remains to be made with HAI prevention. Care-bundles have recently been introduced for specific HAI such as VAP (Ventilator Associated Pneumonia). Attention also has been given to the safe surgery list and an audit has been performed by BAPCOC (Belgian Antibiotic Policy Coordination Committee) on surgical prophylaxis on a voluntary basis. Annual national hand hygiene campaigns show continuous improvements of both basic requirements and compliance.[4] Finally, a multidrug resistant organisms (MDRO) task force has been set up to enhance infection prevention and control in the near future. Emphasis is given among others on microbiological and epidemiological surveillances, antimicrobial consumption improvement, and outbreak support (MDRO protocol, Belgisch Staatsblad – Moniteur belge 21-11-2013, p 86540-86545).

Key points

- **The prevalence of patients with at least one healthcare-associated infection on any given day in 2017 was estimated at 7.3% (95% CI 6.8-7.7%). This is a status quo in comparison with the Belgian results of the ECDC PPS 2011 (7.1%, 95% CI 6.1-8.3).**
- **The three most frequently registered healthcare-associated infections were pneumonia (22%), urinary tract infections (21%), and surgical site infections (17%).**
- **The three most frequently reported microorganisms from healthcare-associated infections were *Escherichia coli* (18%), *Staphylococcus aureus* (9%) and *Pseudomonas aeruginosa* (5%).**
- **The prevalence of patients with healthcare-associated infections in Belgium was higher than the EU-15 mean estimate of 6.4%.**
- **Progress remains to be made with healthcare-associated infections prevention.**

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3.2. Incidence of hospital-acquired MRSA (QS-2)

3.2.1. Documentation sheet

Description	Incidence of nosocomial MRSA (Methicillin-resistant *Staphylococcus aureus*) infections per 1000 hospital admissions.
Calculation	Numerator: Number of newly acquired nosocomial MRSA infections in acute care hospitals in the reporting period. Nosocomial is defined as not present at admission, no known carriage (for 12 months), and first positive strain >48h after admission. Denominator: Number of hospital admissions in the reporting period x 1000.
Rationale	*Staphylococcus aureus* is an important cause of infections of the skin and mucosae, of postoperative wound infections, catheter infections, pneumonias, bacteraemia and infections of articulations.[1] Since its first description,[2] MRSA was a major source of nosocomial infections in European countries and abroad. Participation in the surveillance of MRSA (at least one semester/year) is compulsory in Belgium for acute care hospitals since 2007.[3]
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance (www.nsih.be)
Source of results	National Surveillance of Infections in Hospitals: http://www.nsih.be/surv_mrsa/introduction_nl.asp Surveillance of antimicrobial resistant bacteria in Belgian hospitals: Report 2016[4]
Technical definitions	In Belgium the following indicator is in use: the total number of hospitalised patients with new Methicillin Resistant *Staphylococcus aureus* strain isolated from clinical samples (all). MRSA is not present at admission, no known carriage for the 12 past months, and the first MRSA positive strain is isolated >48h after admission (nosocomial MRSA). Duplicates and screening samples are excluded. Only patients admitted to one of the following departments of acute care hospitals are taken into account: • intensive care, intensive neonatology, coronary care, mixed departments (H-index) • surgery, medicine, paediatrics, maternity, neonatology (N-index) • psychiatry • geriatrics and Sp-index as far as these two departments are physically part of the hospital or the fusion. An admission is defined as a stay in a hospital bed of minimally one night. Samples of ambulant patients (e.g. day clinic, one-day clinic, haemodialysis department, policlinic services) are not included in the surveillance. The retrospectively collected data (previous year) are transmitted, aggregated at hospital level. Institutions that are part of a fusion unity are asked to gather their data per hospital site.
International comparability	No international organizations include data on nosocomial MRSA, making comparison difficult. An exception is the European Antimicrobial Resistance Surveillance Network (EARS-Net), but this European program does not focus on nosocomial acquisition and considers isolates from blood cultures and cerebrospinal fluid only. Differences between countries concerning the coverage and participation, the quality of the lab results, and the frequency of sampling are also possible.
Periodicity	Semestrial data are available since 1994. Surveillance is continuous. Since 2012 the retrospective MRSA data (for the previous surveillance year) are transmitted once a year instead of each semester.
Dimensions	Quality (safety)
Related indicators	Post-operative sepsis; MRSA in institutions

3.1.2. Results

Belgium

The median incidence of nosocomial MRSA in acute care hospitals was 0.7 cases per 1000 admissions in 2016. The incidence is significantly decreasing since 2003 and currently is at its lowest level since the start of the surveillance in 1994.

The median incidence of nosocomial MRSA was calculated as the median of all incidence rates of hospitals participating at the surveillance period. A decreasing incidence was found between 1994 and 2000 (from 3.7 to 1.4 cases/1000 admissions, respectively), after which the incidence again increased reaching 3.0 in 2004. Since 2005, we measure a slow and constant decrease of the incidence of nosocomial MRSA in acute care hospitals, finally reaching 0.7 new cases/1000 in 2016 (Figure 1).

Probably, the application of the recommendations for the control of MRSA (since 2003), the national hand hygiene campaigns, and the rationalization of the use of antibiotics influenced positively this evolution. Nevertheless, the interpretation of the indicator remains influenced by the screening practices which vary in coverage rate and intensity between hospitals.[4] However, it will be essential to support MRSA screening efforts if we want to hand-hold the excellent results since 2005. Indeed, the attention with respect to MRSA could weaken under the pressure of the extra efforts necessary to fight against the emergence of Extended-Spectrum Beta-Lactamase (ESBL)-producing or carbapenemase producing (CPE) enterobacteriaceae and other multi-resistant micro-organisms.

Regional comparisons

In order to illustrate the trends by region, we used the median incidence of nosocomial MRSA by region, because the Brussels-Capital Region contains only a small number of acute care hospitals and the participation of less or more Brussels hospitals during a period can lead to very large variations in the incidence for the Brussels-Capital Region.

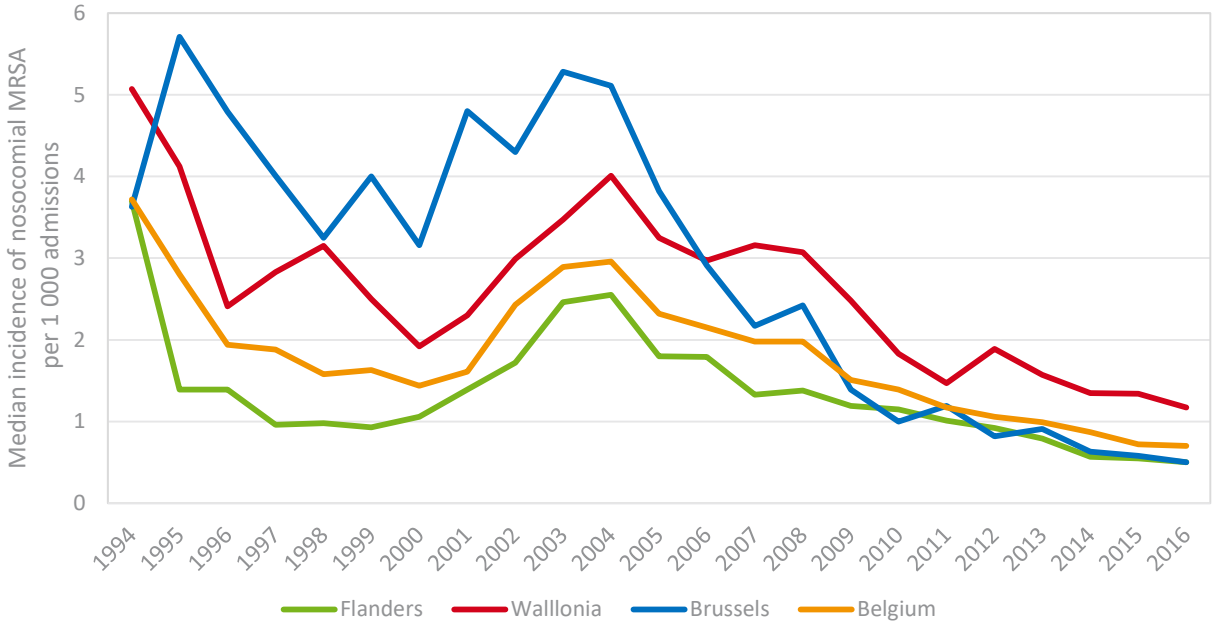
Only data from hospitals participating at least 5 times since the start of surveillance are taken into account. The median incidence was increasing in all regions between 2001 and 2004, but again decreasing afterwards (Figure 1).

This decrease was most impressive in the Brussels hospitals: from 5.3 cases/1000 admissions in 2003 to 0.5 cases/1000 admissions in 2016.

In the Flemish Region, the median incidence decreased from 2.6 cases (2004) to 0.5 cases/1000 admissions in 2016.

In the Walloon Region, after a peak at 4.0 cases/1000 admissions (2004), the median incidence decreased to 1.2 cases/1000 admissions in 2016.

Figure 37 – Evolution of the median incidence of nosocomial methicillin resistant *Staphylococcus aureus* (MRSA) per 1000 admissions by region, Belgian acute care hospitals with at least 5 years of participation in the surveillance, 1994–2016



Source: Latour et al., 2018[4]

International comparisons

Not available.

Key points

- **A decreasing median incidence in MRSA was found between 1994 and 2000, after which the incidence again increased in 2004. Since 2005, we measure a slow and constant decrease of the incidence of nosocomial MRSA in acute care hospitals.**
- **Probably, the application of the recommendations for the control of MRSA (since 2003), the national hand hygiene campaigns, and the rationalization of the use of antibiotics influenced positively this evolution. Nevertheless, the interpretation of the indicator remains influenced by the screening practices which vary in coverage rate and intensity between hospitals. However, it will be essential to support MRSA screening efforts if we want to hand-hold the excellent results since 2004.**
- **No international data are currently available to benchmark the Belgian results.**

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3.3. Postoperative complications (patient safety indicators) (QS-3, QS-4)

3.3.1. Documentation sheet

Description	A. Postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee replacement B. Postoperative sepsis in adults after abdominal surgery
Calculation	A. Number of hospitalisations with a pulmonary embolism or deep vein thrombosis as a complication of hip or knee replacement, per 100 000 discharges for patients aged 15 and older B. Number of hospitalisations with a septicaemia as a complication of abdominal surgery, per 100 000 discharges for patients aged 15 or older
Rationale	Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) cause unnecessary pain and in some cases death, but can be prevented by anticoagulants and other measures before, during and after surgery. Likewise, sepsis after surgery which may lead to organ failure and death, can in many cases be prevented by prophylactic antibiotics, sterile surgical techniques and good post-operative care. [1] Two types of patient safety event can be distinguished: **sentinel events** that should never occur such as failure to remove surgical foreign bodies at the end of a procedure; and **adverse events**, such as post-operative sepsis, which can never be fully avoided given the high-risk nature of some procedures, although increased incidence at an aggregate level may indicate a systemic failing. These two indicators are international indicators calculated based on administrative hospital discharge data (Patient Safety Indicator, PSI), which belong to the framework of HCQI. [2] They were originally developed by the US AHRQ Agency, [3] and are included in the maxi feedback sent from FPS Public health to hospitals. [4]
Data source	RHM-MZG (hospital administrative discharge data), Federal Public Service Public Health
Technical definitions	From OECD website (all ICD-9 codes can be found on the HCQI OECD website): **Indicator A: Postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee replacement** Numerator: Discharges among cases defined in the denominator with ICD code for **deep vein thrombosis** or **pulmonary embolism** in any secondary diagnosis field Denominator: All **hip and knee replacement discharges**, meeting the inclusion and exclusion rules with an ICD code for an operating room procedure ICD-9-CM Total hip and knee replacement procedure code: 8151 Total hip replacement, 8153 Revision of hip replacement, 8154 Total knee replacement and 8155 Revision of knee replacement. Exclude cases (from numerator and denominator): • with principal diagnosis of deep vein thrombosis or pulmonary embolism or (secondary diagnosis present on admission if known), • where a procedure for interruption of vena cava (ICD-9 CM 387 Interruption of vena cava) is the only operating room procedure, • where a procedure for interruption of vena cava occurs before or on the same day as the first / main operating room procedure. (Note that if day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available), • MDC 14 (Pregnancy, childbirth, and puerperium).

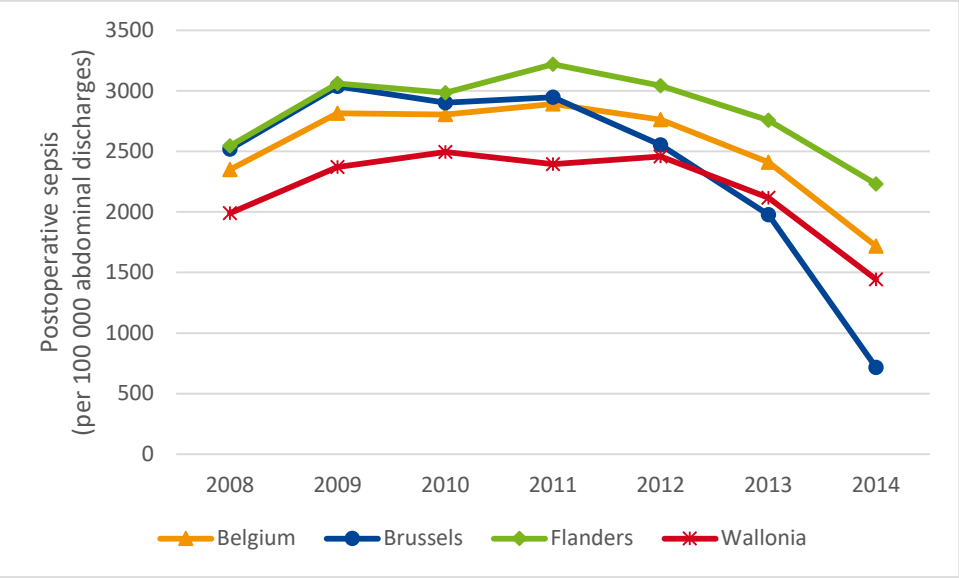
	• with length of stay less than 2 days. **Indicator B: Postoperative sepsis in adults after abdominal surgery** Numerator: Discharges among cases defined in the denominator with ICD code for **sepsis** in any secondary diagnosis field Denominator: All **abdominopelvic surgical discharges** only, meeting the inclusion and exclusion rules with an ICD code for an operating room procedure. Exclude cases: • with principal diagnosis of sepsis (or secondary diagnosis present on admission), • with principal diagnosis of infection (or secondary diagnosis present on admission) – • with any code for immunocompromised state, or cancer –, • MDC 14 (Pregnancy, childbirth, and puerperium) or principal diagnosis - • with length of stay of less than 3 days. These exclusion rules were developed to deal with the uncertainty of the time when the problem occurred (during or before hospitalization). From 2008 this information (diagnostic present at admission) is recorded in the RHM, and exclusion rules will need to be adapted.
Limitation	A report on Belgian RHM data showed that these indicators are highly dependent of the quality of the registration of secondary diagnoses (as one could expect from the definition of the indicator). [5]
International comparability	This definition is the same than the one used for reporting to health statistics at OECD. Caution is needed in interpreting the extent to which these indicators accurately reflect international differences in patient safety rather than differences in the way that countries report, code and calculate rates of adverse events. In some cases, higher adverse events rates may signal more developed patient safety monitoring system rather than worse care. A fundamental challenge in international comparison of patient safety indicators centres on differences in the underlying data. Variations in how countries record diagnoses and procedures and define hospital admissions can affect calculation of rates. [1]
Dimension	Quality – safety
Related indicators	Hospital-acquired MRSA and Clostridium difficile

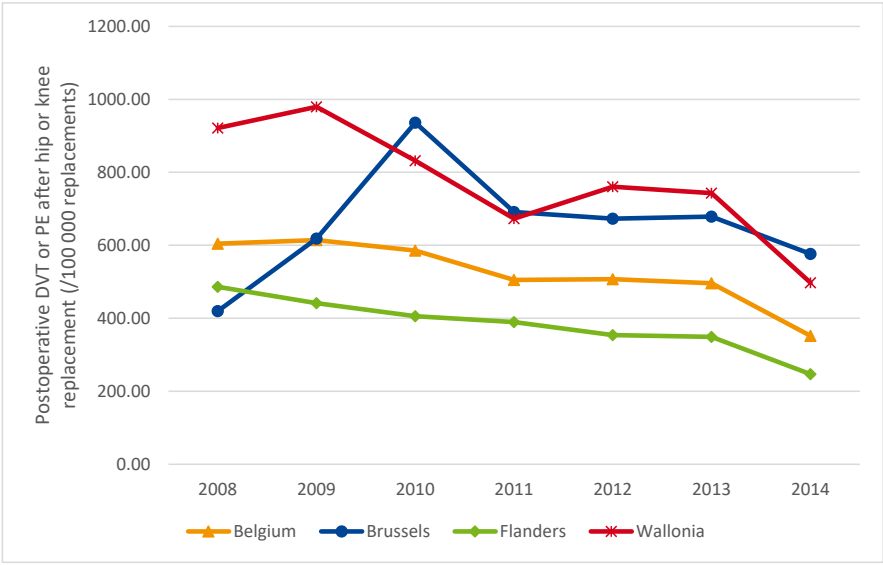
3.3.2. Results

3.3.2.1. In Belgium

Postoperative sepsis results are shown in Figure 38 (left), the complication rates have decreased in recent years in all regions. Results for postoperative deep vein thrombosis or pulmonary embolism after hip of knee replacement are also shown on Figure 38 (right). There is a slow decrease for these complications after hip or knee surgery in Belgium over the period 2008-2014. At the regional level, Flanders and Wallonia also have decreasing rates, Brussels' rate rose from 2008 (420 DVT or PE per 100 000 hip or knee replacements in 2008) to 2010 (936 per 100 000), then decreased from 2010 to 2014 (576 per 100 000).

Figure 38 – Postoperative sepsis after abdominal surgery (per 100 000 abdominal discharges, left) and postoperative PE or DVT after hip or knee replacement (per 100 000 replacements)



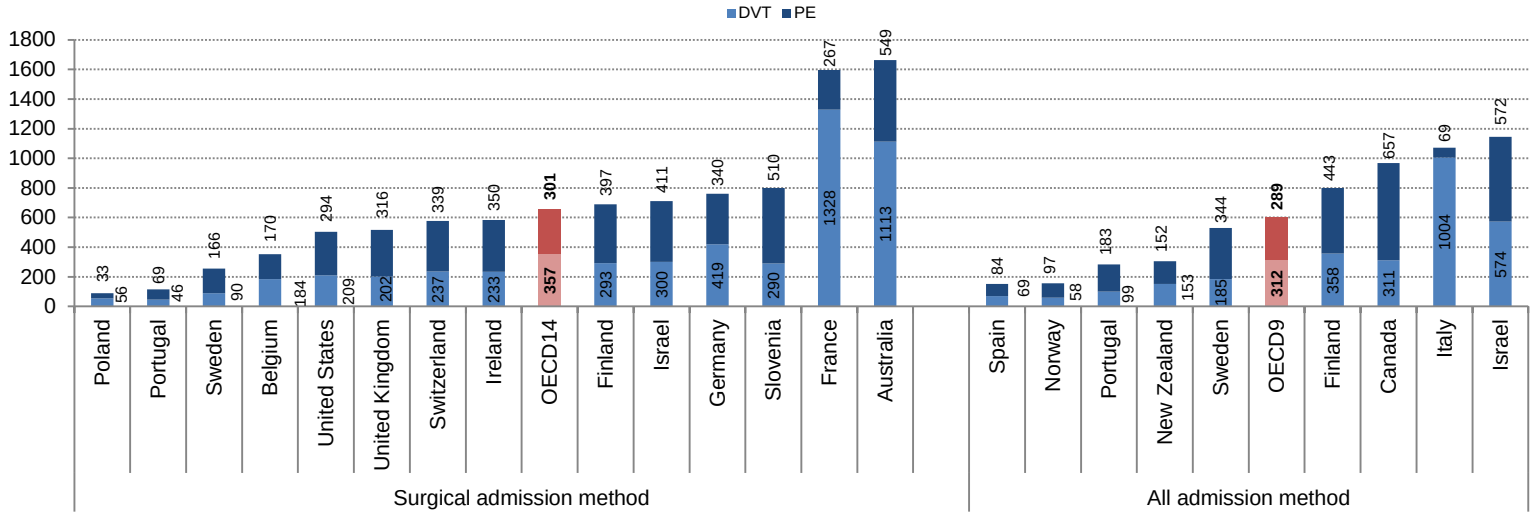


3.3.2.2. *Internationals comparisons*

Results from the international comparison are presented in Figure 39 and Figure 40 for postoperative pulmonary embolism or deep vein thrombosis, and in Figure 41 for Post-operative sepsis after abdominal surgery. Caution is needed in interpreting the extent to which these indicators accurately reflect international differences in patient safety rather than differences in the way that countries report, code and calculate rates of adverse events.

In some cases, higher adverse event rates may signal more developed patient safety monitoring systems and a stronger patient safety culture rather than worse care. [1]

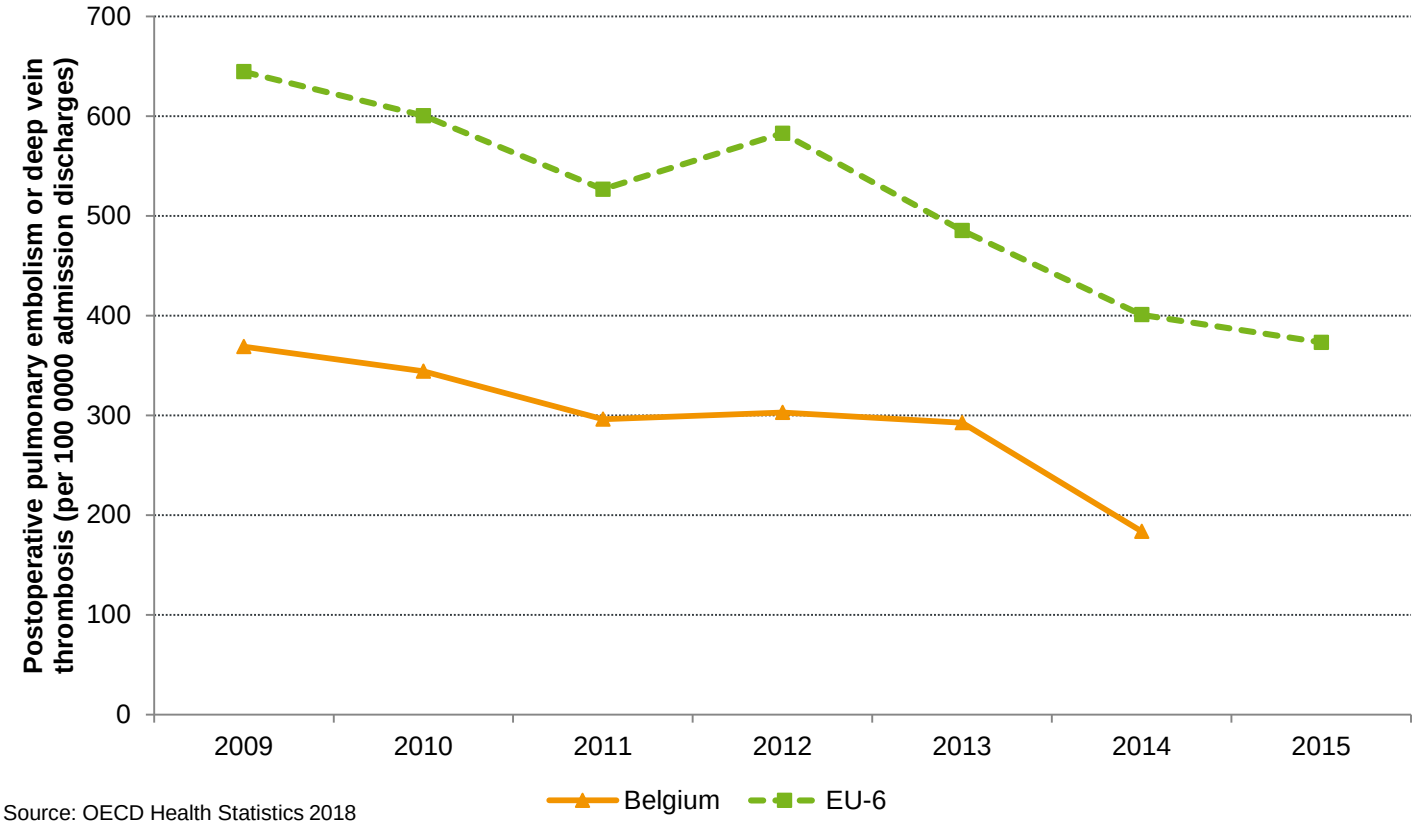
Figure 39 – Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) in hip and knee surgeries: international comparison, 2015 (or nearest year, per 100 000 replacements)



Source: OECD Health at a Glance 2017

Both indicators are on a decreasing trend for the period 2009-2014 in Belgium, while in European countries, PE or DVT after hip or knee surgery is also decreasing but post-operative sepsis after abdominal surgery remains stable. In 2014, Belgium is below EU countries.

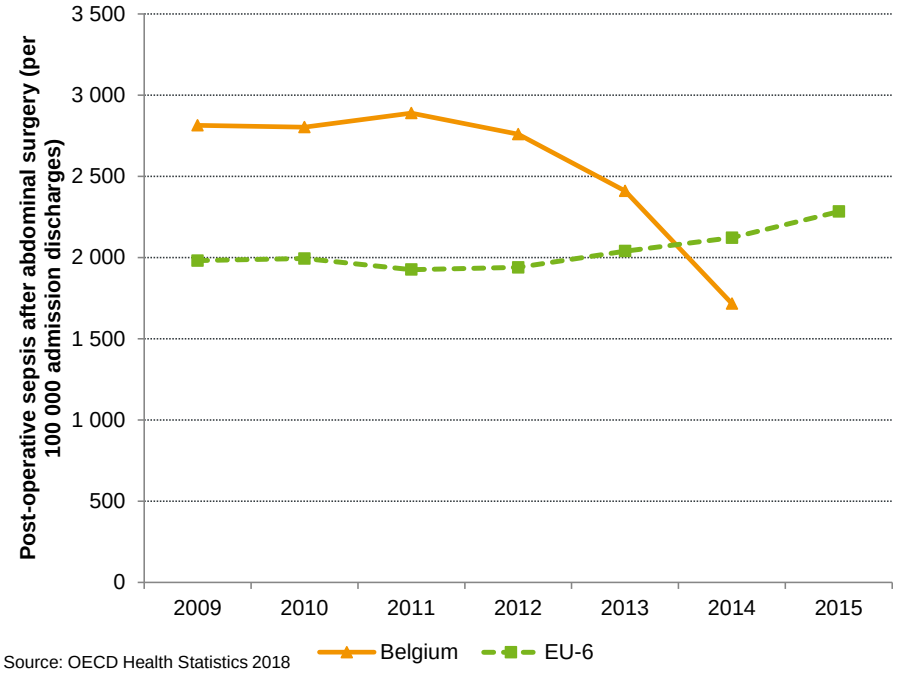
Figure 40 – Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) in hip and knee surgeries (2009-2015)



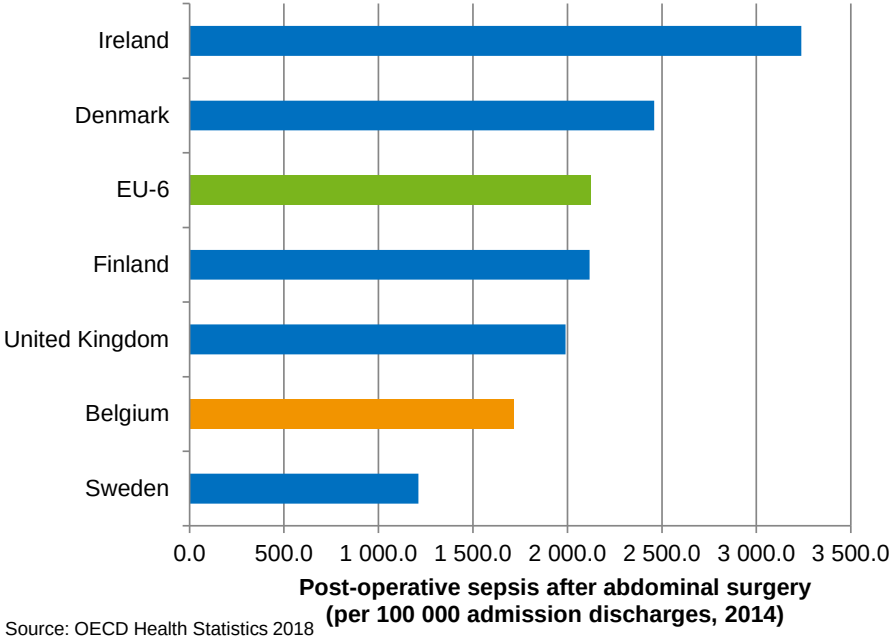
Source: OECD Health Statistics 2018

Note: Surgical admission-related method.

Figure 41 – Post-operative sepsis after abdominal surgery (per 100 000 admission discharges): international comparison



Source: OECD Health Statistics 2018



Source: OECD Health Statistics 2018

Key points

- **The incidence of complications after surgery are international indicators of patient safety, which are monitored on the basis on administrative hospital discharge data, and hence rely highly on the quality of the coding of complications.**
- **Between 2009 and 2014, the incidence of postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee surgery decreased slightly, while the postoperative sepsis after abdominal surgery shows a stronger decrease in recent years.**
- **In comparison with other countries, Belgium has good results on these indicators (lower rates of postoperative complications) than other European countries, but this might be due to large differences in coding practices between countries.**

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3.4. Pressure ulcer in patients hospitalised (QS-5)

3.4.1. Documentation sheet

Description	Prevalence of pressure ulcer in patients hospitalised in general hospitals
Calculation	Numerator: number of patients having a pressure ulcer at the moment of survey Denominator: number of patients surveyed during the prevalence study
Rationale	The occurrence of a pressure ulcer in a hospitalised patient has a serious negative impact on the individual's health and often leads to a much prolonged hospital stay. A substantial part of pressure ulcers can be prevented with good quality nursing care. Measuring the prevalence of pressure ulcers in different hospital wards can help targeting areas where preventive actions are the most needed, and can evaluate effectiveness of preventive interventions already taken.
Data source	A survey on the prevalence of pressure ulcers in general hospitals has been organised in 2012 by the Federal Council on the quality of the Nursing activities (Conseil Fédéral pour la Qualité de l'Activité Infirmière - CFQAI - Federale raad voor de kwaliteit van de verpleegkundige activiteit - FRKVA). Several structure, process and outcomes indicators were collected in the 70 participating hospitals. This report is the most recent source of data for this indicator.[1]
Technical definitions	The prevalence is established based on a *one day measure every 3 months*, among all patients hospitalised that day in services C, D, I, G and Sp. The severity of pressure ulcer can be categorised in: • Category 1: non- blanchable erythema • Category 2: partial thickness skin loss (blister/abrasion) • Category 3: full thickness skin loss (superficial pressure ulcer) • Category 4: full thickness tissue loss (deep pressure ulcer)
Limitation	Results of a point prevalence survey should not be used to benchmark hospitals on the quality of their nursing care, as patients who developed a pressure ulcer in another healthcare institution are also included in the survey.
International comparability	The prevalence survey method is based on a method developed by the European Pressure Ulcer Advisory Panel (EPUAP),[2] which has been validated internationally.
Related indicators	Incidence of pressure ulcers in long-term care facilities
Dimensions	Quality (safety of care)

3.4.2. Results

National studies

In 2012, a national study to measure the prevalence of pressure ulcers was organised by the Federal Council on the Quality of the Nursing Activities (CFQAI – FRKVA) in 70 general hospitals. It consisted of 4 point-prevalence surveys, each organised every trimester, and results are presented for the whole year 2012. A total of 90 095 patients were surveyed: the prevalence of pressure ulcer (categories 1 to 4) was 7.8% (7.1% in Flanders, 8.9% in Wallonia and 8.0% in Brussels, Table 11), and showed large variability between hospitals (Figure 42) When taking into account only cat 2-4, the prevalence was reduced to 5.1%.

In 2008 a prevalence study was organised for the first time at a national level in general hospitals, following the last European Pressure Ulcer Advisory Panel guidelines (which are specific for the registration and the classification of pressure ulcers). This study was organised in 84 hospitals and included 19 964 patients. A pressure ulcer prevalence of 12.1% was observed. The prevalence of category 2 to 4 pressure ulcers was 7%.[3] A clear distinction was made between a pressure ulcer and Incontinence- Associated Dermatitis (IAD), which showed a prevalence of 5.7%.

The comparison between these two surveys is difficult, mainly because of the differences in training of the assessors to identify pressure ulcers: in the 2008 survey 2 nurses were specially trained per ward, and had to asses patients and agree on the classification, while in the FRKV study bedside nurses were not specially trained for pressure ulcer prevalence screening. The difference between these two approaches may partly explain the differences in results between the two surveys.

Local studies

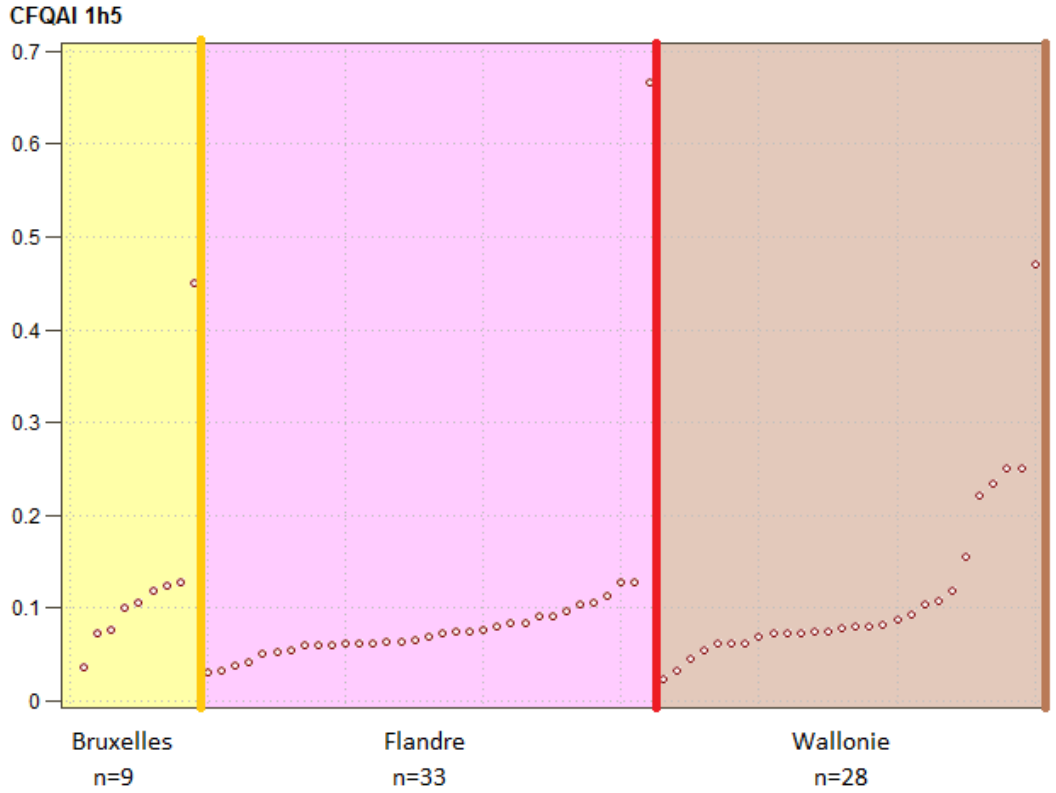
A prevalence study organised by 13 hospitals from Vlaamse Ziekenhuisnetwerk KU Leuven showed a prevalence from 3 to 5% for PU category 2 to 4 (number of patients surveyed 18 992) (see Figure 43). No information is available on category 1 pressure ulcers.

Table 11 – Prevalence of pressure ulcers in acute hospitals, results from national survey (2012)

	Belgium	Flanders	Wallonia	Brussels
Number of hospitals participating to the survey	70	33	28	9
Number of patients surveyed on one year	90095	49051	33750	7294
Number of patients having a with pressure ulcer (category 1-4)	7041	3461	2993	587
Prevalence of pressure ulcer (category 1-4)	**7.8%**	**7.1%**	**8.9%**	**8.0%**
Number of patients having a with pressure ulcer (category 2-4)	4111	1992	1739	380
Prevalence of pressure ulcer (category 2-4)	**5,1%**	**4%**	**7,7%**	**5,9%**

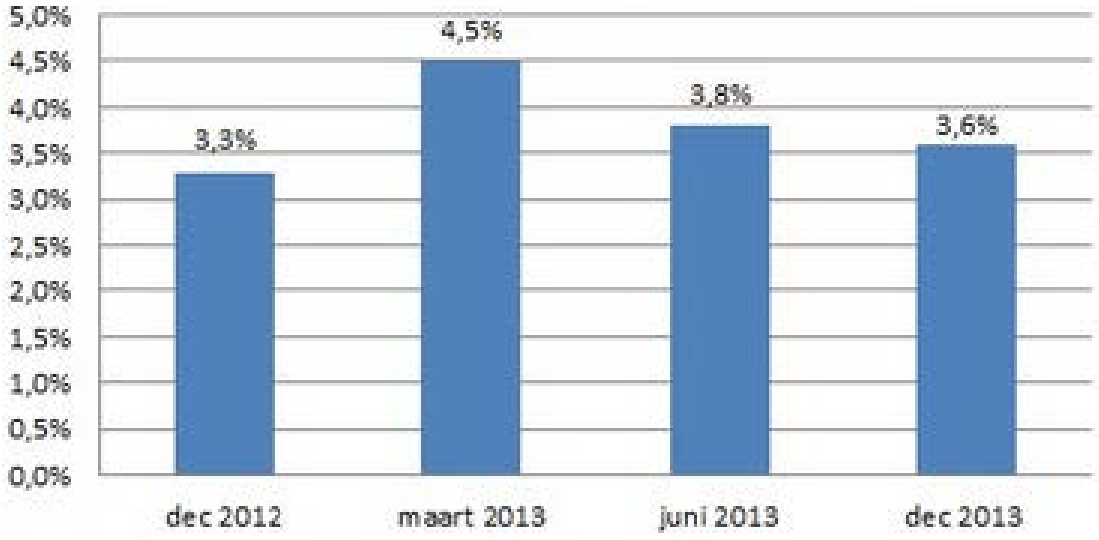
Source: Prevalence surveys in general hospitals, 2012, Federal Council on the quality of the Nursing activities, [1]

Figure 42 – Variability between hospitals in prevalence of pressure ulcer, by region (2012)



Source: Prevalence surveys in general hospitals, 2012, Federal Council on the quality of the Nursing activities, [1]
Note: Results are expressed as a proportion (from 0 to 1)

Figure 43 – Prevalence of pressure ulcer in a local study of 13 hospitals from KU Leuven network (2013)



Source: http://www.vznkul.be/content/decubitus

International comparison

The comparison between countries remains difficult because of differences in pressure ulcer definitions, methods of data collection and patient population.[4,5] A recent report reviewed results of prevalence studies conducted in hospital settings in several European countries (Table 12). The reported prevalence rates ranged from 8.9% (France 2004) to 18.1% (The Netherlands, 2004). More recent surveys (2013) in the Netherlands showed a much lower prevalence, 8.4%, and evidence of decreasing trends over time.[6]

In Belgium, the prevalence of pressure ulcers has been studied twice on a national level within the hospital setting, and reported prevalence of 12.1% in the first survey (2008) and 7.8% in the second one (2012), but methodological difference between these two surveys may partly explain the differences in results.

Table 12 – Prevalence of pressure ulcers in adults, in a selection of European countries, in hospitals: international comparison

Country	Study year	Sample size (n)	Prevalence (Grade I-IV)
Belgium	2008	19 968	12.1%
	2012	90 095	7.8%
France	2004	37 307	8.9%
Germany	2004	8 515	9.0%
Italy	2005	1 097	8.3%
Sweden	2011	16 466	16.6%
The Netherlands	2004	10 237	18.1%
	2013	2989	8.7%

Source of international comparison: KCE Report 203 [7]

Key points

- **In 2012, the prevalence of pressure ulcer of patients hospitalised in general hospitals was 7.8% (cat 1-4) and 5.1% (cat 2-4).**
- **In 2008, a previous national survey showed higher prevalence rates: 12.1% (cat 1-4) and 7% (cat 2-4), but the methodology was slightly different (trained assessors in 2008 versus mandatory data collection by bedside nurses in 2012). It is thus diffcult to know whether the difference between the two surveys is due to a real quality improvement in the prevention of pressure ulcer , or due to ta differences in sensitivty of the assessors.**
- **The comparison of Belgian data with other European countries also remains difficult because of differences in pressure ulcer definitions, methods of data collection and patient population. Taking into account these limitations, Belgium has the lowest prevalence rate of pressure ulcer of surveys organised in France, Germany, Italy, Sweden and The Netherlands.**

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3.5. Polypharmacy among the elderly (QS-6)

3.5.1. Documentation sheet

Description	Proportion of the insured population aged 65 years and older, using 5 or more drugs of >80 DDD per year.
Calculation	Numerator: number of insured people aged 65 years and older, using 5 or more drugs of >80 DDD per year. Denominator: number of insured people aged 65 years and older
Rationale	Chronic diseases are highly prevalent among the older population and often require multiple medications for optimal management. There are however many consequences of polypharmacy. Aside from increased direct medical costs, patients are at higher risk for adverse drug reactions, drug interactions, non-adherence, diminished functional status, and various geriatric syndromes.[1] Although the use of multiple drugs is widely referred to as polypharmacy, no consensus exists on what number should define the term. In the literature, polypharmacy has often been defined as taking at least five medicines concurrently. Alternately, polypharmacy has also been defined by the consumption of more medicines than clinically indicated or by the consumption of medicines that are not clinically indicated.[2] Information on inappropriate medicine use is however not considered here.
Primary data source	Pharmanet Survey of Health, Ageing and Retirement in Europe (SHARE); Midão et al., 2018[3] Belgian Health Interview Survey, Sciensano (http://his.wiv-isp.be)[4]
Source of results	RIZIV-INAMI Sciensano, Lifestyle and chronic diseases
Technical definitions	The analyses of the Pharmanet data are performed by the Cell Appropriate Care of the RIZIV-INAMI, in the context of the evaluation of medical practices variations. Standardized ratios are calculated by multiplying the non-standardized ratios by the desired distribution, and summing by location; by location and preference regulation; by location and gender; by location, age group and sex; or by age group and gender.
International comparability	Comparison of national data with other countries is difficult/impossible because of important differences in definitions of polypharmacy, study years, settings, designs, samplings, data collection methods, definitions of medicine and of time period used to count the number of medicines. Recently, the Survey on Health, Ageing and Retirement in Europe (SHARE) included a question on polypharmacy, allowing for unbiased international comparisons.[3]
Limitation	Pharmanet includes reimbursed medicines only; Limited periodicity; No international comparisons possible.
Dimensions	Quality (safety)
Related indicators	None

3.5.2. Results

In the HSPA report 2015, data were used from the Belgian Health Interview Survey (HIS) 2013. Since the results of the HIS 2018 will only be available by the end of 2019, two alternative data sources have been explored:

- Pharmanet: RIZIV – INAMI evaluated the consumption of 5 or more drugs of >80 DDD per year among the insured population aged 65 years and older.
- Wave 6 of the Survey of Health, Ageing and Retirement in Europe (SHARE), conducted in 2015 across 17 European countries plus Israel, included, for the first time, a question on polypharmacy.[3]

Table 13 compares the three available data sources (HIS, Pharmanet, and SHARE). All data sources have specific limitations, such that no single best data source can be identified. Taking into account all strengths and limitations, we have decided to use the Pharmanet data for the national evaluation, and the SHARE data for the international comparisons. For the sake of completeness, however, the information from the HIS is also presented here.

Table 13 – Comparison of three different data sources for polypharmacy among the elderly in Belgium.

Data source	Definition	Most recent year	Time trends	Regional comparisons	International comparisons
HIS	Percentage of the population using at least five different drugs in the past 24 hours (% pop aged 65+)	2013	Yes	Yes	No
Pharmanet	Percentage of the insured population using 5 or more drugs of >80 DDD per year. (% pop aged 65+)	2016	Yes (limited)	Yes	No
SHARE	Percentage of the population using at least five different drugs on a typical day (% pop aged 65+)	2016	No	No	Yes

Pharmanet

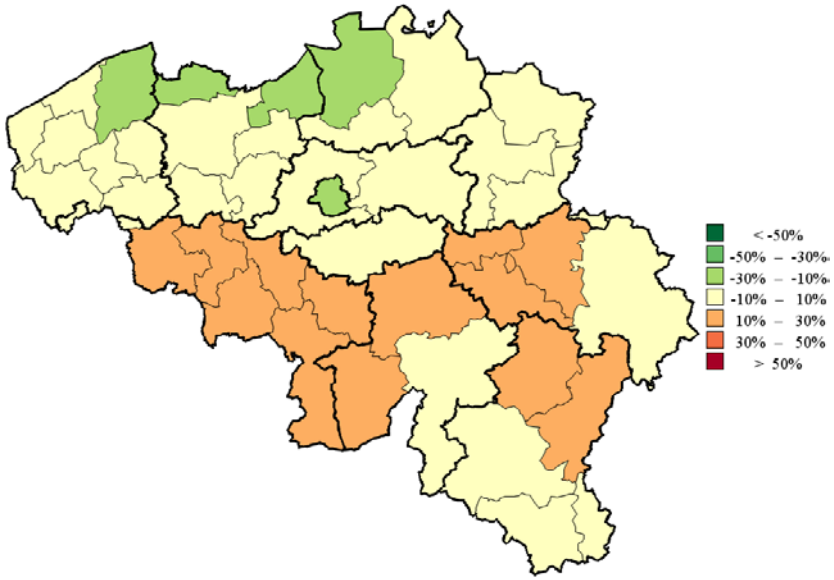
In the context of the evaluation of medical practice variations, the RIZIV – INAMI evaluated the consumption of 5 or more drugs of >80 DDD per year among the insured population aged 65 years and older. This indicator is proposed here as a proxy for polypharmacy, since it deviates from the commonly adopted definition of polypharmacy in two distinct ways: 1) it mainly focuses on drugs for chronic diseases (≥ 80 DDD), and 2) it evaluates the use of medicine on an annual basis, instead of on a daily basis.

Table 14 summarizes the Pharmanet estimates for the year 2016 and the period 2014-2016. Overall, polypharmacy was higher in women, in the older age groups, in the Walloon Region, and among people with preferential reimbursement entitlement ("verhoogde tegemoetkoming", "intervention majorée"). Detailed regional differences are shown in Figure 44. Differences between 2016 and the period 2014-2016 are minimal.

Table 14 – Percentage of the insured population aged 65+ using 5 or more drugs of >80 DDD per year.

		2016	2014-2016
TOTAL		**39%**	**39%**
Gender	Male	38%	38%
	Female	40%	40%
Age group	65-69	28%	28%
	70-74	36%	36%
	75-79	43%	43%
	80-84	49%	49%
	85-89	52%	52%
	90-94	49%	50%
	95+	40%	42%
Region	Flanders	37%	37%
	Brussels	35%	35%
	Wallonia	44%	44%
Reimbursement entitlement	Preferential	48%	48%
	Non-preferential	35%	35%

Figure 44 – Difference from the national mean of insured population aged 65+ using 5 or more drugs of >80 DDD per year, by district, average 2014-2016



HIS—Health Interview Survey

In the Belgian HIS, polypharmacy was defined as taking at least five medicines in the past 24 hours. Respondents were asked during a face-to-face interview whether they had taken any medicines during the last 24 hours. The respondent then had to show the medicines that he/she has taken during the past 24 hours, if possible with the package. The interviewer recorded the brand names and national codes of all medicines. In the definition of polypharmacy, only the official medicines as listed in the Annotated Medicines Registry published by the Belgian Centre for Pharmacotherapeutic Information (BCFI – CBIP) were considered.

In the HIS 2013[4], the mean age of the study population aged 65 and older (N=2020) was 75.4 years (range: 65-102). The majority were women (57.8%), aged 65-79 years (69.5%). The mean number of medicines used per person was 3.1 (range: 0-20). Almost one seventh (14.6%) did not take any medicines during past 24 hours. 27.4% (591) was in the polypharmacy group (mean number of medicines: 7.1), of which 5.6% (125) was in the *excessive* polypharmacy group (≥9 drugs in the past 24 hours) (mean number of medicines: 10.6).

In the univariate analysis, we observed a gradient in the prevalence of polypharmacy (Table 15) in function of age and a higher prevalence in the lower educational levels and among the “older elderlies” (persons age 85 years and older). Compared to 2004 and 2008, we observed a decrease of

polypharmacy in 2013. In 2004 and 2008, polypharmacy was more frequent in the Walloon Region, but this was not the case anymore in 2013.

Table 15 – Proportion of the population aged 65 years and older reporting having taken 5 or more different medicines during the last 24 hours, 2013.

		N	Crude % (95%CI)	OR (crude)
Year of survey	2013	2020	27.4 (24.6-30.2)	**0.78 (0.65-0.93)**
	2008	2778	32.6 (29.9-35.3)	1.00 (0.85-1.17)
	2004	3446	32.6 (30.3-34.9)	—
Gender	Male	889	25.5 (21.9-29.1)	—
	Female	1131	28.7 (24.9-32.5)	1.18 (0.92-1.51)
Age group	65-69	597	19.1 (15.1-23.2)	—
	70-74	434	28.9 (22.4-35.3)	**1.71 (1.15-2.56)**
	75-79	401	29.0 (22.8-35.2)	**1.73 (1.15-2.56)**
	80-84	331	32.3 (25.6-39.1)	**2.02 (1.35-3.03)**
	85+	257	34.0 (26.5-41.4)	**2.18 (1.43-3.33)**
Region	Flanders	743	27.2 (23.1-31.2)	—
	Brussels	425	29.2 (24.1-34.4)	1.11 (0.80-1.53)
	Wallonia	852	27.2 (23.2-31.3)	1.00 (0.75-1.34)
Education level	No degree / Primary	519	31.3 (25.6-36.9)	**1.50 (1.01-2.21)**
	Secondary inferior	398	33.7 (26.6-40.8)	**1.67 (1.09-2.56)**
	Secondary superior	512	21.9 (17.5-26.3)	0.92 (0.63-1.36)
	Superior education	564	23.3 (18.2-28.5)	—

Source: Health Interview Survey, Sciensano, Belgium[4]

Cardiovascular medications were the most frequently used medicines (40.4% of all medicines used): they were used by 63% of all people age 65 years and older, 94% of the polypharmacy users and 98.7% of the excessive polypharmacy users. When considering the pharmacological classes (ATC level 3), the medicines most frequently used by the polypharmacy users and the excessive polypharmacy users were lipid modifying agents (plain) and antithrombotic agents. They were followed by β-blocking agents and medicines for peptic ulcer and gastro-oesophageal reflux disease. In 2012, a study of medicines reimbursed in Belgium found also that the four most frequently used medicines associated with polypharmacy were lipid modifying agents (plain), antithrombotic agents, medicines for peptic ulcer and gastro-oesophageal reflux disease, and β-blocking agents.[4]

SHARE—Survey of Health, Ageing and Retirement in Europe

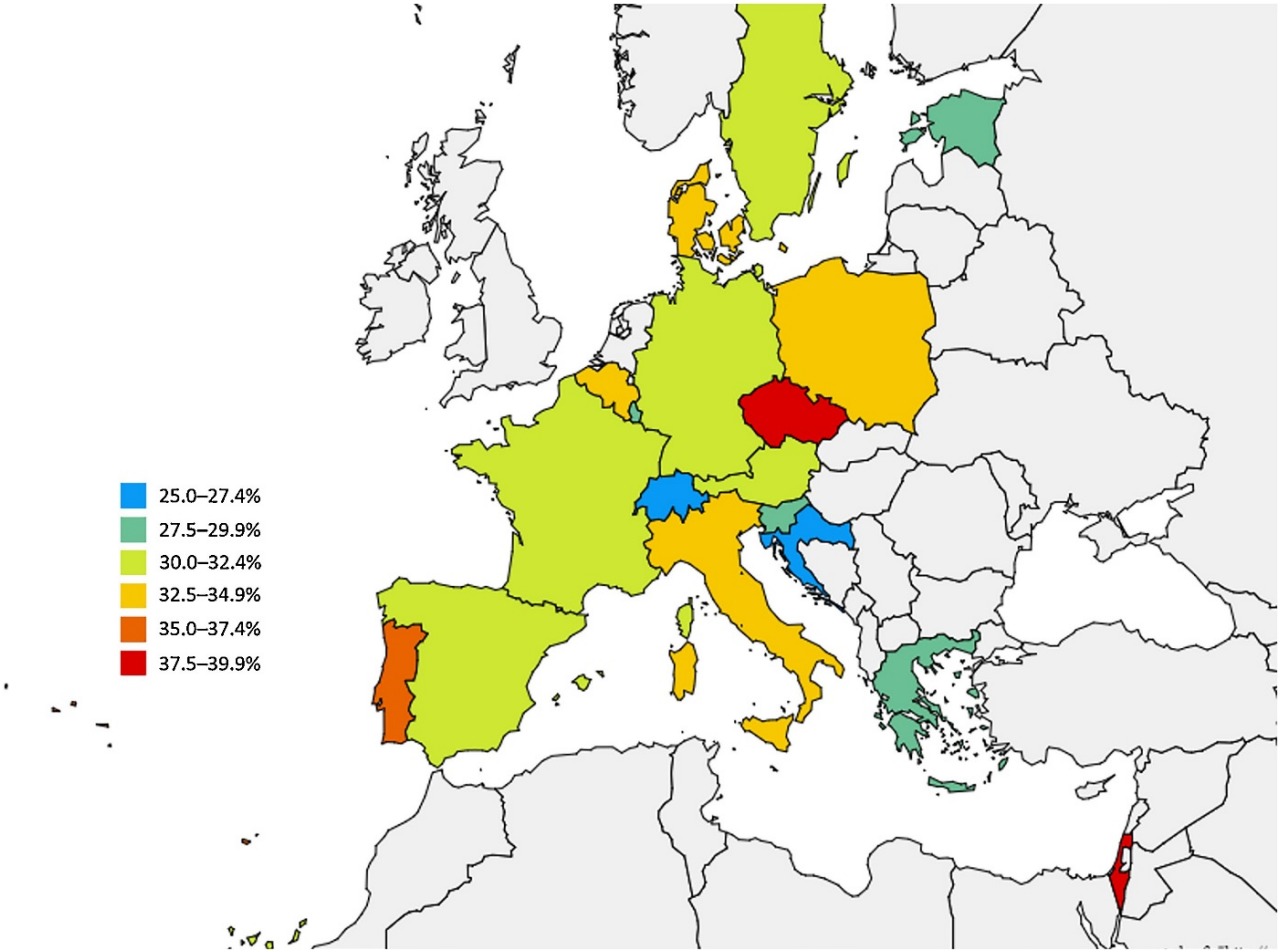
Wave 6 of the Survey of Health, Ageing and Retirement in Europe (SHARE), conducted in 2015 across 17 European countries (Austria, Belgium, Croatia, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Luxembourg, Poland, Portugal, Spain, Sweden, Switzerland and Slovenia) and Israel, included, for the first time, a question on polypharmacy.[3] Polypharmacy was defined as the concurrent use of five or more medications per day. Specifically, respondents were asked the following question: *"Do you take at least five different drugs on a typical day? Please include drugs prescribed by your doctor, drugs you buy without a prescription and dietary supplements such as vitamins and minerals."*

Across all participating countries, information on polypharmacy was available for a total of 34,232 participants aged 65 and older. Of these, the mean age was 75.1 ± 7.2 years, and 19,544 (57.1%) were female.

In Belgium, 807 out of 2303 participants reported using 5 or more drugs on a typical day, corresponding to an adjusted prevalence of 34% (95%CI 33-35%). This result was slightly higher than the European average of 32%. Belgium had the fourth highest polypharmacy prevalence across all 18 participating countries (Figure 45).

Of note, even though the Belgian HIS 2013 and the SHARE 2015 were only two years apart, and even though the questions were relatively similar in both surveys, the overall results of the HIS 2013 and the SHARE 2015 are quite different, i.e., 27% and 34%, respectively. Whether or not this reflects a true increase in polypharmacy over time, needs to be confirmed in the Belgian HIS 2018.

Figure 45 – Prevalence of polypharmacy in elderly (65 years and older) among 17 European countries and Israel.



Source: SHARE 2015[3]

Key points

- **The percentage of the insured population aged 65 and over that used in the past year 5 or more different drugs of >80 DDD, was 39% in 2016.**
- **Over time, we observe a steady decrease in the prevalence of polypharmacy.**
- **The prevalence of polypharmacy is higher among the 'older elderlies'. This group deserves particular attention because 'older elderlies' have an increased risk of adverse effects of medications, in particular due to impaired kidney and liver functions.**
- **Since more than 90% of persons in the polypharmacy groups use cardiovascular medications, interventions could be focused on patients with cardiovascular diseases.**
- **According to the SHARE 2015 study, Belgium had the fourth highest polypharmacy prevalence across all 18 participating countries.**

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3.6. Proportion MRSA and 3GC/4GC I/R *Escherichia coli* in acute care hospitals (QS-7, QS-8)

3.6.1. Documentation sheet

Description	Proportion of methicillin-resistant *Staphylococcus aureus* (MRSA) and proportion of *Escherichia coli* with reduced susceptibility to 3rd or 4th generation cephalosporins (3GC/4GC I/R *E. coli*) in acute care hospitals
Calculation	Numerator: Number of MRSA and 3GC/4GC I/R *E. coli* infections in acute care hospitals in the reporting period. Denominator: Number of *S. aureus* and *E. coli* infections in acute care hospitals in the reporting period.
Rationale	*Staphylococcus aureus* is an important cause of infections of the skin and mucosae, of postoperative wound infections, catheter infections, pneumonias, bacteraemia and infections of articulations.[1] Since its first description,[2] MRSA was a major source of nosocomial infections in European countries and abroad. Third-generation cephalosporins (3GC) are extended-spectrum antimicrobial agents useful in a variety of clinical situations. Their proven record of clinical efficacy, favourable pharmacokinetics, and low frequency of adverse effects make 3GC the preferred antibiotic in many clinical situations. Fourth-generation cephalosporins (4GC) have true broad-spectrum activity, and are also active against β-lactamase producing *Enterobacteriaceae* which may inactivate third-generation cephalosporins. Monitoring *S. aureus* (a skin bacterium) can inform about the effectiveness of infection prevention and control measures (including hand hygiene), while monitoring *E. coli* (a gut bacterium), additionally informs about antibiotic consumption. By Royal Decree, Belgian acute care hospitals mandatorily have to participate (at least one semester/year) in the surveillance of MRSA (since 2006) and multi-resistant Gram-negative bacteria (since 2015).[3] MRSA and 3GCR *E. coli* are considered by ECDC primary indicators of antimicrobial resistance in bacteria from humans.
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance (www.nsih.be) International comparisons are based on EARS-Net data (https://ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks/ears-net)
Source of results	National Surveillance of Infections in Hospitals: http://www.nsih.be/surv_mrsa/introduction_nl.asp Surveillance of antimicrobial resistant bacteria in Belgian hospitals: Report 2016[4] Surveillance of antimicrobial resistance in Europe: Annual report of the European Antimicrobial Resistance Surveillance Network (EARS-Net) 2017[5]
Technical definitions	MRSA is defined as *Staphylococcus aureus* (*S. aureus*) resistant to methicillin/oxacillin. 3GC/4GC I/R *E. coli* is defined as *Escherichia coli* (*E. coli*) resistant to 3rd and/or 4th generation cephalosporins (3GC/4GC I/R), and specifically as reduced susceptibility (intermediate susceptibility [I] or resistance [R]) to: • cephalosporins of the 3rd generation (cefotaxime ceftriaxone, ceftazidime); and/or • 4th generation cephalosporins (cefepime), according to EUCAST or CLSI criteria.

	The resistance proportion (crude, mean, median, range [minimum - maximum]) was calculated for each resistant bacterium by dividing the number of resistant bacterial species by the total number of isolated species in the hospital during the surveillance period. In order to compare resistance and incidences across regions, Kruskal-Wallis tests were performed. Differences were considered significant if p≤0.05.
International comparability	The only source of information for international comparisons is the European Antimicrobial Resistance Surveillance Network (EARS-Net). EARS-Net is a program managed and coordinated by the European Centre for Disease Prevention and Control (ECDC), and is the largest publicly funded system for antimicrobial resistance surveillance in Europe. The results of EARS-Net should however be interpreted with caution: • EARS-Net only considers invasive isolates (from blood cultures, cerebrospinal fluid, and urine), while the national surveillance includes all isolates. • EARS-Net is a voluntary programme, and estimates are therefore not nationally representative for Belgium. Differences between countries concerning the coverage and participation, the quality of the lab results, and the frequency of sampling are also possible. The national surveillance on the other hand is mandatory and does yield nationally representative estimates for Belgium. • EARS-Net considers 3GCR *E. coli* only, while the national surveillance considers 3GC/4GC I/R *E. coli*.
Periodicity	Both the national surveillance and EARS-Net have an annual periodicity.
Dimensions	Quality (safety)
Related indicators	Post-operative sepsis; Prevalence of healthcare-associated infections in acute care hospitals; Incidence of MRSA in nursing homes

3.6.2. Results

Background

The service "Healthcare-associated infections and antimicrobial resistance" of Sciensano (previously known as the Belgian Scientific Institute of Public Health; WIV-ISP) closely monitors antimicrobial resistance in Belgian acute care hospitals. In 1994, the team initiated the first national surveillance program of methicillin resistant *Staphylococcus aureus* (MRSA). This resistant Gram-positive bacterium caused and still causes difficult to treat infections, such as skin and soft tissue infections, infections of surgical sites and catheter sites, pneumonia or bloodstream infections. By the end of the 1990s, resistance in a wide range of Gram-negative bacteria started to escalate. In 2005, the surveillance program was therefore extended to also include resistance in *Escherichia coli* and several other Gram-negative bacteria.

By Royal Decree, Belgian non-psychiatric hospitals – with the exception of chronic care hospitals – mandatorily have to participate in the surveillance of MRSA (since 2006) and multi-resistant Gram-negative bacteria (since 2015).

Proportion of methicillin-resistant *Staphylococcus aureus*

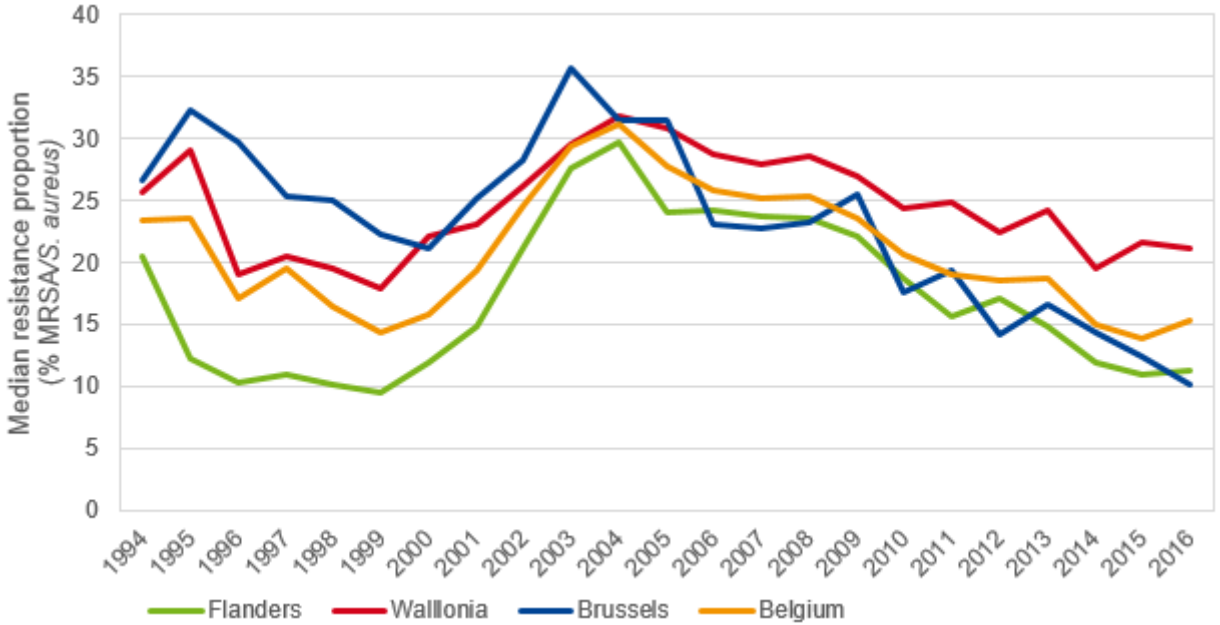
In 2016, the crude proportion of MRSA on the total number of *S. aureus* isolates was 15.4% (n=5 744/37 220) in all 122 participating acute care hospitals. The median ratio significantly differed between Wallonia and Brussels (p<0.001) and between Wallonia and Flanders (p<0.001). More details on the resistance proportion by region can be found in Table 16.

Table 16 – Resistance in Staphylococcus aureus: proportion of methicillin resistant S. aureus (MRSA) on the total number of reported S. aureus isolates by region, Belgian acute care hospitals, 2016

	Number of participating hospitals	Proportion MRSA / *S. aureus (%)*			
		Crude	*Mean*	*Median*	*Range*
Belgium	122	15.4	15.7	15.0	0.0-42.9
Flanders	60	12.3	12.1	10.9	1.3-32.1
Wallonia	45	21.5	21.4	21.2	0.0-42.9
Brussels	17	12.5	13.3	10.3	5.4-34.9

The overall median MRSA resistance proportion in a cohort of acute care hospitals with at least 5 participations between 1994 and 2016 peaked in 2004, and has shown an overall steady decrease afterwards. Between 2015 and 2016, however, it slightly increased (13.8% and 15.4%, respectively), but decreased in Brussels (12.5% versus 10.2%) and remained more or less stable in Flanders (11.0% versus 11.3%) and in Wallonia (21.6% versus 21.1%) (Figure 46).

Figure 46 – Evolution of the median proportion of methicillin resistant Staphylococcus aureus (MRSA) on the total number of reported S. aureus by region, Belgian acute care hospitals with at least 5 years of participation in the surveillance, 1994-2016



Source: Latour et al., 2018[4]

Proportion of nosocomial methicillin-resistant Staphylococcus aureus

In total, 121 acute care hospitals reported 1554 clinical samples and 1560 screening samples as MRSA positive more than 48 hours after admission. These MRSA cases can therefore be considered as hospital acquired or nosocomial. The proportion of clinical samples tested MRSA positive more than 48 hours after admission (nosocomial MRSA) on the total number of clinical samples tested positive for S. aureus was 26.3%. There were no statistically significant differences between the proportions in the different regions (Table 17).

Table 17 – Resistance in nosocomial Staphylococcus aureus: proportion of methicillin resistant S. aureus (MRSA) on the total number of reported nosocomial S. aureus isolates by region, Belgian acute care hospitals, 2016

	Number of participating hospitals	Proportion nosocomial MRSA / *S. aureus (%)*			
		Crude	*Mean*	*Median*	*Range*
Belgium	121	26.3	30.4	27.3	0.0-100
Flanders	58	28.3	32.4	29.5	0.0-100
Wallonia	46	26.8	29.7	25.6	0.0-100
Brussels	17	18.4	25.7	23.6	0.0-71.4

Proportion of 3GC/4GC I/R *Escherichia coli*

In 2016, the crude overall resistance proportion for 3GC/4GC I/R *E. coli* was 4.0% (n=5457/138,083) (Table 18). Large differences between the overall crude and median resistance proportion of 3GC/4GC I/R *E. coli* in acute care hospitals (clinical samples only) were seen in Brussels and therefore also overall. No statistically significant differences in median resistance proportion were observed between the regions.

Table 18 – Resistance proportion of Escherichia coli (clinical samples only) by region: reduced susceptibility for 3th and/or 4th generation cephalosporins, Belgian acute care hospitals, 2016

	Number of participating hospitals	Proportion 3GC/4GC I/R *(%)*			
		Crude	*Mean*	*Median*	*Range*
Belgium	73	4.0	9.1	9.1	0.1-18.1
Flanders	40	9.3	8.7	8.1	1.6-16.1
Wallonia	21	8.7	8.8	9.3	1.3-14.5
Brussels	12	0.9	10.7	10.9	0.1-18.1

In a cohort of acute care hospitals that participated at least three years in the surveillance the mean resistance proportion of 3GC/4GC I/R *E. coli* augmented from 8.1% in 2014 over 9.0% in 2015 to 9.8% in 2016.

International comparisons

The European Antimicrobial Resistance Surveillance Network (EARS-Net) is the main EU surveillance system for AMR in bacteria that cause serious infections. Data reported from the network serve as important indicators on the occurrence and spread of AMR in Europe. All 28 EU Member States and two EEA countries (Iceland and Norway) participate in EARS-Net. The vast majority of the countries regularly report data for all bacteria and antimicrobial groups under surveillance. The number of participating laboratories continuously increased since the initiation of the network, indicating a strengthening of national AMR surveillance systems in the EU/EEA. The widespread and continuing implementation of European Committee on Antimicrobial Susceptibility Testing (EUCAST) guidelines for antibacterial susceptibility testing in Europe, and the high proportion of laboratories that participate in the annual EARS-Net external quality assessment (EQA) exercise, contribute to improved data quality and an increasing ability of EU/EEA countries to report comparable AMR data.

The results of EARS-Net should however be interpreted with caution:

- EARS-Net only considers invasive isolates (from blood cultures, cerebrospinal fluid, and urine), while the national surveillance includes all isolates.
- EARS-Net is a voluntary program, and estimates are therefore not nationally representative for Belgium. Differences between countries concerning the coverage and participation, the quality of the lab results, and the frequency of sampling are also possible. The national surveillance on the other hand is mandatory and does yield nationally representative estimates for Belgium.
- EARS-Net considers 3GCR *E. coli* only, while the national surveillance considers 3GC/4GC I/R *E. coli*.

Based on the EARS-Net data, the resistance proportion of both MRSA and 3GC *E. coli* in Belgium has an intermediate position across EU-15 countries (Figure 47).

Figure 47 – International comparison of the percentage of invasive *S. aureus* isolates with resistance to methicillin and the percentage of invasive *E. coli* isolates with resistance to third-generation cephalosporins, 2012-2017

Figure 7. ***Staphylococcus aureus***: **percentage of invasive isolates with resistance to meticillin (MRSA), EU/EEA, 2012 (left), 2015 (right)**

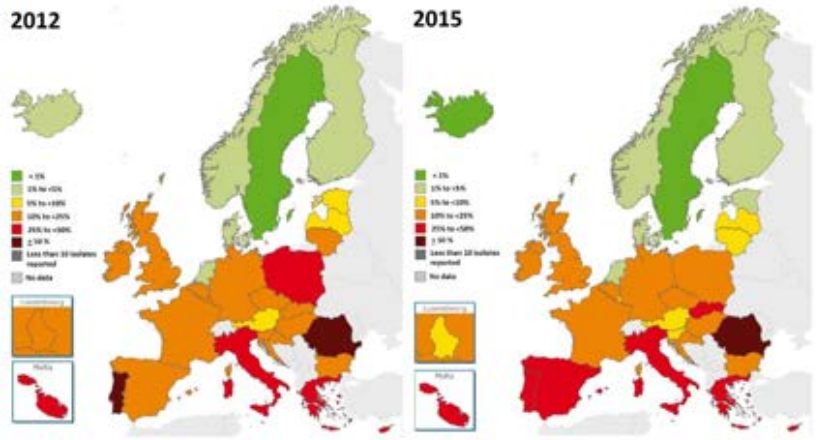


Figure 3.25. *Staphylococcus aureus*. Percentage (%) of invasive isolates with resistance to meticillin (MRSA), by country, EU/EEA countries, 2017



Figure 4. ***Escherichia coli***: **percentage of invasive isolates with resistance to third-generation cephalosporins, EU/EEA, 2012 (left), 2015 (right)**

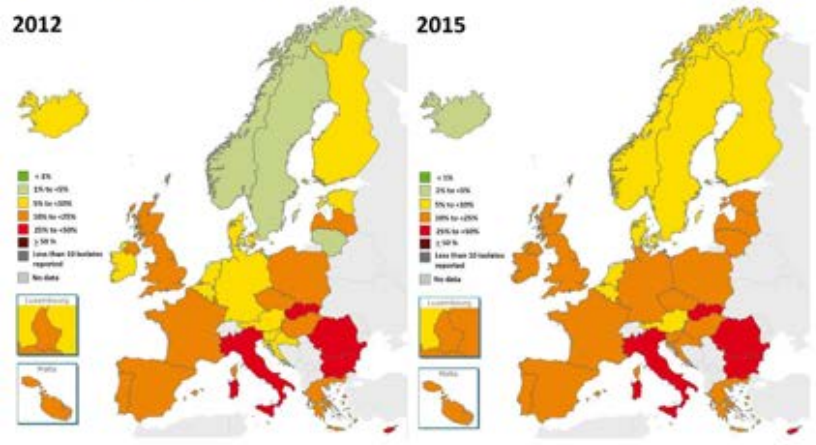


Figure 3.3. *Escherichia coli*. Percentage (%) of invasive isolates with resistance to third-generation cephalosporins, by country, EU/EEA countries, 2017



Source: EARS-Net[5]

Key points

- **In 2016, the median MRSA proportion in Belgian acute care hospitals was 15.0%. The resistance proportion was significantly higher in the Walloon Region compared to the other two regions.**
- **The median resistance proportion of MRSA in Belgium has been decreasing since 2004.**
- **In 2016, the median 3GC/4GC I/R *E. coli* proportion in Belgian acute care hospitals was 9.1%. No statistically significant differences in median resistance proportion were observed between the regions.**
- **The mean resistance proportion of 3GC/4GC I/R *E. coli* augmented from 8.1% in 2014 over 9.0% in 2015 to 9.8% in 2016.**
- **Based on EARS-Net data, which include invasive isolates only, the resistance proportion of both MRSA and 3GC *E. coli* in Belgium has an intermediate position across EU-15 countries.**

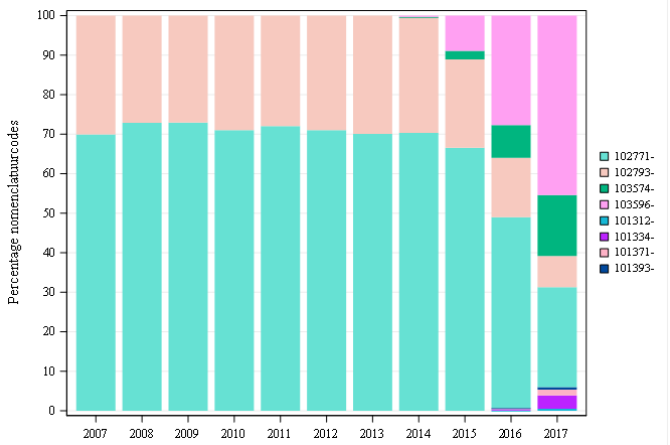
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4. QUALITY OF CARE: CONTINUITY

4.1. Percentage of persons who have a global medical record (GMR) with a general practitioner (QC-1)

4.1.1. Documentation sheet

Description	**Main indicator:** Percentage of persons who have a global medical record (GMR) with a general practitioner (GP)
Calculation	**Main indicator:** • Numerator: number of insured persons with a global medical record or a electronic global medical record • Denominator: all insured persons
Rationale	Since 2001, the global medical record (GMR) is implemented in Belgium. Each patient can ask a (unique) general practitioner to manage his/her medical information. By leaving the coordination of medical care to one central person, the quality of care is expected to increase. Referral to and communication with other care providers can become more efficient, and double investigations or contrasting treatments can be avoided. Since 2016, the electronic global medical record is implemented in Belgium.
Data source	IMA – IMA (Atlas); INAMI–RIZIV
Technical definitions	NIHDI billing codes: • GMR codes: 102771, 102793, 102395, 101371, 101393, completed with • eGMR codes (since 2016): 101312, 101334, 103574, 103596. 

International comparability	Limitation: • specific indicator to the Belgian system. • nomenclature codes are used as a proxy to calculate the present indicator. Condition for the billing is to have at least a contact with the GP during the year. It means that people without any contact during the year are not registered with a GMR even if they still keep their GMR. This phenomenon affects particularly young patient who less often contact the GP a year.
Performance dimension	Quality (continuity); Quality (effectiveness); Efficiency
Related indicators	Percentage of GPs using electronic global medical record (eGMR) through MyCareNet - Share of electronic global medical record among all global medical record (GMR+EGMR)

4.1.2. Results

In 2013, the percentage of insured persons with a GMR was 32.1% and reached 67.5% in 2016 (see Table 19). The coverage of global medical record by general practitioner increases continuously over the time (see Figure 48).

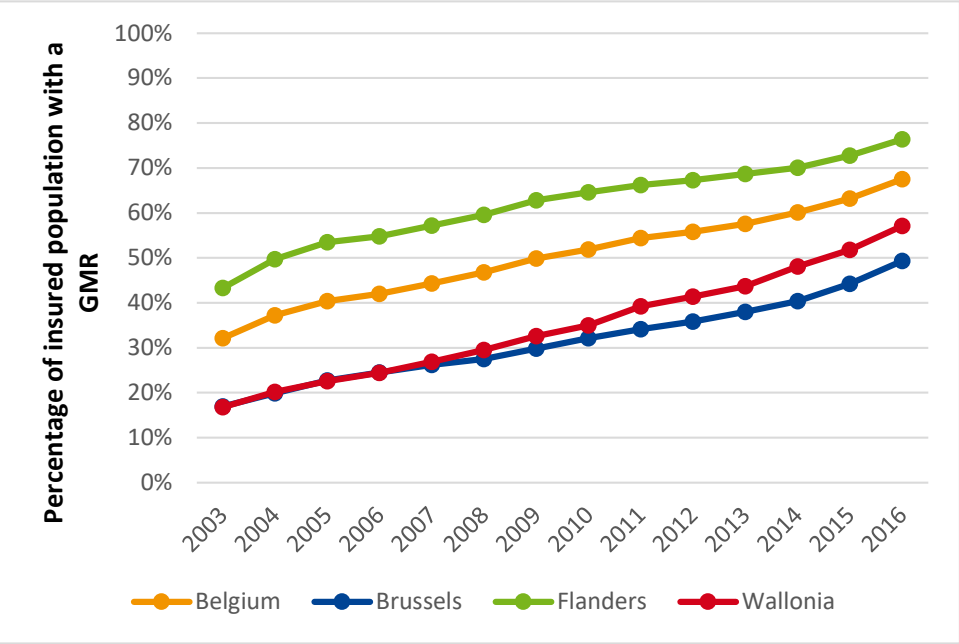
Differences can be observed and remain large between regions and provinces. In Flanders, three quarters of the insured persons are covered whereas less than 60% in Wallonia and less than 50% in Brussels region in 2016 (see Table 19 and Figure 48). Even within regions, big differences in coverage can be observed: for instance, within Flemish region, Limburg has a better global coverage (84.5%) than the Flemish Brabant (69.3%, see Table 19 and Figure 49). It is the same within Wallonia: Liège has a better global coverage (59.4%) than the Walloon Brabant (52.6%, see Table 19 and Figure 49). Even if there are differences between regions, the percentage of insured persons with a GMR increases in the three regions.

Table 19 – Percentage of insured population with a Global Medical Record (GMR), by regions and provinces (2003-2016)

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Belgium		**32.1%**	**37.2%**	**40.4%**	**42.0%**	**44.3%**	**46.8%**	**49.9%**	**51.9%**	**54.4%**	**55.8%**	**57.6%**	**60.1%**	**63.2%**	**67.5%**
Regions	Brussels	16.9%	19.9%	22.7%	24.5%	26.2%	27.5%	29.8%	32.1%	34.1%	35.8%	38.0%	40.4%	44.2%	49.3%
	Flanders	43.3%	49.7%	53.5%	54.8%	57.2%	59.6%	62.8%	64.6%	66.2%	67.3%	68.7%	70.1%	72.8%	76.4%
	Wallonia	16.8%	20.2%	22.6%	24.4%	26.9%	29.5%	32.6%	35.0%	39.2%	41.4%	43.7%	48.1%	51.8%	57.1%
Provinces	Anvers	44.4%	50.7%	54.2%	55.5%	57.9%	60.2%	63.4%	65.0%	66.6%	67.5%	69.2%	70.8%	73.4%	76.7%
	Brussels	16.9%	19.9%	22.7%	24.5%	26.2%	27.5%	29.8%	32.1%	34.1%	35.8%	38.0%	40.4%	44.2%	49.3%
	Hainaut	15.6%	19.3%	21.9%	24.0%	26.5%	29.0%	32.0%	33.9%	38.5%	40.2%	42.1%	46.8%	50.2%	55.7%
	Limbourg	48.4%	57.3%	63.3%	66.0%	68.9%	71.1%	73.9%	75.5%	77.1%	78.3%	79.7%	80.7%	82.4%	84.5%
	Liège	17.7%	20.9%	23.5%	25.3%	27.9%	30.5%	33.6%	35.9%	40.1%	42.9%	45.8%	50.2%	54.0%	59.4%
	Luxembourg	18.3%	21.8%	23.9%	25.5%	28.1%	31.3%	34.6%	37.1%	41.0%	42.5%	44.4%	48.6%	53.0%	58.1%
	Namur	17.3%	20.6%	22.9%	24.4%	26.8%	29.7%	32.9%	35.7%	40.0%	42.5%	45.0%	49.8%	53.8%	58.6%
	East-Flanders	42.0%	47.5%	50.8%	51.7%	54.1%	56.6%	59.8%	61.7%	63.4%	64.2%	65.2%	66.5%	69.5%	73.9%
	Flemish Brabant	34.7%	40.4%	43.8%	45.6%	48.0%	51.3%	54.7%	56.6%	58.1%	59.1%	60.8%	62.2%	65.2%	69.3%
	Walloon Brabant	17.0%	19.8%	21.5%	22.8%	24.7%	26.8%	30.9%	33.8%	37.2%	39.3%	41.4%	44.4%	47.6%	52.6%
	West- Flanders	47.8%	54.4%	58.1%	58.6%	60.4%	61.8%	65.6%	67.3%	69.1%	70.4%	72.0%	73.6%	76.2%	79.6%

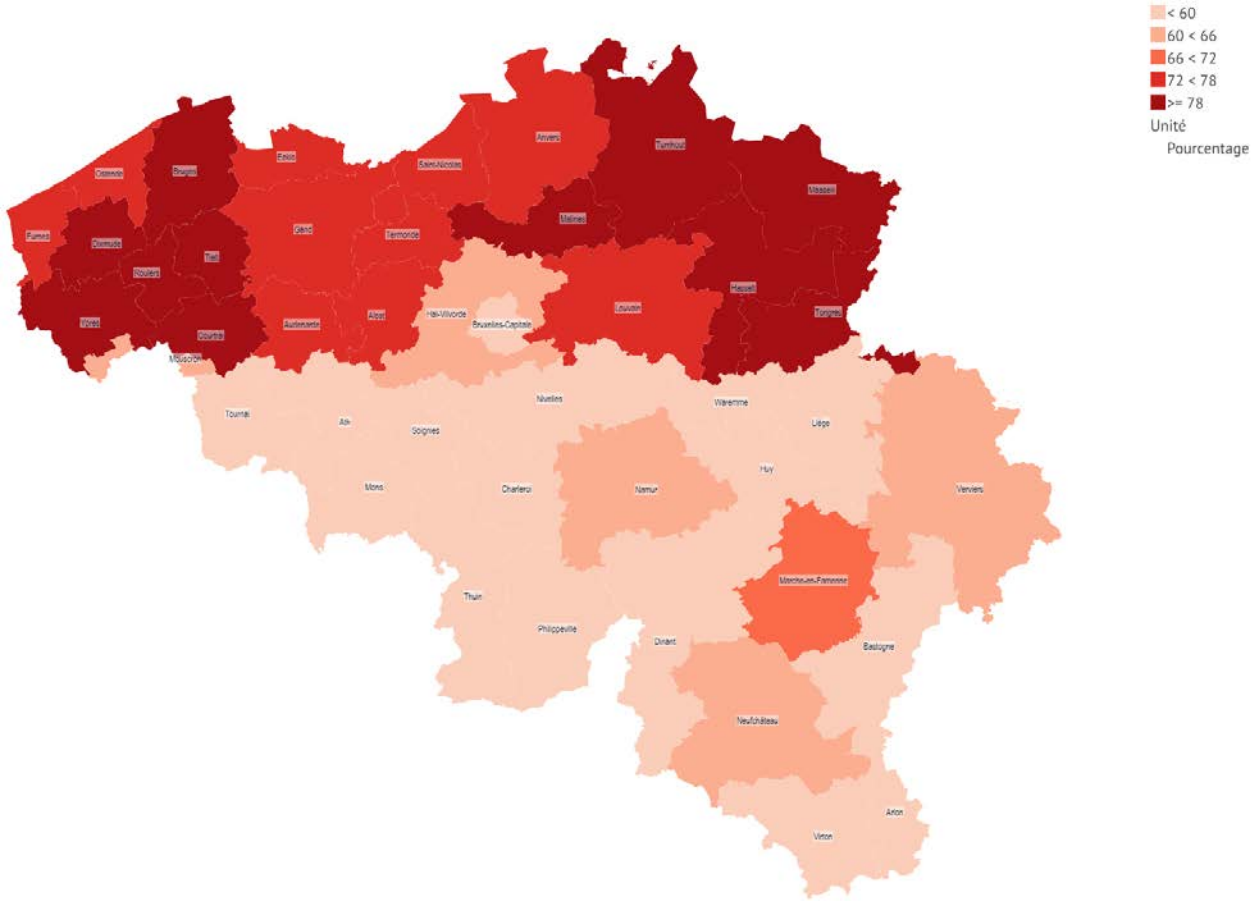
Source: IMA-IMA

Figure 48 – Evolution of insured population with a global medical record (GMR), by provinces (2016)



Source: IMA – IMA

Figure 49 – Percentage of insured population with a global medical record (GMR), by district (2016)



Source: IMA-IMA

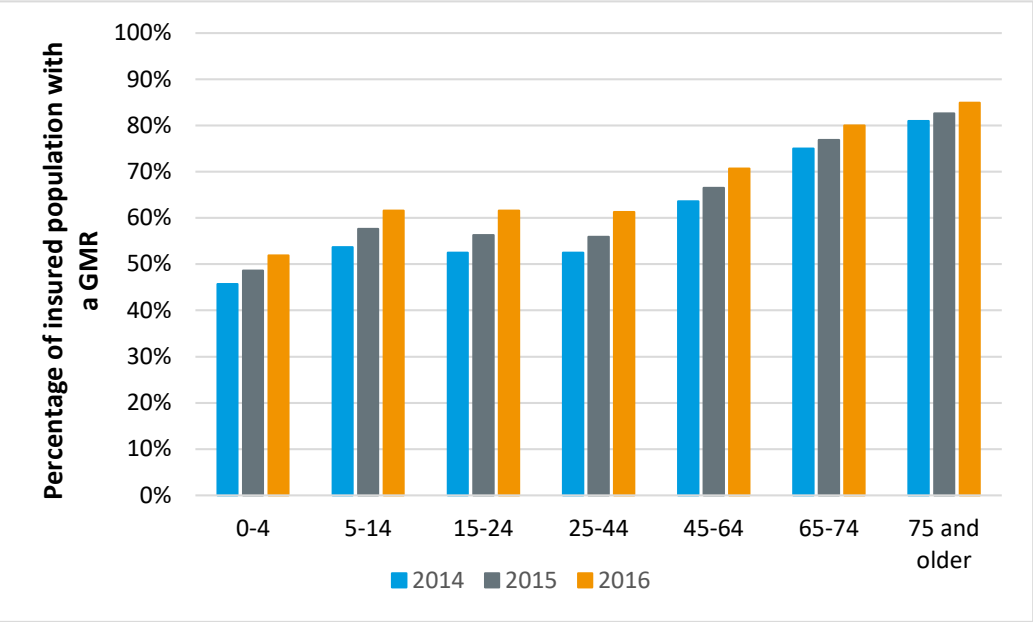
The coverage of global medical record by general practitioner is higher for women (70.7% in 2016) than men (64.2% in 2016, see Table 20). Differences in coverage can also be observed by age group (see Table 20). Older insured persons are better covered (> 80%) than younger insured people (less than 62% below 45 years old, see Table 20 and Figure 50). However, the coverage increases over the time in the same way in each age category (see Table 20 and Figure 50). People with an increased reimbursement have higher rate of coverage than people without (see Table 20).

Table 20 – Percentage of insured population with a Global Medical Record (GMR), by gender, age category and entitlement to increased reimbursement (2014-2016)

		2014	2015	2016
Belgium		**60.1%**	**63.2%**	**67.5%**
Gender	Female	63.3%	66.4%	70.7%
	Male	56.7%	59.8%	64.2%
Age category	0-4	45.7%	48.6%	51.9%
	5-14	53.7%	57.6%	61.6%
	15-24	52.5%	56.3%	61.6%
	25-44	52.5%	55.9%	61.3%
	45-64	63.6%	66.5%	70.7%
	65-74	75.0%	76.9%	80.0%
	75 and older	81.0%	82.6%	84.9%
Increased reimbursement	yes	66.4%	69.6%	73.7%
	no	59.2%	62.2%	66.5%

Source: IMA – IMA

Figure 50 – Evolution of the percentage of insured population with a global medical record (GMR), by age category (2014-2016)



Source: IMA – IMA

Key points

- **The coverage of global medical record by general practitioner is growing over the years from 32.1% in 2003 to 67.5% in 2016.**
- **Differences can be observed by age group. Older insured persons have a better coverage than young people, i.e. 84.9% for people aged 75 years and older have a GMR versus less than 62% for people aged below 45 years old.**
- **Differences are large between regions: in the Flemish region, three quarters of the insured persons have a GMR while the coverage was less than 60% in Wallonia and less than 50% in Brussels**

4.2. Usual provider continuity index (QC-2)

4.2.1. Documentation sheet

Description	Proportion of encounters that were conducted by the general practitioner (GP) consulted most frequently: Usual provider continuity (UPC) index.
Calculation	**Numerator**: number of encounters with the usual GP during 2 years for all patients (children and adults) **Denominator**: total of encounters with GPs during the same period for all patients (children and adults).
Rationale	Longitudinal relationship between physician and patient is acknowledged to encourage communication, improve satisfaction, medication compliance, and behavioural problems, stimulate receipt of preventive services and decrease hospitalisations and emergency department visits for patients with chronic disease.[1] There are several measures of longitudinal continuity with UPC as one of the most common index use.[2-8] The advantage of this indicator is its easy interpretation.
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	**Nomenclature codes for GPs encounters** (consultation and home visits, out-of-hour visits excluded): 101010, 101032, 101076, 103110, 103132, 103213, 103235, 103316, 103331, 103353, 103412, 103434, 103515, 103530, 103552, 103913, 103935, 103950, 104112, 104134, 104156, 104355, 104370, 104650, 104672. **Usual GP**: the GP consulted most frequently or the more recent one if 2 GPs were consulted at the same frequency during the period. **Period**: Two years; one year may not be long enough for some patients to have a total of 3 visits and therefore might biased the results. **Categories:** • Very low continuity if UPC <0.25; • Low continuity if 0.25≤UPC<0.5 • Intermediate continuity if 0.5≤UPC<0.75 • High continuity if 0.75≤UPC<1 • Maximum continuity or exclusivity if UPC =1 **Exclusion criteria**: • Patients with <3 encounters with GP during the period of 2 years. **Long term care:** For long term care, definitions of the IMA-AIM have been used (http://atlas.aim-ima.be/base-de-donnees, see statistics on care for the elderly).
Limitations	Problem with group practices: a growing number of patients are served by different GPs in a single practice or a group of GPs with a relative longitudinal continuity but we cannot identify the GPs belonging to the same practice or group; Patients followed

	by medical houses are excluded. Exclusion from the analysis of some patients because they have less than 3 visits on 2 years period; Children are more often managed by paediatricians than by GPs.
International comparability	Nothing in OECD, OMS, ECHI and Eurostat
Related indicators	Coverage of global medical record in the population
Dimensions	Continuity (Longitudinal); Ambulatory care

4.2.2. Results

A proportion of 40.3 % of the total Belgian population has exclusive encounters with the same GP during 2 years and less than 10% has an UPC<0.5. More often patients have an encounter with a general practitioner during two years, lower is the proportion of exclusivity.

However if we consider an UPC threshold of high continuity (UPC≥0.75) instead of maximum (UPC=1), we notice an increase of continuity with the number of encounters (Table 21).

Table 21 – Proportion of individuals by Usual Provider Continuity (UPC) category, by patient characteristics (2015-2016)

Characteristics		UPC <0.25	0.25≤UPC<0.50	0.50≤UPC<0.75	0.75≤UPC<1	UPC=1	UPC≥0.75
Belgium		1.2%	8.7%	22.5%	27.3%	40.3%	**67.6%**
Encounter number							
	3 to 7	1.7%	10.3%	24.0%	17.4%	46.6%	**64.0%**
	8 to 12	1.2%	8.0%	22.3%	30.8%	37.7%	**68.5%**
	> 12	0.6%	7.0%	20.4%	38.9%	33.2%	**72.1%**
Gender							
	Male	1.3%	8.6%	22.0%	26.0%	42.1%	**68.1%**
	Female	1.2%	8.8%	22.8%	28.4%	38.8%	**67.2%**
Age group							
	00-19	2.0%	14.0%	29.6%	22.8%	31.6%	**54.4%**
	20-34	2.4%	15.0%	30.0%	24.4%	28.2%	**52.6%**
	35-64	1.1%	7.8%	22.4%	27.4%	41.3%	**68.7%**
	65-84	0.3%	3.3%	14.2%	30.0%	52.2%	**82.1%**
	>= 85	0.4%	2.9%	12.2%	37.6%	47.0%	**84.5%**
Long term care (65 years and over)							

Characteristics		UPC <0.25	0.25≤UPC<0.50	0.50≤UPC<0.75	0.75≤UPC<1	UPC=1	UPC≥0.75
	Nursing care at home	0.3%	3.2%	13.3%	38.7%	44.5%	**83.2%**
	MRS-MRPA	0.6%	4.2%	14.8%	43.3%	37.2%	**80.5%**
	no LT care	1.3%	9.0%	22.9%	26.5%	40.3%	**66.9%**
Increased reimbursement							
	No	1.3%	9.2%	23.3%	26.5%	39.7%	**66.2%**
	Yes	1.0%	6.9%	19.0%	30.5%	42.6%	**73.1%**
Region							
	Brussels region	1.9%	10.9%	22.5%	24.3%	40.4%	**64.7%**
	Flemish region	1.3%	9.3%	23.6%	27.5%	38.3%	**65.8%**
	Walloon region	1.1%	6.9%	20.1%	27.5%	44.4%	**71.9%**

Source: IMA data. KCE calculation

Analysis by demographic characteristics and socio-economic status

There are no major differences by sex concerning the proportion of patients with a high continuity index despite males appear to have more often an exclusive continuity with their usual GP than women (42.1% vs 38.8%, Table 21).

The age group of 65-84 years has the higher proportion of exclusive relationship with their GP (52.2%). However, if we consider the threshold of UPC=0.75, the proportion of patients with high continuity increases continuously with age from 20 years old.

Among the 65 years old and plus, patients with home care have the highest proportion of exclusivity with general practitioners, followed by patients without long term care and finally patients in institution. The repartition of the high continuity index is not the same since the highest proportion of patients with high continuity is noticed among patients with home care (83.2%) followed closely by patients in institution (80.5%). The lowest proportion of patients with high continuity is found in patients without long term care (66.9%).

A higher proportion of patients with lower socio-economic level (measured by patients entitled to increased reimbursement) has a high continuity (73.1%) or an exclusive relationship (42.6%) with their general practitioner compared with the group without increased reimbursement (66.2% and 39.7% respectively).

Analysis by region and provinces

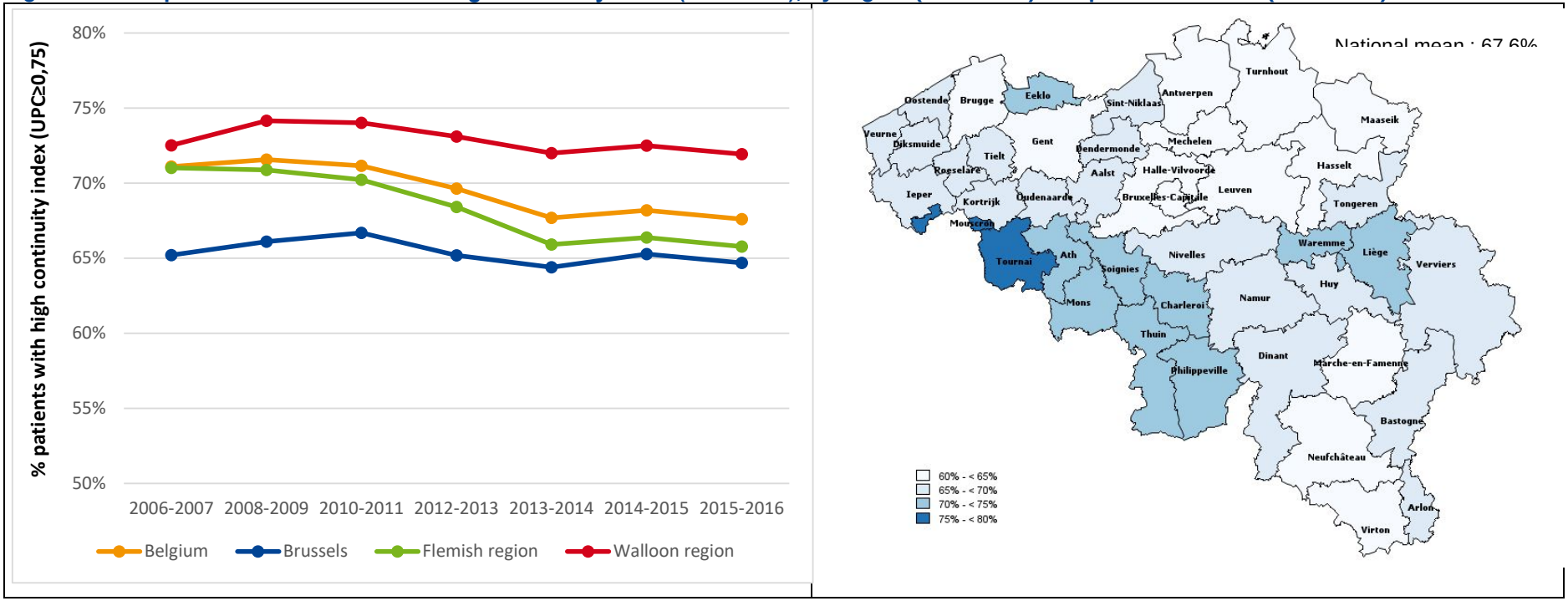
A difference in exclusivity index is found by region with a higher proportion in Wallonia (44.4%), followed by Brussels (40.4%) and then Flanders (38.3%, Table 21). Also a difference in high continuity index is found by region with a higher proportion in Wallonia (71.9%), followed by Flanders (65.8%) and then Brussels (64.7%, Table 21).

An analysis by district (Figure 51) shows that Hasselt and Leuven have the lowest proportion of patients with high continuity index (61.4% and 61.8%, respectively) while Tournai has the highest (78.3%).

Trends over time

The proportion of patients having a high continuity with their general practitioner slightly decreased between 2010 and 2014 and then, it stabilized around 68% (see Figure 51). In Flanders, the proportion of patients having a high continuity index decreased between 2010 and 2014 and it is quite stable since then with 66% (see Figure 51). The same trends can be observed in Brussels and Wallonia but in a less prominent way.

Figure 51 – Proportion of individuals with high continuity index (UPC≥0.75), by region (2006-2016) and patient's district (2015-2016)



Source: IMA data. KCE calculation

Key points

- **In 2016, nearly 68% of patients have a high continuity index since they encounter minimum 3 times over 4 their usual general practitioner during a 2 years period. An exclusive relationship (encounter with the same general practitioner everytime) is observed for only 40% of patients.**
- **Higher is the number of encounters with a general practitioner during 2 years, higher is the proportion of high continuity. It is the opposite for the exclusive relationship.**
- **The proportion of patients having a high continuity with their general practitioner increases continuously with age from 20 years old.**
- **A higher proportion of patients with lower socio-economic level (measured by people entitled to increased reimbursement) has a high continuity or an exclusive relationship with their general practitioner compared with the group without increased reimbursement.**
- **A slight difference is noticed between the 3 regions with a higher proportion of patients having a high continuity index in Wallonia (72%), followed by Flanders (66%) and then Brussels (65%).**
- **The proportion of patients having a high continuity with their general practitioner slightly decreased between 2010 and 2014 and then, it stabilized around 68%.**

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4.3. GP encounter within 7 days after hospital discharge (% patients 65+) (QC-3)

4.3.1. Documentation sheet

Description	Proportion of hospital discharge followed with a general practitioner's (GP) encounter within a 1-weeks period for senior patients (65+)
Calculation	**Numerator:** number of hospitalizations for elderly patients (65+) with at least one GP's encounter within the week (7 days) following the hospital discharge **Denominator:** number of hospitalisations for elderly patients (65+), alive 1 week after discharge and without new hospital admission in the week following the discharge.
Rationale	Being discharged from hospital is a pivotal moment in the care of an older person with an increased risk of adverse events and readmission. The increasing number of older patients and shorter hospital stays emphasise the need for collaboration between different level of care (secondary care and primary care). Different concepts have been developed (integrated care pathways, care pathways,…) to strengthen coordination and cooperation of health care services and results in better quality of patient care (improved health or patient satisfaction outcomes).[1] As says the Commission on Dignity in Care for Older people (NHS Confederation, the Local Government, Association and Age UK), the objective of discharge is not simply to get the person out of hospital, but to ensure seamless clinical, physical and emotional support and the best possible return to their home or care home.[2] This Commission suggests that GPs arrange for a follow-up assessment around 1 week after an older person has been discharged from hospital (to check whether care arrangements put in place when the patient was discharged are still appropriate). Moreover, recent evidence shows that early follow-up after hospital discharge among patients aged 75+ can reduce readmissions and length of hospital stay.[3]
Primary data source	IMA/AIM database
Indicator source	KCE calculation
Technical definitions	**Nomenclature codes for GPs encounters** - all visits and consultations including after-hours visits and consultations were included in the selection of codes: 101010, 101032, 101076, 101091, 101113, 102410, 102432, 102454, 102476, 103110, 103132, 103213, 103235, 103316, 103331, 103353, 103412, 103434, 103515, 103530, 103552, 103913, 103935, 103950, 104112, 104134, 104156, 104215, 104230, 104252, 104274, 104296, 104311, 104333, 104355, 104370, 104392, 104414, 104436, 104451, 104510, 104532, 104554, 104576, 104591, 104613, 104635, 104650, 104672, 104694, 104716, 104731, 104753 **Nomenclature codes for hospital stays**: 761235, 761246, 768003, 768025, 768036, 768040, 768051, 768062, 768084, 768106, 768121, 768143, 768165, 768176, 768180, 768191, 768202, 768213, 768224, 768235, 768246, 768250, 768261, 768272, 768283, 768294, 768305, 768316, 768320, 768331, 768342, 768353, 768364, 790020. Hospitalisation are directly identified in the IMA database. **Exclusion criteria:** • stays with a length lower than 24 hours (minimum length of stay); • stays followed, within 1 week after discharge, by death or re-hospitalization (for death: as the day of death is unknown, deletion of stays for which the month of death = month of discharge OR if the discharge date is the last week of the month preceding the month of death); • stays which are still ongoing for the period of investigation; • stays in patients <65 years in the year of the hospital discharge **Long term care:** For long term care, definitions of the IMA-AIM have been used (http://atlas.aim-ima.be/base-de-donnees, see statistics on care for the elderly).

Limitations	No information on the reason of encounter and the link with hospital stay; no information about who scheduled the appointment (was it scheduled by the hospital or a patient initiative); no information on the reason and duration of the hospitalization. People that visit the GP in a medical house that does not use a fee-for-service system of payment (i.e. most medical houses) cannot be identified in the numerator. People registered in these medical houses should thus also be excluded from the denominator (which was not the case in this report). This mostly impact results for Brussels, meaning that the percentage presented for Brussels is underestimated.
International comparability	Not applicable
Dimensions	Continuity of care (Management/Coordination); coordination of care; integrated care

4.3.2. Results

Patient characteristic (gender, age group, long-term care, increased reimbursement status)

In 2016, 56.6% of elderly have at least one contact with a GP in the week after a discharge from the hospital (see Table 22). This result is an indication of continuity of care between the hospitals and the first line, even if we do not know if the GP's encounter followed a discharge plan from the hospital or from the patient's own initiative.

Table 22 – Proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge, by patient characteristics (2016)

Characteristics	Number discharge followed by a GP contact within 1 week (2016)	Total number discharges (2016)	% (2016)
Belgium	**290 498**	**513 552**	**56.6%**
Gender			
Female	164 486	278 131	59.1%
Male	126 012	235 421	53.5%
Age group			
65-69	43 460	98 872	44.0%
70-74	47 650	98 249	48.5%
75-79	55 211	99 028	55.8%
80-84	62 606	99 689	62.8%

Characteristics	Number discharge followed by a GP contact within 1 week (2016)	Total number discharges (2016)	% (2016)
85-89	52 097	76 503	68.1%
≥90	29 474	41 211	71.5%
Long term care			
Nursing care at home	52 548	77 302	68.0%
MRS_MRPA	68 550	98 610	69.5%
no LT care	169 400	337 640	50.2%
Increased reimbursement			
No	166 714	318 155	52.4%
Yes	123 784	195 397	63.4%
Region			
Brussels region	14 642	32 009	45.7%
Flemish region	186 682	321 465	58.1%
Walloon region	89 174	160 078	55.7%

Source: IMA data, KCE calculation

Analysis by demographic characteristics and socio-economic status

- **Gender and age group**

There is a higher proportion of hospitalizations followed by a contact with a GP within 1 week after discharge in female elderly (aged 65 years or above) than in male (59.1% vs 53.5%). There is also a difference according to age groups, the proportion of hospitalizations followed by GPs encounters increasing continuously with age from 44% among the 65-69 years old to 71.5% among the ≥90 years old (see Table 22).

- **Long-term care and socio-economic status**

Almost 70% of hospitalizations of patients living in institutions are followed by a GP encounter and this proportion is quasi similar in patients with home care (68%). The proportion of hospitalizations followed by GP encounter is clearly lower among patients without long-term care (50.2%).

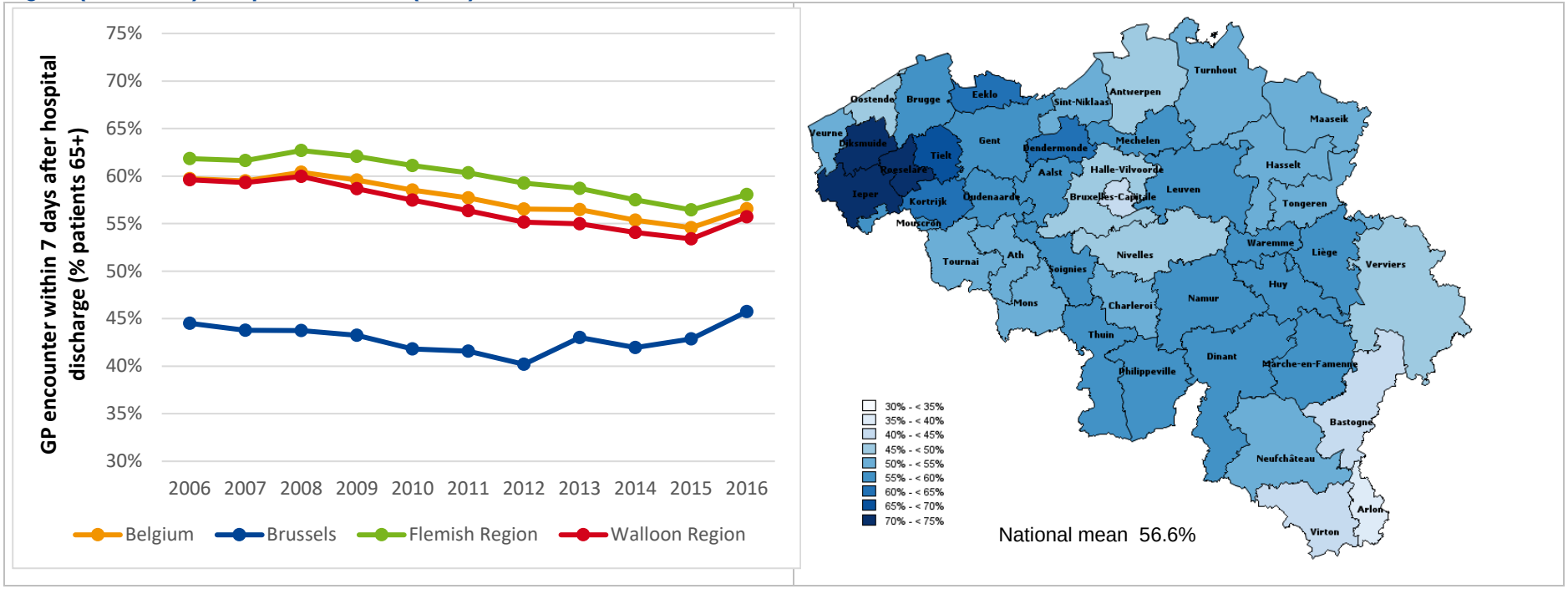
There is a difference by socio-economic level (measured by being entitled to increased reimbursement): a higher proportion of hospitalizations among patients with lower socio-economic level was followed by a GPs encounter within one week after a discharge (63.4%) compared with the group without increased reimbursement (52.4%).

Analysis by region and province

The proportion of hospitalizations followed by a contact with a GP within 1 week after discharge is quite similar for Flemish and Walloon regions (more than 55%). However, it is lower for Brussels with a percentage falling to 45.7% (Table 22). The lower proportion in Brussels can nevertheless be explained by the fact that people in medical houses were not excluded from the denominator (underestimation, see limitations in the technical fiche).

An analysis by district (Figure 52) shows that Arlon, Brussels and Virton have the lowest proportion of GPs encounters within one week after a discharge (38.5% for Arlon and 46% for Brussels and Virton) while the highest are in Ieper (78.5%), Diksmuide (75.6%), and Roeselare (73.7%).

Figure 52 – Proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge, by region (2006-2016) and patient district (2016)



Source: IMA data, KCE calculation

Trends over time

Since 2006, the proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge decreases for Belgium and for each of the three regions (Figure 52). Since 2015, an upward trend of the proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge seems to begin and particularly in the region of Brussels (from 40% in 2012 to 46% in 2016).

Key points

- **Despite the supposed advantage of having a GP encounter within the week after hospital discharge, only 56.6% of the hospitalization for elderly (65 years old or above) are followed effectively by a GP's encounter in Belgium.**
- **This indicator is influenced by factors such as gender (59.1% in females vs 53.5% in males), having long-term care (LTC) (more than 68% for elderly in institution or with home care against 50.2% for elderly without long term care), age group which is directly linked to having LTC (44% for the 65-69 years old vs more than 60% for the 80+) and finally the socio-economic level (63.4% with increased reimbursement and 52.4% without).**
- **This indicator is different between regions (58.1% for Flemish region, 55.7% for Walloon region and 45.7% for Brussels). The lower proportion in Brussels can nevertheless be explained by the fact that people in medical houses were not excluded from the denominator (underestimation).**
- **Despite a decrease over the years of the proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge, an upward trend seems to begin since 2015, especially in Brussels.**

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4.4. Proportion of adult diabetics (under insulin) with a convention, a pass/pre-care trajectory or a care trajectory (% of patients, 18+) (QC-4) & Proportion of adult diabetics (receiving only glucose-lowering drugs, excluding insulin) with a convention, a pass/pre-care trajectory or a care trajectory (% of patients, 50+) (QC-5)

4.4.1. Documentation sheet

Description	QC-4 Proportion of adult diabetics (under insulin) registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory (% of patients, 18+) QC-5 Proportion of adult diabetics aged 50 years and older (receiving only glucose-lowering drugs, excluding insulin) registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory (% of patients, 50+)
Calculation	**QC-4 Proportion of adult diabetics (under insulin) registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory (% of patients, 18+)** • Numerator: number of diabetic patients (≥ 18 years) under insulin registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory • Denominator: number of patients (≥ 18 years) under insulin with any type (I and II) diabetes identified through their drugs prescription. **QC-5 Proportion of adult diabetics aged 50 years and older (receiving only glucose-lowering drugs, excluding insulin) registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory (% of patients, 50+)** • Numerator: number of diabetic patients (≥ 50 years) receiving only glucose-lowering drugs registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory • Denominator: number of patients (≥ 50 years) receiving only glucose-lowering drugs with any type (I and II) diabetes identified through their drugs prescription.
Rationale	To optimize care provided to diabetic patients, several measures have been implemented in Belgium by the INAMI – RIZIV. • Diabetes pass/pre-care trajectory: o Set up in Belgium in 2003. Removed and replaced by the pre-care trajectory for patients with type 2 diabetes since the 1st February 2016. o Inclusion criteria: patients with diabetes type II under diet or oral antidiabetics; patients should have a global medical record followed by their general practitioner. o Aims: to improve the education of patients and those around them (information on treatment, management of complications…), to stimulate the patients involvement through information on periodic examinations and to support the communication between the patient and various care providers. o Advantages for patients: 2 consultations partially reimbursed by year with dieticians and 2 consultations partially reimbursed with podiatrist each year (only if the patient is at high risk of foot wound). o Diabetes pass has been replaced by the pre-care trajectory for patients with type 2 diabetes in order to better manage patients with type 2 diabetes not registered in a care trajectory for chronic care or in a convention. Advantages for patients are almost the same: 2

consultations reimbursed by year with dieticians and 2 with podiatrist. Some patients[m] in the pre-care trajectory are eligible for reimbursement of consultations with specialist in diabetes for education (dieticians, pharmacist, nurses, physiotherapists…). A maximum of 4 consultations per patient per year is reimbursed.

- Care trajectorys for chronic care:
  - Set up in Belgium in September 2009 (modified in 2018).
  - Inclusion criteria: patients with diabetes type II under insulin or incretinomimetics or diabetes type 2 insufficiently controlled by oral antidiabetics; patient not be registered in a convention; patient should have a global medical record followed by their general practitioner and should undertake to consult their general practitioner at least twice by year and their endocrinologist at least one by year.
  - Aims: to improve follow-up and collaboration between patients, general practitioner and specialist physician.
  - Advantages for patients: all consultations totally reimbursed with general practitioner and endocrinologist; free access to consultations with nurses specialised in diabetes for education (information on lifestyle, treatments, follow-up); free self-control material only for those on injectable therapy (150 dipsticks/6 months, glucometer), 2 consultations partially reimbursed by year with dieticians and 2 consultations partially reimbursed by year with podiatrist (only if the patient is at high risk of foot wound).
  - Since the 1st May 2018, reimbursment rules for patients with type 2 diabetes in care trajectory has been modified. It affects consultations in diabetes for education, reimbursement of self-control material and reimbursement of consultations with specialists. Patients registered in a care trajectory for type 2 diabetes under insulin or under incretinomimetics are fully reimbursed for their self-control material. Each patients can benefit from 5 consultations in diabetes for education per year and once 5 supplementary consultations. At least one of them should be delivered at home. Mutualities do not paid lump sum fee for endocrinologists anymore when patients are also registered in a diabetes convention .
- Convention for diabetes self-management:
  - Set up in Belgium in 1986 (modified in 2008 and 2016).
  - Inclusion criteria: patients with type 1 or type 2 diabetes under at least 2 insulin injections by day and with a serious medical condition or patients with type 2 diabetes under at least 3 insulin injections by day; patients with gestational diabetes; patients aged more than 16 years old; ambulatory patients or hospitalized; patients with a global medical record followed by their general practitioner. Usually, patient with type 2 diabetes registered in a care trajectory are not followed in specialised hospital.
  - Aims: to organize a multidisciplinary management of diabetic patients in specialised hospital centers in order to support the education of patients and those around them, the patient's involvement in their periodic examinations and the communication between the patient and various care providers.
  - Advantages for patients: integration in a full revalidation process including free self-control material and multidisciplinary consultations. Since the application of the new convention the 1st July 2016, in addition to the usual standard equipment a new measuring equipment (sensor for self-monitoring of glucose) is reimbursed for patients with type 1 diabetes.

Because the registration in a diabetes pass/pre-care trajectory, care trajectory or convention is volunteer, the percentage of patients registered in at least one of the three systems of registration is an indicator of the patient's participation in this public investment.

[m] Inclusion criteria: patients with type 2 diabetes registered in the pre-care trajectory; patients with age 15-69 years and a cardiovascular risk defined as BMI>30 and/or having high blood pressure; GP's prescription for consultation for diabetes education.

Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	Two distinct groups of diabetics patients are considered (selection on Pharmanet: class ATC A10 drugs prescription) • **Adult diabetics under insulin** (ATC=A10A): patients aged ≥ 18 years and A10A prescription >37.5 DDDs. • **Adults diabetics receiving glucose-lowering drugs, excluding insulin** (ATC=A10B): patients aged 50 years and older and A10B prescription >=270 DDDs (and 0≤A10A<37.5DDDs). This group includes all oral antidiabetics but also incretin mimetic (GLP1-agoniste, code A10BJ) which is a non-insulin injectable solution. For this group of patients, an inferior age limitation was set at 50 years to be sure to discard people taking e.g. metformin to lose weight instead of stabilizing a diabetes. For these 2 groups of diabetics patients (under insulin or receiving glucose-lowering drugs), we identified patients registered in at least one of the three systems of registration. Adult diabetics (under insulin or receiving glucose-lowering drugs) registered in a care trajectory, a convention or holding a diabetes pass/pre-care trajectory are identified through the following nomenclature code: • **Diabetes pass/pre-care trajectory :** 102852, 109594 • **Diabetes care trajectory** : 107015, 107030, 107052, 107074. • **Diabetes convention** : 770033, 770055, 770070, 771573, 771595, 772450, 773113, 773231, 773253, 773275, 773393, 773496, 773592, 774115, 774130, 774152, 775456, 775471, 794076, 788756, 788771, 788793, 788815, 788830, 788852, 788874, 788896, 788911, 788933, 788955, 785573, 785595, 785610, 785632, 785654, 785676, 785691, 785713, 785735, 785750, 785772, 785794, 785816, 785831, 785853, 785875, 785890, 785912, 785934, 785956, 789751, 789773, 789795, 789810, 789832, 789854, 789891, 789913, 789935 **Long term care:** For long term care, definitions of the IMA-AIM have been used (http://atlas.aim-ima.be/base-de-donnees, see statistics on care for the elderly).
Limitations	Underestimated denominator (only diabetic with medication); process indicator (which provide no information on outcome); risk of misclassification, notably risk that some patients under insulin since a few days were considered as patients receiving only glucose-lowering drugs; risk of misclassification or omission of certain INAMI – RIZIV codes that refer to a pass/pre-care trajectory, care trajectory or convention.
International comparability	Not applicable
Related indicators	“Appropriate diabetes follow-up”
Dimensions	Continuity (Management/Coordination); Ambulatory care; Link specialist and GP; Chronic care

4.4.2. Results

A total of 146 450 diabetic patients under insulin (≥ 18 years) and a total of 208 524 diabetic patients receiving only glucose-lowering drugs, excluding insulin (≥ 50 years) were identified in 2016 through their drugs prescription (see Table 23 and Table 24). This number does not consider the diabetic patients without medication (e.g. patients diagnosed with diabetes but only under diet or non-diagnosed patient). Globally, 89.9% of the identified **diabetic patients under insulin** have at least one registration in a diabetes care model (pass/pre-care trajectory, care trajectory or convention, see Table 23). A large majority of these patients registered in a diabetes care model has a convention (84.2%), while 22.3% and 4.5% had a care trajectory or a pass/pre-care trajectory respectively.[n] The proportion of **patients receiving only glucose-lowering drugs, excluding insulin** having at least one registration in a diabetes care model is only 20.2% (see Table 24). Half of them has a care trajectory (52.6%), while almost another half has a pass/pre-care trajectory (47.2%), and few (probably recently under insulin) have a convention (4.3%).[o]

Analysis by demographic characteristics and socio-economic status

- **Gender & Age group**

The proportion of **diabetic patients under insulin** with at least one registration in a diabetes care model is quite similar for men (90.5%) and women (89.3%). The same difference is present among **diabetic patients receiving only glucose-lowering drugs, excluding insulin** with at least one registration in a diabetes care model (20.5% for men and 19.7% for women, Table 23 and Table 24).

The proportion of **diabetic patients under insulin** with at least one registration in a diabetes care model is the highest in the 18-24 years (92.6%) and remains superior to 80% until 84 years. Afterwards, this proportion decrease continuously to reach 63.1% in the 95+ age group (Table 23). The proportion of **diabetic patients receiving only glucose-lowering drugs, excluding insulin** who have at least one registration in a diabetes care model decreases regularly from 21.8% in the first 50-74 age group to reach 9.4% in the 95+ age group (Table 24).

Among the 65 years old and plus, the proportion of diabetic patients with at least one registration in a diabetes care model is lower in institutions compared to home care and no long-term care, **both for patients under insulin and receiving only glucose-lowering drugs, excluding insulin** (see Table 23 and Table 24). This difference is particularly high **for patients under insulin** registered in care trajectory or convention.

- **Socio-economic status**

Adult patients (18 years or +) **under insulin** with entitlement to increased reimbursement have slightly less often a registration than patients without this financial support (88.8% vs 90.5%, see Table 23). However, the proportion of **diabetic patients receiving only glucose-lowering drugs, excluding insulin** with at least one registration in a diabetes care model is higher with entitlement to increased reimbursement (21.1%) than without increased reimbursement (19.8%, see Table 24).

[n] Total is not 100% since some patients have more than one registration in a diabetes care model.

[o] Total is not 100% since some patients have more than one registration in a diabetes care model.

Table 23 – Proportion of diabetic patients under insulin with a diabetes pass/pre-care trajectory, a care trajectory or a convention, by patient characteristics (2016)

PATIENTS UNDER INSULIN (18 years or more)							
		Patients under insulin having a at least ONE OF THE THREE systems of registration			Patients under insulin having a PASS/PRE-CARE TRAJECTORY	Patients under insulin having a CARE TRAJECTORY	Patients under insulin having a CONVENTION
		Numerator	Denominator	Proportion	Proportion	Proportion	Proportion
Belgium		131 654	146 450	**89.9%**	4.0%	20.0%	75.7%
Region	**Brussels**	12 903	14 990	**86.1%**	6.6%	12.1%	77.7%
	Flanders	75 189	82 319	**91.3%**	3.7%	24.9%	73.5%
	Wallonia	43 562	49 141	**88.6%**	3.7%	14.3%	78.9%
Gender	**Female**	62 660	70 200	**89.3%**	4.2%	20.6%	74.7%
	Male	68 994	76 250	**90.5%**	3.8%	19.6%	76.6%
Age groups	**18-24**	5 841	6 307	**92.6%**	1.5%	0.3%	92.4%
	25-49	20 832	22 931	**90.8%**	3.1%	6.5%	86.6%
	50-74	70 197	76 892	**91.3%**	4.4%	21.3%	76.1%
	75-84	25 774	28 935	**89.1%**	4.4%	28.6%	68.8%
	85-94	8 716	10 919	**79.8%**	3.9%	28.1%	59.6%
	95+	294	466	**63.1%**	2.1%	21.9%	46.4%
Long term care (65 years or +)	**Nursing care at home**	6 990	7 911	**88.4%**	3.6%	28.6%	68.7%
	Institutions	6 918	9 324	**74.2%**	3.5%	20.5%	59.4%
	No LT care	54 318	59 738	**90.9%**	4.5%	26.7%	71.8%
Increased reimbursement (18 years or +)	**No**	81 277	89 839	**90.5%**	3.4%	20.1%	76.1%
	Yes	47 361	53 357	**88.8%**	5.1%	21.1%	74.1%

Source: IMA data, KCE calculation

Table 24 – Proportion of diabetic patients aged 50 years and older receiving only glucose-lowering drugs, excluding insulin with a diabetes pass/pre-care trajectory, a care trajectory or a convention, by patient characteristics (2016)

Patients receiving only glucose-lowering drugs, excluding insulin (50 years or more)							
		Patients receiving only glucose-lowering drugs, excluding insulin having a at least ONE OF THE THREE systems of registration			Patients receiving only glucose-lowering drugs, excluding insulin having a PASS/PRE-CARE TRAJECTORY	Patients receiving only glucose-lowering drugs, excluding insulin having a CARE TRAJECTORY	Patients receiving only glucose-lowering drugs, excluding insulin having a CONVENTION
		Numerator	Denominator	Proportion	Proportion	Proportion	Proportion
Belgium		42 074	208 524	**20.2%**	9.5%	10.6%	0.9%
Region	**Brussels**	3 044	17 389	**17.5%**	10.0%	7.7%	0.7%
	Flanders	29 452	113 368	**26.0%**	12.2%	13.9%	1.0%
	Wallonia	9 578	77 767	**12.3%**	5.6%	6.5%	0.7%
Gender (50 years or +)	**Female**	18 253	92 501	**19.7%**	9.6%	10.2%	0.7%
	Male	23 821	116 023	**20.5%**	9.5%	10.9%	1.0%
Age groups	**00-24**	-	-	**-**	-	-	-
	25-49	-	-	**-**	-	-	-
	50-74	31 258	143 653	**21.8%**	9.6%	12.2%	0.9%
	75-84	8 862	49 154	**18.0%**	9.8%	8.1%	0.7%
	85-94	1 907	15 216	**12.5%**	8.1%	4.2%	0.6%
	95+	47	501	**9.4%**	6.6%	2.8%	0.0%
Long term care (65 years or +)	**Nursing care at home**	1 351	7 533	**17.9%**	8.0%	9.4%	1.6%
	Institutions	674	6 880	**9.8%**	5.3%	3.8%	0.9%
	No LT care	24 015	123 523	**19.4%**	9.9%	9.5%	0.7%
Increased reimbursement (50 years or more)	**No**	28 859	145 779	**19.8%**	9.1%	10.6%	0.8%
	Yes	13 215	62 745	**21.1%**	10.5%	10.5%	1.0%

Source: IMA data, KCE calculation

Analysis by region and district/province

A difference was noticed between the three regions and the type of diabetes care model concerning **diabetic patients under insulin** (see Table 23). The use of care trajectory is clearly higher in Flanders (almost twice) compared with the two other regions. In Brussels, the use of diabetes pass/pre-care trajectory is higher (6.6%) compared with the two other regions (3.7% in Flanders and 3.7% in Wallonia).

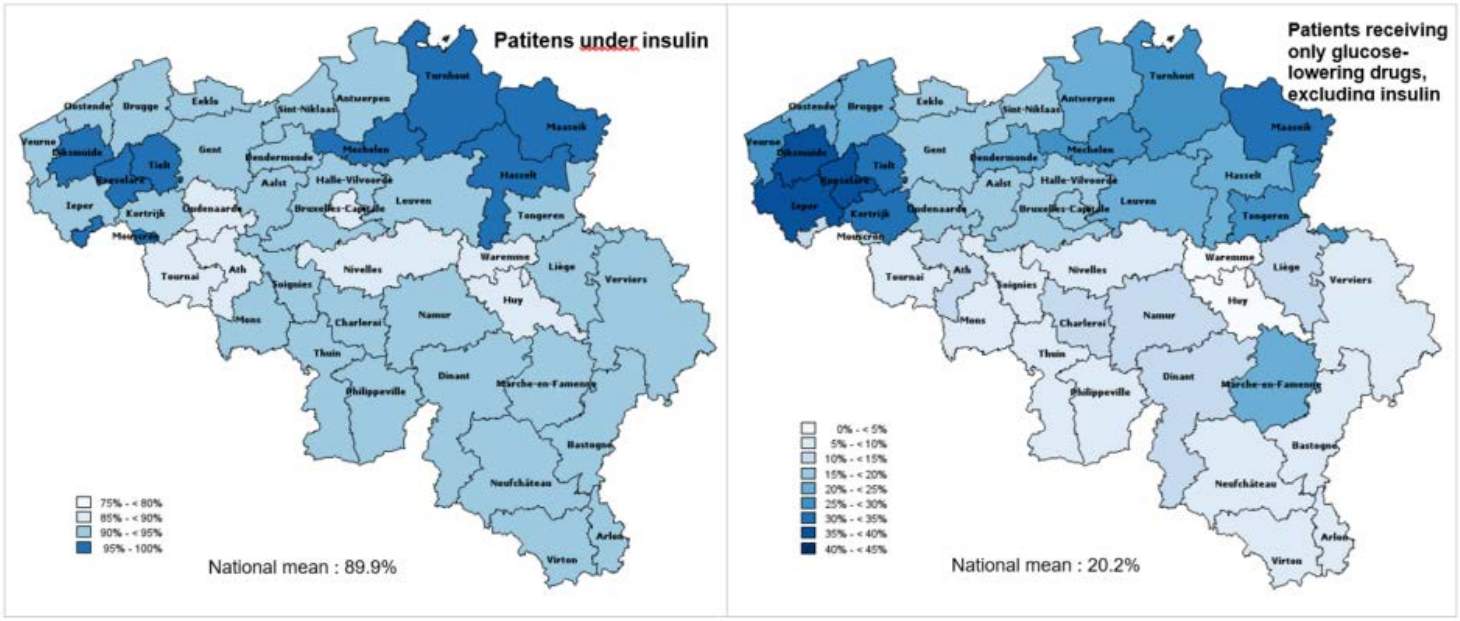
The proportion of **patients receiving only glucose-lowering drugs, excluding insulin** with at least one registration in a diabetes care model is higher in Flanders than in Brussels and Wallonia and this difference is found for the three type of registration (see Table 24).

Maps with patient districts/provinces

An analysis by district shows that Waremme has the lowest proportion of **diabetic patients under insulin** with at least one registration in a diabetes care model (83%) while Tielt and Diskmuide have the highest (94.3% and 94.9% respectively, see Figure 57).

For **patients receiving only glucose-lowering drugs, excluding insulin**, Waremme is the district with the lowest proportion of patients with at least one registration in a diabetes care model (3.6%) while Roeselare, Diksmuide and Ieper have the highest (41.9%, 41.4% and 39.9% respectively, see Figure 57).

Figure 53 – Proportion of diabetic patients in a care trajectory, a convention or with a diabetes pass/pre-care trajectory, by patient district (2016)



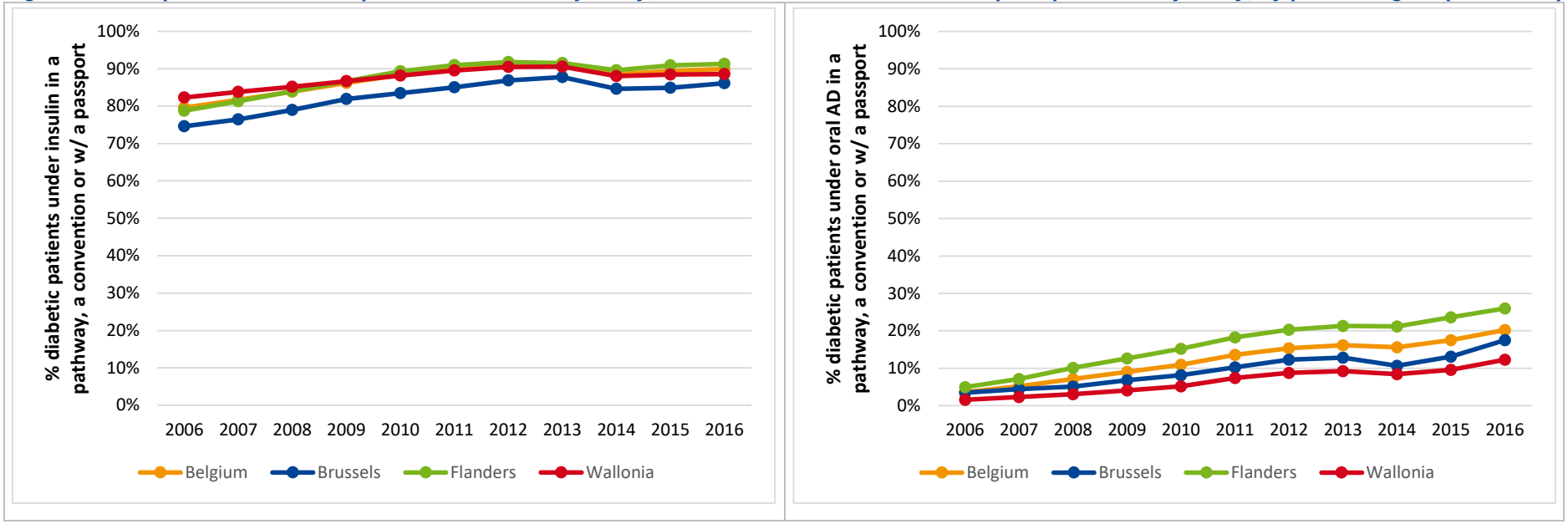
Source: IMA data. KCE calculation.

Trend over time by region

The proportion of **diabetic patients under insulin** with at least one registration in a diabetes care model slightly increased between 2006 and 2013 to reach 90.8% (Figure 54). Since 2014, the proportion of **diabetic patients under insulin** with at least one registration in a diabetes care model is quite stable around 88-89%. Conventions which exist since 1986 are the kind of registration more often used. Addition of care trajectory, started in September 2009, allows to reach 20% of patients under insulin in 2016.

The proportion of diabetic patients **receiving only glucose-lowering drugs, excluding insulin** with at least one registration in a diabetes care model is low but slightly increases since 2006 (Figure 54). This increase is slightly higher in Flanders. Diabetic patients **receiving only glucose-lowering drugs, excluding insulin** with at least one registration in a diabetes care model are mainly concerned by diabetic pass/pre-care trajectory which are developed in 2003. The additional value of care trajectory is not negligible in this group since it reaches more than 50% of the patients with at least one registration in a diabetes care model in 2016.

Figure 54 – Proportion of diabetic patients in a care trajectory, a convention or with a diabetes pass/pre-care trajectory, by patient region (2006-2016)



Source: IMA data. KCE calculation.

Key points

- **The proportion of diabetic adults with at least one registration in a diabetes care trajectory, a diabetes convention or a diabetes pass/pre-care trajectory is relatively high among patient under insulin (89.9%). A large majority of patients under insulin registered in a diabetes care model have a convention (84%). In another way, a low proportion of patients receiving only glucose-lowering drugs, excluding insulin has at least one registration in a diabetes care model (20.2%), half having a care trajectory and almost another half a pass/pre-care trajectory.**
- **The proportion of diabetic patients with at least one registration in a diabetes care model decrease with age after 85 years both for patients under insulin and adults receiving only glucose-lowering drugs, excluding insulin.**
- **Among the 65 years old and plus, the proportion of diabetic patients with at least one registration in a diabetes care model is lower in institutions compared to home care and no long term care, both for patients under insulin and receiving only glucose-lowering drugs, excluding insulin.**
- **Patients under insulin with lower socio-economic level (measured by entitlement to increased reimbursement) have slightly less often a registration. Conversely, Patients receiving only glucose-lowering drugs, excluding insulin with lower socio-economic level have slightly more often a registration.**
- **The proportion of patients with at least one registration in a diabetes care model is higher in Flanders for patients under insulin (91.3%) and especially for patients receiving only glucose-lowering drugs, excluding insulin (26%) compared with the two other regions (respectively 88.6% and 12.3% for Wallonia and 86.1% and 17.5% for Brussels).**
- **A positive trends over time can be noticed for patients receiving only glucose-lowering drugs, excluding insulin. The proportion of patients under insulin is quite stable since 2014.**

4.5. Patients with cancer discussed at the multidisciplinary team meeting (%) (QC-6)

4.5.1. Documentation sheet

Description	Proportion of patients with a new diagnosis of cancer who were discussed at the multidisciplinary team meeting (MDT, MOC-COM[p])
Calculation	Numerator: Number of patients diagnosed with an invasive cancer in a given year discussed at the MDT within 1 month before and 6 months after incidence date. Denominator: Number of patients diagnosed with an invasive cancer in a given year (first tumour only).
Rationale	Multidisciplinary team meetings have been implemented in many countries as the predominant model of cancer care to ensure that all patients receive timely diagnosis and treatment, that patient management is evidence-based, and that there is continuity of care. In all cancer guidelines developed by the KCE and the College of Oncology, multidisciplinary discussion is recommended to decide on the diagnosis, staging and treatment plan of cancer patients. They are financed in Belgium since 2003, and have been strongly encouraged by the National Cancer Plan since then.[1]
Target	Not specified for Belgium. Setting a 100% target of MDT meetings for all patients with cancer is not realistic, as particular reasons can hamper the discussion of the patient case during a MDT meeting (e.g., patient might have died before being discussed at MDT meeting). Nevertheless, EUSOMA recommended a target value of 99% for the multidisciplinary discussion (pre and postoperatively) of cancer patients, with a minimum standard of 90%.[2] Moreover, EUSOMA recommended a target value of 90% for the multidisciplinary discussion of women with breast cancer.[3]
International comparability	No data are readily available from other countries. Data on multidisciplinary discussion are only sporadically published.
Data source	Belgian Cancer Registry (BCR), incidence years 2004-2015, linked to IMA-AIM data.
Periodicity	Yearly
Technical definitions	The nomenclature codes for the coordination of a (MDT, MOC-COM are the following: • first MOC-COM (350372-350383) • follow-up MOC-COM (350276-350280) • additional MOC-COM (350291-350302) • supplementary fees for oncologists (350453-350464). Selection of patients: • new diagnoses of invasive cancer registered in the BCR (no in situ tumours), incidence years 2004-2015 The following cases were excluded from the analyses: • Second and subsequent invasive tumours for the same patient during one incidence year (only the first tumour per incidence year is taken into account) • Patients without a Belgian residence

[p] COM consultation multidisciplinaire en oncologie, MOC multidisciplinair oncologisch consult.

	• Patients without national social security number • Patients for whom no IMA data in the year of incidence were available (≈2% of the selected patients) • Patients with an uncertain date of diagnosis To account for the fact that the date of diagnosis is sometimes slightly inaccurate and that small administrative mistakes in the health insurance data are possible, a MDT was searched for each patient within a time frame of 1 month before and 6 months after incidence date.
Limitations	No information is available on the quality of the discussion, and there are some financial incentives for hospitals to organise MDT meetings (the financing of extra manpower in oncological centres is directly linked to the number of yearly MDTs organized in a centre). As the delay on the invoice data (i.e. IMA-AIM data) can prolong up to 2 years after the actual date that the MDT was organised, the proportion of MDTs from the last included incidence year of the analysis (in this case 2015) may be a slight underestimation. [1] Although extremely useful to assess MDT practice at the population level, working with administrative billing databases entails some limitations in the interpretation of the results.[4] First, although MDT coverage is frequently used as a parameter of quality of care (Stordeur et al., 2012),[5] no information is available on the actual quality of discussions between specialists impacting the treatment decision. Second, only financed MDT meetings were analysed, leading to an underestimation of reality. Discussions with experts of the field revealed that many patients are discussed during MDTs for whom the conditions for financing are not fulfilled, for example when a patient decides to ask for a second opinion without informing the first hospital. In this way, information on additional MDTs which are not financed and hence not registered in the used databases could not be taken into account in our analyses. A financing for the organisation of a "reference MDT meeting" to allow experts from reference centres to discuss more complex cases at a (inter) national level should be foreseen to fairly recognise the contribution of these clinical experts (Stordeur, Vrijens, & Leroy, 2016).[6]
Dimensions	Quality: Continuity-Coordination of care.
Related indicators	Cancer 5-year survival rate (breast, colon)

Background

In Belgium, MDT meetings are financed since 2003 by the National Institute for Health and Disability Insurance (NIHDI). MDT meetings are not obligatory according to the Belgian legislation for every new cancer diagnosis. Indeed, the law stipulates only four situations in which the discussion of a case in a MDT is mandatory: (1) when an oncological treatment deviates from the hospital's oncology manual, (2) when re-irradiation of a same target zone is envisaged within 12 months after the start of the first radiotherapy, (3) when chemotherapy is delivered with a drug that, in its first reimbursement phase, is to be monitored by a MDT and (4) from 2007 onwards, for every new breast cancer diagnosis treated in a recognised breast clinic. Nonetheless, the National Cancer Plan launched in 2008 encouraged the implementation of MDT meetings as an essential step in the clinical pathway of each new cancer case. In 2009, financial incentives have been set up to fund the supportive oncology staff members (i.e., psychologists, nurses, social workers, dieticians and data managers); they are based on the number of billed MDT meetings in preceding years per oncological centre. Hence, the more MDTs are billed, the more supportive staff the oncological centre can recruit. Until 2010, financing was limited to one MDT per patient per calendar year. In 2010, a differentiation was introduced allowing different MDT meetings per patient along the care pathway (i.e. a first MDT meeting to discuss the diagnosis and the set-up of the treatment plan, a follow-up MDT meeting when the diagnosis and/or the treatment plan is altered and/or when re-irradiation is scheduled within 12 months after initiation of the first radiotherapy, and a supplementary MDT meeting when a patient is referred to another hospital to complete the diagnosis and the treatment plan). In addition, the maximum possible number of intramuros specialists being reimbursed for attending a MDT meeting increased from 4 to 5, and some specialists (in medical oncology, haematology, paediatric oncology and paediatric haematology) received a supplementary fee when attending or coordinating the MDT meeting.

4.5.2. Results

In 2004 (the first full year after the start of the financing of multidisciplinary discussions in Belgium) only 50.8% of the cancer patients were discussed during a multidisciplinary team meeting (see Table 25). In 2012, 83.6% of the patients benefited from this meeting and this proportion increased further to 87.5% in 2015 (see Table 25). The proportion of cancer patients discussed at a MDT varies between different types of cancer, but this variability between tumour types is less pronounced in the more recent years.

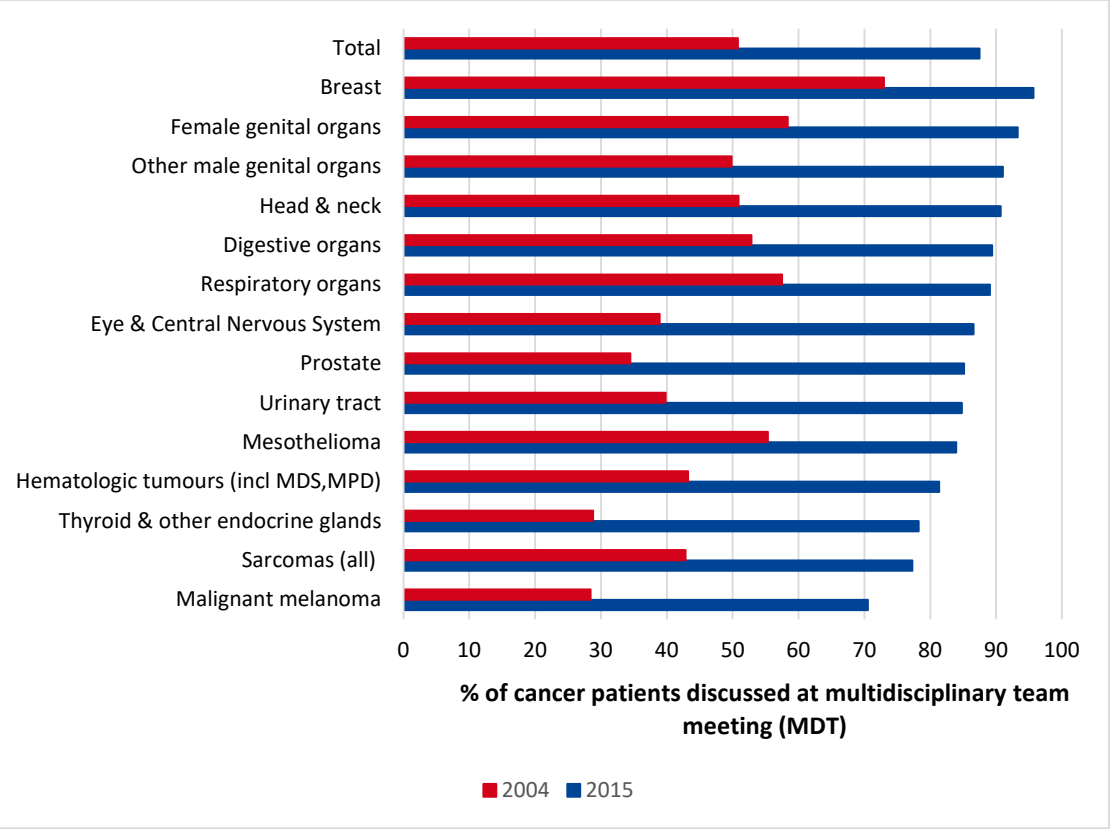
In both 2012 and 2015, patients with breast cancer are the most often discussed in a MDT (95.7% in 2015), contrasting with malignant melanoma cases that are the least often cases discussed (70.5% in 2015) (Table 25 and Figure 55).

Table 25 – Proportion of cancer patients discussed at multidisciplinary team meeting, per tumour group (2004-2015)

Localisation	2004			2012			2015		
	N of Patients	N of MDT	% MDT	N of Patients	N of MDT	% MDT	N of Patients	N of MDT	% MDT
C00-C14, C30-C32 Head & neck	2 339	1 191	**50.9**	2 530	2 183	**86.3**	2 549	2 312	**90.7**
C15-C26 Digestive organs	11 144	5 891	**52.9**	13 577	11 558	**85.1**	14 059	12 569	**89.4**
C33-C39 Respiratory organs	6 814	3 917	**57.5**	7 897	6 687	**84.7**	8 047	7 169	**89.1**
C40-C41, C46-C49 Bones, articular cartilage, soft tissue & Kaposi sarcoma	504	216	**42.9**	559	419	**75.0**	595	460	**77.3**
C43 Malignant melanoma	1 336	380	**28.4**	2 403	1 481	**61.6**	2 716	1 916	**70.5**
C45 Mesothelioma	224	124	**55.4**	272	226	**83.1**	287	241	**84.0**
C50 Breast	9 189	6 707	**73.0**	10 677	10 055	**94.2**	10 631	10 172	**95.7**
C51-C58 Female genital organs	3 014	1 759	**58.4**	3 151	2 809	**89.1**	3 127	2 917	**93.3**
C61 Prostate	8 845	3 048	**34.5**	7 909	6 240	**78.9**	7 956	6 775	**85.2**
C60, C62, C63 Other male genital organs	293	146	**49.8**	435	394	**90.6**	457	416	**91.0**
C64-C68 Urinary tract	3 375	1 345	**39.9**	4 176	3 388	**81.1**	4 267	3 618	**84.8**
C69-C72 Eye & CNS	814	317	**38.9**	904	700	**77.4**	945	818	**86.6**
C73-C75 Thyroid & other endocrine glands	611	176	**28.8**	991	683	**68.9**	1 075	841	**78.2**
C81-C96 Hematologic tumours (incl MDS, MPD)	4 531	1 959	**43.2**	6 329	5 054	**79.9**	6 874	5 592	**81.4**
C76, C80 Unknown primary and ill-defined sites	1 153	339	**29.4**	920	541	**58.8**	910	598	**65.7**
Total. excl.non-melanoma	54 186	27 515	**50.8**	62 730	52 418	**83.6**	64 495	56 414	**87.5**

Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency
Note: Abbreviations: MDS: Myelodysplastic syndrome, MPD: Myeloproliferative Disorder, CNS: Central Nervous System.

Figure 55 – Proportion of cancer patients discussed at multidisciplinary team meeting, per tumour group (2004-2015)



Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency; Note: Sarcomas (all): Bones, articular cartilage, soft tissue & Kaposi sarcoma

A recent paper published on similar Belgian data (BCR-IMA)[4] focused on seven different cancer types (female breast cancer, prostate cancer, lung cancer, rectal cancer, malignant melanoma, acute leukaemia and soft tissue sarcoma) in patients diagnosed between 2004 and 2011 (n= 205 062 patients). Additional information provides further insight into the current results. For example, the positive trend over time in coverage rate by MDT meetings seemed independent of the stage of the disease for all cancer types, except for melanoma: in 2011, patients with stage I were less discussed (66%) in MDT than those with stage III disease (98%). This is probably due to the fact that these patients are not automatically referred to a hospital but are often diagnosed and treated ambulatory, particularly for non-advanced stages (in ambulatory dermatology practices). In this case, diagnoses are reported directly to the BCR by the pathological laboratory.

In general, age seemed to play an important role in considering a patient for a MDT discussion; elderly patients (i.e., ≥80 years) were less often discussed during a MDT meeting for all cancer types. This under-usage of MDT meetings for elderly patients is regrettable: even when a patient is unfit to undergo a curative treatment, an MDT meeting remains extremely useful to determine in a multidisciplinary way which strategy could be helpful for the patient taking into account the results of the geriatric assessment and the frailty of the patient, whatever its intent, curative or palliative.

4.5.2.1. Trend over time by region

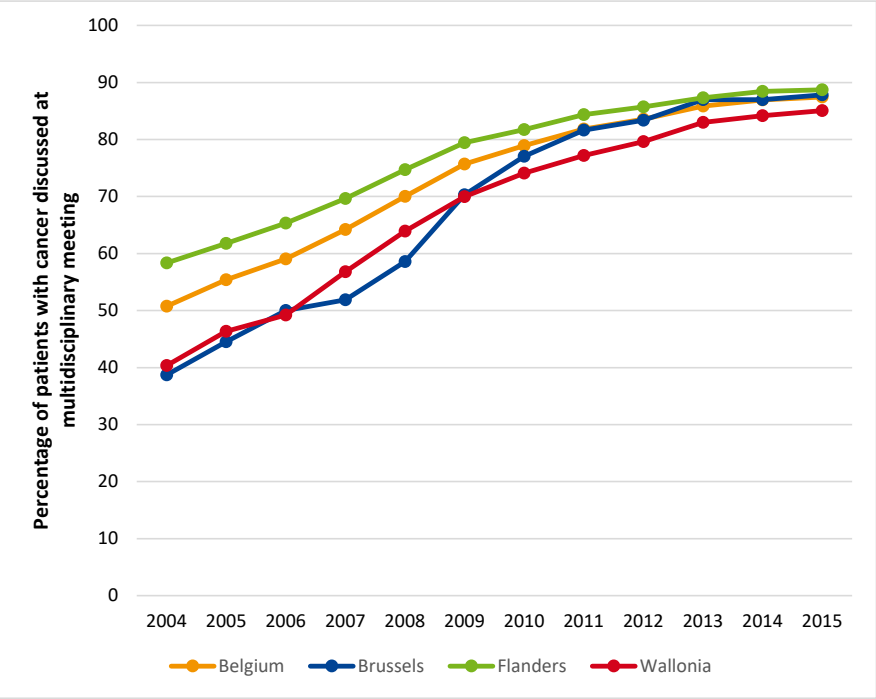
The clear regional differences in MDT that were observed at the introduction of the code in the nomenclature (e.g. 2004, Flanders 58.3%, followed by Wallonia 40.3% and Brussels 38.7%) tend to diminish. Cancer patients diagnosed in 2015 were only slightly more frequently discussed at the MDT in Flanders (88.7%), followed by Brussels (87.8%) and Wallonia (85.1%) (Table 26 and Figure 56).

Table 26 – Proportion of cancer patients discussed at multidisciplinary team meeting, per region (2004-2015)

	2004			2012			2015		
	N Patients	N MDT	% MDT	N Patients	N MDT	% MDT	N Patients	N MDT	% MDT
Belgium	**54 186**	**27 515**	**50.8**	**62 730**	**52 418**	**83.6**	**64 495**	**56 414**	**87.5**
Brussels	4 348	1 683	**38.7**	4 874	4 064	**83.4**	4 750	4 172	**87.8**
Flanders	31 819	18 563	**58.3**	37 587	32 213	**85.7**	38 754	34 388	**88.7**
Wallonia	**18 019**	**7 269**	**40.3**	**20 269**	**16 141**	**79.6**	**20 991**	**17 854**	**85.1**

Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency

Figure 56 – Proportion of cancer patients discussed at multidisciplinary team meeting, per region (2004-2015)



Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency

Key points

- **Since the introduction of specific nomenclature codes for the multidisciplinary team meeting (MDT, MOC-COM) in 2003, a rapid increase of its use is noticed for all cancer types. Overall, about 87.5% of cancer patients diagnosed in 2015 were discussed at the MDT (compared to 51% in 2004 and 84% in 2012).**
- **There is variability in use of the MDT between different cancer types (highest in breast cancer with 95.7%, lowest in malignant melanoma with 70.5% in 2015).**
- **An increasing use of the MDT is noticed for all three regions throughout the period 2004-2015.**
- **Moreover, initial (i.e. in 2004) marked regional variability in use of the MDT, with the highest results in Flanders, has clearly reduced in the more recent years. In 2015 cancer patients are only slightly more frequently discussed at the MDT in Flanders (88.7%), followed by Brussels (87.8%) and Wallonia (85.1%).**

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3. Wilson AR, Marotti L, Bianchi S, Biganzoli L, Claassen S, Decker T, *et al.* The requirements of a specialist Breast Centre. Eur J Cancer. 2013;49(17):3579-87. doi: 10.1016/j.ejca.2013.07.017. Epub Aug 19.
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5. QUALITY OF CARE: PATIENT CENTEREDNESS

5.1. Patients experiences with ambulatory healthcare service (QP-1, QP-2, QP-3, QP-4)

5.1.1. Documentation sheet

Description	Patients experiences with ambulatory care
Calculation	**Numerator**: number of respondents (≥ 15 years old) who answered to the HIS and who reported they had a good relational experience during the last contact with either a general practitioner (GP) or a specialist in ambulatory care (4 questions, GP or specialist depending on which ambulatory health care provider was contacted last). **Denominator**: number of respondents (≥ 15 years old) who answered to the HIS and who had a contact with either a GP or a specialist in the 12 months preceding the date of the interview:
Rationale	Patient-centered care is supported by good provider-patient communication so that patient's needs and preferences can be addressed and that patients understand and participate in their own care.[1-3] Unfortunately, a good communication is not easy and requires several competencies (listening, explaining, courtesy…) The measurement of these skills is a challenge and several institutes tackle this issue in their surveys.[1,4,5] In 2011 the OECD has edited a questionnaire on patient experiences with some questions related to the quality of the consultation.[4] On the request of the Federal Public Service Public Health, the Belgian Scientific Institute of Public Health included in the Health interview survey 2013 the OECD instrument dedicated to the patient experiences with ambulatory care.
Data source	HIS 2013
Technical definitions	Question based on the OECD module[4]: Now, refer to the last time you had a consultation either with a GP; either with a specialist: Q15. Did this doctor spend enough time with you? Q16. Did this doctor explain things in a way that was easy to understand? Q17. Did this doctor give you an opportunity to ask questions or raise concerns about recommended treatment? Q18. Did this doctor involve you as much as you wanted to be in decisions about your care and treatment?
Limitations	Subjective assessment of the "understandable" aspect of information provided by the physician while we do not know if this information was effectively understood; even if respondents without contact with a physician during the last 12 months were excluded, the delay between consultation and survey can be long; focus on ambulatory care only; home visits by GPs excluded.

International comparability	Yes, data based on an OECD module, questions are comparable in all countries but with cautious because the way in which the information in different countries is collected (special survey vs overall health survey, sampling scheme, survey organization, etc.) may have an impact on the outcome of the result.
Dimensions	Patient centeredness (Providers skill of communication/Explaining ability); Ambulatory care

5.1.2. Results

The following results are based on the Belgian Health interview survey (HIS) 2013.[6]

Q15. Did the doctor spend enough time with you?

According to the Belgian HIS 2013, 97.5% of patients mentioned their doctor spent enough time with them during consultation; this percentage equals 97.7% for general practitioners and 96.3% for specialists. This rate is similar at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning satisfaction of time spent by general practitioners. The percentage of satisfied patients concerning the time spent by specialists is slightly higher in patients with higher education level than in groups with lower education level (between 94.7% and 96.5%). After standardisation for age and sex, the single remaining significant difference concerns patient with upper secondary education level.

Analysis by region

The percentage of satisfied patients concerning the time spent by specialists or general practitioners is lower in Brussels than in Flanders or Wallonia. After standardisation for age and sex, the single significant difference concerns the comparison Brussels-Flanders.

Table 27 – Proportion of satisfied patients (15 years old and plus) concerning the time spent by their physician during consultation, by region (2013)

	General practitioner	Specialist
Flanders	98.0	97.1
Brussels region	96.6	93.9
Wallonia	97.5	96.1

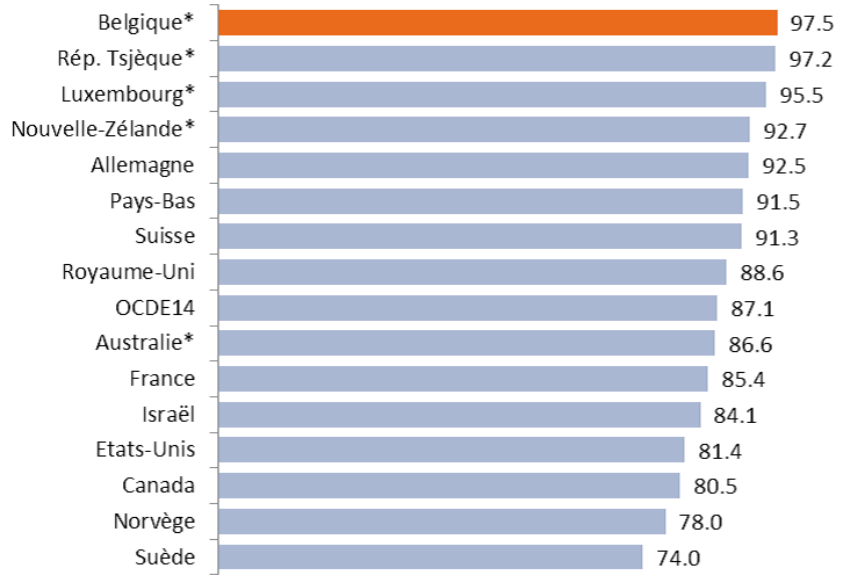
Source: Health Survey, Belgium, 2013.[6]

International comparison

The questionnaire used in the Belgian health interview survey is also used by other countries. This allows some comparisons such as performed by the OECD in the report 'Health at a Glance" published in 2013.[7] Fourteen countries are compared after standardisation for age and sex (based on OECD population 2010). Data concern all physicians without distinction between general practitioners and specialists and comparisons are approximate as the years of data collection are not the same in all countries (years were as close to 2013 as possible).

Compared with 13 countries, Belgium ranks first for patient satisfaction related to the time spent by their physician during consultation.

Figure 57 – Proportion of satisfied patients concerning the time spent by their physician during consultation: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Q16. Did the doctor explain things in a way that was easy to understand?

In Belgium, 97.7% of patients considered that explanations provided by their physician were sufficiently clear. This percentage equals 98.2% for the general practitioner and 95.5% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning clarity of explanations provided by general practitioners. The percentage of patients indicating that the specialist provided a clear explanation is lower among patients with the lower education level (85.5%) compared to the higher education level (98.2%). This difference is significant after standardization for age and sex.

Analysis by region

The percentage of patients indicating that the general practitioner or the specialist has provided a clear explanation is lower in Brussels (96.4%) than in Flanders (98.0%) or Wallonia (97.6%). However these differences are not significant after standardisation for age and sex.

Table 28 – Proportion of patients (15 years old and plus) considering that their physician has provided a clear explanation, by region (2013)

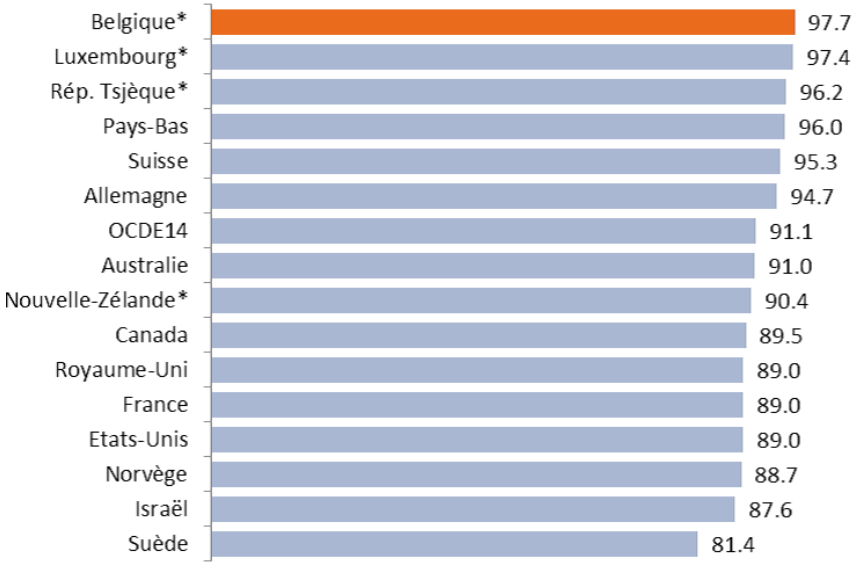
	General practitioner	Specialist
Flanders	98.3	96.0
Brussels region	97.4	93.2
Wallonia	98.2	95.7

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks first for the clarity of the physician's explanation.

Figure 58 – Proportion of patients considering that their physician has provided a clear explanation: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Q17. Did this doctor give you an opportunity to ask questions or raise concerns about recommended treatment?

In Belgium, 97.6% of patients agreed they had the opportunity to ask questions to the doctor or to express their concerns about the treatment, where appropriate. This percentage equals 98.1% for the general practitioner and 95.3% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning the opportunity to ask questions to the general practitioner or to express concerns about treatment. The percentage of patients indicating that they had the opportunity to ask questions or to express their concerns about the treatment with the specialist is lower among patients with the lower education level (88.7%) compared to the higher education level (96.7%). This difference is significant after standardization for age and sex.

Analysis by region

The proportion of patients indicating that they had the opportunity to ask questions or to express their concerns about the treatment with the general practitioner is the same in the three regions. Concerning the specialist, the percentage of patients reporting this opportunity is lower in Brussels than in the other two Regions, but only the difference between Brussels and Wallonia is significant after standardization for age and sex.

Table 29 – Proportion of patients (15 years old and plus) considering that they had the opportunity to ask questions to their physician or to express their concerns about the treatment, by region (2013)

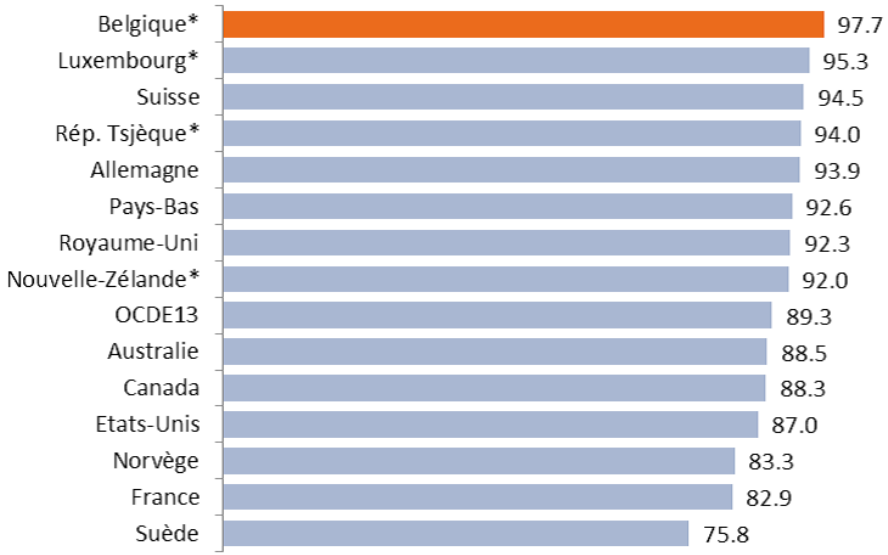
	General practitioner	Specialist
Flanders	98.6	95.4
Brussels region	96.9	91.9
Wallonia	97.4	96.4

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks first for the patient's perception of their opportunity to ask questions to their physician or to express their concerns about treatment.

Figure 59 – Proportion of patients considering that they had the opportunity to ask questions to their physician or to express their concerns about the treatment: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Q18. Did this doctor involve you as much as you wanted to be in decisions about your care and treatment?

In Belgium, 95.2% of patients agreed they were sufficiently involved in decisions about their care or treatment, where appropriate. This percentage equals 95.8% for the general practitioner and 92.1% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning the feeling of involvement in the decision with the general practitioner. The percentage of patients indicating that they were sufficiently involved in decisions about their care or treatment with the specialist is lower among patients with the lower education level (87.1%) compared to the higher education level (93.5%). This difference is significant after standardization for age and sex.

Analysis by region

The percentage of patients indicating that they were sufficiently involved in decisions about their care or treatment is the same in the three regions, both for the general practitioner and the specialist.

Table 30 – Percentage of patients (15 years old and plus) considering that they were sufficiently involved in decisions about their care or treatment, by region (2013)

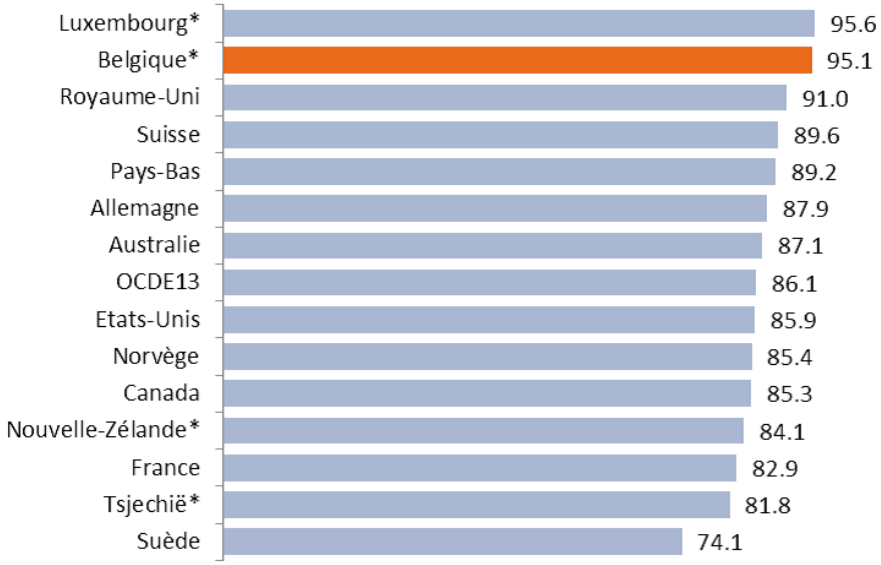
	General practitioner	Specialist
Flanders	96.0	91.8
Brussels region	95.0	92.0
Wallonia	95.8	92.5

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks second for the patients perception of their involvement in the decision about their care or treatment.

Figure 60 – Proportion of patients considering that they were sufficiently involved in decisions about their care or treatment: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Key points

- **Four items were considered to estimate the patient experiences for both general practitioners and specialists: time spent to the patient by the physician; clarity of explanation; opportunity to ask questions; patient involvement in the decision.**
- **The patient satisfaction is globally high regarding the four items, both for general practitioners and specialists. No difference was noticed by sex or age.**
- **Patients with higher education level appear to be slightly more satisfied than patients with lower education level regarding the four items provided by specialist. No difference was found for general practitioners.**
- **The satisfaction level is lower in Brussels for two items: the time spent to the patient by the general practitioner or specialist and the opportunity to ask questions to the specialist. No significant difference was noticed for the clarity of explanations and the patient involvement in decision.**
- **As it is the first time that these items were included in the Health interview survey, no trends over time can be currently estimated.**
- **Comparison with 13 European countries showed that Belgium ranks first for patient satisfaction related to the time spent by their physician during the consultation, the clarity of explanations and the opportunity to ask questions. Belgium ranks second for the patients perception of their involvement in the decision about their care or treatment.**

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5.2. Prostate cancer active surveillance and watchful waiting (QP-5) – Testicular cancer adjuvant therapies (QP-6)

5.2.1. Documentation sheet

Description	Proportion of prostate cancer patients in low risk category receiving no active treatment. Proportion of testicular cancer patients in low risk category receiving no adjuvant treatment after orchiectomy.
Rationale	In Belgium, prostate cancer is the most frequent cancer type in men with 9050 new cases in 2016[q], but few men (3%) die of it. Good clinical practice recommendations advise practitioners to discuss first with a patient diagnosed with localised prostate cancer whether an immediate treatment is required or not. [1] For patients in the low risk category, active surveillance is recommended rather than an intervention for patients. [2] Active surveillance involves close monitoring of biochemical or histological progression with initiation of curative therapy at a given moment. There is currently no clear protocol of active surveillance but periodic exams (as digital rectal exam, PSA measurement and sometimes biopsy) are always foreseen. This approach should be distinguished from watchful waiting (WW) which involves a policy of observation and the provision of (palliative) treatment when symptoms arrive. WW should be recommended to all men with localised disease, irrespective of their risk category, in patient with a short (< 10 years) life expectancy. Testicular cancer is a less frequent cancer (403 new cases in 2016 in Belgium[q]) which generally affects men in the 20-39 age category (over 66% in 2016). [3] Good clinical practice recommendations advise surveillance after surgical testis removal (not to be confused with lymphadenectomy) in case of stage I disease (i.e. localised tumour), especially in absence of risk factors (i.e. rete testis invasion and tumour size in case of seminomas and vascular invasion in case of non-seminomas. [4] Alternatively, active adjuvant treatment (i.e. chemotherapy or radiotherapy or retroperitoneal lymph-node dissection) can be prescribed.
Calculation	Prostate cancer: Numerator: number of patients receiving no active treatment Denominator: number of prostate cancer patients with adenocarcinoma in the low risk category (cT1-cT2 cN0/x cM0/x and Gleason <7) Testicular cancer: Numerator: number of patients receiving adjuvant treatment after surgery Denominator: number of testicular patients with clinical stage I disease treated with orchiectomy
Data source	Belgian Cancer Registry (BCR): incidence years 2004-2015. IMA – AIM
Technical definition	Selection of patients: • new diagnoses of cancer registered in the BCR, with the following ICD-10 code: C61 (for prostate cancer), C62 (for testicular cancer) • for prostate cancer: Adenocarcinoma • for testicular cancer: Clinical Stage I The following exclusion criteria have been applied: • Patients without official residence in Belgium at date of diagnosis

q https://kankerregister.org/Statistiques_tableaux%20annuelle

	• Patients with uncertain incidence date • Patients with no NSSN known • Patients with no IMA data available in incidence year • For prostate cancer: patients with multiple prostate cancers in the period 2004-2015; patients having bladder cancer For analyses on prostate cancer, region corresponds to the region of the place of residence of the patients at time of their diagnosis. Region of the hospital performing surgery is taken into account for analyses on testis cancer. Interventions have been identified for patients thanks to the following billing codes (nomenclature) in the GZSS (health care) IMA – AIM database: • Prostate cancer o Surgery: 261796-261800, 694610-694621, 154851-154862, 777114-777125, 172675-172686 o Curative external radiotherapy: 444135-444146, 444150-444161, 444172-444183 o Brachytherapy: 444216-444220, 444253-444264, 444290-444301, 444312-444323 o Chemotherapy has been identified by ATC codes « L01 » with the exception of some CNK codes (710566, 1092857, 1174481, 1174499, 38521 and 706044) in the Pharmanet-Farmanet IMA database. • Testicular cancer o Surgery: 261111-261122, 261096-261100, 262570-262581, 241312-241323, 241334-241345, 241872-241883, 241894-241905, 241113-241124, 241150-241161, 260750-260761, 611796-611800, 260713-260724, 260853-260864, 260875-260886, 260890-260901, 262172-262183, 684213-684224, 154932-154943 o Curative external radiotherapy: 444135-444146, 444150-444161, 444172-444183, 444113-444124 o Retroperitoneal lymph node dissection: 240450-240461, 240472-240483, 243751-243762, 243773-243784, 240494-240505, 240516-240520 o Chemotherapy has been identified by ATC codes « L01 » with the exception of some CNK codes (710566, 1092857, 1174481, 1174499, 38521 and 706044) in the Pharmanet-Farmanet IMA database ▪ Carboplatin: L01XA02 ▪ BEP (bleomycin + etoposide + cisplatin): L01DC01, L01CB01, L01XA01
International comparability	N/A
Limitation	This indicator comes from administrative and clinical data, not from patient interview; active participation of the patient and compliance to recommendations cannot be measured. A substantial proportion of the prostate cancer patients in the BCR database has an 'unknown' Gleason score (average ±16%), particularly in the early years of the period of interest, explaining the lower absolute number of selected patients in the earlier years. The BCR database does not have information on risk factors (i.e. rete testis invasion and tumour size in case of seminomas, vascular invasion in case of non-seminomas) readily available for testicular cancer patients. Therefore it is not possible to identify the tumours with presence of risk factors. The calculated indicator on adjuvant treatment serves as a proxy for de ESMO clinical practice guidelines. [4]
Dimension	Quality, Patient centeredness
Related indicators	N/A

5.2.2. Results

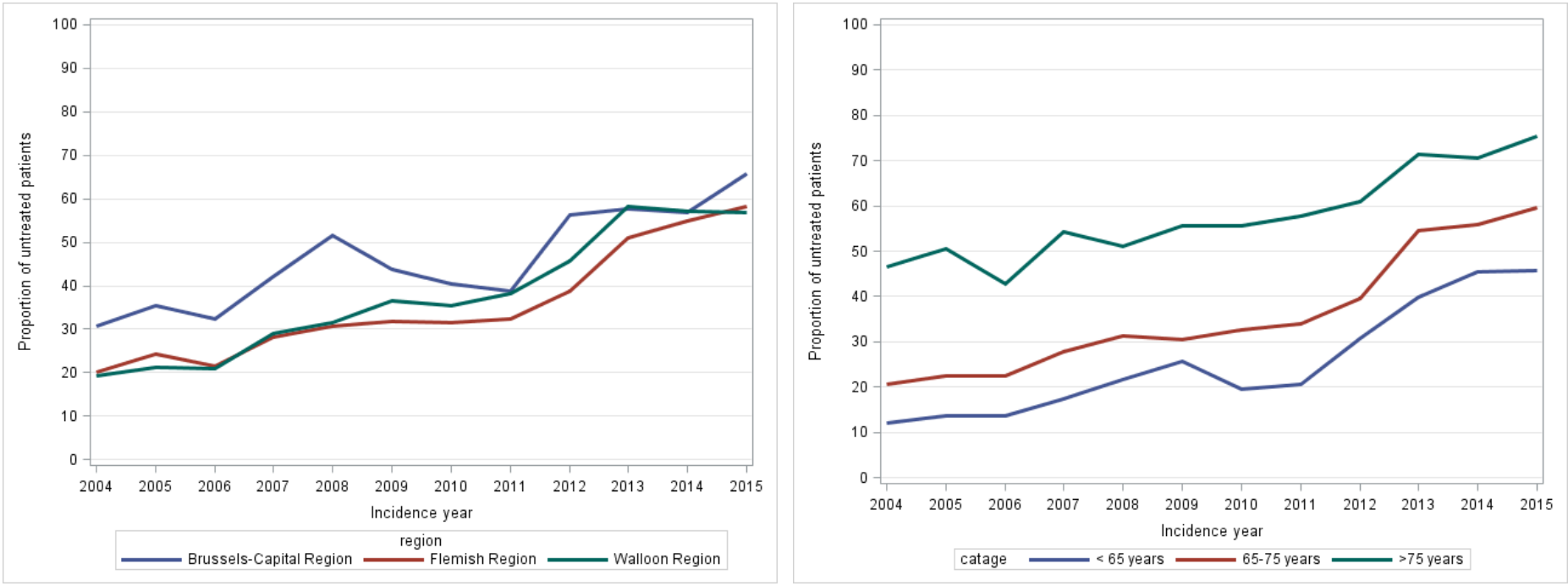
5.2.2.1. Prostate cancer

Low risk category

- "Low risk category" has been defined as a tumour confined to the prostate with no metastasis (i.e. lymph nodes nor distant), and no undifferentiated or poorly differentiated tissue (biopsy):
  - cT1/cT2
  - cN0/unknown
  - cM0/unknown
  - Gleason < 7
- "No active treatment" definition is the following:
  - Patients who receive no surgery, no hormonotherapy, no radiotherapy (RT) (cat. 2-8) within 1 month before and 6 months after the incidence date

There were 37.6% patients with no treatment out of 20 705 for the 2004-2015 period: the older the patients (over 75 years old), the higher the proportion of absence of treatment is, probably indicating a watchful waiting approach (rationale: the patient will probably die from another cause). Moreover for all age categories, the proportion of untreated patients is rising sharply from 2012 on, indicating a general trend towards the recommendation for active surveillance. The effect is most noticeable in men under 65 years old: from 20.7% in 2011 to 45.8% in 2015. Regional variation is generally restricted, and tends to disappear over time (see Figure 61).

Figure 61 – Proportion of prostate cancer untreated patients by age category (left) and by region (right) (2004-2015)



Source: BCR

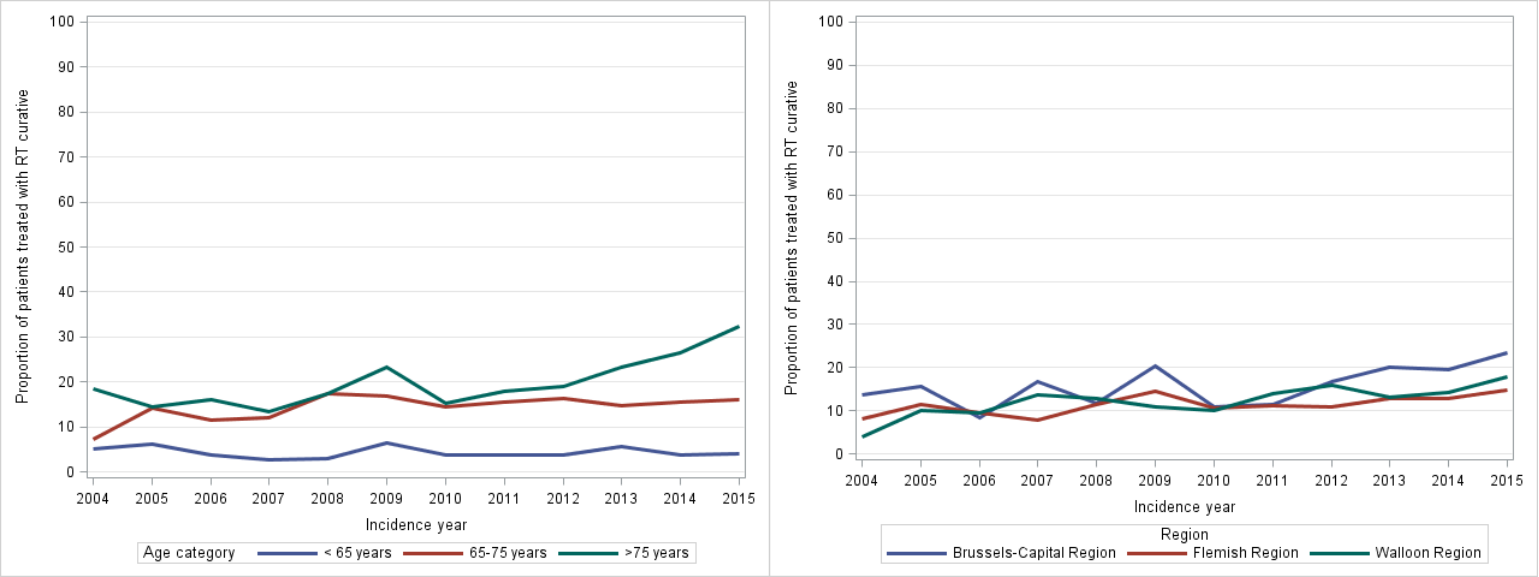
Higher risk categories

As an addendum, some results are presented in this section for prostate cancer patients in higher risk categories.

Patients in the intermediate risk category (cT1-cT2 cN0/x cM0/x and Gleason 7) can be treated by surgery, brachytherapy (localised radiotherapy), external radiotherapy, possibly combined with hormonotherapy. There is no role for chemotherapy in localised disease at this point in time in Belgian (KCE) or international guidelines. The results presented show the proportion of patients getting curative external radiotherapy a primary treatment: these patients didn't receive any surgery nor brachytherapy. Since 2013, the number of patients over 75 years old are getting this less invasive treatment more often compared to their younger counterparts: the rate doubled from 2010 to 2015, to reach over 30 percent of these patients by 2015. There is a discrete generally (all ages) increasing trend of primary curative external radiotherapy observed in all regions, with Brussels a bit ahead Flanders and Wallonia (Figure 62).

The interpretation is quite complex, but it may suggest that older patients are receiving less primary hormonotherapy. The overall incidence of radiotherapy remains quite low suggesting that the treatment decision is primarily driven by urologists.

Figure 62 – Prostate cancer patients in intermediate risk category getting external radiotherapy by age and by region (2004-2015)



Source: BCR

5.2.2.2. Testicular cancer

There were 1516 tumours studied (clinical stage I: localised tumour which can be surgically removed) from 1504 patients over the period 2004-2015. Tumours were classified as seminomas and non-seminomas using the definition of EUROCARE-5 study. As there is no direct link between the cancer (from BCR database) and the treatments found in the IMA data, time frames around the incidence date are used:

- The surgery is considered as related to the cancer if it occurs within 1 month before and 6 months after the incidence date
- A treatment is considered to be adjuvant if it is given within 3 months after surgery[5]

Guidelines have recommended recommend surveillance after surgery for a stage I tumour: KCE guidelines[6] (2010) and ESMO guidelines[4] (2013). The analysis distinguishes two period: before ESMO guidelines 2004-2012 and after (2013-2015). The goal is to reduce long-term side effect of radiotherapy and chemotherapy.

The BCR database does not have information on risk factors (i.e. rete testis invasion and tumour size in case of seminomas, vascular invasion in case of non-seminomas) readily available for testicular cancer patients. Therefore it is not possible to identify the tumours with presence of risk factors. The calculated indicator on adjuvant treatment serves as a proxy for de ESMO clinical practice guideline. In comparison, a recent Spanish publication reported 47% rete testis invasion in stage 1 seminoma [7] and another publication reported 18% vascular invasion. [8]

Seminoma

Most Belgian patients diagnosed with a seminoma stage I (N=913 tumours, 908 patients) receive as primary treatment a surgery (i.e. orchiectomy) (96.9%, N=885 tumours, 880 patients). Since the publication of the ESMO guidelines in 2013, surveillance is recommended following primary orchiectomy, especially in absence of certain histological risk factors (i.e. rete testis invasion and tumour size in case of seminomas) instead of adjuvant treatment (in case of seminoma stage I recommended adjuvant treatment options are 1 cycle of Carboplatin or radiotherapy 10 fractions of 2 Gy). Most stage I patients (79.5%) from the period 2004-2012 received an adjuvant treatment (i.e. chemotherapy or external radiotherapy), compared to only 52.3% for the 2013-2015 period (Table 31). Regional variations are observed, with Wallonia having a bit more than a third of patients (36.5%) with an adjuvant treatment in 2013-2015, compared to more than half of the patients for Flanders (57.2%) and over two thirds in Brussels (69.2%); annual figures are presented in Figure 63 (remark: Brussels has no more than 10 cases a year, explaining the wide variations). When looking at the proportion of stage I patients receiving adjuvant external radiotherapy (with or without chemotherapy), there has been a remarkable decrease between the 2004-2012 period (30.6%) and the 2013-2015 period (3.6%); this has been observed in Flanders (drop to 2.6%) and Wallonia (drop to 4.1%) and in a milder way in Brussels (drop to 15.4%). The same has not been observed when considering chemotherapy as adjuvant therapy (with or without radiotherapy): the proportion remained stable at 49% (2004-2012 vs 2013-2015 periods).

Table 31 – Proportion of stage I testicular cancer (seminoma) with adjuvant therapy (chemotherapy or radiotherapy) following surgery

	Belgium			Brussels			Flanders			Wallonia		
Before ESMO guidelines (2004-2012)	604	480	79.5	52	46	88.5	380	309	81.3	171	124	72.5
After ESMO guidelines (2013-2015)	281	147	52.3	13	9	69.2	194	111	57.2	74	27	36.5

Figure 63 – Proportion of testicular cancer patients (stage I, seminoma) with adjuvant treatment (chemotherapy or radiotherapy) following surgery by region (2004-2015)



Source: BCR

Most patients (69.9%) from the period 2004-2012 had an adjuvant treatment (carboplatin-based chemotherapy or radiotherapy) whereas only 44.5% had it for the 2013-2015 period (Table 32). Regional variations are observed, with Wallonia having less than a quarter of patients (21.6%) with the mentioned adjuvant treatment in 2013-2015, compared to half of the patients for Flanders (52.6%) and Brussels (53.9%); annual figures are presented in Figure 64 (Brussels has no more than 10 cases a year, explaining the variations).

Table 32 – Proportion of stage I testicular cancer (seminoma) with adjuvant therapy (carboplatin or radiotherapy) following surgery

	Belgium			Brussels			Flanders			Wallonia		
	N surgeries	N adjuvants	%	N surgeries	N adjuvants	%	N surgeries	N adjuvants	%	N surgeries	N adjuvants	%
Before ESMO guidelines (2004-2012)	604	422	69.9	52	41	78.9	380	279	73.4	171	101	59.1
After ESMO guidelines (2013-2015)	281	125	44.5	13	7	53.9	194	102	52.6	74	16	21.6

Source: BCR

Interpretation: In absence of information on the risk factors incidence, we can conclude that a significant proportion of patient is still receiving adjuvant treatment.

Figure 64 – Proportion of testicular cancer patients (stage I, seminoma) with adjuvant treatment (carboplatin-based chemotherapy or radiotherapy) by region (2004-2015)



Source: BCR

Non-seminoma

There were 572 tumours (569 patients) with non-seminoma stage I testicular cancer included in the study over the period 2004-2015. Non-seminoma is defined according to EUROCARE-5 study (ICD-O morphology codes = 9080-9083; 9085; 9100-9102; 9065; 9070-9072); 97.2% (556 cases) were treated with surgery (i.e. orchiectomy) as primary treatment.

The difference in adjuvant treatment between the period 2004-2012 and 2013-2015 is smaller than for seminoma (Table 33): a mean proportion of 66.8% of the operated patients received an adjuvant therapy in 2004-2012 compared to 59.9% in 2013-2015 for Belgium. There is a regional variation, with the highest rates of adjuvant treatment in Flanders, followed by Brussels, and the lowest rates in Wallonia. The generally observed decrease of adjuvant treatment over time is of similar order of magnitude in the 3 regions.

Table 33 – Proportion of stage I testicular cancer (non-seminoma) with adjuvant therapy (chemotherapy or retroperitoneal lymph node dissection) following surgery

	Belgium			Brussels			Flanders			Wallonia		
Before ESMO guidelines (2004-2012)	404	270	66.8	37	22	59.5	278	202	72.7	89	46	51.7
After ESMO guidelines (2013-2015)	152	91	59.9	9	5	55.6	102	67	65.7	41	19	46.3

Source: BCR

Key points

- **Practitioners are advised to actively involve the patient in the choice of treatment; for patients diagnosed with a tumour in early stage, the patients can be involved in the decision-making whether to treat immediately or to postpone or to leave out the treatment (e.g. active surveillance, watchful waiting)**
- **The proportion of prostate cancer patients with an early stage low risk tumour (cT1-cT2 cN0/x cM0/x and Gleason <7) getting an active treatment around the diagnosis date is declining in the more recent years (i.e. 2012-2015): 58% of the patients diagnosed in 2015 received no treatment (all ages) compared to 21% in 2004; regional variation for these results is very small; throughout the whole study period (2004-2015) the proportion of patients without treatment around the diagnosis date is clearly higher in patients aged 75 years or older compared to younger patients**
- **The proportion of prostate cancer patients aged 75 years or older in an intermediate risk category (cT1-cT2 cN0/x cM0/x and Gleason 7) getting a less invasive treatment (external radiotherapy) rather than surgery or brachytherapy as primary treatment is rising since 2011 and is over 30% in 2015**
- **Testicular cancer patients (stage I, localised cancer) have a primary surgical treatment (i.e. orchiectomy) which can be followed within 3 months by an adjuvant treatment or surveillance; since 2013, ESMO guidelines recommend surveillance after orchiectomy for stage I seminomas and non-seminomas rather than adjuvant treatment, especially in absence of risk factors; a clear decrease in proportion of adjuvant treatments has been observed for the 2013-2015 period compared to the period preceding the publication of new guidelines in case of seminoma (especially for adjuvant radiotherapy), and to a much less pronounced extent in case of non-seminoma; these trends are observed in all regions**
- **Regional variation regarding adjuvant treatment for stage I testicular seminoma shows the highest rates for Brussels, followed by Flanders and lastly Wallonia, both before and after the publication of new guidelines**
- **Regional variation regarding adjuvant treatment for stage I testicular non-seminoma shows the highest rates for Flanders, followed by Brussels and lastly Wallonia, both before and after the publication of new guidelines**

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5.3. Measurement of patient experiences after hospital stay (PREMs) (QP-7)

5.3.1. Documentation sheet

Description	Proportion of general hospitals measuring PREMs after a stay in C or D bed (%)
Calculation	N: number of general hospitals measuring PREMs after a stay in C or D bed D: number of general hospitals in Belgium
Rationale	Patient experience measurements are needed to assess the patient-oriented approach in hospitals, one of the dimensions in the assessment of quality. [1] The Vlaams patiëntenplatform (VPP) in Flanders has already set up a satisfaction questionnaire[r], with 50 general hospitals participating on a voluntary basis in 2017. French speaking hospitals measure patient satisfaction using questionnaires developed by BSM-Management[s] and Santhea[t]. A few hospitals measure patient experiences in an autonomous way. The national authorities have launched a Pay for Performance (P4P) programme for general hospitals with a budget of 6 million EUR for 2018 to be shared between participating general hospitals. Out of 80 points (maximum score), 10 points concern the measurement of patient experiences. Following recommendations on pay for quality (P4Q) ,[2] the P4P programme initiated in 2018 will be expanded with PROMs and PREMs in the future.
Data source	Databases from VIP², BSM and individual hospitals were transferred to the SPF SPSCAE – FOD VVVL for the calculation of P4P points.
Technical definitions	The 10 out of 80 points are allocated for getting 300 questionnaires filled in by patients after a stay in a C or D bed between 1 January 2017 and 15 May 2018.
International comparability	No comparison
Dimension	Quality, Patient centeredness
Keywords	Patient experiences

r https://www.zorg-en-gezondheid.be/indicatoren-vip2-az-per-domein#patientenervaringen

s http://www.bsm-management.be/

t http://santhea.be/

5.3.2. Results

The response rate was 94% (N=102; 96 hospitals participating, with one hospital not participating because of a different population as it is a hospital for children).

Key points :

- **The federal authorities started a Pay for Performance (P4P) programme for general hospitals in 2018 with a section dedicated to patient experience measurement (PREMs); this programme is part of the hospital financing and amounts to 6 million EUR**
- **Most of the general hospitals (96 out of 102, 94%) organise measurement of PREMs**
- **More PREMs as well as PROMs (patient-related outcome measurement) will be included in the P4P programme in the future**

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6. ACCESSIBILITY OF CARE

6.1. Health insurance status of the population (A-1)

6.1.1. Documentation sheet

Description	Health insurance status of the population (% of population)
Calculation	Number of insured persons divided by Belgian population affiliated with a sickness fund, end-of-year situation (= insured / insured and uninsured people affiliated with a sickness fund, mid-year situation)
Rationale	Belgium has a compulsory public health insurance system, in principle covering the entire population (employees, self-employed, civil servants, unemployed, pensioners, minimum income recipients, disabled, students, foreign nationals, as well as all of their dependents) and a wide range of services. The services that are covered by compulsory health insurance are described in the nationally established fee schedule. Services not included in the fee schedule are not reimbursable. The percentage of insured persons is an indicator of accessibility of health care.
Data source	Number of insured individuals: RIZIV – INAMI (web application: https://applstst2.riziv.fgov.be/analytics/FR/Portal/mainUnchallenged.do?unchallenged=yes)
Technical definitions and limitations	An uninsured person is defined as someone who is not entitled to compulsory health insurance. The main reason is that administrative and/or financial requirements are not fulfilled. This does not mean that "uninsured people" have no right to necessary medical care. They can be covered by the public municipal welfare centres (OCMW – CPAS). People covered by another system (e.g. foreign people working at the European commission) are not considered (not affiliated to a sickness fund).
International comparability	International comparability is possible. For the international comparison, the indicator "Government/social health insurance coverage (% of total population)" was used (OECD data). It should nevertheless be noted that health insurance coverage is a partial indicator of accessibility, since the range of services covered and the degree of cost sharing applied to those services can vary across countries.
Dimension	Accessibility of care
Related performance indicators	Out-of-pocket payments

6.1.2. Results

Based on data provided by the National Institute for Health and Disability Insurance (RIZIV – INAMI), almost the whole population (99%) is covered for a core set of services. The percentage of uninsured persons was stable between 2009 and 2017 at about 1% (see Table 34).

Table 34 – Percentage of the population covered by public health insurance by year (2009-2017)

Variable	Category	Number of insured persons (mid-year) (N)	Number of persons affiliated to a sickness fund (mid-year) (A)	Rate N/A
Year	2009	10 546 590	10 650 480	99.0%
	2010	10 632 028	10 735 039	99.0%
	2011	10 715 356	10 823 976	99.0%
	2012	10 785 206	10 904 425	98.9%
	2013	10 851 160	10 969 707	98.9%
	2014	10 906 348	11 028 464	98.9%
	2015	10 954 981	11 073 971	98.9%
	2016	11 009 531	11 131 460	98.9%
	2017	11 069 759	11 184 208	99.0%

Analysis by demographic characteristics and by region and province

However, there are some differences in coverage rates (2017) between regions, men and women and between age categories (see). Men are slightly less covered than women (98.7% vs 99.3%). The percentage of uninsured persons is higher in Brussels (1.9%) than in Flanders (0.5%) or Wallonia (0.7%). Possible explanations for the lower coverage rates of persons aged 25-40 are related to the family and work situation. At the age of 25 or when people start working, they are no longer insured as a dependent person of their parents but become insured in their own name. Moreover, when two individuals who are affiliated with a different sickness fund start living together, they often choose one of the sickness funds. These changes present some paperwork to be done or contributions to be paid.

International comparison

According to the OECD Health Statistics 2018, all EU-15 countries had government/social health insurance coverage rates between 99 and 100% in 2015, except for 3 countries: Greece (86%), Germany (89.2%) and Luxembourg (95.2%). However, some differences in methodologies between countries are not to exclude (e.g. it is possible that countries with a 100% coverage rate do not report persons who do not fulfill administrative and/or financial requirements).

Greece has the lowest population coverage in EU-15 (below 90%). This could be explained by the effect of the economic crisis (they reduced health insurance coverage among the long-term unemployed and self-employed workers[1]). European measures have been taken to maintain accessibility of care and since 2014, under certain conditions, uninsured people are

covered for prescribed pharmaceuticals, emergency services in public hospitals, and for non-emergency hospital care.[2] In Germany, all residents are legally required since January 2009 to have health insurance but those earning above a threshold may choose to remain with social health insurance or take out private health insurance.[3]

Table 35 – Percentage of the population covered by public health insurance, by year and patient characteristics (2017)

Variable	Category	Number of insured persons (mid-year) (N)	Number of persons affiliated to a sickness fund (mid-year) (A)	Rate N/A
Age (years)	00-04	608 009	611 668	99.4%
	05-09	652 494	656 858	99.3%
	10-14	619 967	623 186	99.5%
	15-19	613 536	616 495	99.5%
	20-24	644 922	654 574	98.5%
	25-29	703 948	722 391	97.4%
	30-34	698 342	716 449	97.5%
	35-39	718 420	733 373	98.0%
	40-44	702 626	714 780	98.3%
	45-49	756 699	766 906	98.7%
	50-54	790 433	797 970	99.1%
	55-59	760 821	765 507	99.4%
	60-64	682 991	685 447	99.6%
	65-69	608 680	609 691	99.8%
	70-74	497 476	497 820	99.9%
	75-79	375 405	375 641	99.9%
	80+	634 990	635 452	99.9%
Gender	Female	5 643 133	5 684 516	99.3%
	Male	5 426 626	5 499 692	98.7%
Province	Antwerp	1 793 836	1 803 111	99.5%
	Flemish Brabant	1 098 310	1 103 694	99.5%
	Walloon Brabant	386 024	388 397	99.4%
	West Flanders	1 172 141	1 176 462	99.6%
	East Flanders	1 479 541	1 485 894	99.6%
	Hainaut	1 296 499	1 306 009	99.3%
	Liège	1 061 303	1 068 156	99.4%
	Limburg	832 513	838 501	99.3%
	Luxembourg	218 306	219 740	99.3%
	Namur	482 859	485 937	99.4%

	Brussels-Capital	1 069 456	1 089 980	98.1%
	Abroad	168 946	203 201	83.1%
	Unknown	10 025	15 126	66.3%
Region	Brussels	1 069 456	1 089 980	98.1%
	Flanders	6 376 341	6 407 662	99.5%
	Wallonia	3 444 991	3 468 239	99.3%
	Abroad	168 946	203 201	83.1%
	Unknown	10 025	15 126	66.3%

Source: RIZIV – INAMI

Key points

- **The percentage of uninsured persons (affiliated with a sickness fund) in Belgium is about 1% but in Brussels and for age categories 25-40 years this percentage amounts to more than 2%.**
- **All EU-15 countries have a government/social health insurance coverage rate between 99 and 100% (except for Greece (86%), Germany (89.2%) and Luxembourg (95.2%)).**

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6.2. Out-of-pocket payments as a share of current expenditure on health (A-2), per capita (A-3), and as a share of final household consumption (A-10); Out-of-pocket payments on dental care as a share of current expenditure on dental care (A-11)

6.2.1. Documentation sheet

Description	A-2 - Out-of-pocket payments on health (% of current expenditure on health) A-3 - Out-of-pocket payments on health (in US $ PPP/capita) A-10 - Out-of-pocket medical spending (% of final household consumption) A-11 - Out-of-pocket payments on dental care (% of current expenditure on dental care)
Calculation	A-2 - Amount of out-of-pocket payments on health (HF .3 in the ICHA-HF classification of healthcare financing) divided by current expenditure on health A-3 - Amount of out-of-pocket payments on health (HF.3 in the ICHA-HF classification of healthcare financing) divided by population (mid-year for the relevant year) A-10 - Amount of out-of-pocket payments on health (HF.3 in the ICHA-HF classification of healthcare financing) excluding long-term healthcare expenditure (HC .3) divided by final household consumption A-11 - Amount of out-of-pocket payments on outpatient curative dental care (HF.XXX in the ICHA-HF classification of healthcare financing) divided by current expenditure on outpatient curative dental care (HC 132)
Rationale	Financial accessibilty is a basic condition for a functional healthcare system. Foregoing necessary treatment because of its cost can be detrimental to a person's health. High out-of-pocket payments that affect other necessary expenses are also considered undesirable. Healthcare is generally considered financially inaccessible when people limit or postpone the use of necessary care because of (excessively) high costs, or when they have to relinquish other basic necessities because they need care. Out-of-pocket medical spending as a share of final household consumption gives a kind of opportunity cost of spending on healthcare. Dental outpatient curative care expenditure is defined in the System of Health Accounts (SHA, OECD).[1] Trends in OOP for dental care are an important indicator of accessibility because dental health care is less covered by the sickness funds than other healthcare services and a high amount is paid by patients.
Primary data source	OECD Health Statistics 2018 (System of Health Accounts (SHA))[1]
Technical definitions	Out-of-pocket payments are expenditure borne directly by a patient because health insurance does not cover the (full) cost of the health good or service. They include cost-sharing (co-payment, coinsurance – "ticket modérateur" in French and "remgeld" in Dutch – or deductible), self-medication and other expenditure paid directly by private households. It does not include all of the patient contribution to long-term care in elderly and nursing homes. This is due to the fact that not all care provided in nursing homes (mostly used by the elderly) is classified under 'health care' in the health accounts (the Belgian estimate is limited to the copayment for 'nursing and care beds' only – copayments related to all other expenditure in nursing homes is considerd as 'social' care, and thus kept out of scope).

Limitations	Final household consumption is available through the national accounts and does not take into account cash allowances that households get (care allowances). In the Belgian SHA, expenditure for long-term healthcare (HC .3) is included for the out-of-pocket medical spending (under the assumptions above), where a correction is applied to the national accounts data, in order to correct for a.o. different care allowances that are available to households (these allowances are reported as public expenditure). Nevertheless, because the capacity of countries to estimate private long-term care expenditure varies widely, caution is needed in the comparison of figures, as comparability is not guaranteed. The patients out of pocket expenditure for dental care reported is also based on the households' final consumption estimation of the national accounts, with some technical corrections. One of these corrections concerns coverage by private insurances but due to a lack of detailed data, this correction is not fully accurate. Nevertheless, private insurances for ambulatory dental care are still limitedly spread in Belgium.
International comparability	The OECD definition was adopted. OECD member countries are at varying stages of implementing the System of Health Accounts (SHA). Therefore, the data reported in OECD Health Statistics 2018 are at varying levels of comparability.
Performance dimension	Accessibility of care
Related indicators	Healthcare expenditure according to the System of Health Accounts (OECD) Delayed contacts with health services for financial reasons

6.2.2. Results

Table 36 gives the evolution over time (2004-2016) of out-of-pocket payments expressed in million euros, as a percentage of current expenditure on health and in euros per capita. Total out-of-pocket payments (OOP) increased between 2004 and 2014 from 4.93 to 7.09 billion euros and tended to decrease since 2014 (6.73 billion € in 2016, see Table 36). The share of out-of-pocket payments in current expenditure on health remained constant during the same period and even tended to decrease in recent years (18.2% in 2004 and 15.9% in 2016, see Table 36) mainly due to an increase in public funding. Measured in per capita terms, out-of-pocket payments increased from € 473.3 in 2004 to € 632.9 in 2014 and slightly decreased since 2014 to reach € 593.8 per capita in 2016. Official co-payments (a part of these out-of-pocket payments) remains quite stable for the same period. One explanation is that safety nets, such as the maximum billing system or increased reimbursement of medical expenses, target the protection of patients against large amounts of co-payments only. Other out-of-pocket payments such as over-the-counter medicines or supplements are not included in these safety nets.

While OOP have slightly decreased these two latest years, health expenditure covered by voluntary health insurance has continued to slightly increase (from € 132 per capita in 2004 to € 189 per capita in 2016).

Table 36 – Out-of-pocket payments on health in Belgium (2004-2016)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
OOP payments (in million €)	4 932.5	4 901.4	5 269.1	5 716.9	5 864.1	6 150.2	6 338.0	6 692.1	6 778.3	7 040.5	7 093.7	6 823.8	6 729.0
Official co-payments (in million €); after MAB reimbursements*	1 320.1	1 349.5	1 364.4	1 432.2	1 575.5	1 660.0	1 610.5	1 627.5	1 671.6	1 680.5	1 677.5	1 756.5	-
Voluntary health care payment schemes (in million €)	1 450.6	1 531.4	1 587.0	1 692.1	1 514.1	1 490.6	1 543.5	1 704.7	1 719.2	1 833.8	1 913.2	2 132.9	2 261.9
OOP payments as a share of current expenditure on health	18.2%	17.6%	18.2%	18.7%	17.9%	17.6%	17.6%	17.6%	17.3%	17.5%	17.1%	16.5%	15.9%
OOP payments on dental care as a share of current expenditure on dental care	50.2%	48.8%	51.4%	51.2%	48.4%	49.9%	53.1%	55.4%	55.0%	55.0%	55.5%	56.2%	57.6%
OOP per capita in current prices (€)	473.3	467.8	499.5	538.0	547.5	569.6	581.7	606.3	610.3	630.9	632.9	605.3	593.8
Voluntary health care payment schemes per capita in current prices (€)	132.1	139.2	146.1	150.5	159.2	141.4	138.1	141.7	154.4	154.8	164.3	170.7	189.2
OOP per capita, purchasing power parity in current prices (US$)	$ 532.5	$ 524.5	$ 570.9	$ 611.4	$ 631.6	$ 670.1	$ 696.0	$ 728.8	$ 742.3	$ 782.6	$ 790.9	$ 755.3	$ 738.9

*Source: SHA, OECD Health Statistics 2018; * after Maximum Billing reimbursement (source: Assuralia 2018[2])*

The cost of healthcare for patients or households is not necessarily the same as the financial burden of healthcare. A household financial burden is measured in terms of its capacity to pay rather than an absolute amount of out-of-pocket payment. Hence, the financial burden depends on household income. Since out-of-pocket payments for health displaces resources available for other goods and services, they should be related to household consumption patterns to measure 'financial protection' in health.

The Household Budget Survey (2016) showed that, on average, the share of out-of-pocket payments in total household consumption is 4.6% in Belgium (i.e. € 1 571 on average per household per year and € 689 per inhabitant per year, see Table 36). There were small differences between regions in terms of health expenditure. Higher income households spend twice as much on health as lower income households (€ 2 154 for higher income households versus € 954 for lower income households in 2016).

Table 37 – Average OOP health expenditure per household and as a share of total household consumption per year, in Belgium (2012-2016)

			2012	2014	2016
Average OOP health expenditure per inhabitant (in €)	Region	Belgium	635	716	689
		Brussels	615	726	644
		Flanders	640	740	688
		Wallonia	634	668	705
Average OOP health expenditure per household (in €)	Region	Belgium	1 497	1 655	1 571
		Brussels	1 317	1 520	1 396
		Flanders	1 529	1 738	1 586
		Wallonia	1 503	1 558	1 606
	Income level	Lower income quartile (<Q25)	1 005	983	954
		Top income quartile (>Q75)	1 944	2 346	2 154
OOP health expenditure as a share of total household consumption	Region	Belgium	4.2%	4.6%	4.6%
		Brussels	4.5%	4.9%	4.7%
		Flanders	4.1%	4.6%	4.4%
		Wallonia	4.3%	4.6%	4.9%
	Income level	Lower income quartile (<Q25)	5.1%	4.9%	4.9%
		Top income quartile (>Q75)	3.6%	4.4%	4.2%

Source: Household Budget Survey (2016); https://statbel.fgov.be/fr/themes/menages/budget-des-menages#news

A third dimension of coverage, in addition to population and cost coverage, is service coverage which can be defined as the proportion of primary health coverage in total health spending. Service coverage in Belgium largely varies by function of care: 86.9% service coverage for inpatient care (curative and rehabilitative care), 73.6% for outpatient care (curative care and rehabilitative care, with the lower coverage for dental care, i.e. 42.4%), 94.4% for long-term care, 92.5% for ancillary services, and 70.2% for pharmaceuticals goods (2016 SHA data).

International comparison

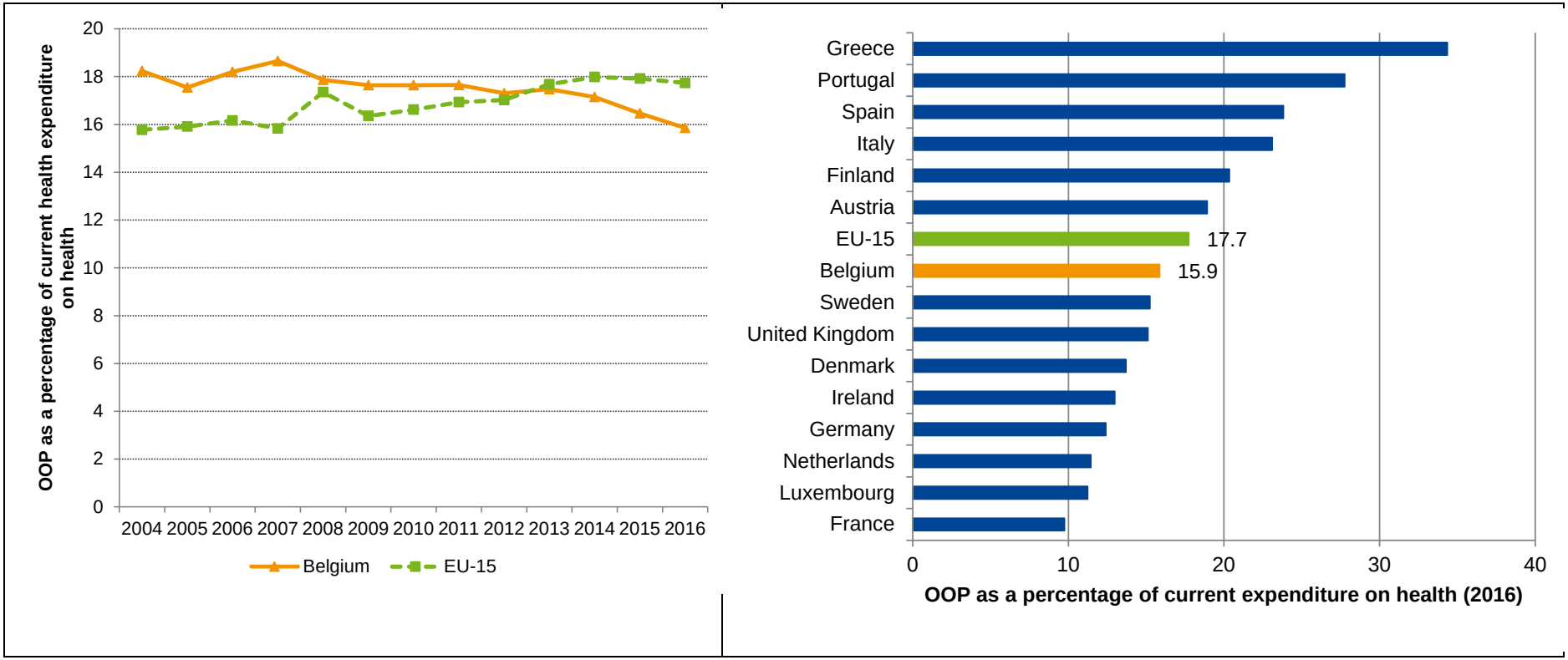
In an international perspective (Figure 65), out-of-pocket payments represent a relatively large share in current expenditure on health in Belgium (15.9%), with only Finland, Austria and the Southern European countries showing a larger share. In Portugal and Greece out-of-pocket payments are more than 25% of current expenditure on health. In France the share is slightly less than 10%. Figure 65 also compares the evolution over time (2004-2016) of the share of out-of-pocket payments in current expenditure on health between Belgium and EU-15. For the whole period the share for Belgium was similar to the share for EU-15 and ranged between 16% and 18%. Since 2013, the share of out-of-pocket payments in current expenditure on health for Belgian is nevertheless below the share for EU-15.

When out-of-pocket payments are expressed per capita, Belgium is above the EU-15 average (US $ 739 PPP, see Figure 66). The EU-15 average amounted to US $ 732 (PPP). Austria, Finland and Sweden are at the top of the ranking (see Figure 66). In France out-of-pocket payments per capita amounted to US $ 466 (PPP) in 2016. Figure 66 also compares the evolution over time (2004-2016) of the share of out-of-pocket payments per capita between Belgium and EU-15. Both in Belgium and in EU-15, the average amount per capita increased between 2004 and 2014 (from US $ 533, PPP to US $ 791, PPP in Belgium). Since 2014, the trend seems to slightly decrease in Belgium, to reach US $ 739, PPP per capita in 2016.

Figure 67 measures the burden of out-of-pocket medical spending (i.e. OOP on health excluding OOP on long-term healthcare to make results more comparable between countries) as a share of final household consumption. The share of household consumption allocated to medical care varied across European countries, ranging from about 1.5% of final household consumption in Luxembourg, France and the United Kingdom, to 4% in Greece. In 2016, Belgian households spent 3% of their final consumption on health (excluding long-term care) and it was higher than the EU-15 average of 2.6% (see Figure 67).

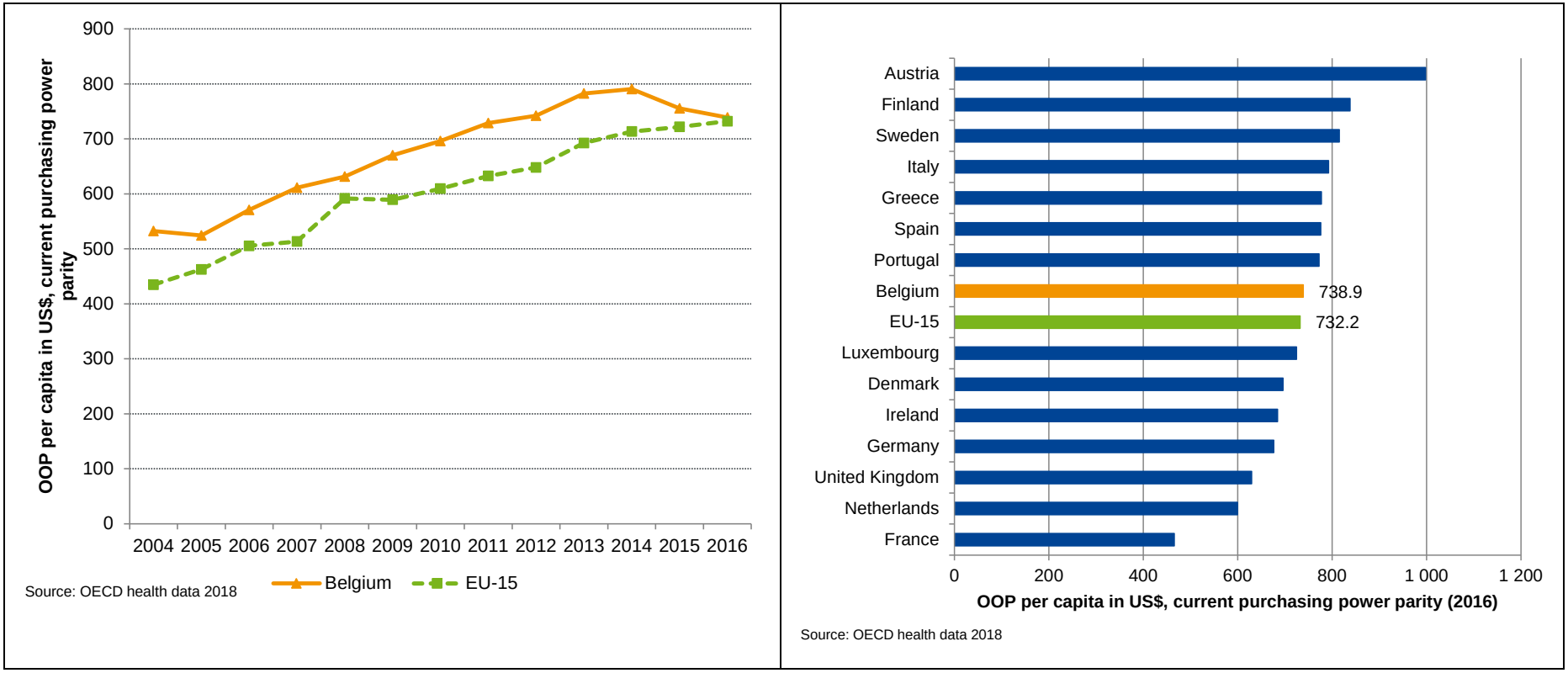
Concerning dental care, the share of out-of-pocket payments is high. With a share of 57.6% in 2016, Belgium is slightly below the European average (based on 10 countries) but is above bordering countries such as Germany (25.5%) and the Netherlands (21.7%). The high European average is mainly due to the fact that dental care in Greece and Spain are almost not covered. Over time (2004-2016), Belgium remain close to the European average but the share of out-of-pocket payments increase slightly from around 50% in 2004 to almost 60% in 2016 (see Figure 68).

Figure 65 – Out-of-pocket payments as a percentage of current expenditure on health: international comparison (2004-2016)



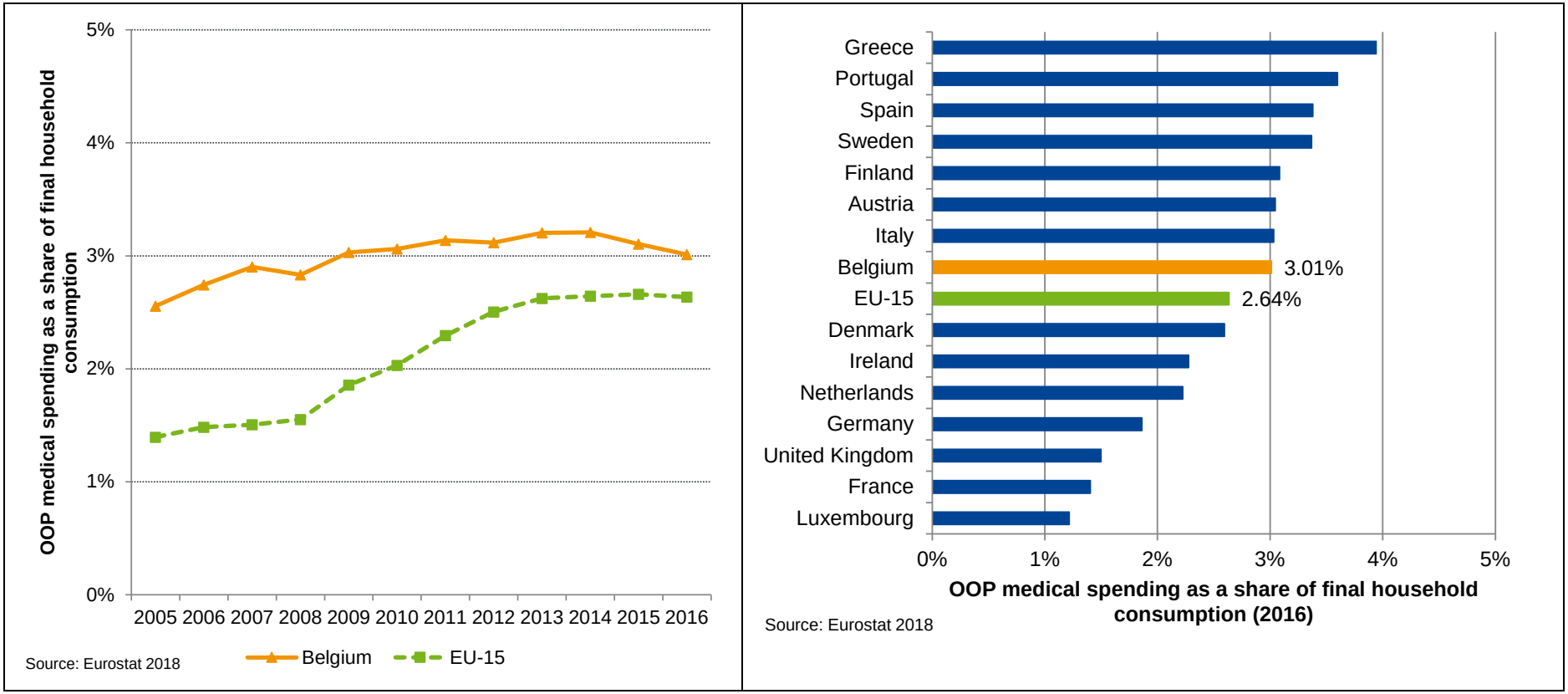
Source: OECD Health Statistics 2018

Figure 66 – Out-of-pocket payments per capita, current prices (US$), purchasing power parity: international comparison (2004-2016)



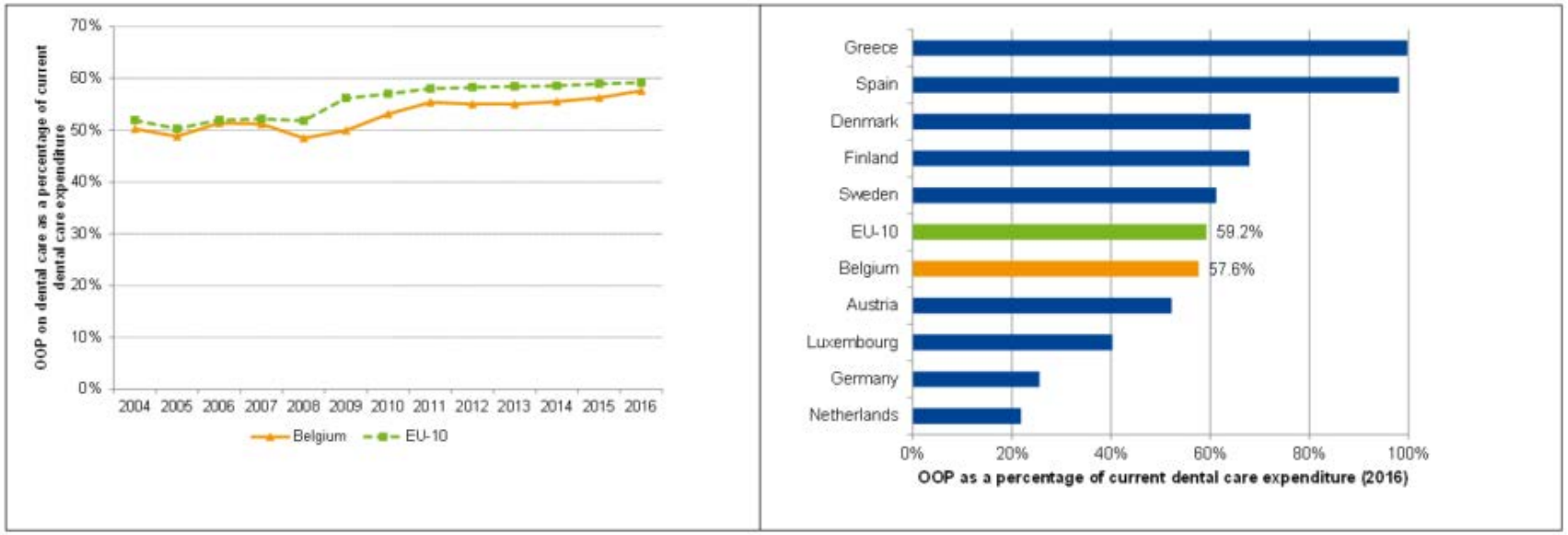
Source: OECD Health Statistics 2018

Figure 67 – Out-of-pocket medical spending* as a share of final household consumption: international comparison (2005-2016)



*Source: SHA - Eurostat 2018; *This indicator refers to current health spending excluding long-term care (health) expenditure. The source differs from results in Table 2 (based on the household budget survey).*

Figure 68 – Out-of-pocket payments on dental care as a percentage of current expenditure on dental care: international comparison (2004-2016)



Source: OECD Health Statistics 2018

Key points

- **High out-of-pocket payments for health, which are private payments at the point of use, may raise issues of accessibility of healthcare.**
- **Out-of-pocket payments in Belgium increased between 2004 and 2014 from 4.93 to 7.09 billion euros and after 2014, tended to decrease. In 2016, OOP payments accounted for 6.73 billion € in absolute amounts and for € 593.8 per capita.**
- **The share of out-of-pocket payments in current expenditure on health for Belgium was similar to the share for EU-15 and ranged between 16% and 18% in the 2004-2016 period. However, the share for Belgium is below the share for the EU-15 since 2013. For dental care, the share of out-of-pocket payments was also similar to the share for EU-10 and increased from 50% to 58% in the 2004-2016 period.**
- **Out-of-pocket payments per capita in Belgium increased from US $533 (PPP) to US $738 (PPP) in the 2004-2016 period and for the whole period they are above the EU-15 average. Since 2014 there has been a decreasing trend in Belgium, but not in the EU-15 countries.**
- **The share of household consumption allocated to medical spending excluding long-term care expenditure amounted to 3% in Belgium in 2016 compared to 2.6% as the EU-15 average.**

References

1. OECD. Health Working Paper (forthcoming) based on 2015 Joint Health Accounts Questionnaire. OECD Publishing: 2015.
2. Assuralia. Les dépenses nationales en soins de santé, 13ième édition. Bruxelles: Assuralia; 2018. Available from: https://www.assuralia.be/images/docs/stats/FR/01_etudes-Assuralia/depenses-nationales-sante-chiffres2015_13edi.pdf

6.3. Self-reported delayed contacts with health services for financial reasons (% of households) (A-4)

6.3.1. Documentation sheet

Description	Self-reported delayed contacts with health services for financial reasons (% of households)
Calculation	Numerator: number of households that answered yes to one of the sub-questions in question AC.04. in the HIS survey (see below) Denominator: total number of households included in the survey
Rationale	Financial access is a basic condition for a functional healthcare system. Foregoing necessary treatment because of its cost can be detrimental to a person's health. High out-of-pocket payments that affect other necessary expenses are also considered undesirable. Care is generally considered financially inaccessible when people limit or postpone the use of necessary care because of (excessively) high costs, or when they have to relinquish other basic necessities because they need care. Delayed contacts is therefore one of the indicators for unmet needs.
Primary data source	Health Interview Survey (HIS); EU Statistics on Income and Living Conditions (EU-SILC) from Eurostat
Technical definitions	**Health Interview Survey (HIS)** AC.04. Was there any time during the past 12 months, when you or someone in the household needed the following kinds of care, but could not afford it? • AC.04.01. Medical care or a surgery (yes/no)? • AC.04.02. Dental care (yes/no)? • AC.04.03. Prescribed medicines (yes/no)? • AC.04.04. Eyeglasses or contact lenses (yes/no)? • AC.04.05. Mental healthcare, by a psychologist or a psychiatrist for example (yes/no)? An indicator AC_04 was constructed and set equal to one as soon as one household member answered yes to one of the above questions and the household was considered to have postponed healthcare for financial reasons. More technical details on the methodology are available in the HIS report.[1] **EU-SILC[2]** PH050_Q1: What was the main reason for not having a medical examination or treatment? Could not afford to: • Too expensive • Waiting list • Could not take time because of work, care for children or for others • Too far to travel or no means of transportation • Fear of medical doctors, hospitals, examination or treatment

	• Wanted to wait and see if problem got better on its own • Didn't know any good medical doctor • Other reasons
International comparability	Data on unmet healthcare needs are available in Eurostat based on the EU-SILC survey. Data in the EU-SILC refer to individuals aged 16 years and over in private households (collective households are excluded) and results are not standardised for age or sex. The EU-SILC survey includes questions on different possible barriers (such as cost, distance, waiting times, etc.) to accessing medical or dental examinations or treatment, but does not include questions on unmet need for surgery, prescribed medicines, eyeglasses or contact lenses or mental healthcare.
Limitations	The HIS results are based on the HIS 2013 because the HIS 2019 is not yet available. Results will be updated on the website. For the EU-SILC data, there is a break in the data series in 2011 (change of method). The results for the percentage of households delaying contacts with health services for financial reasons in the HIS are divergent from those in the Eurostat database, which are based on the EU-Statistics on Income and Living Conditions (EU-SILC) survey.
Performance dimension	Accessibility; Equity
Related indicators	Out-of-pocket payments as a share of current healthcare expenditure and per capita

6.3.2. Results

Analysis based on the HIS (2013) survey

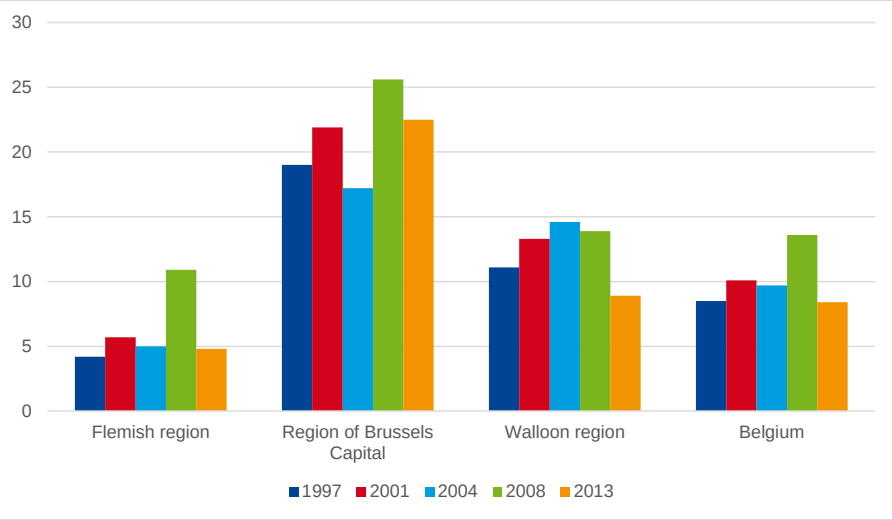
In 2013, 8% of households declared that they had to postpone healthcare (medical care, surgery, dental care, prescribed medicines, eyeglasses or contact lenses, mental healthcare) for financial reasons.[3]

There is a clear association with the level of education of the household head: 12.5% for households from the lowest education level (primary or no degree for the household head) versus 6.2% for households in the highest education level (superior education for the household head). This is also true for household income: 19.1% for households in the lowest income level versus 2.6% for households in the highest income level.[3]

There is also a regional difference: in Brussels 22% of households declared to postpone healthcare, versus 9% in Wallonia and 5% in Flanders. In the three regions this percentage is increasing over time (see Figure 69).

Figure 69 also shows the evolution since the first Health Interview Survey in 1997. For Belgium, the share of households that postponed healthcare was more or less stable in 1997, 2001, 2004 and 2013 (around 8%) but increased to 13.6% in 2008. The results for Flanders and Brussels show a comparable course over time, be it at a lower (Flanders) or higher (Brussels) level. The results for Wallonia are deviating from the other regions: the highest level was found in 2004 and not in 2008 and the results for 2013 are the best since the first survey in 1997.

Figure 69 – Percentage of households that reported to have delayed contacts with health services for financial reasons, by region (1997-2013)



Source: Sciensano 2018[3]

Analysis based on EU-SILC survey

The results for the percentage of households delaying contacts with health services for financial reasons in the HIS are divergent from those in the Eurostat database, which are based on the EU-Statistics on Income and Living Conditions (EU-SILC) survey.[2]

The share of persons aged 16 and over in Belgium reporting unmet needs for medical examination due to financial reasons increased over the time from 0.5% in 2008 to 2.2% in 2014 and then stabilized to reach 2.0% in 2017[u] (see Table 38). Women reported more unmet needs for medical examination due to cost than men (see Figure 70).

[u] And is similar (2.1%) when other reasons than the cost (i.e. distance, waiting times, etc.) are also taken into account.

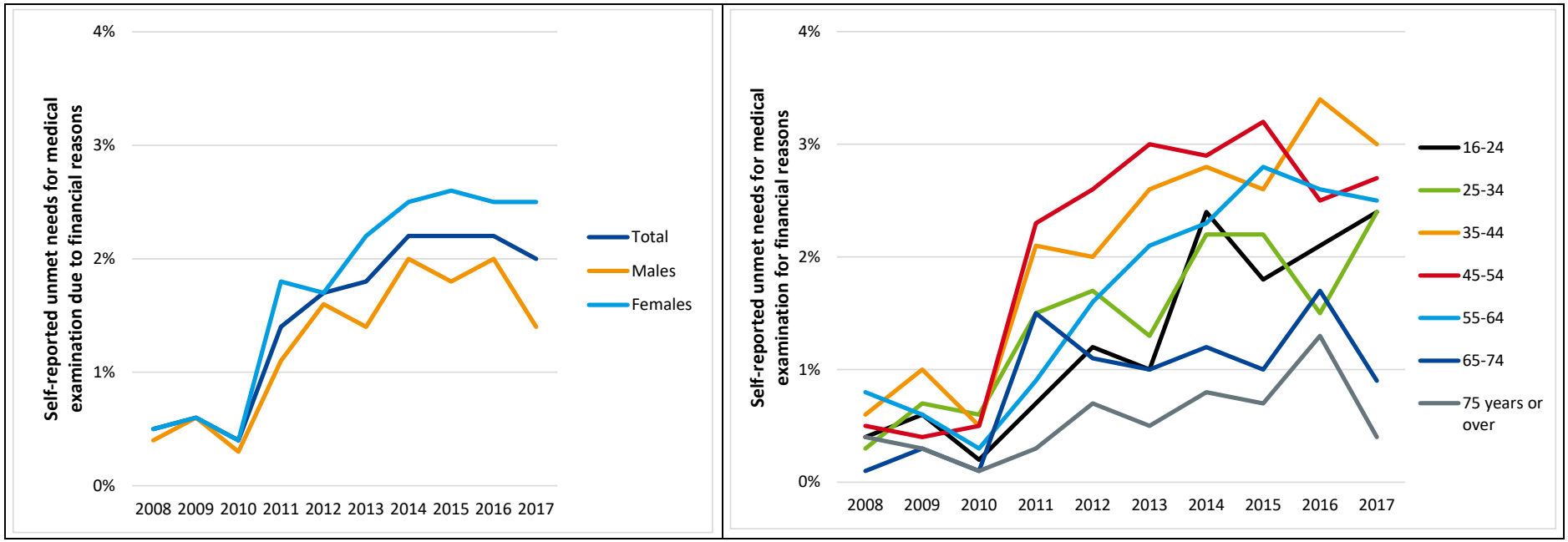
The share of persons reporting unmet needs for medical examination due to cost is highest for patients aged between 35 and 64 years old, followed by younger patients (aged between 16 and 34 years old). In older patients (65 years and older) the share is the lowest (see Figure 70). There are large differences between income quintiles (equivalent disposable household income, see Table 38 and Figure 71). The share of persons reporting unmet needs for medical examination due to cost was 0% in 2017 for the highest income quintile versus 6.7% for the lowest income quintile (see Table 38).

Table 38 – Share of individuals with self-reported unmet needs for medical examination due to financial reasons in Belgium (2008-2017)

EU-SILC		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Belgium		0.5%	0.6%	0.4%	1.4%	1.7%	1.8%	2.2%	2.2%	2.2%	2.0%
Gender	**Males**	0.4%	0.6%	0.3%	1.1%	1.6%	1.4%	2.0%	1.8%	2.0%	1.4%
	Females	0.5%	0.6%	0.4%	1.8%	1.7%	2.2%	2.5%	2.6%	2.5%	2.5%
Age category	**16-24**	0.4%	0.6%	0.2%	0.7%	1.2%	1.0%	2.4%	1.8%	2.1%	2.4%
	25-34	0.3%	0.7%	0.6%	1.5%	1.7%	1.3%	2.2%	2.2%	1.5%	2.4%
	35-44	0.6%	1.0%	0.5%	2.1%	2.0%	2.6%	2.8%	2.6%	3.4%	3.0%
	45-54	0.5%	0.4%	0.5%	2.3%	2.6%	3.0%	2.9%	3.2%	2.5%	2.7%
	55-64	0.8%	0.6%	0.3%	0.9%	1.6%	2.1%	2.3%	2.8%	2.6%	2.5%
	65-74	0.1%	0.3%	0.1%	1.5%	1.1%	1.0%	1.2%	1.0%	1.7%	0.9%
	75 years or over	0.4%	0.3%	0.1%	0.3%	0.7%	0.5%	0.8%	0.7%	1.3%	0.4%
Income levels	**First quintile**	1.4%	1.5%	1.2%	4.1%	4.8%	5.3%	7.6%	7.0%	7.7%	6.7%
	Second quintile	0.6%	0.9%	0.2%	1.9%	2.3%	2.0%	2.1%	2.9%	2.4%	2.0%
	Third quintile	0.1%	0.2%	0.3%	0.8%	0.8%	1.6%	1.2%	0.8%	0.9%	1.0%
	Fourth quintile	0.1%	0.3%	0.1%	0.3%	0.5%	0.2%	0.5%	0.4%	0.2%	0.3%
	Fifth quintile	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%

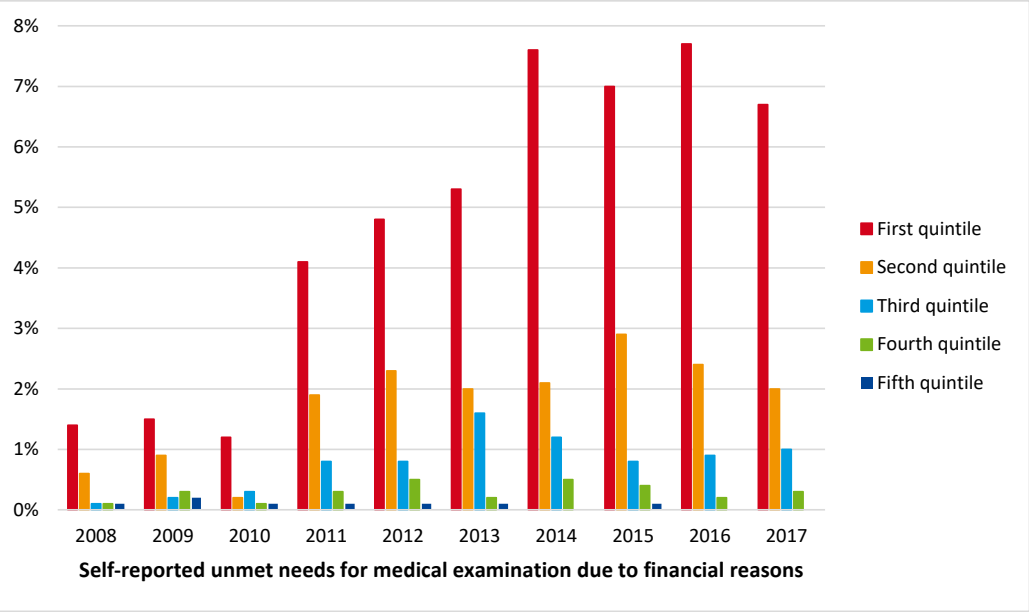
Source: Eurostat – EU-SILC 2018

Figure 70 – Share of individuals with self-reported unmet needs for medical examination due to financial reasons in Belgium, by gender and by age category (2008-2017)



Source: Eurostat – EU-SILC 2018

Figure 71 – Share of individuals with self-reported unmet needs for medical examination due to financial reasons in Belgium, by income level (2008-2017)



Source: Eurostat – EU-SILC 2018

The results for **dental care** show a comparable pattern but shares are higher: 1.4% in 2008 and 3.5% in 2017 for unmet needs due to financial reasons for the population aged 16 and over (see Table 39 and Figure 72).

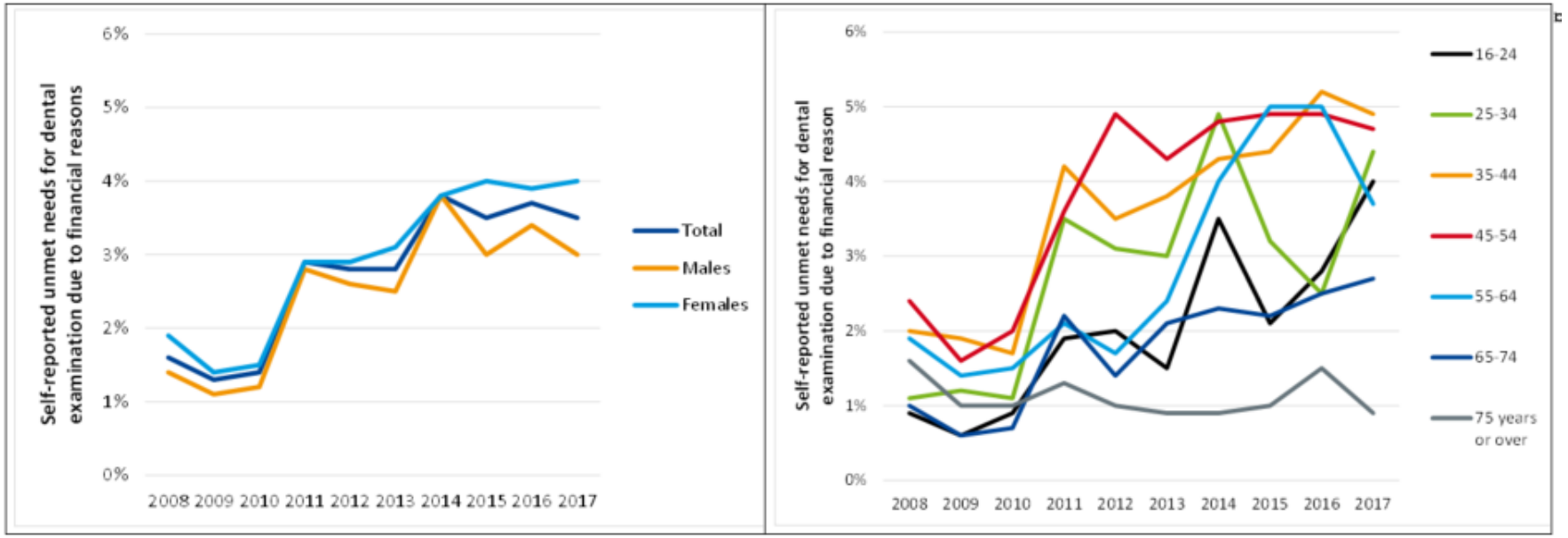
Results per income quintile range from 0.3% for the highest income quintile to 10.5% for the lowest income quintile (see Table 39 and Figure 73). Results show an increase for dental care for the total population and for most income quintiles.

Table 39 – Self-reported unmet needs for dental examination due to financial reasons in Belgium (2008-2017)

EU-SILC		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Belgium		1.6%	1.3%	1.4%	2.9%	2.8%	2.8%	3.8%	3.5%	3.7%	3.5%
Gender	**Males**	1.4%	1.1%	1.2%	2.8%	2.6%	2.5%	3.8%	3.0%	3.4%	3.0%
	Females	1.9%	1.4%	1.5%	2.9%	2.9%	3.1%	3.8%	4.0%	3.9%	4.0%
Age category	**16-24**	0.9%	0.6%	0.9%	1.9%	2.0%	1.5%	3.5%	2.1%	2.8%	4.0%
	25-34	1.1%	1.2%	1.1%	3.5%	3.1%	3.0%	4.9%	3.2%	2.5%	4.4%
	35-44	2.0%	1.9%	1.7%	4.2%	3.5%	3.8%	4.3%	4.4%	5.2%	4.9%
	45-54	2.4%	1.6%	2.0%	3.6%	4.9%	4.3%	4.8%	4.9%	4.9%	4.7%
	55-64	1.9%	1.4%	1.5%	2.1%	1.7%	2.4%	4.0%	5.0%	5.0%	3.7%
	65-74	1.0%	0.6%	0.7%	2.2%	1.4%	2.1%	2.3%	2.2%	2.5%	2.7%
	75 years or over	1.6%	1.0%	1.0%	1.3%	1.0%	0.9%	0.9%	1.0%	1.5%	0.9%
Income levels	**First quintile**	5.1%	3.9%	4.1%	7.6%	6.8%	7.8%	11.5%	10.1%	11.3%	10.5%
	Second quintile	1.8%	1.3%	1.7%	4.1%	4.6%	4.0%	4.0%	4.3%	3.6%	4.3%
	Third quintile	0.8%	0.6%	0.7%	1.7%	1.7%	1.9%	2.9%	2.2%	2.6%	2.0%
	Fourth quintile	0.3%	0.5%	0.4%	1.0%	0.6%	0.2%	0.7%	1.0%	0.9%	0.6%
	Fifth quintile	0.3%	0.2%	0.1%	0.3%	0.2%	0.3%	0.3%	0.4%	0.0%	0.3%

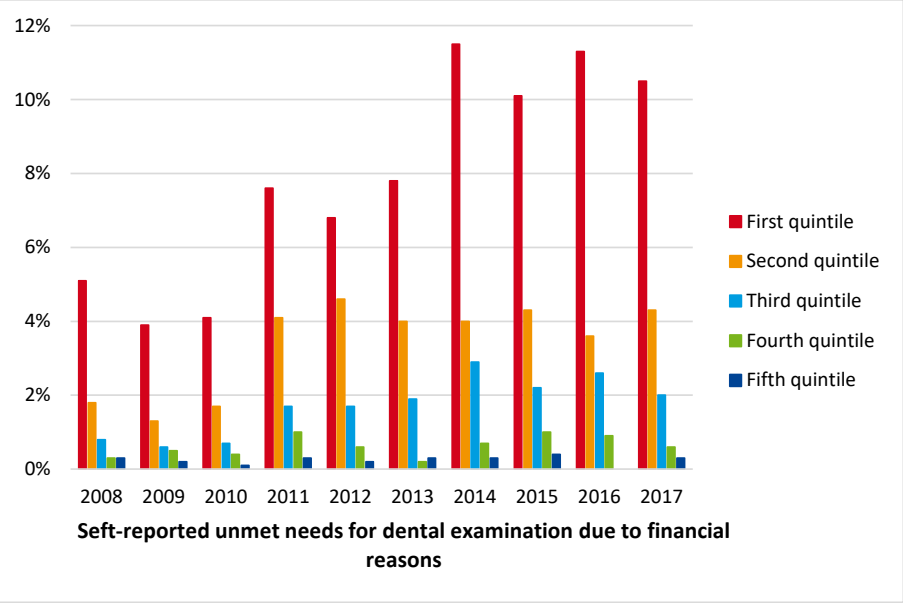
Source: Eurostat – EU-SILC 2018

Figure 72 – Self-reported unmet needs for dental examination due to financial reasons in Belgium, by gender and by age category (2008-2017)



Source: Eurostat – EU-SILC 2018

Figure 73 – Self-reported unmet needs for dental examination due to financial reasons in Belgium, by income level (2008-2017)



Source: Eurostat – EU-SILC 2018

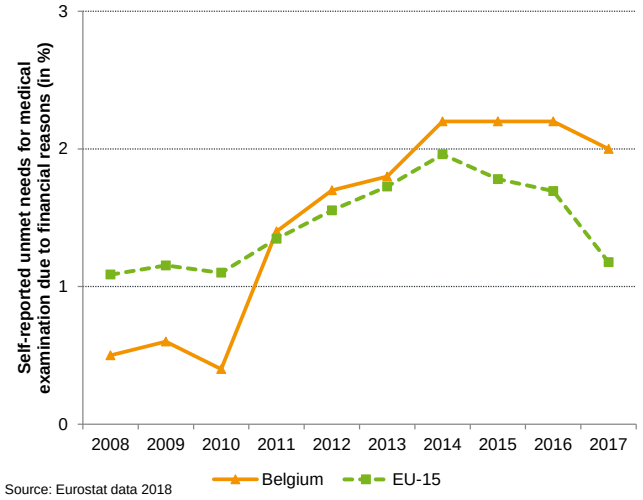
International comparison

Figure 74 and Figure 75 represent self-reported unmet needs for medical and dental examination due to financial reasons in Belgium and other European countries (EU-15). For medical examination, the share of unmet needs due to financial reasons is higher in Belgium than the EU-15 average in 2017 (respectively 2.0% and 1.2%, see Figure 74). Only Greece has unmet needs for medical examination due to financial reasons higher than in Belgium (8.2% in Greece)[v]. The share of unmet needs for medical examination due to financial reasons is stable around 2.2% in Belgium since 2014 (see Figure 74).

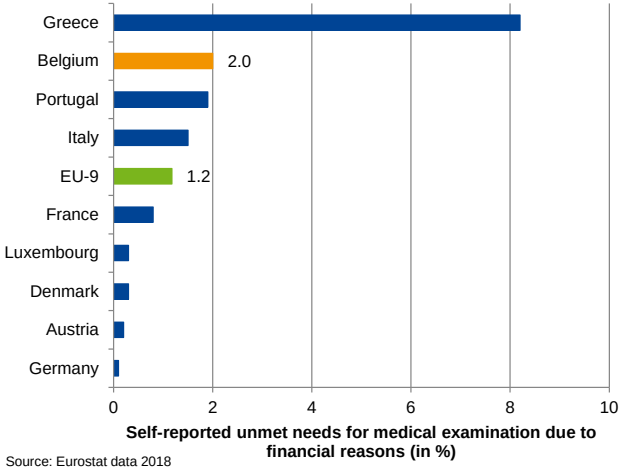
For dental examination, the share of unmet needs due to financial reasons is also higher in Belgium than the EU-15 average in 2017 (respectively 3.5% and 3.2%, see Figure 75). This share is higher in Portugal, Greece, Denmark and Spain. The share of unmet needs due to financial reasons is higher for dental examination than medical examination in most of the European countries. The share of unmet needs for dental examination due to financial reasons seems to be stable around 3.5% since 2014 in Belgium (see Figure 75).

[v] Based on 9 countries. In 2016, based on the EU-15, only Italy and Greece (5% in Italy and 12% in Greece) had unmet needs for medical examination due to financial reasons higher than in Belgium (2.2%)

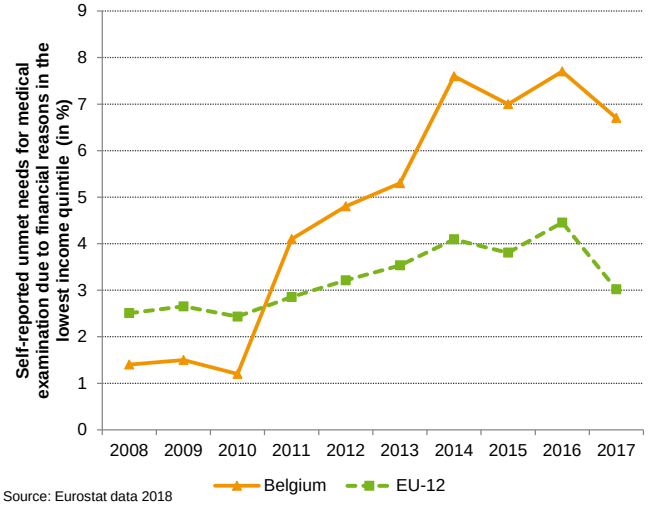
Figure 74 – Self-reported unmet needs for medical examination due to financial reasons: international comparison (2008-2017)



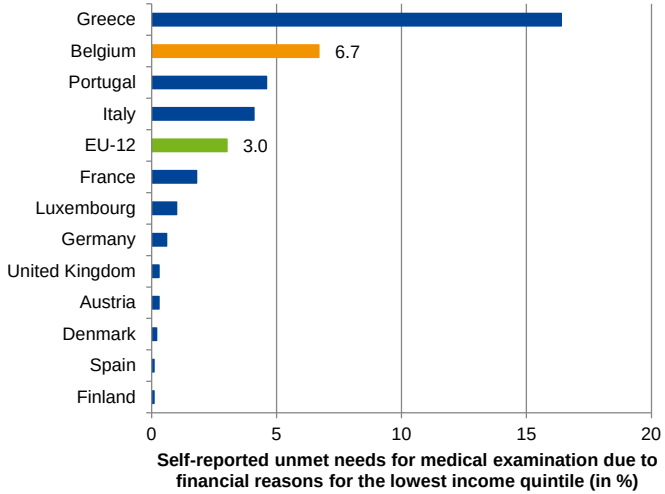
Source: Eurostat data 2018



Source: Eurostat data 2018

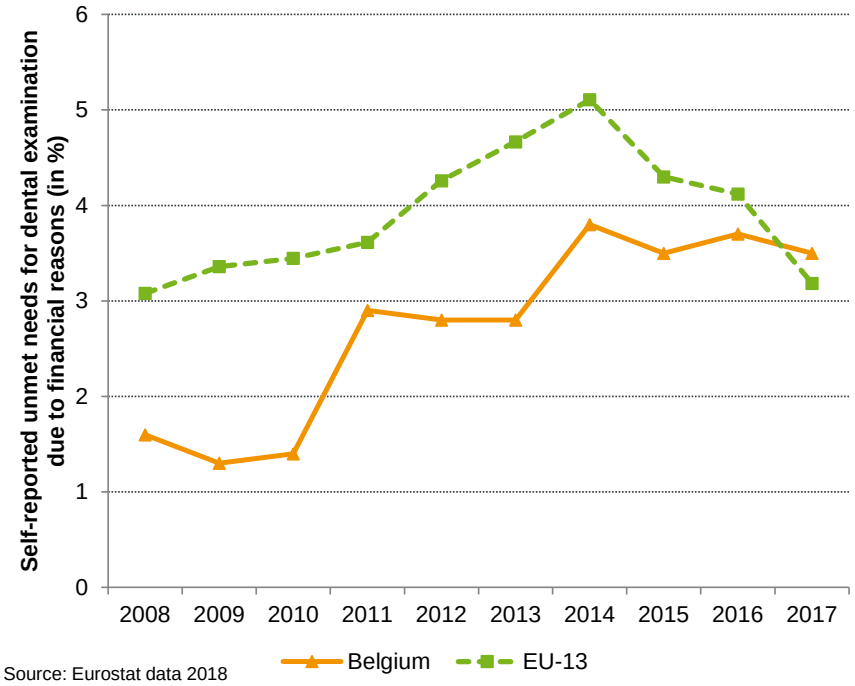


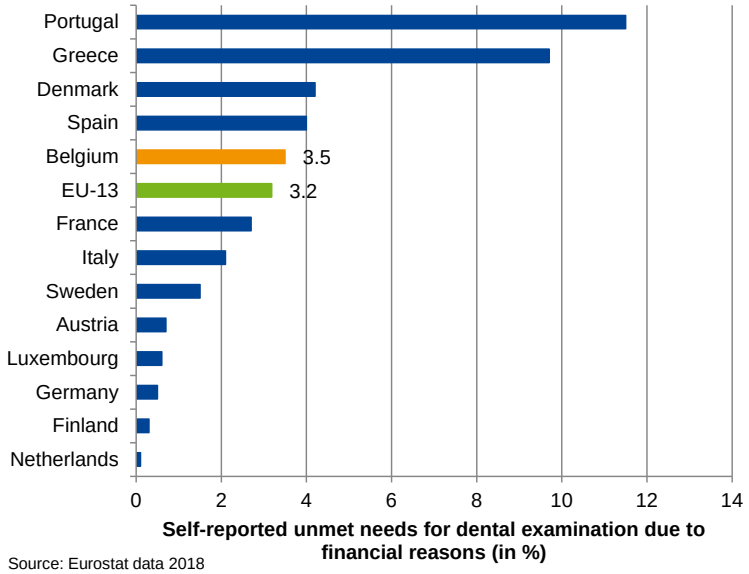
Source: Eurostat data 2018



Source: Eurostat – EU-SILC 2018

Figure 75 – Self-reported unmet needs for dental examination due to financial reasons: international comparison (2008-2016)





Source: Eurostat – EU-SILC 2018

Key points

- **The percentage of households delaying contacts with health services for financial reasons is an indicator of how accessible, at least in financial terms, a health system is.**
- **In 2013, 8% of the households declared that they had to postpone healthcare (medical care, surgery, medicines, eyeglasses or contact lenses, mental healthcare) for at least one of the household member for financial reasons. The percentage is in line with results of previous surveys (1997, 2001 and 2004) but is lower than the 14% found in 2008.**
- **Shares of households delaying contacts with health services are not equally spread across different income or educational groups. Generally, the lower the income or educational level, the larger the percentage of households that has to postpone healthcare for financial reasons.**
- **There is also a clear regional difference: in Brussels 22% of households declared to postpone healthcare, versus 9% in Wallonia and 5% in Flanders.**
- **According to the EU-SILC, the share of individuals with self-reported unmet needs due to financial reasons is higher for dental examination (3.5%) than for medical examination (2.0%) in Belgium. In 2017, the share of individuals with unmet needs due to financial reasons is higher in Belgium than the EU-15 average for both dental examination and medical examination.**
- **Self-reported unmet needs due to financial reasons for the lowest income quintile group are among the highest in Europe for both medical and dental examinations.**

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6.4. Accessibility to agreed tariffs: Practising GP in FTEs acceding to the agreement (per 10 000 population) (A-12) and Practising dentists in FTEs acceding to the agreement (per 10 000 population) (A-13)

6.4.1. Documentation sheet

Description	Number of practising conventioned GPs FTE (care providers) per 10 000 population Number of practising conventioned dentists FTE (care providers) per 10 000 population
Calculation	Numerator: number of GPs FTE acceding to the agreement (conventionnés / geconventioneerde, x 10 000) Denominator: number of persons insured to a sickness fund
Rationale	Practitioners acceding to the agreement between INAMI – RIZIV and sickness funds ("conventioned" practitioners) allow patients to know what they will pay when consulting, giving them price certainty (sécurité tarifaire / tariefzekerheid): no supplement fees are charged, ensuring financial accessibility to the patients. The density of care providers who accede to the agreement gives important information regarding the accessibility of healthcare (geographical as well as financial) for the insured population. Since some practitioners exercise part time, full time equivalent (FTE) has been used instead of head counts.
Data source	RIZIV – INAMI annual statistics
Technical definitions	Compared to the fiche on practising physician, the denominator here is the number of insured people and not the Belgian population. The number of persons insured to a sickness fund is discussed in the technical sheet A-1. As some practitioner do not exercise full time, RIZIV – INAMI also calculate the number of practising physician in full time equivalent (FTE): it is estimated by the ratio between individual income and the median revenue for the same specialism for practitioners between 45 and 55 years old (with a cap at 1 FTE for a given practitioner). Contacts with care providers have been defined from the first two digits of the care provider number and qualification code: GPs: number=10 and qualification code=003, 004, 007, 008 Dentists: number=30 and qualification code=001, 002, 003, 004 Gynaecologists: number=10 and qualification code=340, 369, 978
Limitations	General practitioners working as salaried in medical houses or in homes for elderly do not declare income as self-employed and thus cannot be counted: they are subsequently added to the FTE numbers. Physicians still in training are excluded. Practitioners who did not accede to the agreement can also charge the agreement tariffs. This indicator is a proxy for financial accessibility. Regional analysis is based on the personal address of the practitioner and not on the addresses where (s)he practice. This mainly impact estimates in Brussels (underestimation).

International comparability	No comparison
Dimension	Sustainability, access, healthwork force
Related performance indicators	Qualification levels of healthcare providers (GP versus SPs). Medical graduates
Keywords	

6.4.2. Results

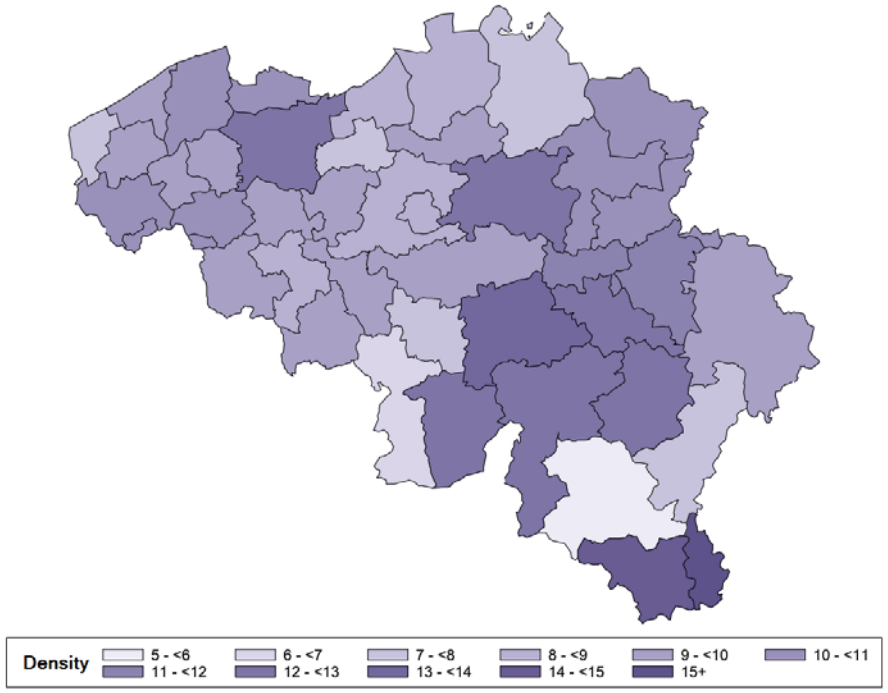
Belgium has an even distribution of its medical doctors across the territory (around only 20% difference of density between regions while in other European countries, a higher concentration of physicians in capital cities is observed). The population of general practitioner is relatively aging in Belgium, there are difficulties to find replacement GPs in some areas (see other workforce indicators such as medical graduates (S-4), medical graduates becoming GPs (S-5), mean aged of practising GPs (S-6) and practising physicians aged 55+ years (S-7) as well as practising physicians (A-5)). The 2016 geographical distribution has been looked into at the provincial level (see Table 40) and the district level (see Figure 76-79). Brussels and the Brabant wallon have a lower level of conventioned GP density when considering the FTE numbers, Luxembourg has a very low level of conventioned gynaecologists, and Antwerpen has a low level of conventioned dentists. At the district level, the geographical difference is mitigated when considering conventioned FTEs over number of conventioned GPs: in the former case, only the districts of Philippeville (province of Namur) and Arlon (province of Luxembourg) are far from the national mean. Conventioned FTEs have a greater significance for patient accessibility than the absolute number of conventioned practitioners; this is why for gynaecologists and dentists, the maps presented show the conventioned FTEs per 10 000 population only. The density of conventioned gynaecologists is low in some parts of Flanders: West-Vlaanderen except for the districts of Brugge and Oostende, in Aalst, Eekloo and Sint-Niklaas (Oost-Vlaanderen), in Mechelen (province Antwerpen); in Wallonia as well: Waremme and Verviers (Liège), Arlon, Bastogne and Virton (province Luxembourg) and in Philippeville (province Namur). Brussels and its neighbourhood (both Brabants) as well as Mons (Hainaut) have a somewhat higher density (not far from 1 conventioned gynaecologist per 10 000 population). The distribution of conventioned dentists (in FTE) is more even: only Veurne, Antwerpen and Charleroi are districts with a lower density while Liège is above average.

Table 40 – Conventioned practitioners: FTE density per 10 000 population, 2016 (see also for more medical specialties)

Geographic level	GPs (FTE density per 10 000 population)	Gynaecologists (FTE density per 10 000 population)	Dentists (FTE density per 10 000 population)
Province			
Antwerp	6.23	0.22	**1.84**
Walloon Brabant	**5.70**	0.68	3.14
Brussels Capital	**4.95**	0.52	4.29
Hainaut	6.02	0.51	2.50
Liège	7.47	0.31	4.81
Limburg	8.48	0.28	3.93
Luxembourg	6.85	**0.08**	3.57
Namur	8.33	0.26	2.84
East Flanders	7.80	0.22	2.99
Flemish Brabant	7.26	0.48	3.32
West Flanders	8.03	0.17	3.01
Region			
Belgium	6.97	0.33	3.17
Brussels	4.95	0.52	4.29
Flanders	7.40	0.26	2.85
Wallonia	6.81	0.41	3.40

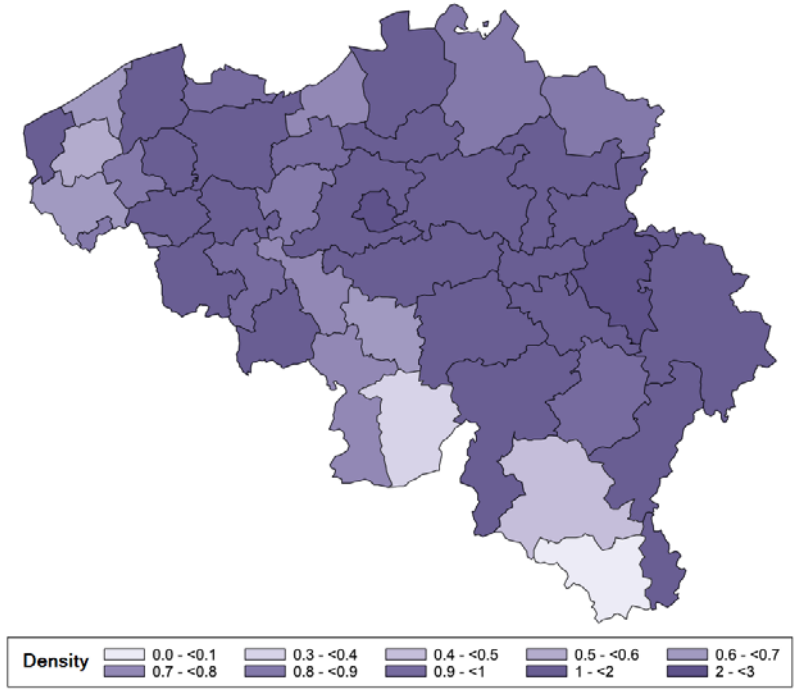
Source : INAMI – RIZIV

Figure 76 – Conventioned GPs density (by 10 000 insured population) by district (2016)



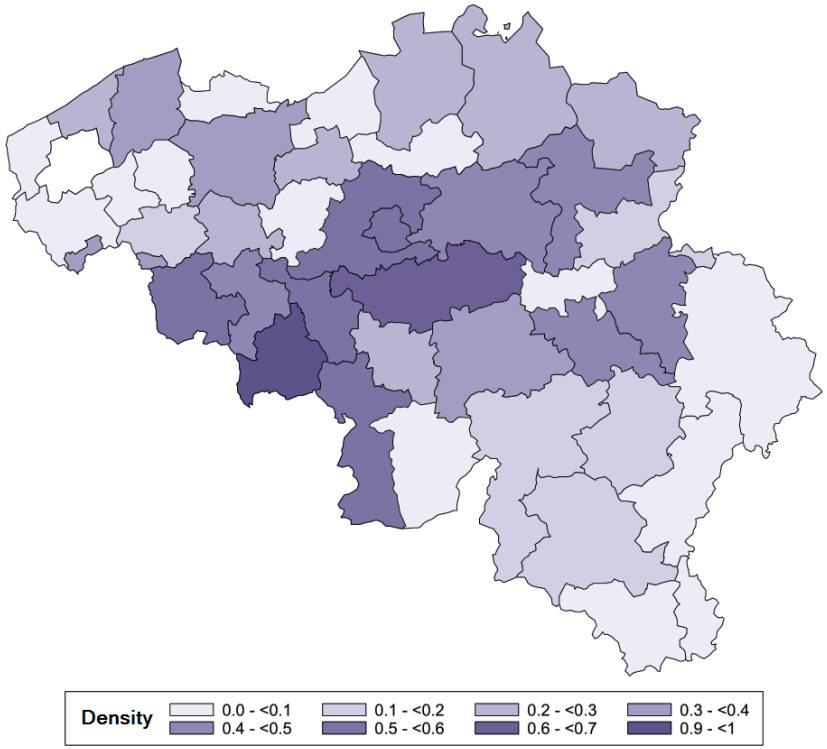
Source: INAMI - RIZIV

Figure 77 – Conventioned GPs density (FTE by 10 000 insured population) by district (2016)



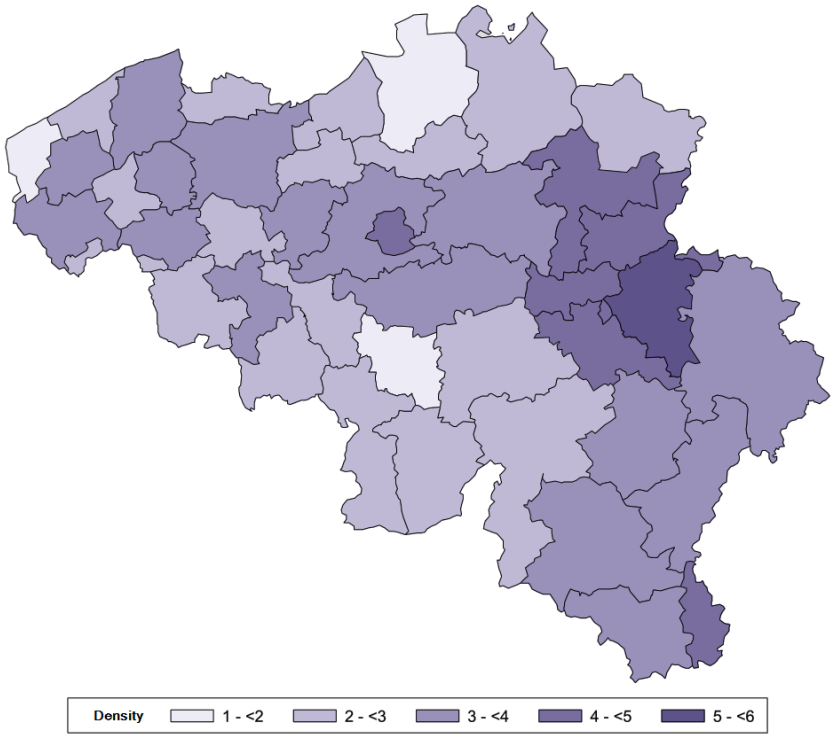
Source: INAMI – RIZIV

Figure 78 – Conventioned gynaecologists density (FTE by 10 000 insured population) by district (2016)



Source: INAMI – RIZIV

Figure 79 – Conventioned dentists density (FTE by 10 000 insured population) by district (2016)



Source: INAMI - RIZIV Key points

- **The density of practitioners acceding to the agreements can be used as proxy for geographical and financial access to outpatient healthcare**
- **When considering FTEs for active conventioned practitioners, the distribution is rather even for GPs and dentists (with small gaps for the districts of Antwerpen, Veurne and Charleroi for the latter); the density of conventioned gynaecologist (in full time equivalent) is generally low in Belgium, with the exception of Mons Percentage of the billed fee supplements to the billed official health insurance fees (A-14)**

6.4.3. Documentation sheet

Description	Percentage of the billed fee supplements to the billed official health insurance fees.
Calculation	Numerator: • Amount of the billed fee supplements Denominator: • Amount of the official (convention) health insurance fees RIZIV – INAMI (= reimbursed amount + co-payment ("remgeld"/"ticket modérateur")) For classic hospitalisation and day hospitalisation
Rationale	Currently fee and room supplements can only be billed in single rooms. Exceptions are made for the following situations: • when the health status of the patient or the technical conditions of the examination or treatment requires a single room, or if special surveillance is required; • when the patient is put in a single room because there is no double or multi-room available; • when the patient is admitted absent of his/her will to the emergency department or intensive care unit; • when a child is admitted and the accompanying parent has not explicitly signed for a single room. • Historically, fee and room supplements have been forbidden in consecutive phases: • Since 2010 room supplements are forbidden in double and multiple bed rooms, in *classic* as well as *day* hospitalisation. • Since 2013 also fee supplements are forbidden in double and multiple bed rooms for *classic* hospitalisation. • Since mid 2015, also fee supplements are forbidden in double and multiple bed rooms for most of the surgical interventions in *day* hospitalisation.

	A large part of the Belgian population has a hospitalisation insurance. Often this insurance reimburses – either partly or fully - the fee supplements billed in single rooms. This makes that many patients choose for a single room. However, given that supplements are rising, the insurance fees for an insurance policy covering single bed rooms risk to become unpayable for many persons. For certain hospitals the billing of fee supplements is a way to attract and keep physicians. This makes that some hospitals systematically propose single rooms to their patients. This reaction however could lead to a two-tier healthcare with a social stratification of hospitals, resulting in hospitals for the "rich" and hospitals for the "poor". Although it is forbidden, it was in the press that some physicians refuse to treat patients when they are in double or multi-room. This makes that not all patients have equal access to equally qualitative care.
Data source	IMA-AIM
Technical definition	
International comparability	No comparability
Dimension	Accessibility, Sustainability

6.4.4. Results

Total mass of billed fee supplements

For classic hospitalisation, in 2017 the total mass of fee supplements for classic hospitalisation amounted to 20% of the total mass of billed official tariffs. In 2015, this percentage was 18% (see Figure 80).

For one day hospitalisation, total mass of fee supplements amounted to 15% in 2015 and dropped slightly to 13% in 2017. The drop can be explained by the abolition of fee supplements in double and multiple rooms for one day hospitalisation since mid-2015.

For classic and one day hospitalisation, total mass of fee supplements was 18% of the total mass of billed official tariffs in 2017. This percentage remained stable compared to 2015.

Frequency of billing fee supplements

As from 2013 fee supplements have been abolished in classic hospitalisation for double and multiple bed rooms, they are only billed in case of hospitalisation in single bed rooms. Data of 2017 show that fee supplements were billed in 11% of fee billings (and more specifically in 12% of fee billings in classic hospitalisation and 8% of fee billings in one day hospitalisation) (see Table 41).

Impact on patients

The abolition of fee supplements in one day hospitalisation in double and multi bed rooms mid-2015 has led to a reduction by 11% in the number of patients confronted with fee supplements (classic + one day hospitalisations) in the period 2014-2017 (see Table 42). This reduction however only took place in the number of patients confronted with "low" supplements (<€1 000). The number of patients confronted with "high" supplements (>€1 000) has notably increased. This means that a shift took place, less patients were confronted with fee supplements, but the size of fee supplements increased.

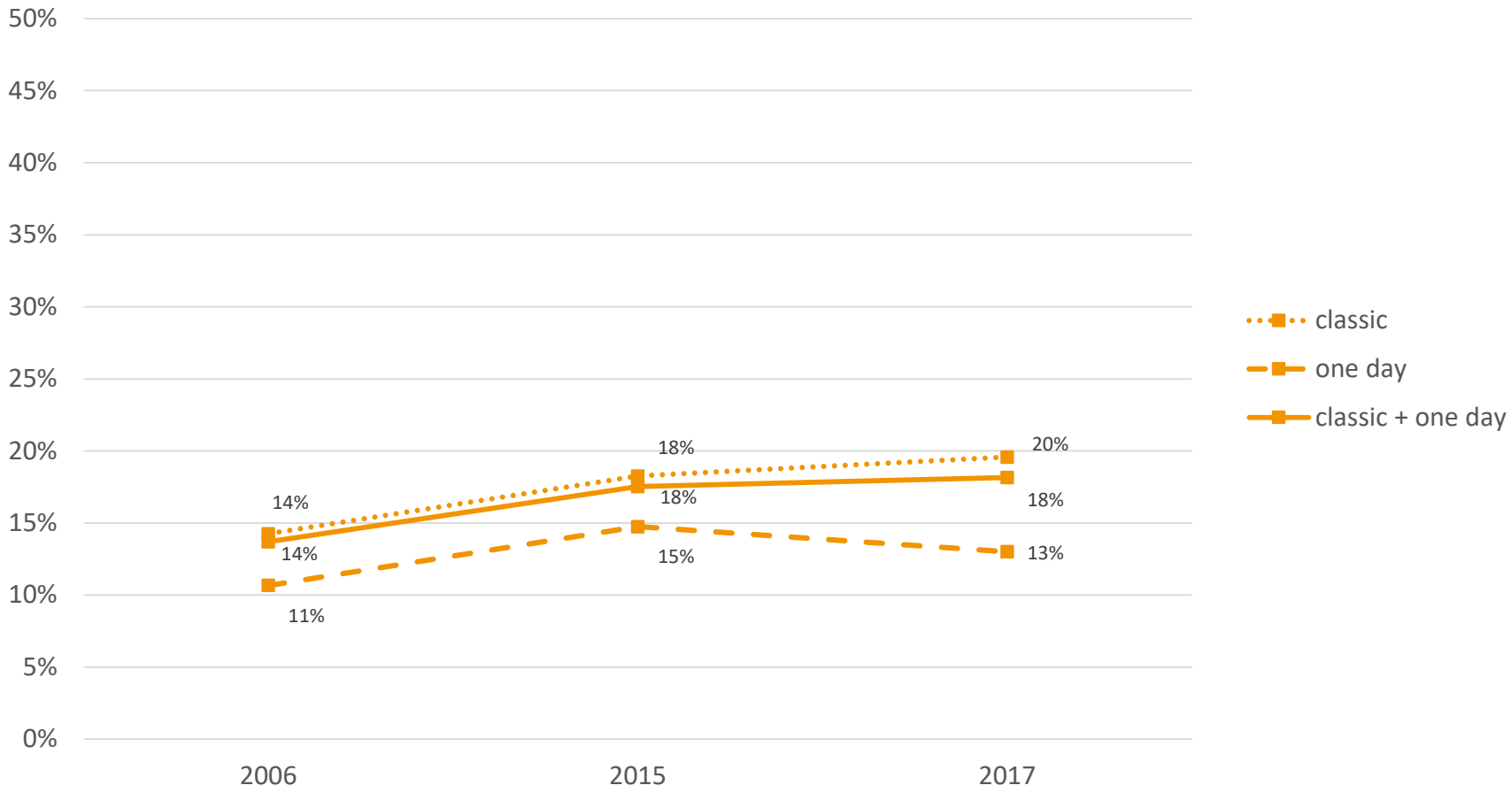
Regional variation

Figure 81 shows that the total mass of fee supplements to the total mass of billed official tariffs is highest in Brussels and lowest in Flanders. The proportion of stays for which fee supplements are billed varies slightly by region: 14% in Flanders, 13% in Wallonia and 17% in Brussels. However, in case fee supplements are billed, the height varies considerably between regions (see Figure 81). In Flanders, fee supplements are on average €800, in Wallonia €1 350 and in Brussels €1 700.

Variation between hospitals

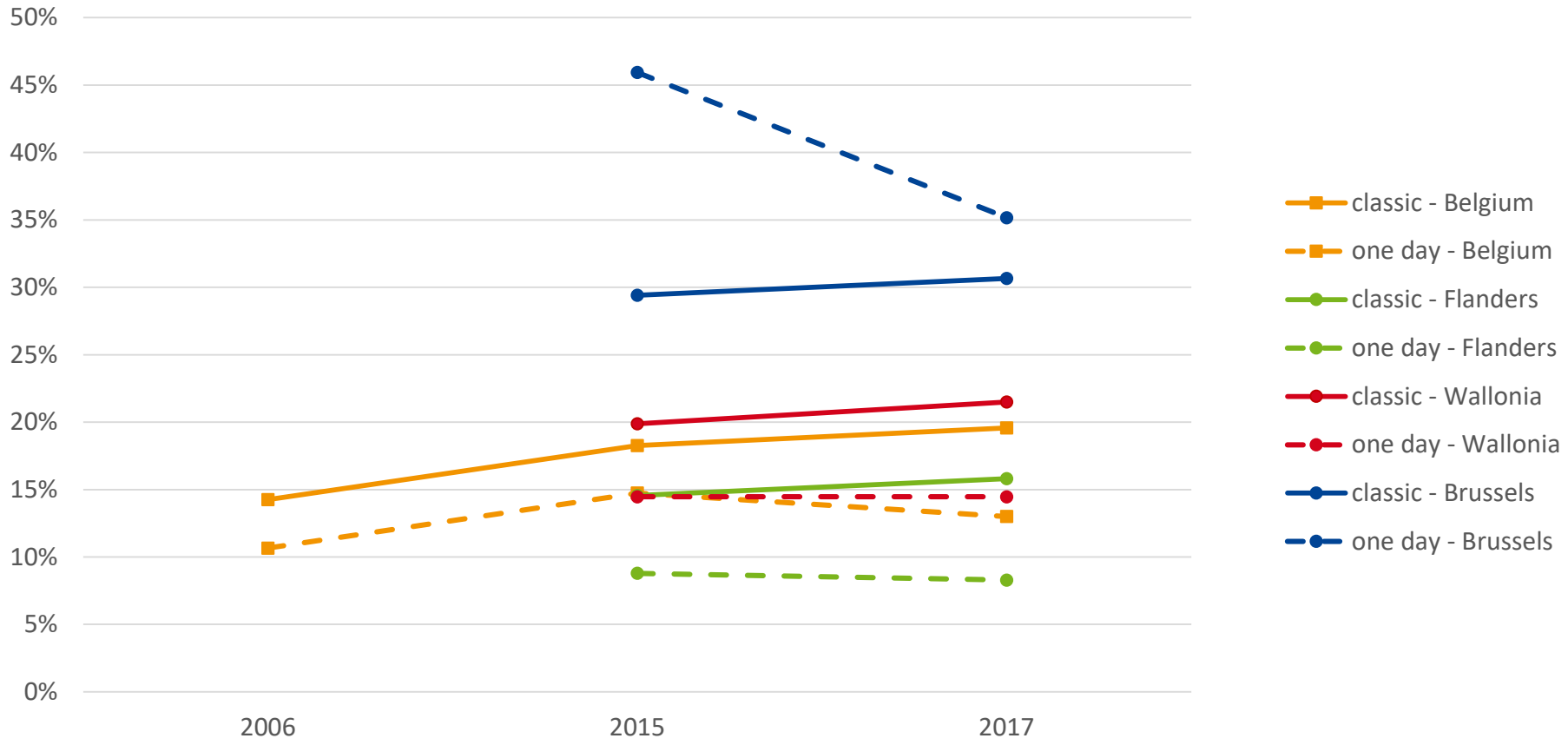
There is large variation between hospitals concerning the proportion of stays with fee supplements (see Figure 82). Looking at classic hospitalisation, in some hospitals only in 10% of stays fee supplements are billed, whereas in other hospitals in around 30% of stays fee supplements are billed. Looking at one day hospitalisation, the percentage also varies widely between 0 and 20%, and there are outliers.

Figure 80 – Percentage of the total mass of billed fee supplements to the total mass of official health insurance fees – evolution 2006-2015-2017 – Belgium



Source: IMA (data), KCE (graph)

Figure 81 – Percentage of the total mass of billed fee supplements to the total mass of official health insurance fees – evolution 2006-2015-2017 – per region



Source: IMA (data), KCE (graph)

Table 41 – Amount and frequency of fee supplements (2017)

	Billed official fees (million €)	Attested fee supplements (million €)	% of attested fee supplements to billed official fees	% of fee billings with supplements
Classic hospitalisation	2 431	476	20%	12%
One day hospitalisation	673	87	13%	8%
Total	3 104	563	18%	11%

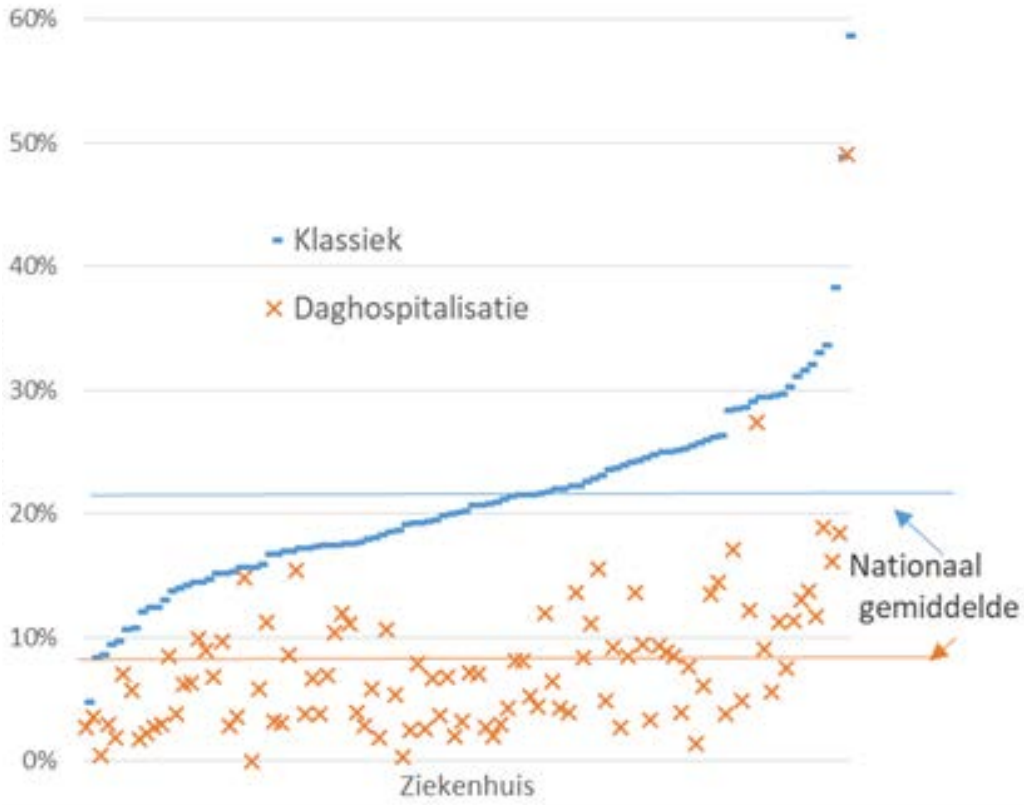
Source: IMA-AIM

Table 42 – Number of patients confronted with fee supplements (2014-2017)

	Number of patients (more than one stay possible per patient)		
	2014	2017	Evolution 2014-2017
All stays	2 072 245	2 146 435	3.6%
Without fee supplements	1 598 822	1 723 799	7.8%
With fee supplements, amongst which	473 423	422 636	-10.7%
0 to 1 000€	308 263	236 639	-23.2%
1 000€ to 3 000€	135 128	148 589	10.0%
3 000€ to 5 000€	19 864	23 535	18.5%
5 000€ to 10 000€	8 270	10 960	32.5%
10 000€ to 30 000€	1 874	2 880	53.7%
30 000€ and more	24	33	37.5%

Source: IMA-AIM

Figure 82 – Percentage of stays with fee supplements by hospital (2017)



Key points

- **Fee supplements have continued to grow since 2015. In 2017 they accounted for 18.1% of the offical billed fees, amounting in total to 563 million €. The growth especially took place in classic stays (+8% in the period 2015-2017). In one day, fee supplements shrinked over the same period with 5%. This can be explained by the abolition of fee supplements in double and multi bed rooms in one day setting since 28th of August 2015 (for classic stays fee supplements were already forbidden in these room types since 2013).**
- **Following the abolition of fee supplements in double and multi bed rooms in one day hospitalisation mid-2015, a shift took place. Fee supplements are billed in less hospital stays, but the height of supplements has increased.**
- **The debate on further abolition of supplements is inseparable from the larger debate on the reform of hospital and physician payment. Steps should be taken to guarantee equal access for patients to high-quality healthcare whilst ensuring sustainable payment for hospitals and physicians.**
- **Free choice of physician should be guaranteed, regardless of room type.**

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6.5. Catastrophic out-of-pocket health care expenditures (A-15)

6.5.1. Documentation sheet

Description	Catastrophic out-of-pocket payments
Calculation	Catastrophic spending can be measured in different ways.[1-7] It is generally defined as the proportion of households whose out-of-pocket health care payments exceeds a certain threshold of the household ability to pay. All calculation methods share the intent to measure the incidence of financial hardship caused by out-of-pocket health payments, but apply different definitions for capacity to pay and different threshold values. Four calculation methods are commonly used: (1) the budget share method, (2) the actual food-spending method, (3) the partial normative food-spending method and (4) the normative spending on food, housing and utilities.[2] We report results using method (1) and (4). **Budget Share Method**: the proportion of the population with large household out-of-pocket health care payments relative to total household expenditures. Two threshold values are used to define out-of-pocket payments as catastrophic: 10% or 25% of total household expenditures. This is the approach adopted in the Sustainable Development Goals.[1, 3, 8] While this method has the virtue of simplicity, it is criticized to underestimate the incidence of catastrophic payments of poor households as total household expenditures do not reflect actual ability to pay. Poor households devote more of their resources to meeting basic needs and may face a trade-off between consuming basic needs and healthcare. Hence, the resources remaining after spending 10% or 25% of one's consumption budget on healthcare may have different implications for rich and poor households. Therefore, alternative methods define ability to pay as consumption less a deduction for necessities. The argument is that basic necessities need to be covered for before one has the ability to consume healthcare. **Normative spending on food, housing and utilities method**: the proportion of the population with large household out-of-pocket healthcare payments relative to household expenditures minus a standard amount to cover basic needs. A threshold value of 40% is applied to define catastrophic spending.[2, 3] The details on how this standard amount is calculated can be found below.
Rationale	By pooling risks and resources, universal health coverage generates solidarity between high and low risks and high and low incomes. The objective is to have an equitable distribution of healthcare based on needs and to avoid that families who get needed healthcare do not suffer undue financial hardship as a result. The percentage of people in households who are confronted with catastrophic out-of-pocket payments is an indicator for financial protection in the system.
Data source	EU-SILC, EUROMOD and IMA

Technical definitions	All analyses are performed at the household level. The household definition from EU-SILC is applied: a household consists of a person living alone or a group of people who live together in the same dwelling and share expenditures including the joint provision of the essentials of living. Household expenditures are imputed on the EU-SILC data using the EUROMOD microsimulation model. More information on the imputation procedure can be found in Decoster et al. (2014) and De Agostini et al. (2017).[9, 10] *Household out-of-pocket healthcare payments* are calculated from registered co-payments and supplements in the IMA data (ss00060, ss00160, ss00165, ss00210). In the normative spending on food, housing and utilities method, the *standard amount to cover basic needs* is calculated as the average amount spent on food, housing (rent) and utilities by households between the 25th and 35th percentiles of the household consumption distribution, adjusted for household composition by the modified OECD equivalence scale. For each household a subsistence value is computed and subtracted by combining the equivalent basic need expenditure and the household composition. As a consequence, households can have a negative ability to pay. Households with [without] out-of-pocket payments and a negative ability to pay are considered [not] to incur catastrophic payments. This approach is used by WHO Euro region and more information can be found in Cylus et al. (2018 and Thomson et al. (2016).[2, 3]
Limitations	Given that certain expenditures such as ambulatory supplements and healthcare expenditures without reimbursement are not registered, the considered out-of-pocket healthcare payments can be an underestimation of actual out-of-pocket spending. On the other hand, no information is available on coverage by voluntary healthcare insurance that (partially) covers out-of-pocket expenditures. This can lead to an overestimation of out-of-pocket healthcare payments.[6, 11]
International comparability	This indicator can be internationally compared, but there can be differences related to the available data to calculate out-of-pocket payments and household capacity to pay. Generally household budget surveys are used for the calculation. As we did not have access to the microdata of the household budget survey, different data sources were used.
Dimension	Equity
Related performance indicators	
Keywords	

6.5.2. Results

WILL APPEAR IN FOLLOW-UP REPORT

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6.6. Practising physicians per 1000 inhabitants (A-5)

6.6.1. Documentation sheet

Description	Number of practising physicians per 1 000 population
Calculation	**Main indicator: Number of practising physicians per 1 000 population** Numerator : Number of practising physicians x 1 000 Denominator: End-of-year Belgian population **Secondary indicator:** **Number of practising physicians, in FTE per 1000 population** Numerator: Number of full time equivalent (FTE) practising physicians x 1 000 (see also the technical definitions) Denominator: End-of-year Belgian population **Number of practising physicians acceding to the agreement, in FTE per 1000 population** Numerator: Number of full time equivalent (FTE) practising physicians acceding to the agreement (conventionnés / geconventioneerde) x 1 000 Denominator: End-of-year Belgian population
Rationale	The number of care providers gives important information on the medical workforce and thus the accessibility of healthcare. Together with the number of graduates, this information can be used for health providers supply planning.
Limitation	Data on all professionally active physicians are currently not reported. A more detailed view on the activity of licensed physicians is available in the PlanCad project, resulting of a linkage of several administrative databases. A new report of the PlanCad for physicians, that will allow us to have details about all professionally active physicians and practising physicians, including physicians working outside the health system covered by the compulsory health insurance such as in occupational medicine, in insurance companies, in child services (ONE-kind and gezin), etc.), also in FTE, is only planned for 2019-2020. An update of this indicator will therefore be done on the website when the PlanCad report for physicians will be available. Regional analysis is based on the personal address of the practitioner and not on the addresses where (s)he practice. This mainly impact estimates in Brussels (underestimation).
Primary data source	OECD Health Statistics 2018 and RIZIV–INAMI yearly statistics
Technical definitions	A care provider is considered to be practising (RIZIV – INAMI: “profiles”) if he/she provided more than 1 clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year. General practitioners working as salaried in medical houses or in homes for elderly are added to those numbers. Physicians still in training are not counted.

	RIZIV – INAMI also calculates the number of full-time-equivalent (FTE) practising physician. Because information on their time of work is not available, FTE is calculated as the ratio between individual revenue of a specialist compared to the P50 of the same specialism between 45-55years (N.B. all results above 1 is limited to 1).
International comparability	The OECD differentiates between practising physicians (doctors providing direct care to patients), professionally active physicians (including also doctors working in the health sectors as managers, educators, researches, etc) and physicians licensed to practise (i.e. having the required diploma). In addition, **OECD countries use different methodologies to calculate the same indicator (such as different minimal activity thresholds)**. Comparisons between countries are therefore potentially inadequate.[1] Before 2009, Belgian data transferred to OECD for practising physicians included all registered physicians at the INAMI – RIZIV (all physicians having a RIZV – INAMI code). Since 2009 (and since then data have been adapted retrospectively) these data are based on the number of practising physicians, giving a better picture of the medical density in Belgium. It should also be noted that for 2016, OECD data concerned the number of practicing physicians with at least one clinical service (instead of more than one); 2016 data on the number of practicing physicians with more than one clinical service are available on the RIZIV – INAMI website (https://www.riziv.fgov.be/fr/statistiques/soinsdesante/2017/Pages/nombre-dispensateurs-soins-individuels.aspx?utm_source=alert&utm_medium=email&utm_campaign=FR20190211)
Dimensions	Accessibility, Health workforce
Related indicators	Qualification levels of healthcare providers (GP versus SPs). Medical graduates

6.6.2. Results

Belgium

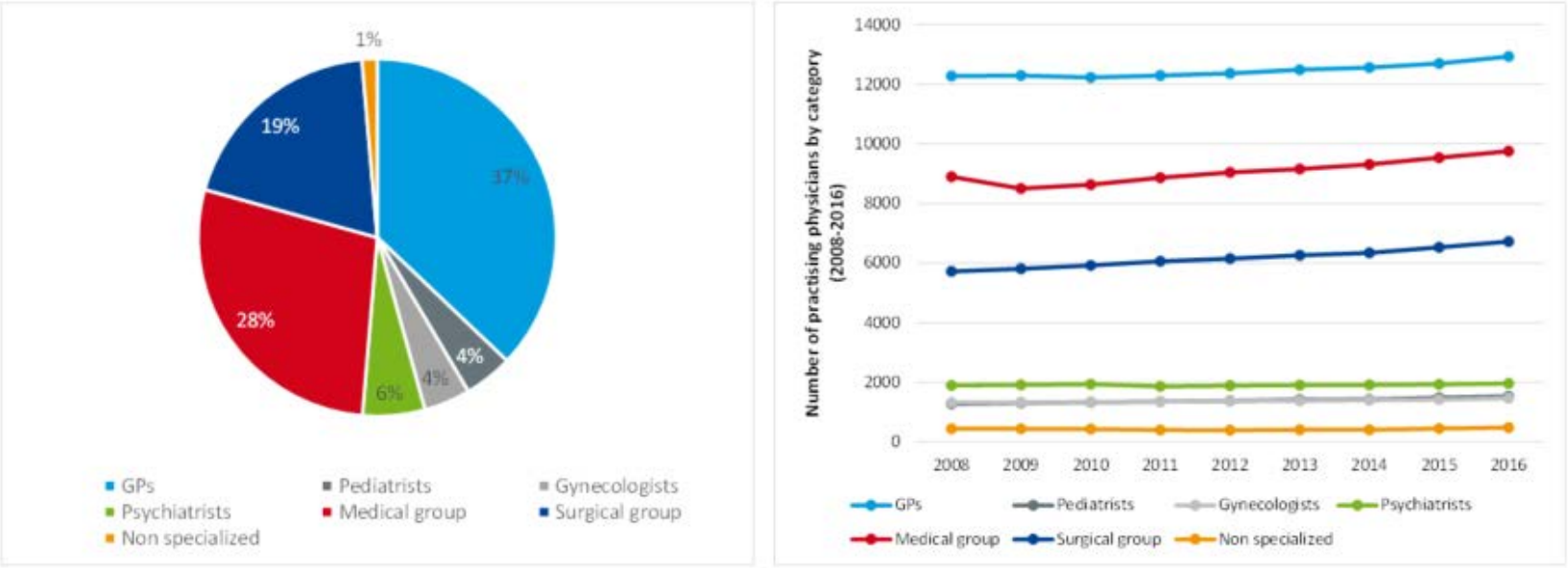
Based on the last OECD statistics, there were 34 834 physicians in practice in 2016 in Belgium, corresponding to a density of 3.07 per 1000 inhabitants (see Table 43). The number of practising physicians increased over the time from 31 803 in 2008 to 34 834 in 2016 (see Table 43). The three main specialities among physicians are GPs (37%), medical group (28%) and surgical group (19%, see Figure 83).

Table 43 – Number of practising physicians, by speciality (2008-2016)

Speciality	2008	2009	2010	2011	2012	2013	2014	2015	2016	Density 2016 (/1000 inhabitants)
TOTAL Physicians	**31 803**	**31 577**	**31 814**	**32 181**	**32 582**	**32 999**	**33 353**	**34 020**	**34 834**	**3.07**
GPs	12 274	12 286	12 228	12 290	12 363	12 483	12 560	12 693	12 929	1.14
Paediatricians	1269	1301	1332	1350	1378	1414	1429	1482	1532	0.14
Gynaecologists	1317	1331	1346	1352	1370	1377	1405	1416	1462	0.13
Psychiatrists	1891	1914	1932	1865	1890	1899	1907	1930	1958	0.17
Medical group	8893	8500	8627	8866	9043	9157	9309	9530	9753	0.86
Surgical group	5718	5806	5916	6059	6150	6261	6339	6523	6719	0.59
Non specialized	441	439	433	399	388	408	404	446	481	0.04

Source: OECD Health Statistics 2018

Figure 83 – Distribution of practising physicians (2016) and evolution of the number of practising physician, by speciality (2008-2016)



Source: OECD Health Statistics 2018

Regional analysis

There are no huge variation between regions and provinces but the number practising physicians per 1000 population is slightly lower in the Flemish region than in the Walloon region or the region of Brussels capital (see Table 44). It should nevertheless be noted that this analysis is based on the address of the physician's home and not based on the place of practice. A recent study[2] based on the place of the GP practice obtained 1.23 practising GP per 1000 population in Brussels in 2017 (compared to 1.17 per 1000 population in 2016 based on the place of the physician's home).

This indicator nevertheless also poorly reflects the real workforce of practising physicians, as all physicians performing at least 1 clinical act are included in the head counts. To overcome this problem, the RIZIV – INAMI also calculated the number of full time equivalent (FTE) practising physicians, and the number of FTE acceding to the agreement. These data are presented in Table 44. In 2016, the number of practising GP is 12 929 (1.14 per 1000 population), while their estimated FTE is 8988 (0.79 per 1000 population) and their estimated FTE acceding to the agreement is 7 719 (0.68 per 1000 population). Based on these data, some low values can be noticed for some specialties (GPs and gynaecologists), which can be seen as a sign of problems in some area (see Table 44 and Table 45).

Table 44 – Number of practising physicians (per 1000 population, 2016)

		GPs	Paediatricians	Gynaecologists	Psychiatrists	Medical group	Surgical group	Non specialized	Total
Total Belgium		1.14	0.14	0.13	0.17	0.86	0.59	0.04	3.1
Total Brussels region		1.17	0.22	0.23	0.33	1.14	0.66	0.10	3.8
Flemish region	Antwerp	1.02	0.10	0.09	0.14	0.68	0.53	0.03	2.6
	Flemish Brabant	1.23	0.21	0.18	0.22	1.22	0.85	0.05	4.0
	West Flanders	1.08	0.08	0.09	0.11	0.66	0.51	0.01	2.5
	East Flanders	1.11	0.11	0.10	0.13	0.77	0.56	0.02	2.8
	Limburg	1.10	0.06	0.08	0.14	0.63	0.43	0.04	2.5
	Total Flanders	1.10	0.11	0.11	0.15	0.79	0.58	0.03	2.8
Walloon region	Walloon Brabant	1.33	0.29	0.23	0.31	1.71	1.04	0.09	5.0
	Hainaut	1.07	0.10	0.12	0.11	0.67	0.44	0.04	2.6
	Liège	1.27	0.18	0.16	0.21	0.99	0.66	0.05	3.5
	Luxembourg	1.13	0.08	0.09	0.07	0.53	0.36	0.04	2.3
	Namur	1.41	0.13	0.11	0.15	0.94	0.69	0.04	3.5
	Total Wallonia	1.21	0.15	0.14	0.16	0.91	0.60	0.05	3.2

Source: RIZIV – INAMI data and KCE calculation (calculated in the same way than for OECD data)

Table 45 – Number of practising physicians, in FTE and acceding to the agreement (per 1000 population*; 2016)

	Practising physicians	Practising physicians in FTE	Conventionned practising physicians in FTE
GPs	12 929 (1.14)	8 988 (0.79)	7 719 (0.68)
Paediatricians	1 532 (0.14)	952 (0.08)	824 (0.07)
Gynaecologists	1 462 (0.13)	948 (0.08)	369 (0.03)
Psychiatrists	1 958 (0.17)	1 289 (0.11)	1 129 (0.10)
Medical group	9 753 (0.86)	6 683 (0.59)	5 077 (0.45)
Surgical group	6 719 (0.59)	4 678 (0.41)	3 202 (0.28)

*Source: RIZIV – INAMI data and KCE calculation (*calculated in the same way than for OECD data, i.e. per 1000 Belgian end-of-year population and not per 10 000 insured people)*

Number of practising physicians per age group

The number of practising physicians increased over the time from 29 022 in 2000 to 34 834 in 2016 (see Table 46 and Table 47). However, the physicians are getting older and older (see

Figure 84). In 2016, 44.9% of the physicians are aged above 55 years old in comparison to 24% in 2000 (see Table 46 and Table 47).

Table 46 – Number of practising physicians per age category (2000-2013)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total practising physicians	**29 022**	**29 325**	**29 553**	**29 663**	**29 903**	**30 098**	**30 450**	**30 878**	**31 280**	**31 578**	**31 815**	**32 182**	**32 583**	**32 999**
under 35 years old	3 255 (11.2%)	3 344	3 198	3 100	2 978	2 765	2 628	2 596	2 617	2 595	2 416	2 420	2 356	2 457
35-44 years old	9 339 (32.2%)	9 001	8 736	8 300	8 085	7 978	7 907	7 968	7 843	7 770	7 867	7 871	7 898	7 946
45-54 years old	9 443 (32.5%)	9 679	9 934	10 124	10 133	10 105	9 996	9 798	9 618	9 391	9 108	8 850	8 641	8 337
55-64 years old	4 285 (14.8%)	4 593	4 923	5 331	5 828	6 327	6 853	7 322	7 831	8 309	8 691	8 974	9 240	9 446
65-74 years old	2 700 (9.3%)	2 708	2 762	2 808	2 879	2 923	3 066	3 194	3 371	2 681	2 861	2 011	2 012	2 013
75 years old and over										832	872	913	988	1 009

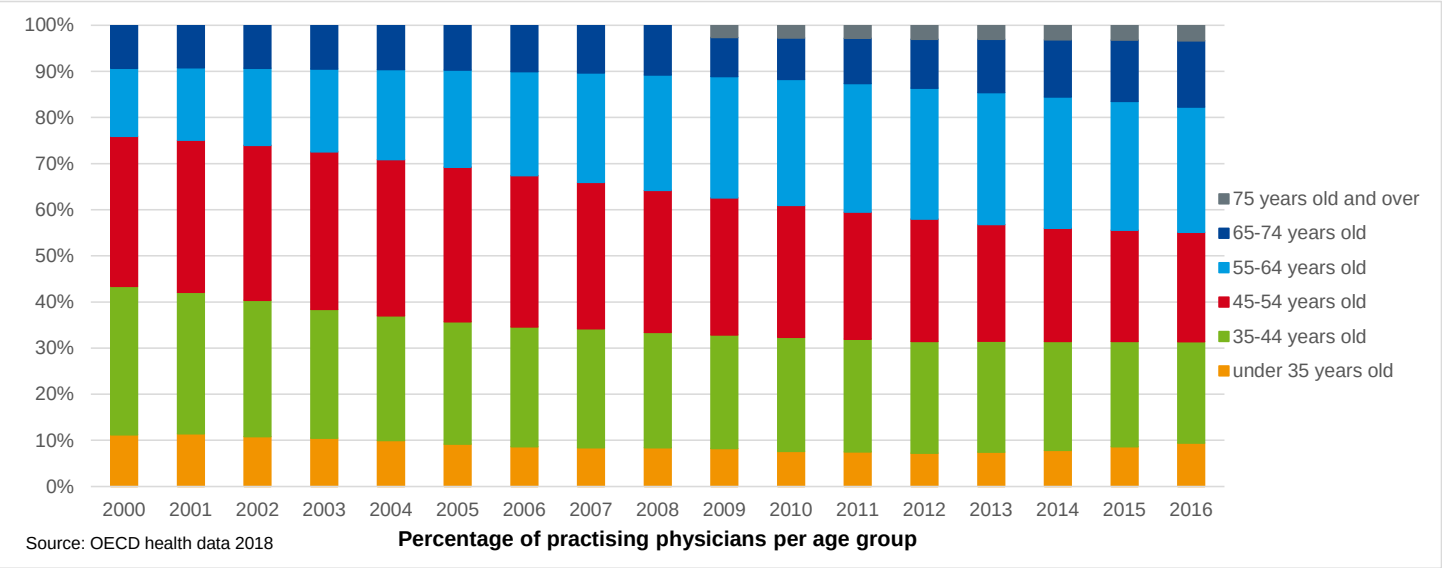
Source: OECD Health Statistics 2018

Table 47 – Number of practising physicians per age category (2014-2016)

Year (OECD)	2014	2015	2016
Total practising physicians	**33 353**	**34 020**	**34 834**
under 35 years old	2 615	2 926	3 275 (9.4%)
35-44 years old	7 878	7 781	7 664 (22%)
45-54 years old	8 180	8 192	8 258 (23.7%)
55-64 years old	9 487	9 502	9 457 (27.2%)
65-74 years old	4 137	4 527	4 996 (14.3%)
75 years old and over	1 056	1 092	1 184 (3.4%)

Source: OECD Health Statistics 2018

Figure 84 – Percentage of practising physicians per age group in Belgium (2000-2016)



Source: OECD Health Statistics 2018

International comparison

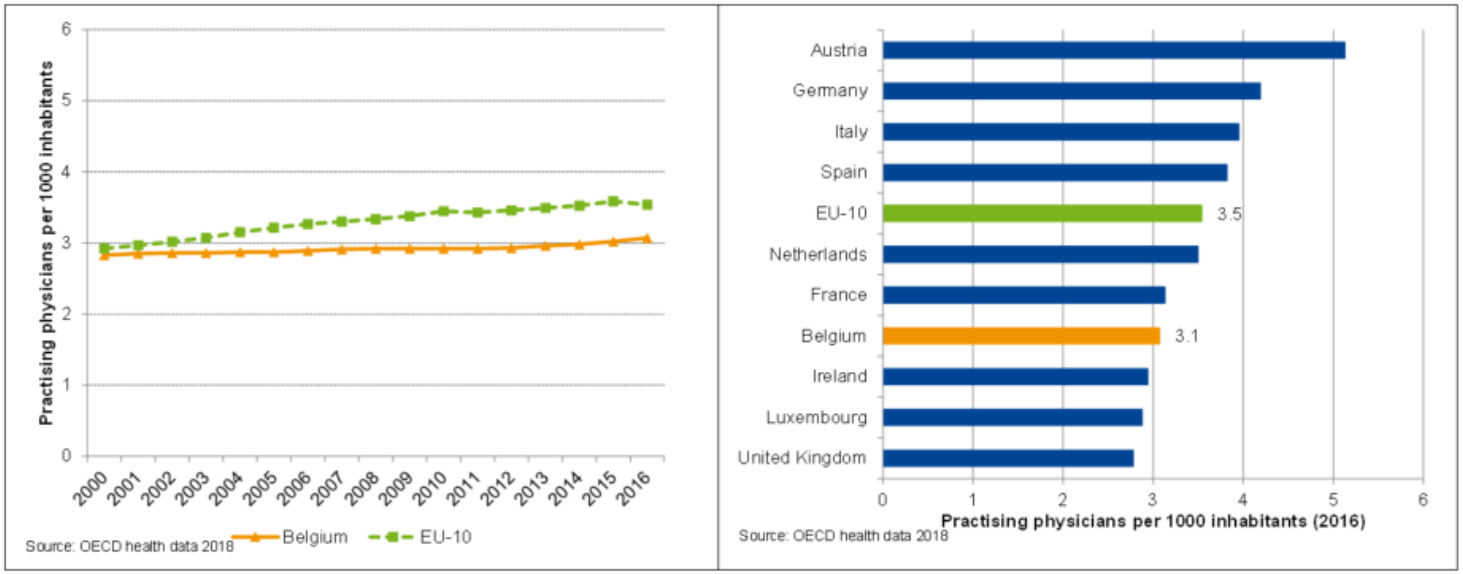
Based on the 12 countries that report data on practising physicians to the OECD, Belgium has a lower number of practising physicians per 1 000 inhabitants than the EU average (3.1 vs 3.5 in 2016, see Figure 85). Since 2000, the European average of the number of practising physicians per 1 000 inhabitants has increased over the time while the growth rate is relatively low in Belgium. It is nevertheless important to note that the definition of practising physicians varied across countries and that in some countries, it corresponded to the number of physicians licensed to practice.

Table 48 – Number of practising physicians per 1 000 inhabitants (2000-2016)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Practising physicians per 1000 inhabitants	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.1

Source: OECD Health Statistics 2018

Figure 85 – Number of practising physicians (per 1000 inhabitants): international comparison (2000-2016)



Source: OECD Health Statistics 2018

Key points

- **The density of practising physicians is very stable since 2000, with 3.1 / 1000 population in 2016 (this represents around 34 800 physicians).**
- **This indicator poorly reflects the real workforce of practising physicians, as all physicians performing at least 1 clinical act are included in the head counts. To overcome this problem, the RIZIV – INAMI also calculated the number of full time equivalent (FTE) practising physicians, and the number of FTE acceding to the agreement. In 2016, the number of practising GP is 12 929 (1.14 per 1000 population), while their estimated FTE is 8 988 (0.79 per 1000 population) and their estimated FTE acceding to the agreement is 7 719 (0.68 per 1000 population).**
- **The number of professionnally active physicians will be available in 2019-2020 via the PlanCAD for physicians.**
- **The number of practising physician is slightly lower in the Flemish region than in the Walloon region or the region of Brussels capital (2.8, 3.2 and 3.8 respectively). Low values can be noticed for some specialties (GPs and gynecologists) in some districts.**
- **Belgium has a density lower than the EU-average (3.07 versus 3.54 per 1000 population). It is nevertheless important to note that the definition of practising physicians varied across countries and that in some countries, it corresponded to the number of physicians licensed to practice.**

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6.7. Practising nurses on the health sector per 1 000 inhabitants (A-6)

6.7.1. Documentation sheet

Description	**Main indicator:** Number of practising nurses on the health sector per 1 000 inhabitants Secondary indicators: Number of nurses with a licensed to practice (LTP) and number of professionally active nurses on the Belgian market
Calculation	**Main indicator:** Number of practising nurses on the health sector per 1 000 inhabitants • Numerator : Number of practising nurses on the health sector x 1000 • Denominator: Total end of year Belgian population
Technical definition	**Main indicator:** Practising nurses are defined as those employed on the health sector. Secondary indicators: • A licensed to practice nurse (LTP) is defined as nurses who have obtained a recognised qualification in nursing, including people with a midwife diploma registered under nursing category in the cadastre database.[1] • A nurse is considered as professionally active when he/she is registered as self-employed person into INASTI database or registered into ONSS database with at least 0.1 full time equivalent (FTE) per year. The threshold of 0.1 FTE per year has been established by the nursing working group on nurses from workforce planning cell.[1] • A nurse is considered as practising nurses on the health sector when he/she is registered into INASTI database and had provided at least 893 acts (based on INAMI-RIZIV nomenclature) per year or registered into ONSS+ database with at least 0.1 full time equivalent (FTE) per year and working for an active employer on the health sector.[1] The distinction between professionally active nurses and practising nurses is the activity sector. Practising nurses are nurses who are active only on the health sector instead of on the entire Belgian market for professionally active nurses.
Rationale	Nurses play a critical role in providing health care in hospitals and long-term care institutions, but also in primary care and in the home care setting. In addition, they are in most countries the largest group of healthcare professionals. Monitoring the number of practising nurses per 1000 inhabitants is therefore important in light of the accessibility and sustainability of the healthcare system. These are essential figures for workforce planning.[2]
Data source	Results from "PlanCAD" 2016[1], Federal database of health care professionals, Federal Public Service Health, Food Chain Safety and Environment[1] It should be noted that data from the PlanCAD slightly differ from the workforce statistics (HWF STATAN 2017), also published by the Federal Public Service Health, Food Chain Safety and Environment, because of another extraction period and a larger selection in the PlanCad (e.g. inclusion of people with a midwife diploma registered as nurse in the cadastre).
International comparability	The differences in inclusion and exclusion criteria between countries make international comparison of these data hazardous. Austria and Greece for example report only nurses working in hospital, resulting in an under-estimation. In OECD health statistics[2] for Belgium, the 2010-2015 data on professionally active nurses have been estimated from the PlanCAD for nurses 2014[2] by using the average share for the period 2004-2009 of professionally active nurses among all nurses licensed to practice. The 2004-2008 data and

	2010-2015 data on practising nurses have been estimated from the PlanCAD for nurses 20142 by using the 2009 share of practising nurses among all professionally active nurses.
Dimension	Accessibility (health workforce)
Related indicators	Number of practising physicians per 1000 population Medical and nursing graduates

6.7.2. Results

In 2016[w], there were 202 402 nurses licensed to practise, 143 470 accredited nurses active on the Belgian labour market, and 124 196 practising nurses, i.e. working in the healthcare sector (see Table 49). Figure 79 shows that the number of nurses (all categories) increases over the time.

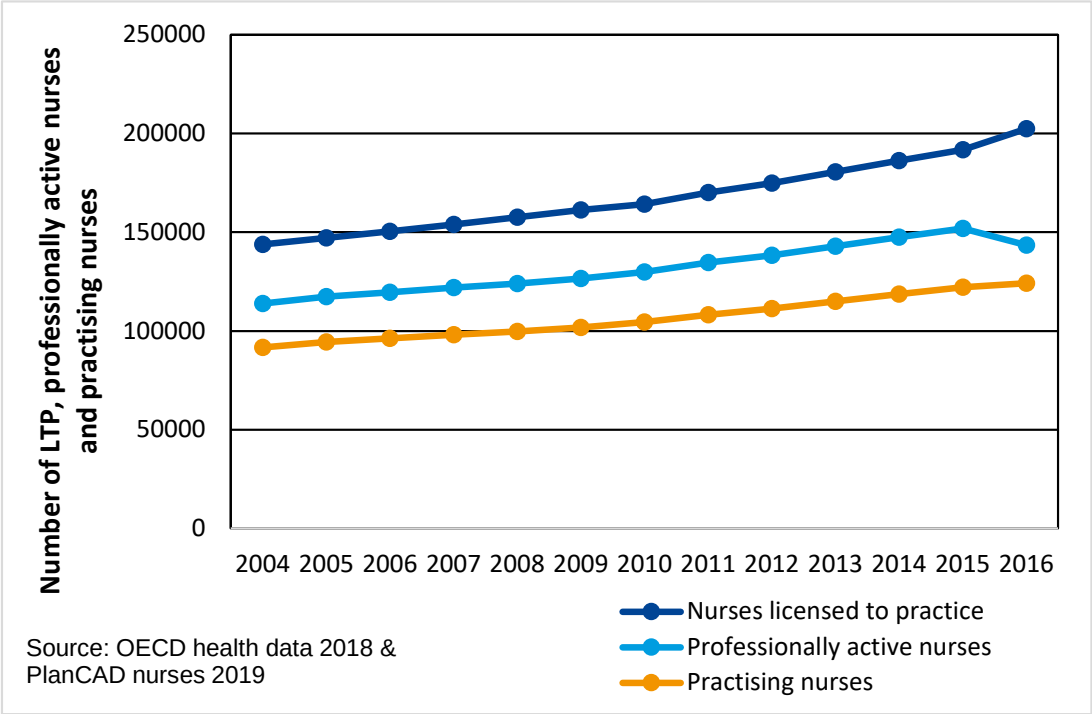
Table 49 – Number of nurses (all categories) in Belgium (2004-2016)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nurses licensed to practice	143 893	147 068	150 414	153 889	157 591	161 299	164 141	170 023	174 849	180 547	186 277	191 805	202 402
Professionally active nurses on the Belgian labour market	113 919	117 346	119 623	121 991	124 064	126 473	129 916	134 572	138 392	142 901	147 437	151 812	143 470
Practising nurses on the health sector	91 644	94 401	96 232	98 137	99 805	101 743	104 513	108 258	111 331	114 959	118 608	122 127	124 196

2016 data are based on the PlanCAD for nurses 2019;[1] 2004-2015 data are based on OECD 2018 Health statistics. The 2010-2015 data on professionally active nurses have been estimated from the PlanCAD for nurses 2014[2] by using the average share for the period 2004-2009 of professionally active nurses among all nurses licensed to practice. The 2004-2008 data and 2010-2015 data on practising nurses have been estimated from the PlanCAD for nurses 2014[2] by using the 2009 share of practising nurses among all professionally active nurses.

[w] The last publication of PlanCAD nurses is in 2019.

Figure 86 – Evolution of number of nurses licensed to practice, professionally active nurses and practising nurses (2004-2016)



Source: 2004-2015 data based on OECD 2018 Health statistics. 2016 data based on PlanCAD nurses 2019[1]

In Table 50, results are detailed by community, region of activity, gender and nationality for each type of nurses (LTP, PA, PR) in 2016. For the 124 196 accredited nurses who were professionally active on the health sector: 14.7% were male (n=18 213), 6.3% were foreigners, 61.3% (n=63 327) of the nurses work in Flanders, 10.2% (n=12 697) in Brussels and 28.4% (n=35 277) in Wallonia (Table 50).

In Belgium, there were 109 practising nurses on the health sector per 10 000 inhabitants and differences were observed between regions (see Table 52).

This corresponds to 117 nurses per 10 000 inhabitants in Flanders, 107 nurses per 10 000 inhabitants in Brussels and 98 nurses per 10 000 inhabitants in Wallonia (Table 52). In term of full time equivalent, there were 105 718 practising nurses on the health sector in Belgium in 2016 with an average of 0.85 FTE (see Table 52). There are small variation in term of FTE between regions and communities (see Table 52).). From Table 50, it is clear that most nurses active in the health sector (salaried only or with a mixed status) work as employees in hospitals (65.5%) followed by nursing homes (13.7%) and home care (7.9%).

Table 50a – Number of nurses (all categories) in Belgium (2016)

PlanCAD 31/12/2016		Licensed to practise (LTP)	Professionally active nurses on the Belgian labour market (PA)		Practising nurses on the health sector (PR)	
		N	N	FTE	N	FTE
Belgium		202 402	143 470	113 414	124 196	105 718
Community	Flemish community	120 555 (59.6%)	88 110 (61.4%)	68 026	76 172 (61.3%)	63 431
	French community	81 847 (40.4%)	55 360 (38.6%)	45 388	48 024 (38.7%)	42 287
Region of activity	Flanders	-	87 415 (60.9%)	67 274	76 155 (61.3%)	63 327
	Wallonia	-	40 707 (28.4%)	33 409	35 277 (28.4%)	31 130
	Brussels Capital	-	15 224 (10.6%)	12 670	12 697 (10.2%)	11 200
	Foreign or unknown	-	124 (0.1%)	62	67 (0.1%)	61
Gender	Male	27.200 (13.4%)	21.317 (14.9%)	19 629	18 213 (14.7%)	17 819
	Female	175.202 (86.6%)	122.153 (85.1%)	93 785	105 983 (85.3%)	87 899
Nationality	Belgian	185.055 (91.4%)	135.033 (94.1%)	106 558	116 397 (93.7%)	98 603
	Not Belgian	17.347 (8.6%)	8.437 (5.9%)	6 857	7 799 (6.3%)	7 114

*Source: PlanCAD nurses 2019[1]; *This diploma was interrupted in 1996.*

Table 51b – Number of nurses active in the health sector (from the National Social Security Office database, i.e. salaried only or with a mixed status, n = 113 878), per activity sector (2016)

	Hospitals	Nursing homes	Home care	Public centres for social action (OCMW-CPAS)	Social welfare	Other health sectors	Total
N (%)*	74 619 (65.5%)	15 567 (13.7%)	8 451 (7.4%)	8 987 (7.9%)	3 550 (3.1%)	3 725 (3.3%)	113 878

*Source: PlanCAD nurses 2019[1]; * Some nurses worked in multiple sectors meaning that the total does not equal to the some of the sectors..*

Table 52 – Practising nurses active on the health sector in Belgium (density per 1 000 population)

31/12/2016		Practising nurses on the health sector				
		N	Density	N (in FTE)	Density (in FTE)	Average FTE
Belgium		124 196	11.0	105 718	9.3	0.85
Region	Flanders	76 155	11.7	63 327	9.7	0.83
	Wallonia	35 277	9.8	31 130	8.6	0.88
	Brussels Capital	12 697	10.7	11 200	9.4	0.88
	Foreign or unknown	67	-	61	-	0.92
Community	Flemish community	76 172	11.3	63 431	9.4	0.83
	French community	48 024	10.5	42 287	9.3	0.88

Source: PlanCAD nurses 2019.[1], density (own calculation)

International comparison

Based on OECD Health Statistics, the number of practising nurses on the health sector in Belgium increased between 2004 and 2015 (see Table 53).

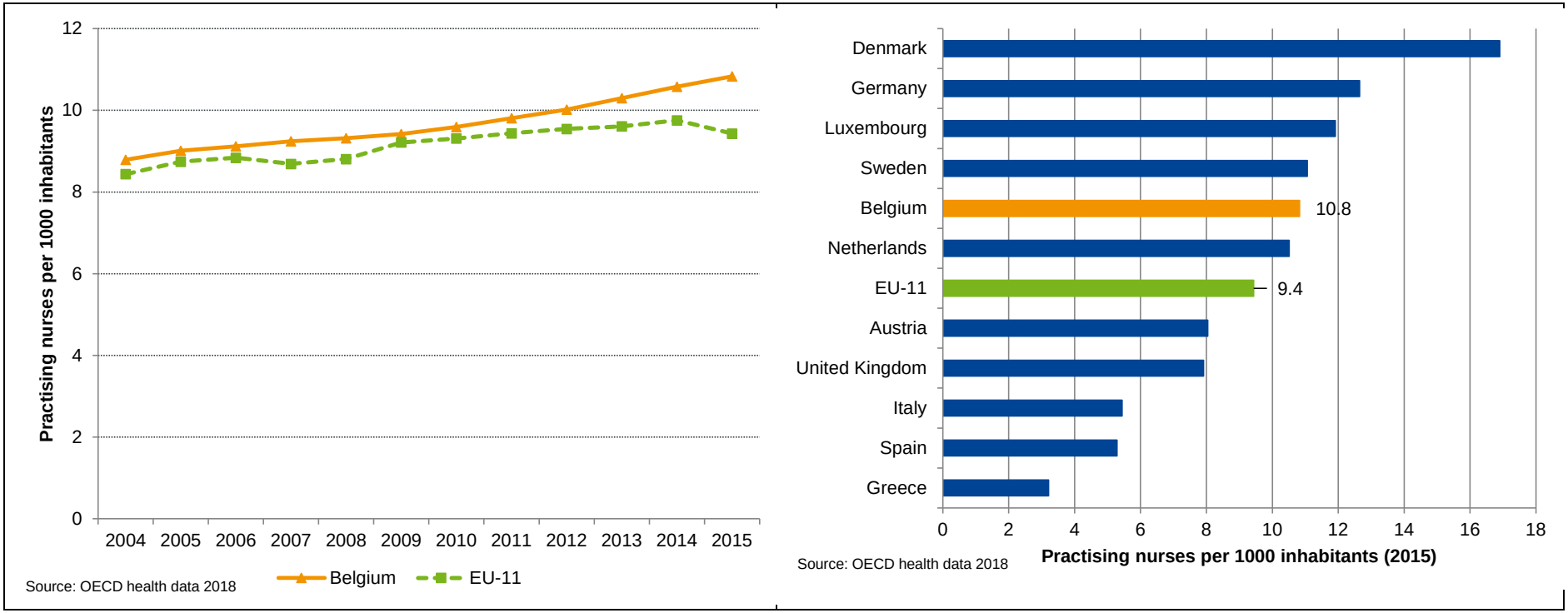
This is in line with what is observed in other European countries (see Figure 87). In 2015, Belgium had 10.8 nurses per 1 000 inhabitants which is one nurse more than the EU-11 average. In 2016, Belgium had 10.9 nurses per 1 000 inhabitants (see Table 53).

Table 53 – Number of practising nurses on the health sector in Belgium and density per 1 000 inhabitants (2004-2015)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Number of practising nurses on the health sector (head counts)	91 644	94 401	96 232	98 137	99 805	101 743	104 513	108 258	111 331	114 959	118 608	122 127
Density per 1 000 population (head counts)	8.8	9.0	9.1	9.2	9.3	9.4	9.6	9.8	10.0	10.3	10.6	10.8

Source: OECD 2018 Health Statistics. Data refers to the number of nurses active on the health sector. The 2004-2008 data and 2010-2015 data have been estimated by using the 2009 share of practising nurses among all professionally active nurses (PlanCad).[3]

Figure 87 – Practising nurses per 1000 inhabitants: international comparison (2004-2015)



Source: OECD 2018 Health statistics

Key points

- **The recent PlanCAD project[1], resulting of a linkage of several administrative databases, allows precise estimation of the number of nurses active on the Belgian labour market (professionally active) and on the health sector (practising nurses).**
- **In 2016[x], there were 202 402 nurses licensed to practise, 143 470 accredited nurses active on the Belgian labour market, and 124 196 practising nurses, i.e. working in the healthcare sector.**
- **Most of professionally active nurses work as employees in hospitals (65.5%) followed by nursing homes (13.7%) and home nursing (7.9%).**
- **The number of practising nurses per 1 000 inhabitants increased between 2004 and 2015 in Belgium (from 8.8 in 2004 to 10.8 per 1000 inhabitants in 2015). This increasing trend is also observed in other European countries. The number of practising nurses per 1 000 inhabitants is slightly above the European average.**

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[x] The last publication of PlanCAD nurses is in 2019.[1]

6.8. Number of nursing vacancies in hospitals (A-7)

6.8.1. Documentation sheet

Description	Number of nursing vacancies in hospitals
Calculation	Absolute number of vacancies for hospital nurses (Bachelor degree and Diploma degree): head count and Full-time equivalents (FTE)
Rationale	For more than 2 decades nursing shortages are reported in most industrialized countries, a problem that will only accelerate by the ageing population (and the ageing nursing workforce)[y1]. Both in Flanders as in Wallonia the nursing profession is labelled as a profession for which it is difficult to fill vacancies[z]. Monitoring nursing shortages via the number of unfilled vacancies is therefore important in light of the sustainability and accessibility of the healthcare system. After all, the nursing workforce is the largest healthcare profession for which shortages can cause problems with the accessibility (e.g. waiting lists) or quality (e.g. to high patient-to-nurse ratios) with healthcare services.
Data source	The yearly survey of 'hospital statistics'[aa] contains, since 2013, a question about the number of unfilled vacancies. The number of vacancies is defined as 'the number of vacancies for which a call (intern/extern) is launched'. Hospitals are asked to complete this question for 4 moments in time: 31/03; 30/06; 30/09; 31/12. The data are collected per educational degree: Master degree; Bachelor degree; Diploma degree. No data were reported in Wallonia in 2013 due to encoding problem. In addition to national data, more detailed data are available for Flanders (including vacancies for Dutch speaking nurses in Brussels). Every three months the number of vacancies that are reported to the VDAB are listed. It should be noted that some bias is possible for the vacancy announcements for temporary 'ad interim' jobs (e.g. 1 vacancy announcement for several temporary jobs). The advantage of these data source is the availability of data for all sectors and for several professions (nursing; care assistants or 'zorgkundigen' (since 2013); qualified carers or 'verzorgenden'; kindbegeleiders, opvoeders, physiotherapists, occupational therapists.[bb]
International comparability	There is no international benchmark available.
Dimension	Accessibility, sustainability,
Related performance indicators	NHPPD Medical and nursing graduates

y http://www.euro.who.int/en/health-topics/Health-systems/nursing-and-midwifery/data-and-statistics

z http://www.onem.be/fr/documentation/feuille-info/t125

aa http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/Hospitalstatistics/Questionnaire/index.htm

bb http://www.ikgaervoor.be/voor-zorgprofessionals

6.8.2. Results

Table 54 shows the number of nursing vacancies reported by Belgian hospitals between 2013 and 2016. In 2016, there were a total of 1 274 vacancies (708 in the Flemish region, 290 in the Walloon region, and 276 in the region of Brussels Capital (absolute numbers)). The distribution of nursing vacancies according to nursing level is constant over the time. Around 70% of nursing vacancies concerned nurses with bachelor degree (A1) followed by diploma A2 (≈20%) and master degree (8.7%). Figure 88 shows the evolution of the number of nursing vacancies in Belgium. The number of nursing vacancies increased between 2013 and 2015 and tended to decrease since 2016. It should be noted that it is unclear if these figures are an underestimation or if much more vacancies are reported for other sectors.

The more detailed Flemish data show that in Flanders in September 2017, 1844 vacancies were reported for the nursing profession (compared to 708 nursing vacancies in hospitals in 2016 according to SPF-FOD data, see Table 54 and Figure 88). The different methodology (survey hospitals versus vacancies reported to the VDAB; Dutch-speaking vacancies for Brussels included in VDAB-figures; hospital sector versus all sectors) make a comparison difficult. The VDAB-figures make it possible to study time trends.

Figure 88 shows that the number of nursing vacancies steadily increased between September 2006 (n=811) and September 2011 (n=1755) but is slightly decreasing since then with 1116 nursing vacancies reported in 2014. Since 2014, the number of nursing vacancies increased from 1116 to 1844 in 2017.

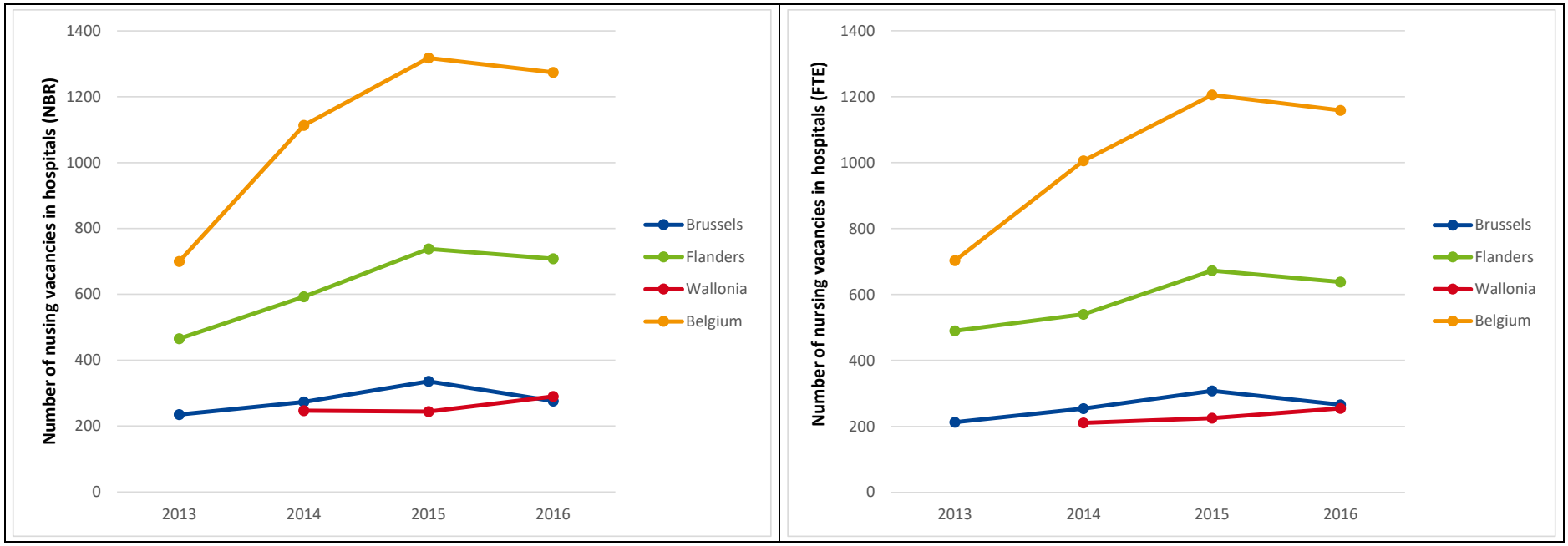
Table 54 – Number of nursing vacancies in hospitals (2013-2016)

Nursing vacancies in hospitals on 31/12/2013, 31/12/2014, 31/12/2015 and 31/12/2016

REGION	Level	NBR (2013)	FTE (2013)	NBR (2014)	FTE (2014)	NBR (2015)	FTE (2015)	NBR (2016)	FTE (2016)
Brussels	Bachelor (A1)	192.0	173.6	229.0	214.2	298.0	268.2	251,0	241.3
	Master (A1+master/licence)	24.0	22.4	23.0	23.0	27.0	32.0	15.0	16.3
	Diploma (A2)	19.0	17.2	21.0	17.3	11.0	7.5	10.0	8.0
	Total	235.0	213.1	273.0	254.5	336.0	307.7	**276.0**	**265.6**
Flanders	Bachelor (A1)	261.0	307.0	337.0	306.5	418.0	374.7	441.0	392.3
	Master (A1+master/licence)	46.0	45.4	53.0	49.0	85.0	81.9	61.0	58.4
	Diploma (A2)	158.0	137.5	203.0	185.1	235.0	215.9	206.0	187.4
	Total	465.0	489.8	593.0	540.6	738.0	672.4	**708.0**	**638.2**
Wallonia*	Bachelor (A1)	-	-	201.0	165.6	173.0	156.7	219.0	188.9
	Master (A1+master/licence)	-	-	24.0	24.3	37.0	36.8	35.0	33.5
	Diploma (A2)	-	-	22.0	21.1	34.0	31.8	36.0	32.8
	Total	-	-	247.0	210.9	244.0	225.3	**290.0**	**255.1**
Belgium	Bachelor (A1)	453.0**	480.5**	767.0	686.3	889.0	799.5	911.0 (71.5%)	822.5 (71.0%)
	Master (A1+master/licence)	70**	67.8**	100.0	96.3	149.0	150.6	111.0 (8.7%)	108.2 (9.3%)
	Diploma (A2)	177**	154.6**	246.0	223.4	280.0	255.2	252.0 (19.8%)	228.1 (19.7%)
	Total	700.0**	703.0**	1113.0	1006.0	1318.0	1205.3	**1274.0**	**1158.9**

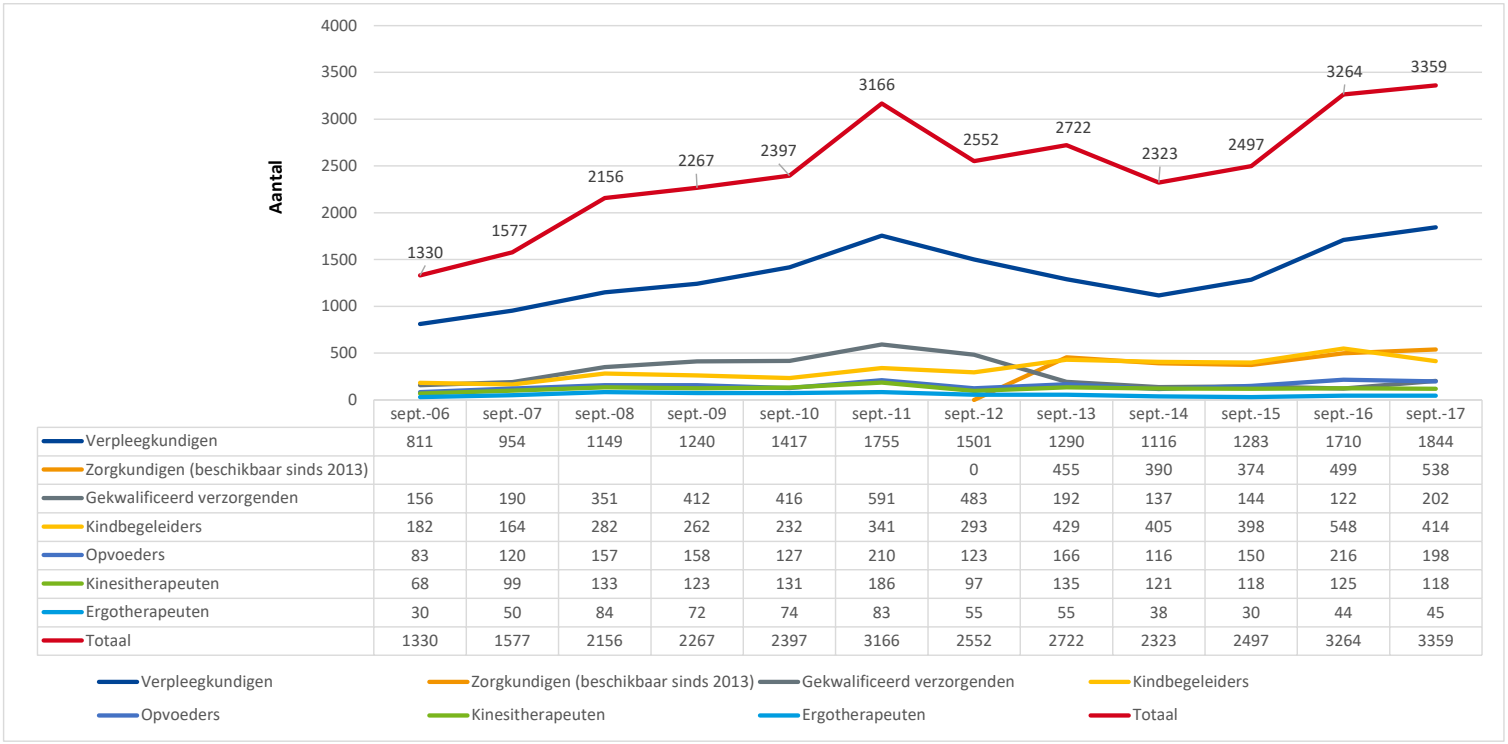
*Source: SPF-FOD; KCE calculations. * The number of nursing vacancies in Wallonia in 2013 are not presented in this table because of encoding error in the database. ** Total number of nursing vacancies excluding Wallonia region.*

Figure 88 – Evolution of number of nursing vacancies in hospitals in Belgium (2013-2016)



Source: SPF-FOD; KCE calculations. In 2013, total number of nursing vacancies excluded Wallonia region.

Figure 89 – Vacancies in Flanders for nursing and other jobs in the (health)care sector (2006-2017)



	sept.-06	sept.-07	sept.-08	sept.-09	sept.-10	sept.-11	sept.-12	sept.-13	sept.-14	sept.-15	sept.-16	sept.-17
Verpleegkundigen	811	954	1149	1240	1417	1755	1501	1290	1116	1283	1710	1844
Zorgkundigen (beschikbaar sinds 2013)							0	455	390	374	499	538
Gekwalificeerd verzorgenden	156	190	351	412	416	591	483	192	137	144	122	202
Kindbegeleiders	182	164	282	262	232	341	293	429	405	398	548	414
Opvoeders	83	120	157	158	127	210	123	166	116	150	216	198
Kinesitherapeuten	68	99	133	123	131	186	97	135	121	118	125	118
Ergotherapeuten	30	50	84	72	74	83	55	55	38	30	44	45
Totaal	1330	1577	2156	2267	2397	3166	2552	2722	2323	2497	3264	3359

Source: VDAB http://www.ikgaervoor.be/voor-zorgprofessionals

Key points

- **The yearly survey of 'hospital statistics' contains, since 2013, a question about the number of unfilled vacancies. In 2016, 1274 nursing vacancies were reported in the Belgian hospitals.**
- **Most vacancies were reported in Flanders (n=708), followed by Walloon hospitals (n=290) and Brussels (n=276) and concerned especially nurses with bachelor degree (A1).**
- **The number of nursing vacancies (across settings) for Dutch-speaking nurses in Flanders and Brussels steadily increased between September 2006 (n=811) and September 2011 (n=1755), then it slightly decreased between September 2011 and September 2014 (n=1116) but it increased again in the past 3 years to reach 1844 nursing vacancies reported in September 2017.**

References

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6.9. Patient-to-nurse ratio (A-8)

6.9.1. Documentation sheet

Description	Main indicator: Patient-to-nurse ratio on general nursing units Secondary indicator: Nursing Hours per Patient Day in Acute Hospitals (NHPPD)
Calculation	**Patient-to-nurse ratio on general nursing units** For international comparison we report patient-to-nurse ratios. Nurse staffing was calculated based on the RN4CAST-data (survey in 12 countries, 488 hospitals, 33 659 nurses), as a ratio of patients to nurses. Nurses on general surgical and internal medicine nursing units were asked for how many patients they were responsible during their last shift. The results were averaged across all nurses providing direct inpatient care in the sampled nursing units. A new RN4CAST survey will start in 2019 in Belgium. The indicator will be updated on the website. **Nursing Hours per Patient Day in Acute Hospitals (NHPPD)** Numerator: the sum of the staffed hours of Registered Nurses (bachelor's degree prepared and diploma level nurses). Students are not taking into account (CAT006). Denominator: the number of inpatient days per nursing unit per observation day. The NHPPD-measure is calculated for general surgery nursing units (C) and general internal medicine units (D). It should be noted that we aim to measure the nursing staff availability (Bachelor prepared nurses and Diploma prepared nurses). However, the general feedback includes an aggregate measure including all nursing and caring staff: • CAT001: nurses with a Master's degree • CAT002: nurses with a Bachelor's degree • CAT003: nurses with a Diploma degree • CAT004: care assistants • CAT005: Supporting staff • CAT006: Students from categories CAT001-CAT004 with a clinical placement. (Excluded from the NHPPD calculation) We will therefore also report the NHPPD for the disaggregated numbers CAT001-CAT003. It should be noted that the distribution statistics are only reported for the nursing units with data available in the respective categories.
Limitation	**Nursing Hours per Patient Day in Acute Hospitals (NHPPD):** Since 2017, the registration of workforce data is not mandatory anymore. As a consequence, the indicator NHPPD will not be available anymore.
Rationale	Shortfalls in the nurse workforce have striking implications in light of a large and growing base of research literature demonstrating an association between nurse staffing and patient outcomes in hospitals.[1-3] Thus, scarce nursing resources should be allocated appropriately so that excessive workload (and its negative impact on patient outcomes) is avoided.
Data source	**Patient-to-nurse ratio on general nursing units:** RN4CAST. A new RN4CAST survey will start in 2019 in Belgium. When data will be available, the indicator will be updated on the website.

	Nursing Hours per Patient Day in Acute Hospitals (NHPPD): Since 1988, all Belgian acute hospitals have been obliged by law to submit to the Ministry of Public Health data about nurse staffing levels and nursing activities. Data are submitted quarterly (March, June, September and December), and these data form the basis of the Belgian Nursing Minimum Dataset (B-NMDS: MVG/RIM)[4] Data intended for the B-NMDS are recorded during the first 15 days of March, June, September and December, during which one recording takes place every 24 hours[cc]. Besides nursing activities, the number of hours that nursing staff work during the recording days are registered. The number of nursing staff is expressed as Nursing Hours per Patient Day (NHPPD), which is the sum of the staffed hours of Registered Nurses (bachelor's degree prepared and diploma level nurses) divided by the number of inpatient days per nursing unit per observation day. Since 2008, the B-NMDS was updated and integrated in the Belgian Hospital Discharge dataset (MZG – RHM). Since 2017, the registration of workforce data is not anymore mandatory.
International comparability	**Patient-to-nurse ratio:** this indicator comes from a European survey called RN4CAST from which a patient-to-nurse ratio can be calculated. In fact, in 2009-2010 a survey was conducted among 33 659 nurses working on general medical-surgical nursing units in 488 general acute care hospitals in 12 European countries (Belgium, England, Finland, Germany, Greece, Ireland, Netherlands, Norway, Poland, Spain, Sweden, and Switzerland).[5] Nurse staffing was calculated for each hospital from the nurse surveys, as a ratio of patients to nurses on the nursing units on each nurse's last shift, averaged across all nurses providing direct inpatient care in the sampled nursing units. Lower ratios indicated more favourable staffing. Primary data for nurse staffing allows the minimisation of differences in administrative reporting methods across countries and restrict staffing measures to nurses providing direct inpatient care. A "nurse" was defined as a fully qualified professional nurse by the standards of each country. The patient-to-nurse ratio as measured by the B-NMDS cannot be compared in a reliable measure with these patient to nurse ratios. **Nursing Hours per Patient Day in Acute Hospitals (NHPPD):** although it is an international used indicator, no systematically collected dataset exists.
Dimension	Quality of care
Related performance indicators	Patient to nurse ratio; Number of practising nurses per 10 000 population; Nursing graduates; Nursing student following a bachelor track

[cc] Unless the patient shifts towards another nursing unit. In that case a new 'care period' is started (i.e. the care period is the unit of registration)

6.9.2. Results

Nursing Hours per Patient Day in Acute Hospitals (NHPPD)

NHPPD increased between 2011 and 2015 from 4.3 to 6.3 for surgical units and from 4.8 to 5.5 for internal medicine (see Table 55 and Figure 90).

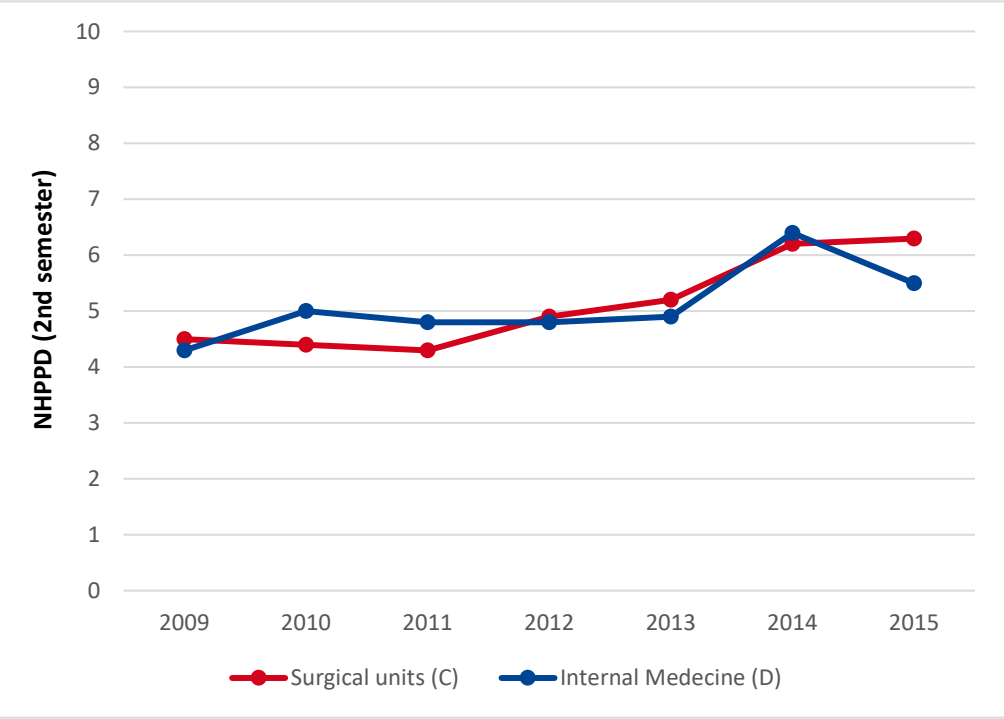
From Table 55 it is clear that there is substantial variability in NHPPD across hospitals. Part of the variability can potentially be explained by differences in nursing intensity. In fact, hospitals receive (based on, a.o. the B-NMDS) extra budget for nursing staff if their nursing intensity is higher compared to other hospitals.[6] Yet, it is has been shown that after correcting for these differences a substantial variation in staffing ratios remain[7], which is associated to variation in quality of patient care.[8]

Table 55 – NHPPD* in Belgian hospitals (2011-2015)

		2011 (2nd semester)						2015 (2nd semester)					
		P10	P25	P50	P75	P90	Mean	P10	P25	P50	P75	P90	Mean
NHPPD aggregate measure**	Surgery (C)	2.9	3.3	3.7	4.3	5.4	4.3	3.2	3.6	4.1	4.9	6.5	6.3
	Internal Medicine (D)	2.7	3.0	3.6	4.3	6.0	4.8	3.0	3.4	4.0	4.8	7.8	5.5
NHPPD* per educational level Surgical units**	Master	0.3	0.3	0.4	0.5	0.7	0.5	0.3	0.4	0.4	0.5	0.6	0.6
	Bachelor	0.9	1.2	1.6	2.3	3.0	2.1	1.2	1.6	2.1	2.7	3.7	4.0
	Diploma	0.6	0.9	1.4	1.9	2.4	1.5	0.7	1.0	1.4	1.9	2.7	1.7
NHPPD* per educational level Internal medicine**	Master	0.3	0.3	0.4	0.5	0.7	0.5	0.3	0.3	0.4	0.5	0.9	0.6
	Bachelor	0.9	1.1	1.6	2.3	3.4	2.2	1.1	1.5	2.0	2.8	5.2	3.3
	Diploma	0.6	0.9	1.2	1.7	2.2	1.8	0.6	0.9	1.3	1.8	2.5	1.7

Source: SPF-FOD Federal Public Service Health, Food Chain Safety and Environment (RHM)
*Note: *NHPPD= Nursing Hours per Patient Day; ** includes hours of nursing staff (Master, Bachelor, diploma), care assistants, supporting staff and students; ***the distribution statistics only concern the nursing unit with the respective educational level present on the nursing unit.*

Figure 90 – NHPPD in general surgery nursing units (C) and general internal medicine units (D) (2009-2015, 2nd semester)



Source: SPF-FOD Federal Public Service Health, Food Chain Safety and Environment (RHM)

International comparison

The average patient-to-nurse ratio in Belgium (10.7) is high compared to other EU countries (average for 12 countries: 9). The average number of patients assigned to 1 nurse is only higher in Germany (13.0) and Spain (12.6) and is nearly twice as high as in Norway (5.4). If besides registered nurses also lesser trained staff is counted the number of patients per staff member is 7.9 which is only higher in Germany.

Table 56 – Patient-to-Nurse ratios in European Hospitals: international comparison (2009-2010)

	Nurse staffing ratio	
Country	Patients to professional registered nurses	Patients to total nursing staff (registered nurses + lesser trained care personnel)
Belgium	10.7 (2.2)	7.9 (1.7)
England	8.6 (1.5)	4.8 (0.6)
Finland	8.3 (2.2)	5.3 (0.8)
Germany	13 (2.3)	10.5 (1.6)
Greece	10.2 (2.8)	6.2 (2.1)
Ireland	6.9 (1.0)	5.0 (0.8)
Netherlands	7 (0.8)	5.0 (0.7)
Norway	5.4 (1.0)	3.3 (0.5)
Poland	10.5 (1.9)	7.1 (1.4)
Spain	12.6 (1.9)	6.8 (1.0)
Sweden	7.7 (1.1)	4.2 (0.6)
Switzerland	7.9 (1.5)	5.0 (1.0)

Source: RN4CAST[2]

Key points

- **The number of nursing staff allocated to patient care is associated with quality of patient care. It is shown that staffing rates in Belgian hospitals are varying considerably.**
- **NHPPD increased between 2011 and 2015 from 4.3 to 6.3 for surgical units and from 4.8 to 5.5 for internal medicine**
- **In 2010, one nurse was, on average, responsable for 10.7 patients, this was amongst the highest in Europe.**

References

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[5] Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Sermeus W. Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. Int J Nurs Stud. 2013;50(2):143-53.

[6] Van de Voorde C. VdHK, Obyn C., Quentin W., Geissler A., Wittenbecher F., Busse R., Magnussen J., Camaly O., Devriese S., Gerkens S., Misplon S., Neyt M., Mertens R. Conceptual framework for the reform of the Belgian hospital payment system. . Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE); 2014.

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[8] Van den Heede K, Lesaffre E, Diya L, Vleugels A, Clarke SP, Aiken LH*, et al.* The relationship between inpatient cardiac surgery mortality and nurse numbers and educational level: analysis of administrative data. Int J Nurs Stud. 2009;46(6):796-803. doi: 10.1016/j.ijnurstu.2008.12.018. Epub 9 Feb 7.

6.10. Waiting time for an appointment with a specialist (A-9)

6.10.1. Documentation sheet

Description	Waiting time (in days) for an appointment with a specialist
Calculation	Number of days a patient has to wait for an appointment with a specialist
Rationale	Long waiting times are an important indication for accessibility problems.
Data source	HIS 2013, waiting time for generalists and specialists This is one of the indicators of the "patient experience" [1]
International comparability	No international comparison available. Wait for EHIS.
Dimension	Accessibility
Related performance indicators	Waiting time for face to face contact with mental health centre.

6.10.2. Results

The proportion of the population aged 15+ who waited more than 2 weeks to get an appointment with a specialist is 38.4% (with no major differences between regions, Table 57). The delay to get an appointment with a specialist was considered problematic by 10.2% of the patients only.

Table 57 – Population (aged 15+ and over) who waited more than 2 weeks to get an appointment with a specialist (2013)

	N	%
Belgium	**1135**	**38.4**
Flanders	308	38.6
Brussels	363	36.0
Wallonia	464	38.9

Source: HIS 2013 [1]

Key points

- **The delay to get an appointment with a specialist was considered problematic by 10.2% of the patients surveyed (in the last Health Interview Survey 2013). This delay was more than 2 weeks for 38% of the patients surveyed (with no major difference between regions)**

7. EFFICIENCY OF THE HEALTHCARE SYSTEM

7.1. One Day surgical hospitalisations (E-1)

7.1.1. Documentation sheet

Description	Surgical day care admissions as a percentage of all hospital admissions for surgery
Calculation	Numerator: number of stays in surgical day care ('one day surgery') Denominator: number of surgical stays
Rationale	Carrying out elective procedures as day cases where clinical circumstances allow (e.g. inguinal hernia repair, circumcision, cataract surgery, etc.) saves money on bed occupancy and nursing care. It is therefore considered an indicator of efficiency. Since the surgical day case rate has an influence on the system's capacity to provide and maintain infrastructure, it is also considered an indicator of sustainability. The majority of Belgian hospitals have a dedicated one-day surgical unit. The recognition of these units is regulated by a Royal Decree. Two KCE reports examined the financing of one-day surgical units, and proposed some recommendations, specifically for one-day surgery[1] and more generally for the financing system of hospitals. [2]
Primary data source	RHM – MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Numerator: Surgical day care were selected using the type of hospitalisation. Before 2008, HOSPTYP1 (file STAYHOSP) = 'D' (for Day care) and the flag for surgical stay in APR-DRG, RPOFM (file STAYXTRA) = 'P' (for procedure). From 2008, A2_HOSPTYPE_FAC (file STAYHOSP) = 'D' or 'C' and MorS_15 (file STAYXTRA) = 'P' Denominator: Stays with a surgical APR-DRG were selected with the flag for surgical APR-DRG.
Limitations	Change from ICD-9 to ICD-10 classification has resulted in a break in the series of RHM – MZG data from 2016 on (and no 2015 data available).
International comparability	OECD presents the % of day care cases for a selection of surgical interventions. [3] A *surgical day case* is defined as a patient who is given invasive surgical treatment (elective surgeries only) which is carried out in a dedicated surgical unit or part of a hospital and which leads to discharge on the day of the operation. Caution is needed when comparing results across countries, as not all OECD countries use exactly the same definition to select the surgical intervention. Another source for international comparison is the International Association for Ambulatory Surgery (IASS) which publishes surveys of day surgery rates across countries. [4]
Performance dimensions	Efficiency; Sustainability;
Related indicators	Number of acute care bed days per inhabitant.

7.1.2. Results

The Belgian surgical day case rate grew from 34.8% in 2000 to 47.2% in 2016 (Figure 91). Wallonia shows lower rates (42.9% in 2016), compared to Flanders (49.5%) and Brussels (45.3%). There is also large variability across the interventions: while some interventions almost reach 95% of cases performed in day surgery (such as cataract), some other interventions remain relatively low (compared to other countries, for instance laparoscopic cholecystectomy) (Table 59).

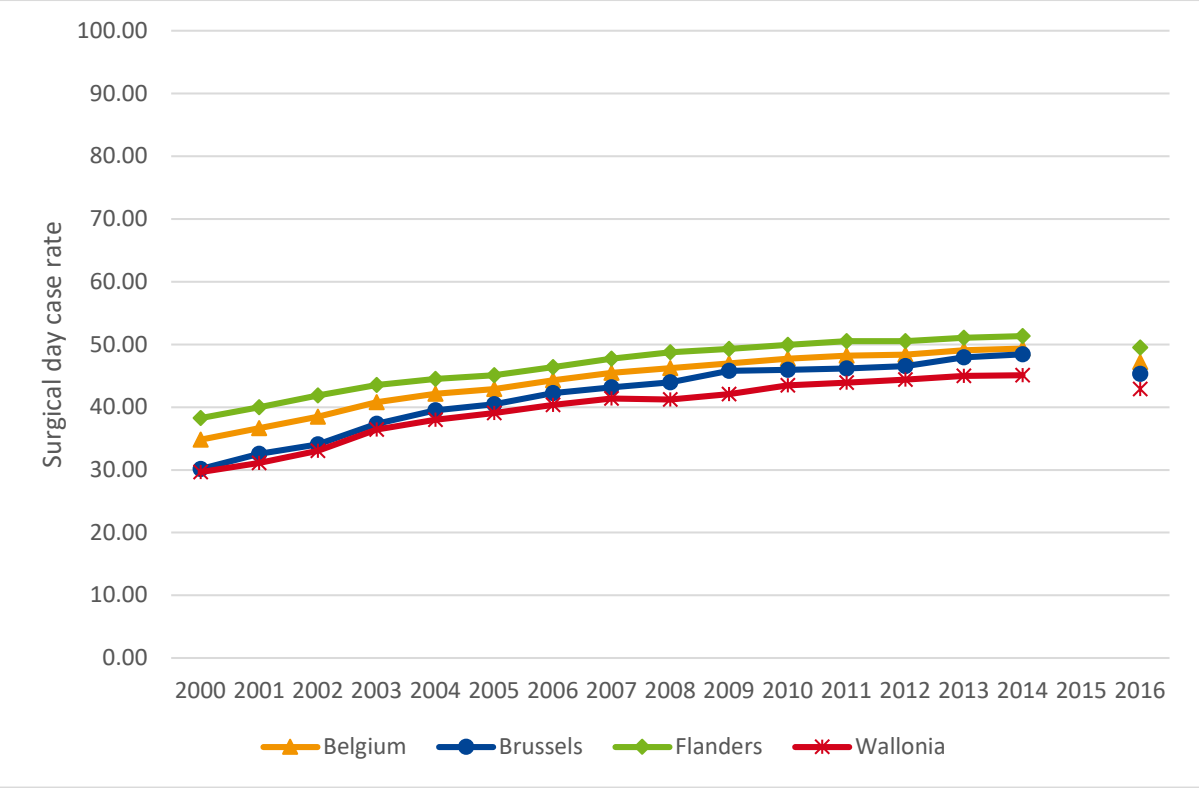
An international comparison has been performed in KCE report 192 on one day surgery.[1] This report concluded that Belgium has one day surgery rates comparable to other countries for a selection of interventions. It also showed that rates are highly dependent on which interventions are on the "A list" and hence benefit from a one day lump sum. Laparoscopic cholecystectomy, for instance, which is not on the A list, has one day surgery rates much lower than other countries (see Table 59). For some surgical treatments, a more recent international comparison is available in KCE report 282[5], with the same conclusions.

Table 58 – Percentage of surgical day cases amongst all surgical hospitalisations by year and hospital region (2016)

Variable	Category	Numerator: all surgical day cases	Denominator: all surgical cases	Percentage
Year	2000	341968	981869	34.8%
	2001	377172	1029730	36.6%
	2002	411132	1068783	38.5%
	2003	445706	1092424	40.8%
	2004	476501	1131439	42.1%
	2005	488666	1139603	42.9%
	2006	515791	1165039	44.3%
	2007	543933	1196287	45.5%
	2008	567255	1227856	46.2%
	2009	588532	1252883	47.0%
	2010	613926	1286543	47.7%
	2011	631249	1308576	48.2%
	2012	635738	1314103	48.4%
	2013	647324	1319213	49.1%
	2014	653543	1324619	49.3%
	2015			
	2016	622599	1318561	47.2%
Data 2016 by region				
Region	Brussels	78722	173773	45.3%
	Flanders	394044	795566	49.5%
	Wallonia	149833	349222	42.9%

Source: RCM-MKG and RHM-MZG

Figure 91 – Percentage of surgical day cases amongst all surgical hospitalisations by hospital region (2000-2016)



Source: RCM – MKG and RHM – MZG

Table 59 – Proportion of day care cases for selected surgeries (2005-2016)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cataract surgery	90.8	92	92.4	93.1	93.7	94.2	94.4	94.6	95	95.4		95.5
Tonsillectomy	66.1	66.5	68	67.8	69.8	70.8	70.8	70.6	70.4	70.8		69.7
Transluminal coronary angioplasty	6.1	6.9	6.9	8.2	8.6	8.7	9	9	9	8.1		8.2
Coronary artery bypass graft	0	0	0	0	0	0	0.1	0	0	0		0
Stem cell transplantation	3.8	2	0.7	0.6	1.2	2.1	2.9	1.6	2.9	1.6		1.4
Appendectomy	0.3	0.2	0.3	0.4	0.6	0.7	0.7	0.7	0.8	0.8		1.2
- Laparoscopic appendectomy	0.3	0.3	0.4	0.5	0.7	0.8	0.8	0.8	1	0.9		1.3
Cholecystectomy	1.2	1.4	1.6	2	2.2	3	3	3.5	4.3	4.6		5.7
- Laparoscopic cholecystectomy	1.3	1.7	1.8	2.2	2.5	3.3	3.3	3.8	4.7	4.9		5.3
Repair of inguinal hernia	19.8	22.3	23.9	25.5	26.8	29.6	30.4	33.7	36	38.1		41.1
- Laparoscopic repair of inguinal hernia	15.4	19.2	20.9	..	(B) 24.1	28.6	29.2	34	36.8	39.9		44.5
Open prostatectomy	0.4	0.4	0.6	0.5	0.6	0.5	0.4	0.6	0.8	0.6		0.2
Transurethral prostatectomy	0.5	0.6	0.4	0.3	0.4	0.3	0.3	0.5	0.5	0.4		1.4
Hysterectomy	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.4	0.5	0.4		3.6(1)
- Laparoscopic hysterectomy	0	0	0	0.2	0.2	0.1	0.3	0.7	0.8	0.7		2.7(1)
Caesarean section	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.4
Hip replacement	0	0	0	0	0	0.1	0	0	0	0		0.1
Total knee replacement	0	0.1	0	0.1	0.1	0.1	0	0	0	0		0.1
Partial excision of mammary gland	28.5	28	29.2	29.3	27.7	29.2	28.3	27.2	28.2	27.8		23.3
Total mastectomy	2.1	2.1	2.3	3	3.3	2.8	3.8	3.1	3.3	3.9		17.3(1)

Source: OECD health statistics 2018[3]

(1) There is a break in the series from 2016 on following the transition from ICD-9 to ICD-10; some mappings still need to be improved.

Table 60 – One day surgery rates, for a selection of procedures: international comparison (2009)

Procédure	Belgique	France	Angleterre	Pays-Bas	Danemark	U.S.A. (2007)
Myringotomie (drainage transtympanique prothétique)	96%	96%	87%	98%(2007)	75%	98%
Amygdalectomie	74%	63%	30%	32%	38%	90%
Chirurgie de la cataracte	93%	78%	97%	99%	99%	99%
Correction du strabisme	93%	33%	92%	97%	84%	84%
Stérilisation endoscopique de la femme	75%	57%	85%	94%	91%	92%
Dilatation + curetage	85%	63%	85%	70%	94%	86%
Méniscectomie arthroscopique	90%	74%	81%	93%	96%	98%
Libération du canal carpien	95%	84%	95%	94%	93%	98%
Cholécystectomie par laparoscopie	3%	1%	20%	6%	58%	53%
Réparation d'une hernie inguinale	35%	20%	59%	67%	81%	86%
Excision d'un kyste pilonidal	45%	19%	58%	91%	92%	91%
Circoncision	95%	90%	83%	95%	94%	91%
Panel IAAS*	78%	45%	77%	68%	86%	85%

** Liste de 37 procédures*

Source: International Association for Ambulatory Surgery (IASS), cited in report [1]

Key points

- **The percentage of surgical hospitalisations that were performed in one day hospital grew from 34.8% in 2000 to 47.2% in 2016.**
- **Belgium is in the international average for a series of interventions, except for some specific "low range" surgeries, which are currently not financed in day surgery, and hence are still performed in classic hospitalisation.**

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1. Van de Sande S, Swartenbroekx N, Van de Voorde C, Devos C, Devriese S. Evolution of day care: impact of financing and regulations. Health Services Research (HSR). Brussels: Blegium Health Care Knowledge Center (KCE; 2013. KCE Reports 192 Available from: https://kce.fgov.be/publication/report/evolution-of-day-care-impact-of-financing-and-regulations
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7.2. Prescription of low-cost drugs in ambulatory setting (E-3)

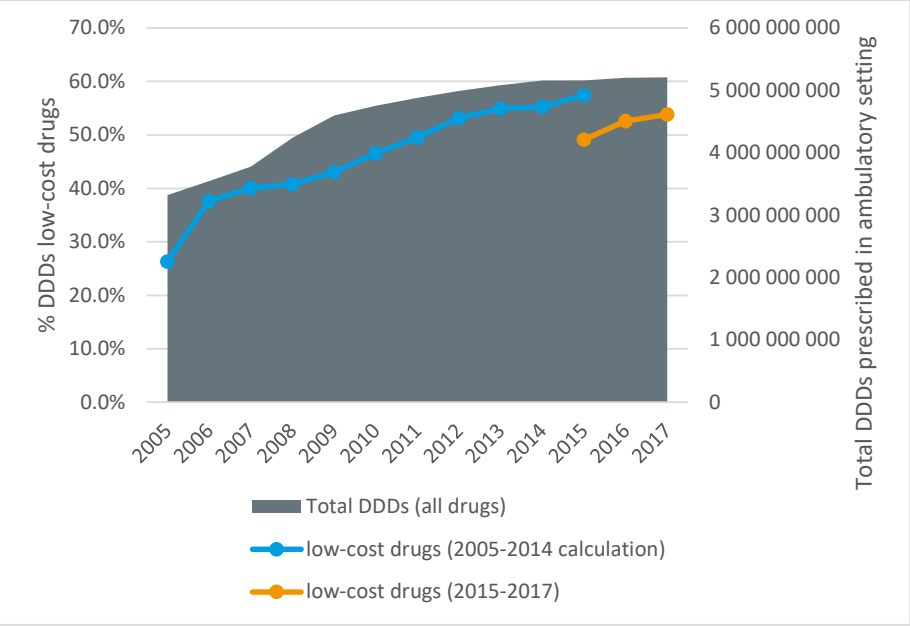
7.2.1. Documentation sheet

Description	Proportion of low-cost drugs (DDD) prescribed in ambulatory setting
Calculation	Numerator: total DDD of low cost drugs delivered in ambulatory setting Denominator: total DDD delivered in ambulatory care
Rationale	Low cost drugs are defined since 1st January 2015 as one of the three cheapest drugs available on the market for reimbursed drugs, or any available that is not 5% more expensive than the cheapest (exception: for patients with chronic conditions, the practitioner can opt for a more expensive drug for justifiable reasons). Before 2015, low-cost drugs were at minimal 31% less expensive that original drugs and drugs prescribed under INN (International Non-proprietary Name) were considered as low-cost; biosimilar treatments were not included in the calculations for 2005-2015 period; they have been added for the 2015-2017 period (biosimilars have been included in the reference price system since July 2012). Promoting the prescription of low-costs drugs is a good way to limit health expenditures, both for the third party payer and for the patient. In Belgium, a reference price system has been implemented in 2001 and extended in 2005. With that system, patients have to pay a supplement when they are prescribed original drugs for which a generic alternative exist. As a consequence, several companies lowered the price of original drugs so that patients did not have to incur the financial penalty. [1] These drugs are thus also considered low cost. Depending on their specialty, physicians and dentists are require to prescribe a certain minimum percentage of low cost drugs, the so-called "quotas" since 2006, these quotas have been revised in January 2011, January 2017 (GPs), January 2018 (specialists). [2]
Data source	Pharmanet (RIZIV – INAMI)
Technical definitions	Low cost prescriptions were defined before 2015 as (1) generic drugs and copies (2) original drugs for which a generic alternative exists and which have lowered their public retail price to the reimbursement basis so that there is no supplement to be paid by the patient (3) drugs prescribed under the International Non-proprietary Name (INN or ICD: International Common Denomination ICD) because the pharmacists delivers a low cost drug in priority: only for drugs within the reference price system. Since January 2015[2]: 1. One of the 3 cheapest drugs on the market 2. Or any drug which is not 5% more expensive than the cheapest drug as long as there are more than 3 different drugs that meet this condition 3. Exception: for patients with a chronic condition, the usual treatment still can be prescribed if a change could cause confusion or lead to problems
International comparability	Comparison with other countries is difficult since international comparison are based on the use of generic drugs (and not use of low costs drugs in general). [3]
Performance dimension	Efficiency

7.2.2. Results

Between 2000 and 2017, the total number of DDD prescribed in ambulatory setting increased from 2.76 billion to 5.2 billion. On the same period, the proportion of low-cost DDDs continuously increased to reach 55.2% in 2014 (Figure 92). With the new calculation introduced in 2015, low-cost DDD rose from 49.1% (which has been estimated to 57.8% for the previous calculation) to 53.8 in 2015 (Figure 92). Results by region are presented in Table 61 below: Flanders has a slightly higher rate that Brussels and Wallonia.

Figure 92 – Percentage of low cost DDD and total DDD prescribed in ambulatory setting (2005-2017)



Source: RIZIV – INAMI, Pharmanet
DDD= Defined Daily Dose

Table 61 – Percentage of low cost Defined Daily Doses (DDD) prescribed in ambulatory setting, by region (2017)

Province	% DDD low cost drugs
Brussels	52.8
Flanders	54.9
Wallonia	51.8
Belgium	53.8

Source: RIZIV – INAMI, Pharmanet

Key points

- **The percentage of low cost drugs in ambulatory setting increased constantly: from 49.1% in 2015 to 53.8% in 2017 (with the previous calculation scheme: from 40.3% in 2008 to 54.8% in 2014).**
- **Differences by region are small, but Flanders is ahead (in 2017: Brussels 52.8%, Wallonia 51.8% Flanders 54.9%)**

References

1. Vrijens F, Van de Voorde C, Farfan-Portet M-I, le Polain M, Lohest O. The reference price system and socioeconomic differences in the use of low cost drugs. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 02/04/2010. KCE Reports 126C (D/2010/10.273/20) Available from: https://kce.fgov.be/sites/default/files/page_documents/d20101027320.pdf
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7.3. Biosimilar treatments (E-4)

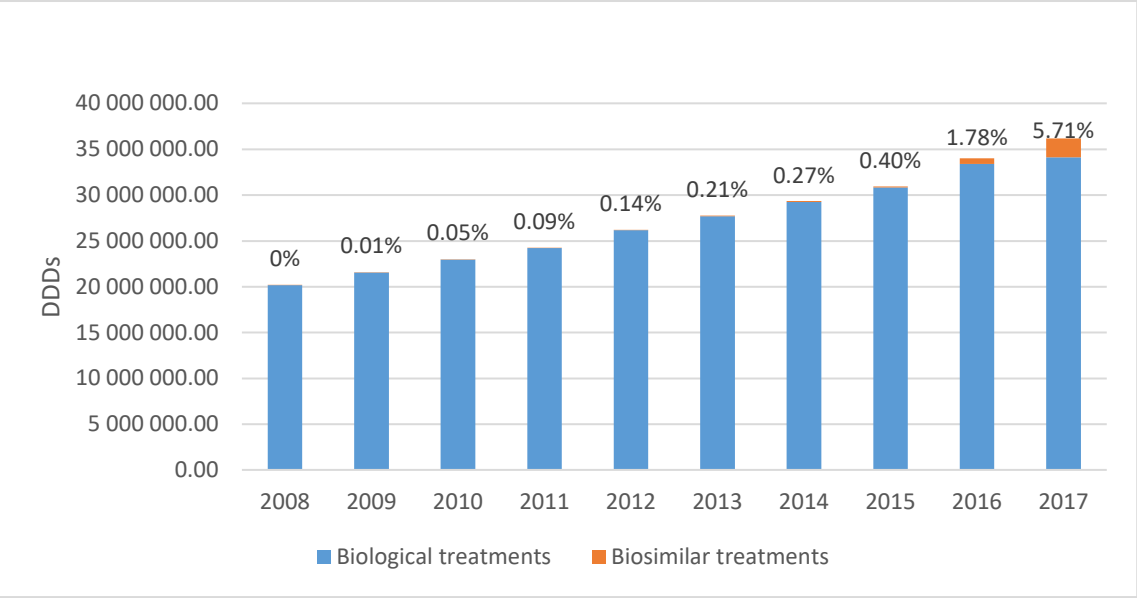
7.3.1. Documentation sheet

Description Proportion of biosimilars (DDD) prescribed in biologicals.
Calculation Numerator: total DDD of biosimilar drugs delivered Denominator: total DDD biologicals delivered for the 6 therapeutic classes with reimbursed biosimilars on the Belgian market. [1]
Rationale A biological medicinal product or biological is a product that contains a biological substance, a substance produced by or derived from a living organism. The expiration of patents of first biologics opened new hopes for affordable copies and increased competition, in the same way that generics are produced from medicines once the patent has expired. Nevertheless, replicate versions of biologicals are not identical, but similar to their original counterparts, hence the name *biosimilars*. Biosimilars have been used in clinical practice in Europe since 2006, some are reimbursed in Belgium since 2008. [2] Promoting the prescription of biosimilars is a way to reduce expenditures, for the patient as well as for the authorities. Currently, biosimilars are not included in the reference price system (cf. E-3 prescription of low drugs in ambulatory setting).
Primary data source Doc PH, Pharmanet (RIZIV – INAMI)
Technical definitions Reference files from RIZIV – INAMI have a variable for biologicals (unique key = CNK) that defines whether a product is a biosimilar or not.
International comparability Comparison with other countries is possible, but sources are scarce.
Limitation The region of the patient is unknown for the inpatient consumption.
Dimensions Efficiency
Related indicators E-3 prescription of low-cost drugs in ambulatory setting

7.3.2. Results

Between 2008 and 2017, the total of DDDs prescribed biologicals (original drugs and biosimilars) in Belgium rose from 20 to 34 million; in the meantime, the share of biosimilars went from 0 to 5.71 %, with a big increase in 2017.

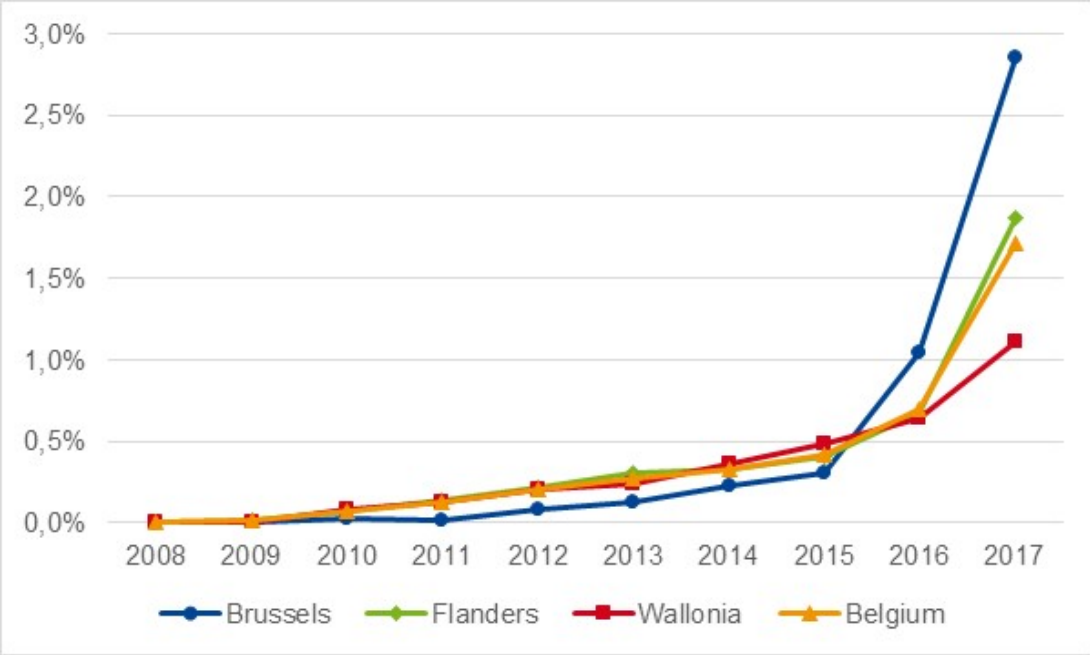
Figure 93 – Biologicals consumption in Belgium (2008-2017) and share of biosimilars



Source: INAMI – RIZIV

Regions have almost the same level of uptake, except for 2017, where Brussels (2.86%) increase is bigger than Flanders (1.87%) and Wallonia (1.11%), cf. Figure 94 (Belgium: 1.71%).

Figure 94 – Proportion of biosimilars share (in DDDs) by region



There are currently 9 biological pharmaceuticals with a biosimilar alternative to the original product. They account in the 2017 INAMI – RIZIV expenditures for an amount of 430 million EUR (Table 62).

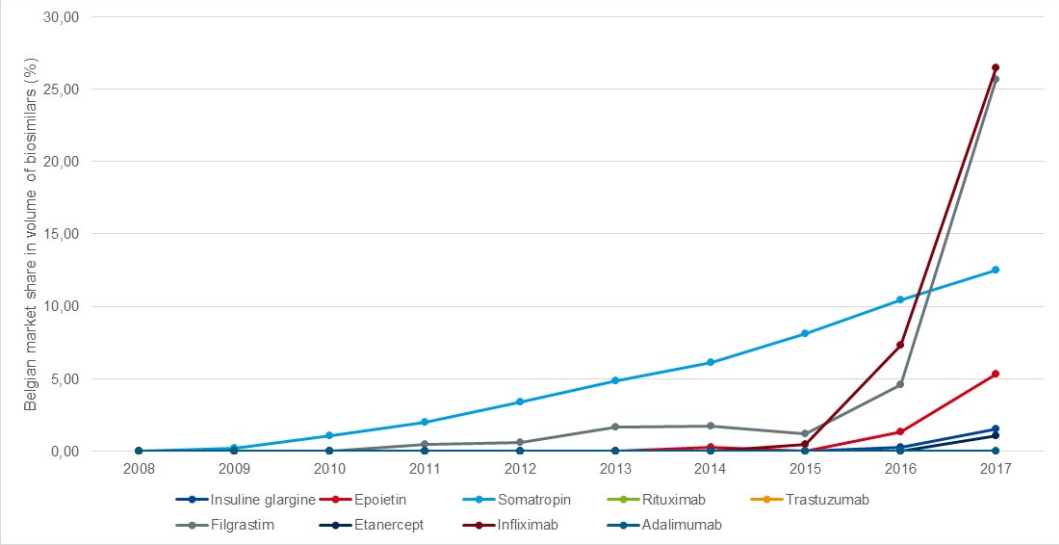
Table 62 – Biologicals with existing biosimilars in Belgium

ATC5	Molecule	INAMI - RIZIV ex-penditures in 2017 (million EUR)	Share of bio-similars in DDDs (2017) (%)
A10AE04	Insuline glargine	28.80	1.52
B03XA01	Erythropoietin	9.64	5.29
H01AC01	Somatropin	20.85	12.48
L01XC02	Rituximab	32.01	0.00
L01XC03	Trastuzumab	62.16	0.00
L03AA02	Filgrastim	3.41	25.69
L04AB01	Etanercept	60.80	1.07
L04AB02	Infliximab	74.65	26.44
L04AB04	Adalimumab	138.38	0.00

Source: INAMI – RIZIV

The biosimilar share is shown for each biological in Figure 95. In 2017, there has been a sharp rise in the proportion of biosimilar for several biologicals exceeding 25% for infliximab and filgrastim.

Figure 95 – Shares of biosimilars for available Belgian biological pharmaceuticals



Source: INAMI – RIZIV

International comparison shows that European countries often have a higher share of biosimilar for anti-TNF's treatments (12/20016 data): Belgium shares (2017 data) are similar to the lowest levels for infliximab (Italy, France) and for etanercept (Spain, Italy, Germany), see Table 63.

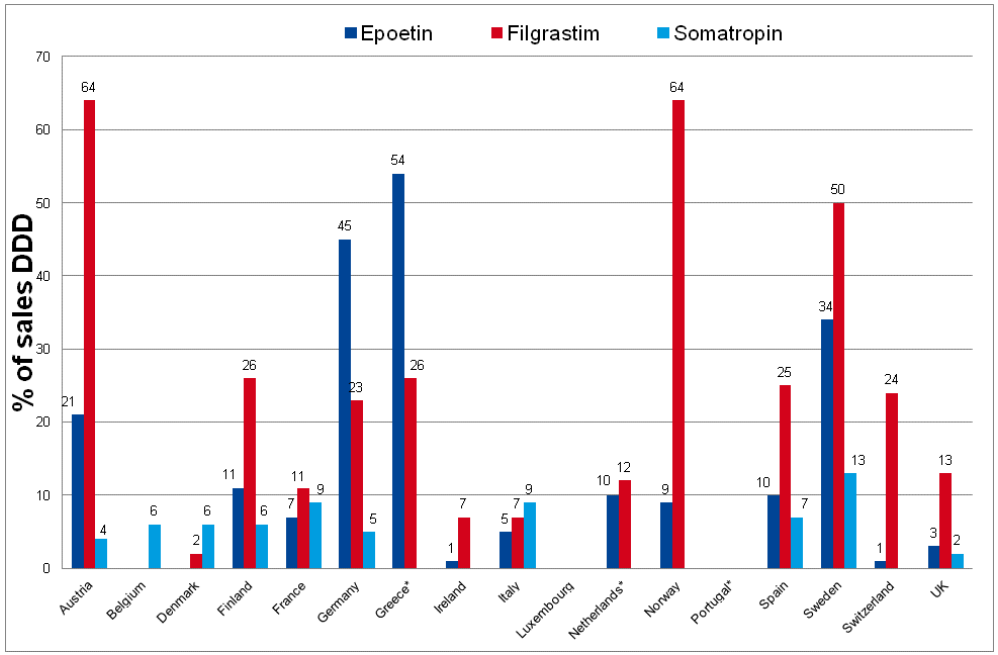
Table 63 – Share of biosimilar for anti-TNF's treatments (in DDD, 12/2016)

Country	infliximab	etanercept
UK	64.1%	31.6%
Italy	24.6%	1.0%
France	27.2%	19.0%
Germany	46.6%	1.0%
Spain	34.8%	0.4%

Source: QuintilesIMS [3]For other biologicals (epoetin, filgrastim and somatropin), Belgium has lower shares of biosimilar than lead European countries (Germany, Sweden, Norway, Austria, Greece), see Figure 96

.

Figure 96 – Percentage of sales in DDD of biosimilars on total market



*Source: IMS data 2nd trimester 2011. *Only retail sector. Second-generation products not included.*

Key points

- **Substitution in biological treatments from orginal drugs to biosimilars has a low uptake in Belgium**
- **Improvements in the share in biosimilars have been sharp the last year (2017), especially concerning infliximab and filgrastim**

References

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[3] QuintilesIMS. The impact of Biosimilar competition in Europe. 2017.

8. SUSTAINABILITY OF THE HEALTHCARE SYSTEM

8.1. Current expenditure on health as % Gross Domestic Product (GDP) (S-1), Current expenditure on health in € per capita (S-2) & Current expenditure on health as % financed by government/compulsory schemes (S-3)

8.1.1. Documentation sheet

Description	Current expenditure on health according to the System of Health Accounts (SHA, OECD), expressed for a given year: - For the total health sector (in million €) - As a percentage of the gross domestic product (GDP) (indicator S-1) - Per capita (in million €/inhabitant) (indicator S-2) - As a percentage financed by government/compulsory schemes (indicator S-3)
Calculation	All calculations are done by OECD on the basis of data provided by experts from each country.[1]
Rationale	Trends in health expenditure are an important indicator of sustainability. For international comparisons, the standard international definitions for healthcare and healthcare expenditure of the OECD's System of Health Accounts (SHA) are classically used. SHA aims at measuring consumption of health and long-term care services. This includes spending by both public and private sources on medical services and goods, public health and prevention programmes and administration. Current expenditure on health is broken down by healthcare function, providers and funding agents for the purpose of monitoring healthcare consumption. The proportion of GDP devoted to healthcare and how this proportion changes over the course of time are also monitored. In OECD, Gross Domestic Product (GDP) is defined as final consumption plus gross capital formation plus net exports. Final consumption of households includes goods and services used by households or the community to satisfy their individual needs. It includes final consumption expenditure of households, general government and non-profit institutions serving households.
Primary Data source	Current expenditure on health: FPS Social Security
Indicator results:	OECD Health Statistics 2018 (https://stats.oecd.org/)
Technical definitions	See SHA technical manual[1] and specific technical note for Belgium (under information for country)
International comparability	OECD and EU Member countries are at varying stages of implementing the System of Health Accounts (SHA). Therefore, the data reported in OECD Health Statistics are at varying levels of comparability. *"To compare spending levels between countries, per capita health expenditure are converted to a common currency (US dollar) and adjusted to take account of the different purchasing power of the national currencies, in order to compare spending levels. Economy-wide (GDP) Purchasing Power Parities (PPPs) are used as the most available and reliable conversion rates".*[2]
Related performance indicators	Out-of-pocket payments

Box 1 – Total health expenditure vs current health expenditure

- **For all indicators related to expenditures on health, we adopted OECD definition based on the System of Health Accounts (SHA) 2011 methodology.[1] Since few years, it is recommended in SHA to use "current health expenditure" instead of "total health expenditure".**
- **Actually, in OECD database all indicators are expressed as a percentage of "current health expenditure" which is defined as final consumption expenditures of resident units on health care goods and services.**

8.1.2. Results

Belgium

In 2016, current expenditure on health amounted to 42.43 billion € in Belgium. This represents € 3 745 spent on health per inhabitant. In 2016, health spending accounted for 10% of Belgian Gross Domestic Product (GDP) and remained quite stable over the years (Figure 97). 78.8% of current expenditure on health is financed by the public sector and accounted for 33.44 billion € (see Table 64).

The three revenue sources of the public sector are social insurance contributions from employees (17.7%) and employers (32.6%) and transfers from government domestic revenue (49.7%, see Table 64).

International comparison

To allow comparisons between countries, these data are also expressed in US$ Purchasing Power Parities (PPP). Belgium spent slightly more on health than the EU-15 mean (i.e. 10% of the GDP versus a EU-15 mean of 9.5,). In Belgium as well as in most European countries, per capita spending on health continued to grow in 2016 following the usual trend (Figure 97). Current expenditure on health per capita grew from € 2 595 per inhabitant in 2004 to € 3 745 in 2016.

Table 64 – Current expenditure on health in Belgium (2004-2016)

OECD 2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Absolute amounts (in million € - current prices)	27 044.6	27 928.4	28 951.6	30 641.9	32 830.1	34 864.9	35 930.0	37 924.0	39 162.7	40 295.5	41 368.1	41 462.5	42 430.1
Per capita, current prices (in €)	2595.2	2665.3	2744.8	2883.8	3065.4	3229.3	3297.7	3435.7	3526.0	3610.9	3690.6	3677.6	3744.5
Per capita (US$ PPP)	2919.8	2988.7	3136.6	3277.1	3535.9	3798.8	3945.4	4129.9	4288.8	4479.1	4612.0	4589.5	4659.5
% GDP	9.05%	8.97%	8.86%	8.89%	9.27%	10.00%	9.84%	10.00%	10.11%	10.27%	10.34%	10.11%	10.04%
Amounts financed by public sector	20 661.5	21 495.6	22 095.4	23 232.9	25 451.9	27 224.1	28 048.5	29 527.2	30 665.2	31 421.2	32 361.2	32 505.8	33 439.3

(government and compulsory schemes) (in million € - current prices)													
% financed by public sector (government and compulsory schemes)	76.4%	77.0%	76.3%	75.8%	77.5%	78.1%	78.1%	77.9%	78.3%	78.0%	78.2%	78.4%	78.8%

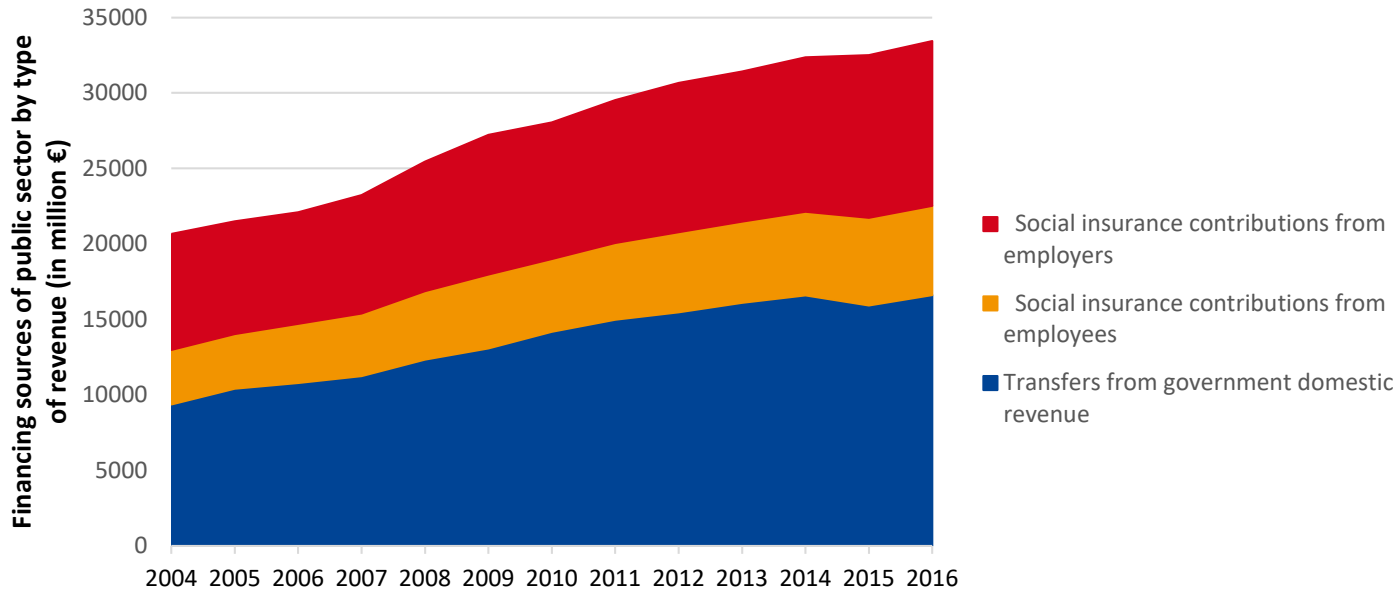
Source: System of Health accounts – SHA – OECD Health Statistics 2018; GDP: Gross Domestic Product; PPP: Purchasing Power Parities.

Table 65 – Financing sources of public sector (government and compulsory insurance) by type of revenue, in Belgium (2004-2016)

OECD 2018	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Amounts financed by public sector (in million € - current prices)	20 661.5	21 495.6	22 095.4	23 232.9	25 451.9	27 224.1	28 048.5	29 527.2	30 665.2	31 421.2	32 361.2	32 505.8	33 439.3
Transfers from government domestic revenue (in million € - current prices)	9360.4	10 404.8	10 782.6	11 239.2	12 332.1	13 073.4	14 175.3	14 974.2	15 465.7	16 093.6	16 586.9	15 917.6	16 607.8 (49.7%)
Social insurance contributions from employees (in million € - current prices)	3614.1	3620.7	3919.1	4145.9	4536.5	4895.0	4821.2	5084.5	5307.8	5380.5	5541.5	5809.0	5914.1 (17.7%)
Social insurance contributions from employers (in million € - current prices)	7686.9	7470.1	7393.7	7847.8	8583.3	9255.7	9052.0	9468.6	9891.6	9947.0	10 232.8	10 779.2	10 917.4 (32.6%)

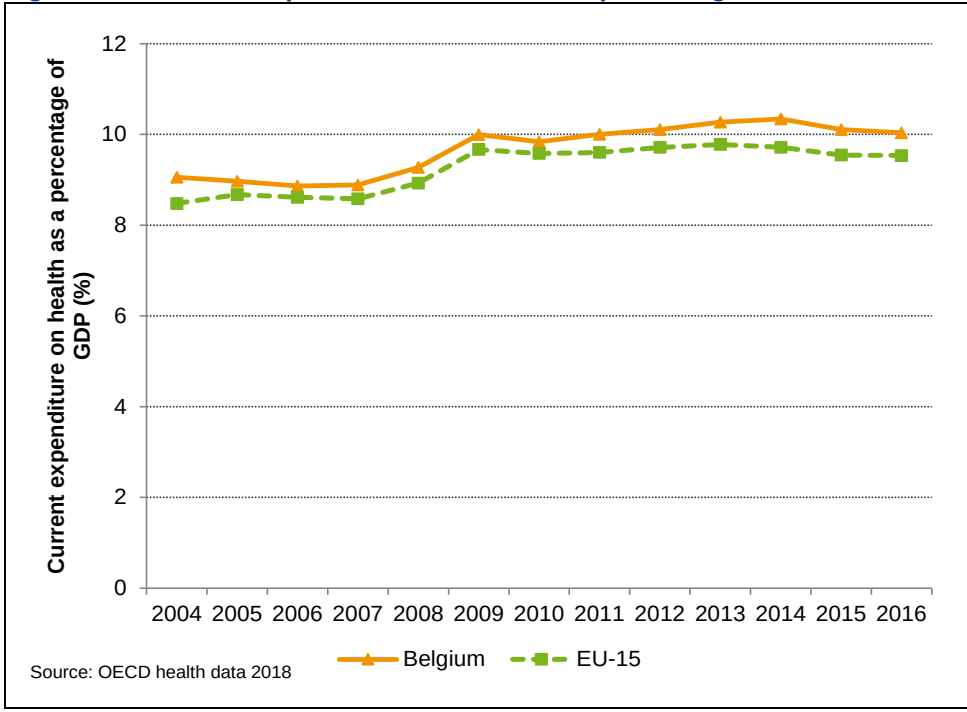
Source: System of Health accounts – SHA – OECD Health Statistics 2018.

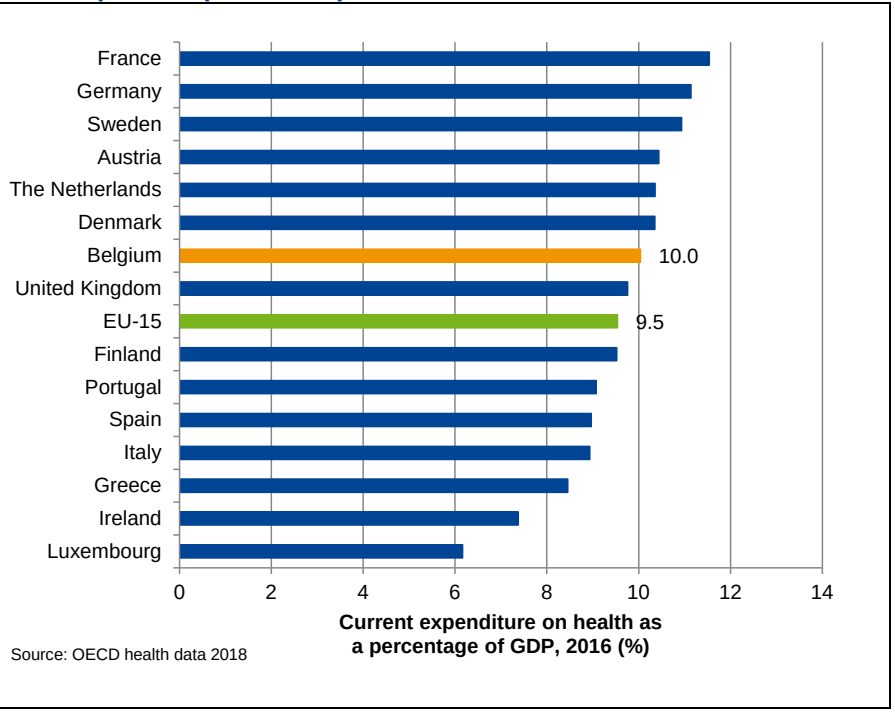
Figure 97 – Financing sources of public sector by type of revenue, Belgium (2004-2016)



Source: OECD health data 2018

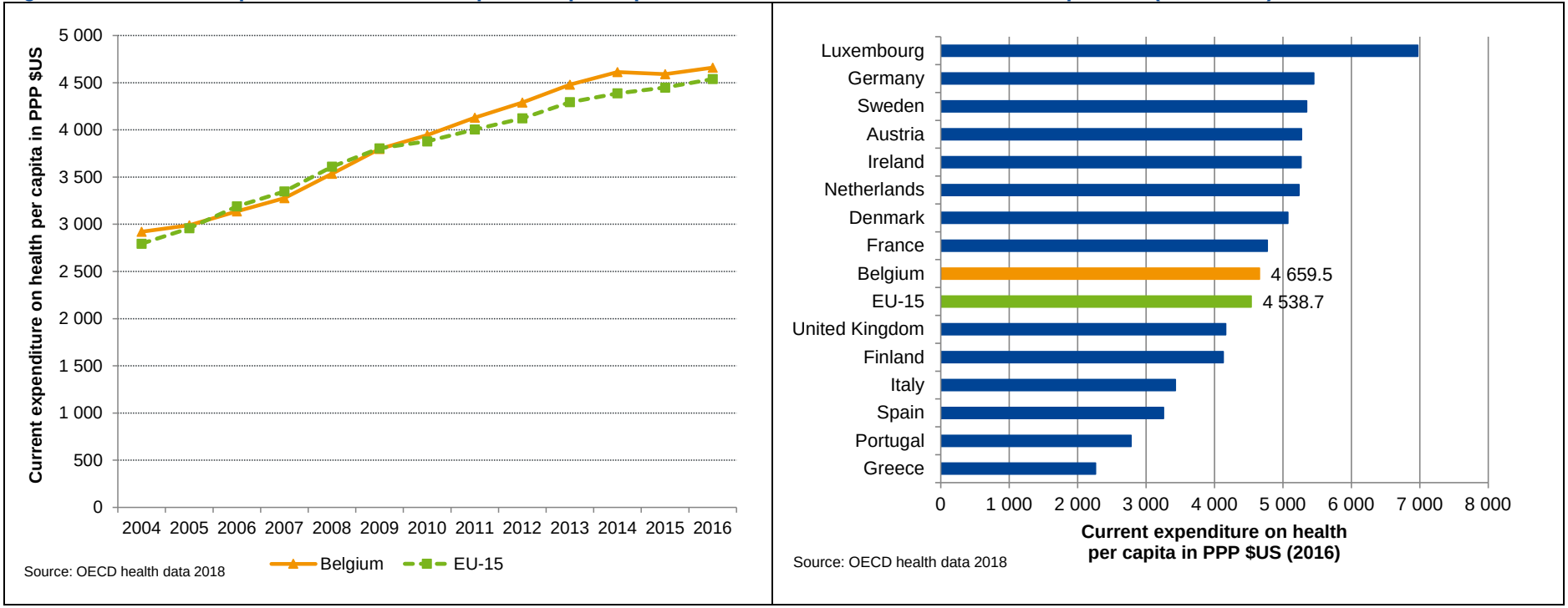
Figure 98 – Current expenditure on health as a percentage of GDP: international comparison (2004-2016)





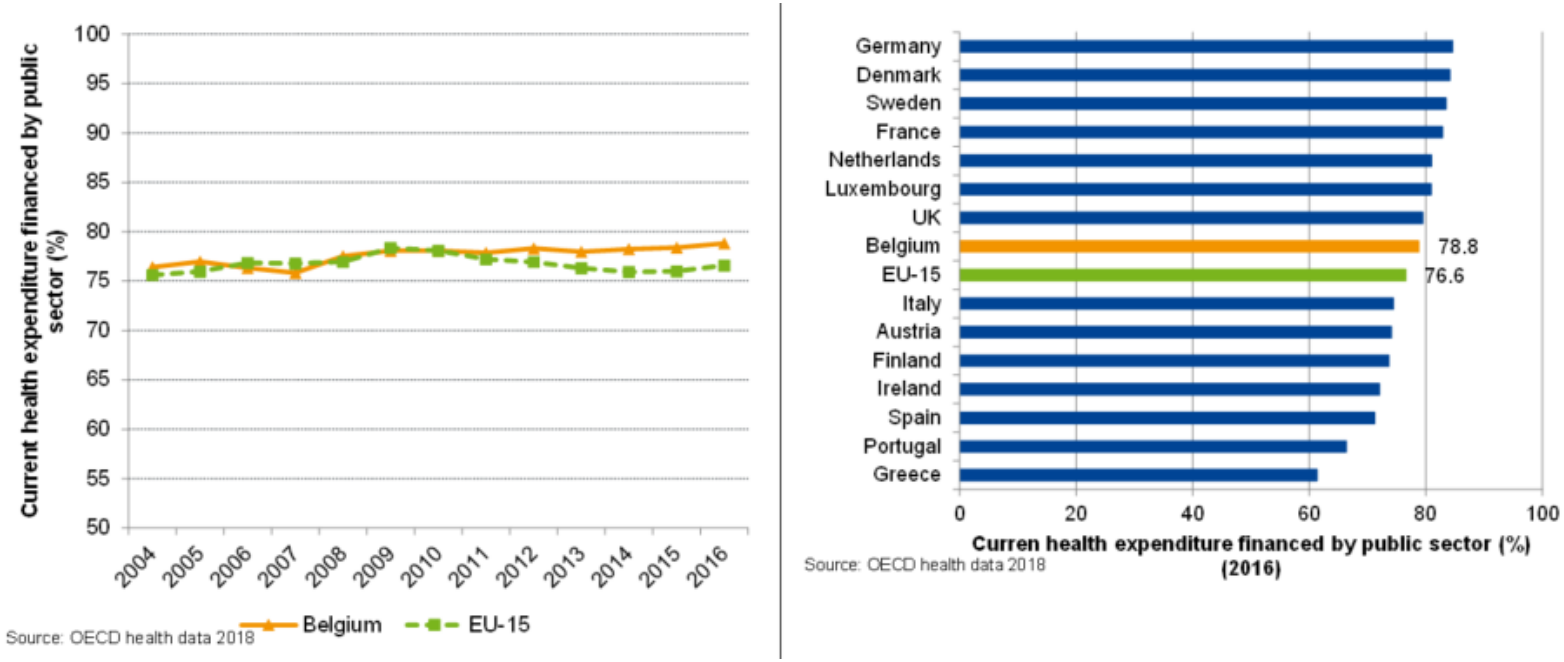
Source: OECD Health Statistics 2018

Figure 99 – Current expenditure on health expressed per capita in PPP US dollars: international comparison (2004-2016)



Source: OECD Health data 2018

Figure 100 – Current expenditure on health, percentage financed by public sector: international comparison (2004-2016)



Source: OECD Health Statistics 2018. UK = United Kingdom

Key points

- **In 2016, current expenditure on health amounted to 42.43 billion € in Belgium. Belgian population spent € 3 745 on health per inhabitant in 2016. Per capita spending on health continued to grow in 2016.**
- **In 2016, 10% of Belgian GDP was spent on health and 79% of this current expenditure on health was financed by the public sector.**
- **Current expenditure on health, expressed as a share of GDP or per capita, is very close (slightly higher) to the EU-15 average.**

References

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8.2. Medical graduates (S-4)

8.2.1. Documentation sheet

Description	Medical graduates per 100 000 population
Calculation	Numerator: number of students graduating every year from medical faculties in Belgium (Belgian diploma). Denominator: total population (number of inhabitants)
Rationale	Maintaining a sufficient stock of doctors to guarantee the accessibility and quality of care requires investment in training new doctors, taking into account that it takes at least 8 years to train a general practitioner[dd] and 10-13 years to train a medical specialist. Some European countries opt for strong recruitment strategy to recruit trained physicians from abroad.[1] The World Health Organization adopted in May 2010 "The Global Code of Practice on the International Recruitment of Health Personnel"[2] to promote a more ethical recruitment of health personnel and to encourage countries to achieve greater "self-sufficiency" in the training of health workers. The number of new medical graduates (inflow), taken together with the number of practising physicians (current situation) and the proportion of practising physicians above 55 years old (a proxy of the outflow within ten years) are thus important indicators of the sustainability of the health system. **Medical training (6 years):** Becoming medical doctor (MD) in Belgium means following basic medical training consisting of a bachelor's and a master's degree (3 years each).[ee] The bachelor's degree + master's degree lead to the MD degree, the starting point for the advanced master's degree (see post-graduate training). After this 6-year cycle, students receive their physician's diploma, a licence to practice (visa/visum) delivered by the Federal Ministry of Public Health and a RIZIV – INAMI number (allowing reimbursement of the medical practice by the compulsory health insurance). To have access to the profession, they also have to be registered in their provincial Medical College (Ordre des Médecins / Orde der artsen). A filter has been introduced in the basic medical training, i.e. an entrance examination, to allow a certain correspondence between the number of students graduating in Medicine and the quotas for access to specialization (see below). **Post-graduate training (3- 7 years):** To be recognized as specialists (in general medicine or in another specialty), graduated physicians have to follow an additional training of three to seven years, depending on the specialty. There are 42 recognized specialties, including general medicine[ff]. Specialization is restricted to a limited number of candidates (system of quota), who have to submit a training plan. The federal government decided in 1997 on a system of quota (i.e. a restriction of RIZIV – INAMI numbers according to federal quotas for access to specialization) to limit the number of medical practitioners in the health care sector. The system became effective in 2004, that is, after all students who had enrolled before the government decision could complete their training. Since the training of doctors is a competence of the Communities, federal quotas were then subdivided between Flanders and the Wallonia-Brussels Federation, proportionally to population size. For French-speaking universities, the quotas were 356 in 2012, 390 in 2013, 410 in 2014 and 492 per year from 2015 to 2017 and 2019-2020. For Flemish universities,

dd General practitioners have the possibility to begin their 3 years post-graduate training the last year of their basic training.

ee The master's degree in medicine was revised from 4 years (240 ECTS credits) to 3 years (180 ECTS credits) in 2014-2015. This means that in academic year 2017-2018, the last cohort of students of the four-year master's degree in medicine graduated as did the first cohort of students of the three-year master's degree ('double cohort').

ff https://www.health.belgium.be/fr/sante/professions-de-sante/medecins-dentistes-et-pharmaciens/medecins-specialistes

	the quotas were 534 in 2012, 585 in 2013, 615 in 2014 and 738 per year from 2015 to 2017 and 2019-2020. The objective was to limit the total number of physicians working in the curative sector and to reduce gradually the existing discrepancy in medical density between the communities.[3] However, the legislator has provided for a smoothing mechanism which provides that, in the event of a one-off overrun, the quota may be increased by one year, provided that the quota is reduced by another year thereafter. This smoothing method, valid until 2018, also allowed to postpone unfilled quotas to the following years.[4] Some specific specializations, i.e. data management, forensic medicine and occupational medicine, fall outside the overall quota ('out of quotas') as these are not financed through the compulsory health insurance. In Belgium, the system of quota only applies for medical doctors with a Belgian diploma. In addition, physicians in Belgium are authorised to practise medicine if their diploma has been stamped by the competent authorities and if they are registered on the list of the Order of Physicians.
Data source	Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Health, Food Chain Safety and Environment OECD Health statistics
Technical definitions	The number of medical graduates and the number of foreign-trained doctors is based on the number of "visa/visum" delivered by the Federal Public Service Public Health, which are registered in the federal cadastre. Only the first "visa/visum" delivered to practise medicine is taken into account.
Limitations	**Medical graduates per 100 000 population**: this indicator also includes medical graduates from foreign countries, completing their medical training (and post-graduate training) in Belgium, but leaving Belgium afterwards.
International comparability	**Medical graduates per 100 000 population**: international comparability is partially limited due to methodological differences (some countries exclude foreign graduates while other countries, such as Belgium, include them).
Dimension	Sustainability of the health system
Related indicators	Number of practising physicians Number of practising physicians above 55+ years old

8.2.2. Results

Number of new medical graduates with a Belgian diploma

In 2017, a total of 1685 students graduated from medical schools in Belgium (see Table 66), i.e. a higher number of graduates than expected due to the implementation of the system of quota. The number of medical graduates with a Belgian diploma is almost the same for the French community (840 in 2017 vs 492 according to the quotas) and the Flemish community (845 in 2017 vs 735 according to the quotas, see Table 66). There is a higher proportion of female medical graduates with a Belgian diploma than male ones (respectively 59.7% and 40.3%, see Table 66) and it is quite stable over the time. Globally, 87.4% of these students have the Belgian nationality (see Table 66).

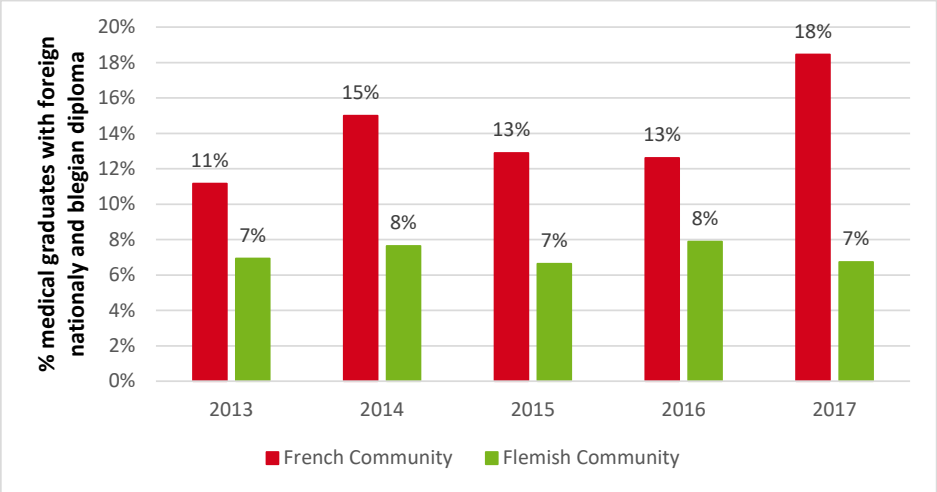
Table 66 – Number of medical graduates with a Belgian diploma, by Community and by characteristics (2013-2017)

Year (SPF)		2013	2014	2015	2016	2017
Belgium		1 180	1 293	1 358	1 625	1 685
Community	**French community**	430 (36.4%)	573 (44.3%)	605 (44.6%)	737 (45.4%)	840 (49.9%)
	Flemish community	750 (63.6%)	720 (55.7%)	753 (55.4%)	888 (54.6%)	845 (50.1%)
Gender	**Female**	737 (62.5%)	781 (60.4%)	832 (61.3%)	965 (59.4%)	1 006 (59.7%)
	Male	443 (37.5%)	512 (39.6%)	526 (38.7%)	660 (40.6%)	679 (40.3%)
Belgian nationality	**Yes**	1 080 (91.5%)	1 152 (89.1%)	1 230 (90.6%)	1 462 (90%)	1 474 (87.4%)
	No	100 (8.5%)	141 (10.9%)	128 (9.4%)	163 (10%)	211 (12.6%)

Source : SPF SPSCAE-FOD VVVL, Cadastre

The pattern of medical graduates with a Belgian diploma and a foreign nationality highly differs by community: a stable proportion of 7% for the Flemish Community, and an increasing proportion up to 18% for the French Community in 2017 (see Figure 101). This higher percentage can partly be explained by a high proportion of French (from France) graduates in the French Community (higher than the proportion of Dutch (from the Netherlands) graduates in the Dutch community), but also by a higher variety of other nationalities in the French Community (Morocco, Luxembourg…).

Figure 101 – Percentage of foreign medical graduates with Belgian diploma[gg], by Community (2013-2017)



Source: SPF SPSCAE-FOD VVVL, Cadastre; KCE calculation

Based on a study published in 2015, it has been highlighted that the proportion of French students is steadily increasing, reaching 12.50% in 2013-2014. The proportion of Luxembourg students fluctuates around 1%. The proportion of students of other European nationalities is gradually increasing, reaching 5.13% in 2013-2014. The proportion of students of non-European nationality fluctuates and seems to increase, from 4.86% in 2009-2010 to 7.40% in 2013-2014. [4]

gg Number of "visa/visum" delivered to people with a foreign nationality divided by the total number of "visa/visum" (Belgian and foreigners).

Number of physicians with a foreign diploma receiving a visa in Belgium

In addition to the number of medical graduates and physicians **with a Belgian diploma**, "visa/visum" are delivered to physicians **with a foreign diploma**.

New visas delivered annually to foreign medical doctors rose from 78 before 2004 to 430 in 2008. Before 2004, the inflow originated largely from the neighbouring countries (France, the Netherlands and Germany) and to a lesser extent from Spain and Italy. Since 2004, the largest group of immigrant doctors comes from the Eastern part of the European Union (Poland and Romania).

In 2017, a total of 436 physicians with a foreign diploma received a visa in Belgium (see Table 67). Since 2015, the number of visa delivered to physicians with a foreign diploma decreases. Only 6.7% of these physicians are Belgian (see Table 67).

Table 67 – Number of physicians with a foreign diploma receiving a visa (2013-2017)

Physicians with a foreign diploma receiving a visa (SPF)		2013	2014	2015	2016	2017
Total physician with a Foreign diploma receiving a visa		455	534	566	495	436
Belgian nationality*	**Yes**	17 (3.7%)	28 (5.1%)	30 (5.3%)	29 (5.7%)	29 (6.7%)
	No	438 (96.3%)	506 (94.9%)	536 (94.7%)	466 (94.3%)	407 (93.3%)

*Source: SPF SPSCAE-FOD VVVL, Cadastre; KCE calculation; *Belgian nationality at the time of the data extraction*

International comparison

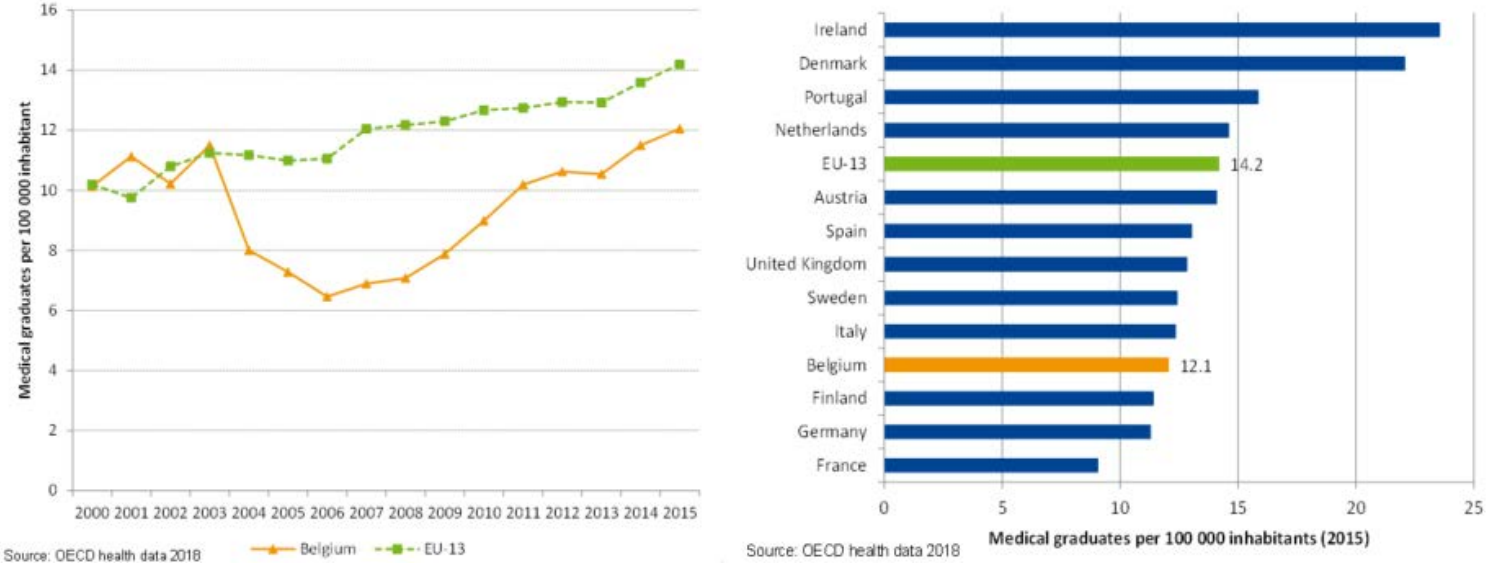
Compared to the medical density reported by other European countries, i.e. on average 14.2 medical graduates per 100 000 inhabitants, Belgium is slightly below (12.1 medical graduates per 100 000 inhabitants, data 2015 – see Table 68). According to more recent data, the number of medical graduates with a Belgian diploma per 100 000 inhabitants will probably exceed the European average. The decrease in 2004 is the effect of the system of quotas which was decided in 1997, and implemented for the first time in 2004.[5] Due to the use of the smoothing possibility (see rationale documentation sheet), the numbers of medical graduates has gradually increased to exceed in 2015 the density of 2003 (see figure 102).

Table 68 – Number of medical graduates with a Belgian diploma per 100 000 inhabitants (2000-2017)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Medical graduates with a Belgian diploma (per 100 000 population)	10.1	11.1	10.2	11.5	8.0	7.3	6.5	6.9	7.1	7.9	9.0	10.2	10.6	10.5	11.5	12.1	14.2	14.8

Source: OECD Health Statistics 2018[hh]

Figure 102 – Medical graduates per 100 000 population: international comparison (2000-2015)[ii]



Source: OECD Health Statistics 2018

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hh Data extracted from OECD Health Statistics 2018 are slightly different from original data source from SPF-FOD Cadastre.

ii Because of the lack of data from other European countries, 2015 is taken as the reference in the calculation.

Key points

- **In 2017, a total of 1685 students graduated from medical school in Belgium (14.8 per 100 000 population).**
- **The density of 12 medical graduates per 100 000 population is below the EU-13 average of 14 per 100 000 population (based on 2015 data) but will probably exceed this number in the future.**
- **A decrease in the number of new graduates was observed in 2004 due to the implementation of the system of quotas. Progressively, the limits of the quotas were enlarged allowing the training of higher numbers of medical students. Moreover, the smoothing technique allowed a flexibility leading universities to exceed the limits imposed by the quotas year after year.**
- **The pattern of foreign medical graduates with a Belgian diploma highly differs by community: a remaining stable proportion around 7% in the Flemish Community, and an increasing proportion up to 18% in 2017 in the French Community.**

References

[1] OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017.

[2] WHO. Global Code of Practice on the International Recruitment of Health Personnel World Health Organization (WHO); 2010.

[3] Gerkens S F-PM-I, Desomer A, Stordeur S, De Waroux M, Van de Voorde C, Van de Sande S, Leonard C. The Belgian Health System in 2010. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE): Belgian Health Care Knowledge Centre (KCE); 2010. Health Systems in Transition (KCE reports 138C)

[4] Cellule Planification de l'offre des professions des soins de santé. Médecins : mobilités internationales. Service public fédéral Santé publique, Sécurité de la chaîne alimentaire et Environnement, Direction générale Soins de santé; 2015.

[5] Roberfroid D SS, Camberlin C, Van de Voorde C, Vrijens F, Léonard C. Physician workforce supply in Belgium: current situation and challenges. Health Services Research (HSR). Brussels: Belgian: Health Care Knowledge Centre (KCE); 2008. KCE reports 72C

8.3. Share of foreign-trained physicians (S-14)

8.3.1. Documentation sheet

Description	Share of foreign-trained physicians
Calculation	Numerator: Number of foreign-trained physicians (Stock) Denominator: Total number of physicians licensed to practice (Belgian-trained physicians and foreign-trained physicians)
Rationale	Maintaining a sufficient stock of physicians to guarantee the accessibility and quality of care requires investment in training new physicians, taking into account that it takes at least 8 years to train a general practitioner[jj] and 10-13 years to train a medical specialist. Some European countries opt for strong recruitment strategy to recruit trained physicians from abroad.[1] The World Health Organization adopted in May 2010 "The Global Code of Practice on the International Recruitment of Health Personnel"[2] to promote a more ethical recruitment of health personnel and to encourage countries to achieve greater "self-sufficiency" in the training of health workers.
Data source	Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Public Health OECD Health statistics
Technical definitions	Foreign-trained physicians are physicians who have obtained abroad the diploma allowing them to have a medical practice in Belgium (i.e. equivalent to the master degree to become a medical doctor). These physicians have also obtained a visa and are registered with the Medical College (Ordre des Médecins / Orde der artsen) to be entitled to practice in Belgium.
Limitations	This indicator refers to the share of foreign-trained physicians on all physicians with a license to practice and not on practising physicians or professionally active physicians (data not available). This indicator therefore includes physicians without active practice in Belgium.
International comparability	International comparability is partially limited due to methodological differences (some countries report licensed to practice physicians while others report practising or professionally active physicians). The data for Germany and some regions in Spain are based on nationality (or place of birth in the case of Spain), not on the place of training.
Dimension	Sustainability of the health system
Related indicators	Number of practising physicians Number of practising physicians above 55+ years old

[jj] General practitioners have the possibility to begin their 3 years post-graduate training the last year of their basic training.

8.3.2. Results

In 2017, 63 381 physicians licensed to practice were counted in Belgium (see Table 69). Almost 12% of them held a foreign diploma (7 606 foreign-trained physicians). Table 69 shows that the share of foreign-trained physicians is increasing over time in Belgium from 9.4% in 2012 to 12% in 2017.

The proportion of male foreign-trained physicians is slightly higher than female foreign-trained physicians (respectively 52.4% and 47.4%, Table 70). This is quite interesting to highlight since a reverse gender distribution is observed among new medical graduates with a Belgian diploma (40.3% were men and 59.7% were women in 2017). Moreover, more than 70% of them are younger than 55 years old. Unsurprisingly, 86.6% of foreign-trained physicians do not have the Belgian nationality. Figure 103 shows that half of foreign-trained physicians come from France, The Netherlands or Romania.

Table 69 – Number of physicians licensed to practice distributed according to the place of training (2012-2017)

Year (SPF)		2012	2013	2014	2015	2016	2017
Total number of physicians		55 986	57 204	58 567	60 056	61 718	63 381
	Belgian-trained physicians	50 745	51 517	52 370	53 314	54 515	55 775
	Foreign-trained physicians	5 241	5 687	6 197	6 742	7 203	7 606
% of foreign-trained physicians		**9.4%**	**9.9%**	**10.6%**	**11.2%**	**11.7%**	**12.0%**

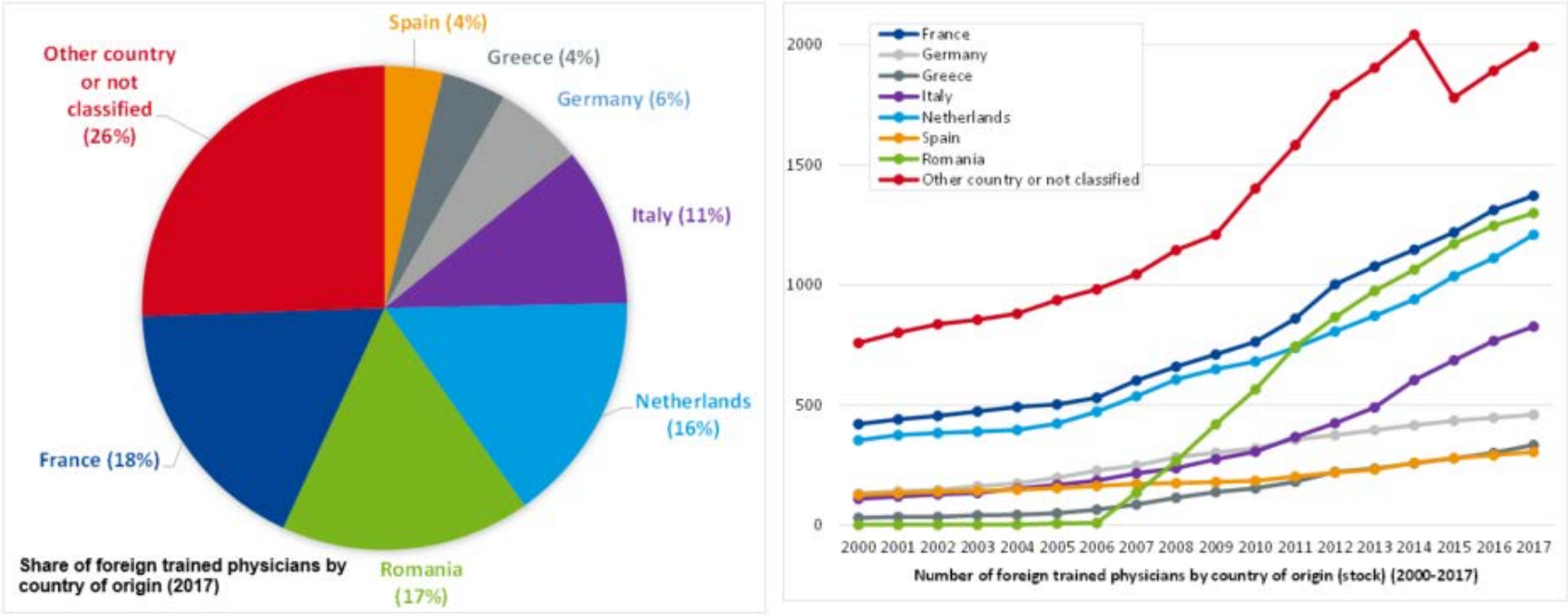
Source : SPF SPSCAE-FOD VVVL, Cadastre

Table 70 – Foreign-trained physicians by personal characteristics (2017)

		2017
Foreign-trained physicians in Belgium		7 606 (12%)
Gender	**Female**	3 606 (47.4%)
	Male	3 985 (52.4%)
	Unknown	15 (0.2%)
Age group	**<35**	1 463 (19.2%)
	35-44	2 539 (33.4%)
	45-54	1 643 (21.6%)
	55-64	1 313 (17.3%)
	65-74	443 (5.8%)
	>74	205 (2.7%)
Belgian nationality*	**No**	6 587 (86.6%)
	Yes	1 019 (13.4%)

*Source : SPF SPSCAE-FOD VVVL, Cadastre ; *Belgian nationality at the time of the data extraction*

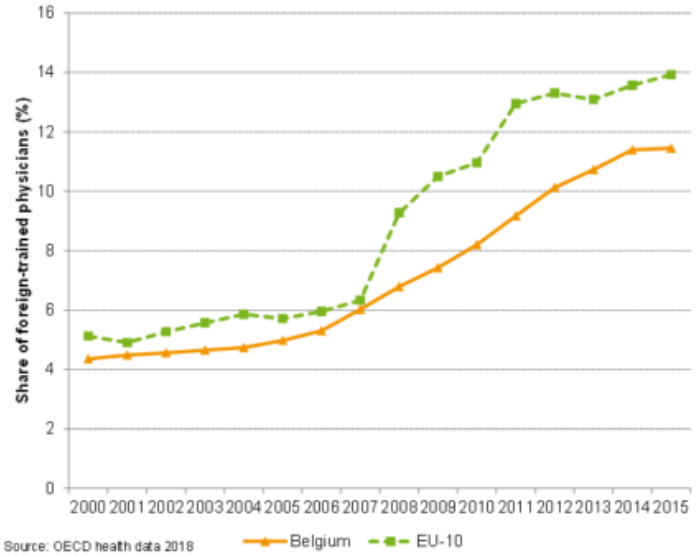
Figure 103 – Foreign-trained physicians by country of origin; stock (2000-2017)

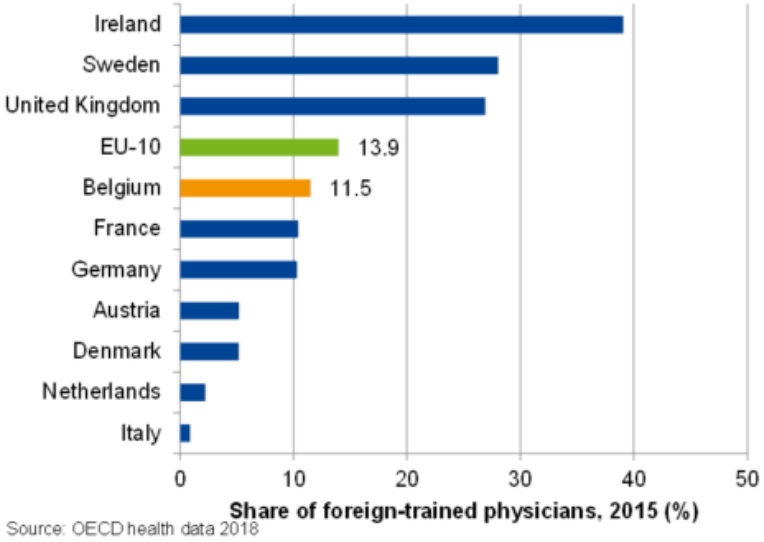


Source: OECD Health Statistics 2018

While the average proportion of foreign-trained physicians for EU-10 is 13.9%, a lower proportion is reported in Belgium (i.e. 11.5%) (see Figure 104). Since 2000, however, a gradually increasing proportion of foreign-trained physicians has been observed from 4% in 2005 to 11.5% in 2015.

Figure 104 – Share of foreign-trained physicians: international comparison (2000-2015)[kk]





Source: OECD Health Statistics 2018

Key points

- **In 2017, almost 12% of all licensed to practice physicians in Belgium hold a foreign diploma (7 606 foreign-trained physicians among 63 381 physicians) ; half of them come from France, The Netherlands and Romania. This proportion relates to graduated physicians who are entitled to practice and not to practising physicians.**
- **A gradually increasing proportion of foreign-trained physicians has been observed in Belgium (from 4% in 2000 to 11.5% in 2015) but remains slightly below the EU-10 average (13.9% in 2015).**

References

1. OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017. Available from: http://dx.doi.org/10.1787/health_glance-2017-en
2. WHO. Global Code of Practice on the International Recruitment of Health Personnel World Health Organization (WHO); 2010. Available from: http://www.who.int/hrh/resources/code_implementation/en/

[kk] Because of the lack of data from other European countries, 2015 is taken as the reference in the calculation.

8.4. Medical graduates becoming GPs (S-5)

8.4.1. Documentation sheet

Description	Percentage of medical graduates becoming GP (% of those with medical specialisation)
Numerator	Number of graduates practising as GP the second year after diploma
Denominator	Total graduates with a medical specialisation (GP and other specialists) the second year after diploma
Rationale	The percentage of medical graduates becoming GPs in the second year in comparison with other specialities is an indicator of attractiveness of GP practice.
Data source & Results source	RIZIV–INAMI
Technical definitions and limitations	*Numerator: professional code 10, competence code 005-006* or 003 or 004 *the second year after diploma* *Denominator: code professional 10, code competence 0xx or 1xx behalf 000 or 009 <> 0 the second year after diploma* The percentage of GP specialisation 2 years after diploma is calculated as comparing the number of diploma in GP specialisation to all type specialised medical doctors 2 years after diploma. Foreign graduates are included, which explain the differences observed with the number of medical graduates registered by the SPF-FOD. Belgian diploma not registered by NIHDI are excluded from the calculation. N.B. The choice of '2 years' is explained with following reason: after 1 year only 40 % of diploma are registered in specialisation and 3 years would be too long to monitor the problematic. No minimum activity level to be considered as practising has been used. It should be noted that in the previous report, numbers were calculated for all graduates practising as GPs within 2 years after diploma while now it is the number at year 2.
International comparability	This is not an international indicator
Related performance indicators	Workforce, number of physicians and nurses, medical graduates, mean age of medical specialist

8.4.2. Results

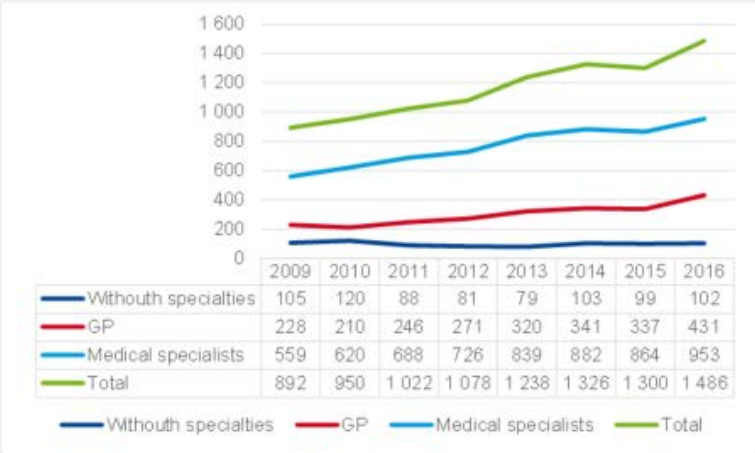
GP's attraction is fundamental to renew the cohort of old GPs that will soon be retired. New recruitment of GPs is a challenge in comparison with other specialities. After a decline between 1990 and 2000 (see the previous performance report), the percentage of medical graduates becoming GPs slightly improved from 2011 to reach 31.1% in 2016. But the number still remains too low to replace the GPs who are going to retire soon.

If we look at the repartition between French and Dutch graduated, the percentage of French graduates becoming GPs is slightly lower that the percentage of Dutch graduates becoming GPs (27.3% vs 34.9 % in 2016).

Table 71 – Medical graduates practising as physician 2 years after diploma

	2009	2010	2011	2012	2013	2014	2015	2016
Medical graduates practising as physician 2 years after diploma (total)	892	950	1 022	1 078	1 238	1 326	1 300	1 486
Without specialties	105	120	88	81	79	103	99	102
GP	228	210	246	271	320	341	337	431
Medical specialists	559	620	688	726	839	882	864	953
% GP vs GP + medical specialists	29.0%	25.3%	26.3%	27.2%	27.6%	27.9%	28.1%	31.1%
For NL diploma (total)	431	429	487	559	648	715	754	742
Without specialties	40	45	27	21	34	37	48	39
GP	120	103	133	162	191	199	214	245
Medical specialists	271	281	327	376	423	479	492	458
% GP vs GP + medical specialists	30.7%	26.8%	28.9%	30.1%	31.1%	29.4%	30.3%	34.9%
For FR diploma (total)	461	521	535	519	590	611	546	744
Without specialties	65	75	61	60	45	66	51	63
GP	108	107	113	109	129	142	123	186
Medical specialists	288	339	361	350	416	403	372	495
% GP vs GP + medical specialists	27.3%	24.0%	23.8%	23.7%	23.7%	26.1%	24.8%	27.3%

Figure 105 – Medical graduates becoming GP, evolution 2009-2015



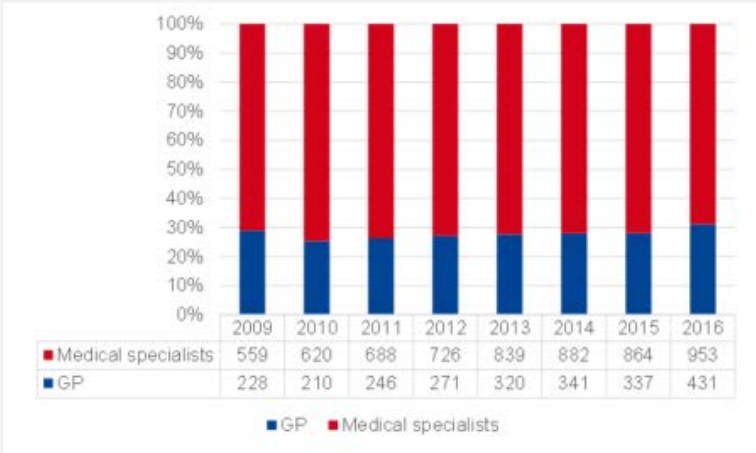
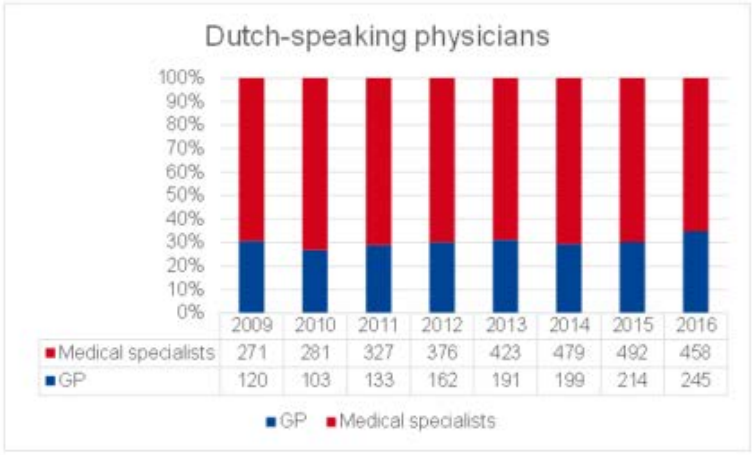
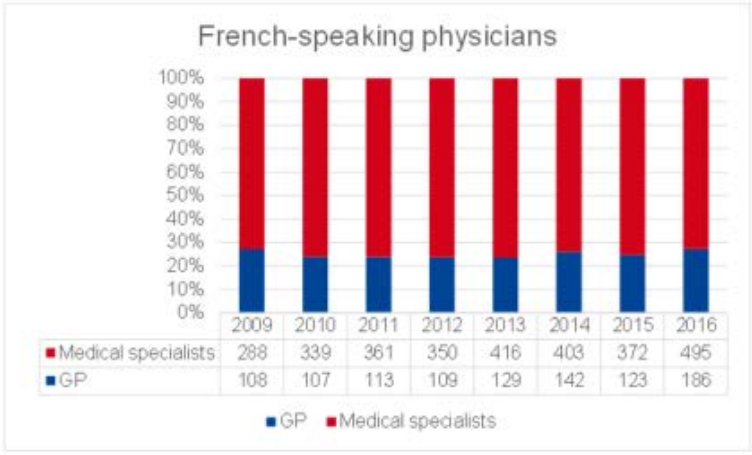


Figure 106 – Percentage of medical graduates becoming GP, repartition for the French- and Dutch-speaking GP (based on the language of the diploma)





Key points

- **The percentage of medical graduates becoming GPs slightly improved from 2011 to reach 31.1% in 2016. But the number still remains too low to replace the GPs who are going to retire soon.**
- **The percentage of French graduates becoming GPs is slightly lower that the percentage of Dutch graduates becoming GPs (27.3% vs 34.9 % in 2016).**

8.5. Mean age of practising GPs (S-6)

8.5.1. Documentation sheet

Description	Mean age of GPs compared to other specialists expressed in full time equivalent (FTE)
Rationale	Mean Age of Full time equivalent (FTE) GP is a sensitive indicator to monitor the replacement of an aging GP cohort and attractiveness of GP practice in comparison with other specialities
Numerator	Sum of ages of practising FTE GPs
Denominator	Total number of practising FTE GPs
Data source	RIZIV – INAMI
Technical definitions and limitations	FTE is calculated by dividing individual NIHDI revenue by the median of revenue from their speciality for age 45-54. If the result of this division is above "1", the result will be indicated as "1". If it is below one, the percentage indicates the % of one FTE
International comparability	This is not an international indicator
Related performance indicators	Number of practising medical doctors, number of medical graduates, % of GP aged more than 55

8.5.2. Results

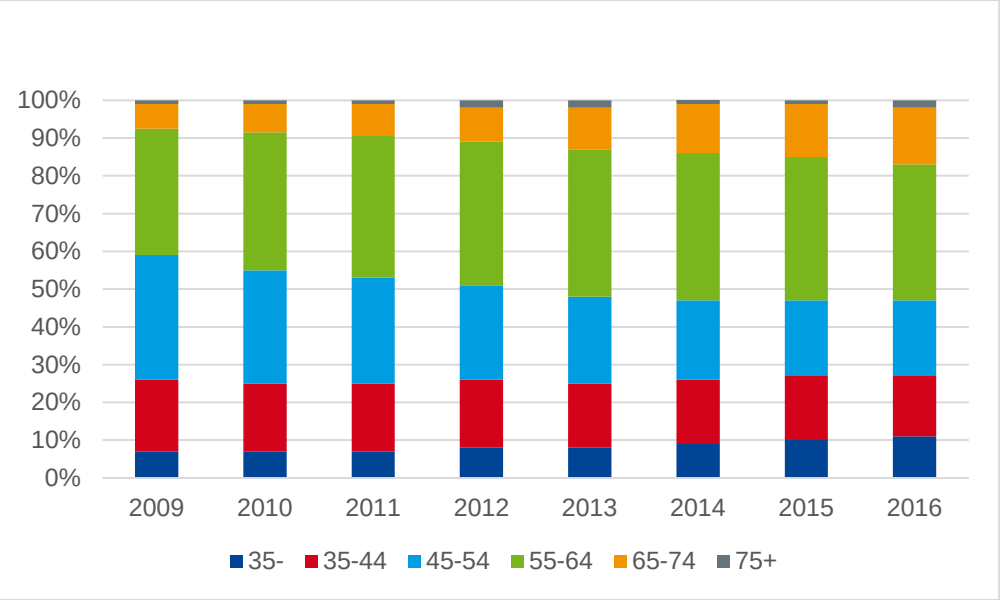
There is a huge cohort of practising FTE GP aged from 55 years old. It should be replaced by young graduates to maintain status quo of primary care. In 2016, the cohort from 55 year old represents 53% of the GPs activity (see Table 72 and Figure 107). The percentage of activity produced by physicians aged 65 year old and more increased from 7% in 2009 to 17% in 2016 (see Table 72). The mean age of practising FTE GP increased from 51.3 in 2009 to 52.9 in 2015 and slightly reduced to 52.7 in 2016 (see Table 73). These increases means that new graduates have not sufficiently replaced older GPs.

Table 72 – Percentage of practising GPs in FTE by age class (2009-2016)

Age group (years)	2009	2010	2011	2012	2013	2014	2015	2016
35-	7%	7%	7%	8%	8%	9%	10%	11%
35-44	19%	18%	18%	18%	17%	17%	17%	16%
45-54	33%	30%	28%	25%	23%	21%	20%	20%
55-64	33%	36%	37%	38%	39%	39%	38%	36%
65-74	6%	7%	8%	9%	11%	13%	14%	15%
75+	1%	1%	1%	2%	2%	2%	1%	2%
Total FTE	**8689**	**8646**	**8710**	**8762**	**8693**	**8790**	**8872**	**8988**

Source: RIZIV – INAMI

Figure 107 – Percentage of practising GP by age category (in Full Time Equivalent)



Source: RIZIV – INAMI

Table 73 – Evolution of the mean age of practising GPs, in FTE (2009-2016)

Mean age FTE	2009	2010	2011	2012	2013	2014	2015	2016
GPs	51.3	51.8	52.1	52.5	52.8	52.9	52.9	52.7

Source: RIZIV – INAMI

Another way to monitor this evolution is to calculate the mean age of FTE by type of health worker. This indicator is a proxy to monitor the replacement of an aging GPs cohort in comparison with other specialities. In comparison with other specialties, the GPs are the oldest ones, with medical specialists in rheumatology (see Table 74). Moreover, in 2000, the mean age for other specialists and GPs was the same (46.6, see the previous Performance report). In 2016, GPs are usually older than other medical specialists (see Table 74).

Table 74 – Mean age of practising GPs in FTE compared to medical specialists* (2016)

	Number of practizing physicians	Number of practizing physicians in FTE	Mean age of practising physicians	Mean age of practising physicians in FTE	% practising physicians aged 55 years old and over	% practising physicians aged 65 years old and over
General practitioner	12 929	8988	53.7	52.7	53%	17%
Medical specialist in pediatry	1462**	909**	50.7	49.5	32%	9%
Medical specialist in gynecology	1462	948	51.6	49.6	33%	7%
Medical specialist in psychiatry	1860	1244	52.8	51.0	38%	14%
Medical specialist in general internal medecine	987	498	51.9	50.7	36%	7%
Medical specialist in geriatry	296	213	48.7	49.6	33%	6%
Medical specialist in endocrinology	307	227	49.9	49.1	29%	7%
Medical specialist in oncology	250	179	49.0	49.0	24%	6%
Medical specialist in hematology	152	110	48.2	48.8	28%	4%
Medical specialist in rheumatology	222	162	54.1	53.3	46%	16%
Medical specialist in pneumology	546	404	49.9	50.3	38%	8%
Medical specialist in gastroenterology	684	495	51.2	50.5	38%	8%
Medical specialist in cardiology	1081	735	51.6	50.5	35%	9%
Medical specialist in neurology	573	419	49.3	49.1	33%	7%
Medical specialist in Physical medecine	486	301	51.7	50.5	38%	8%
Medical specialist in dermatology	747	548	51.4	49.7	33%	11%
Medical specialist in ENT	655	460	52.4	51.1	40%	10%
Medical specialist in radiotherapy	184	131	47.8	48.0	32%	0%
Medical specialist in nuclear medecine	202	147	48.4	48.5	28%	1%
Medical specialist in biology	280	175	52.8	50.1	35%	10%
Medical specialist in anatomic pathology	304	239	50.6	50.2	37%	5%
Medical specialist in radiology	1536	1091	51.6	50.4	40%	6%

Medical specialist in anesthesiology	1997	1535	48.4	48.4	28%	4%
Medical specialist in acute and emergency medecine	421	319	46.6	46.5	18%	1%
Medical specialist in general surgery	1330	857	51.7	50.7	38%	6%
Medical specialist in orthopedics	1032	686	51.8	50.2	37%	5%
Medical specialist in urology	407	262	50.8	49.9	34%	4%
Medical specialist in neurosurgery	200	138	49.7	49.0	30%	5%
Medical specialist in plastic surgery	247	172	49.8	48.3	30%	6%
Medical specialist in ophthalmic surgery	1085	708	51.9	49.6	34%	9%

*Source: RIZIV – INAMI; *not all specialties are included in the table so the sum does not correspond to the total number of practising physicians; *Medical specialists in neuropediatry are not included here (n = 70 practising and 43 in FTE) but are included in the OECD classification of MD pediatrists, explaining why numbers are different from the indicator on practising physicians.*

Key points

- **The mean age of full time equivalent practising GPs is actually 52.7 years. This increases rapidly: in 2000 mean age of GPs was 46.6 years. From almost all medical specialities, GPs have the oldest mean age, with medical specialists in rheumatology, while in 2000 it was similar to other specialities.**
- **The percentage of activity produced by physicians aged 65 year old and more increased from 7% in 2009 to 17% in 2016.**
- **This situation is essentially linked to the fact that older GPs are working longer and to the lack of new graduates becoming GPs to replace the retired workforce.**

References

[1] Meeus P, Aubel X. Performance de la médecine générale, bilan de santé. Health Services Research (HSR). National Institute for Health and Disability Insurance; 2012 February 2013.

8.6. Proportion of practising physicians aged 55 years and over (S-7) and proportion of general practitioner aged 55 years and over (S-15)

8.6.1. Documentation sheet

Description	S-7: Proportion of practising physicians aged 55 years and over (% of total practising physicians) S-15: Proportion of practising general practitioners (GPs) aged 55 years and over (% of total practising GPs)
Calculation	S-7: Numerator: number of practising physicians aged 55 years and over Denominator: total number of practising physicians S-15: Numerator: number of practising GP aged 55 years and over Denominator: total number of practising GP
Rationale	Aside the overall number of doctors, the distribution of medical workforce by age category, gender and specialisation have also important implications on the current and future supply of medical services. Since many years, physicians ageing in OECD countries has raised concerns about the insufficient recruitment to replace the actual workforce who will retire within 10 years. Although there is evidence that retirement of doctors often only occurs gradually and that their retirement age is increasing. Moreover, there are also concerns the growing imbalance number of doctors preferring greater specialisation instead of general medicine and access to primary care for all the population.[1] The proportion of practising physicians (and GPs) aged 55 years and over gives a rough estimation of the share of physicians that will retire within 10 years (although a significant number of doctors continues to practise after 65 years old).[1] This indicator should be analysed together with the current number of practising physicians, and the number of medical graduates (input). At the European level, there is currently a "Joint action on health workforce planning and forecasting".[II] The objective of this platform is to facilitate collaboration and exchange between Member states in order to better prepare the future of the health care workforce. This will support Member states in theirs capacity to take effective and sustainable measures. Also, various tools will be developed to enable Member states to implement health care workforce planning and/or to enhance the current planning processes.
Data source	RIZIV – INAMI (annual statistics)
Results source	OECD Health statistics[1]
Technical definitions	All practising physicians (and GPs) are included, even those with very low volume of activity. A care provider is considered to be practising (RIZIV – INAMI: "profiles") if he/she provided more than **1** clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year.

[II] http://healthworkforce.eu/

	This information will also be available by specific speciality in the PlanCad reports for physicians (published by the Federal Public Service Public Health), in addition with the computation of the FTE (full time equivalent) by age and speciality. The publication of the PlanCAD is planned for 2019-2020.
International comparability	This is an OECD indicator. The OECD differentiates between practising physicians (doctors providing direct care to patients), professionally active physicians (including also doctors working in the health sectors as managers, educators, researches, etc) and physicians licensed to practise (i.e. having the required diploma). Limitation: OECD countries use different methodologies to calculate the same indicator (such as different levels of activity).
Related indicators	Number of practising physicians Number of medical graduates

8.6.2. Results

Number of practising physicians and practicing GPs per age group

The number of practising physicians increased over the time from 29 022 in 2000 to 34 834 in 2016 (see table and Table 76). Table and Table 76 shows the number of practising physicians by age category. Even if the number of physicians is increasing over the time, we observed that physicians are getting older and older (see Figure 108 and Table 77). In 2016, 15 637 physicians were aged over 55 years instead of 6 985 in 2000 (see Table 77). They represented almost half of Belgian physicians (44.9%) whereas only one quarter in 2000 (24%, see Table 76). Most of the physicians aged over 55 years old are men (Table 77).

In 2015, the proportion of practising physicians aged 55 years old and over was higher for French-speaking physicians than for Dutch-speaking physicians (47.8 % and 41.3% respectively, based on the linguistic role of the physician. This difference is yet higher for GPs, i.e. 58.6% and 51.1% respectively.

Table 75 – Number of practising physicians by age category (2000-2013)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total practising physicians	29 022	29 325	29 553	29 663	29 903	30 098	30 450	30 878	31 280	31 578	31 815	32 182	32 583	32 999
under 35 years old	3 255 (11.2%)	3 344	3 198	3 100	2 978	2 765	2 628	2 596	2 617	2 595	2 416	2 420	2 356	2 457
35-44 years old	9 339 (32.2%)	9 001	8 736	8 300	8 085	7 978	7 907	7 968	7 843	7 770	7 867	7 871	7 898	7 946
45-54 years old	9 443 (32.5%)	9 679	9 934	10 124	10 133	10 105	9 996	9 798	9 618	9 391	9 108	8 850	8 641	8 337
55-64 years old	4 285 (14.8%)	4 593	4 923	5 331	5 828	6 327	6 853	7 322	7 831	8 309	8 691	8 974	9 240	9 446
65-74 years old	2 700 (9.3%)	2 708	2 762	2 808	2 879	2 923	3 066	3 194	3 371	2 681	2 861	2 011	2 012	2 013
75 years old and over										832	872	32 182	32 583	32 999

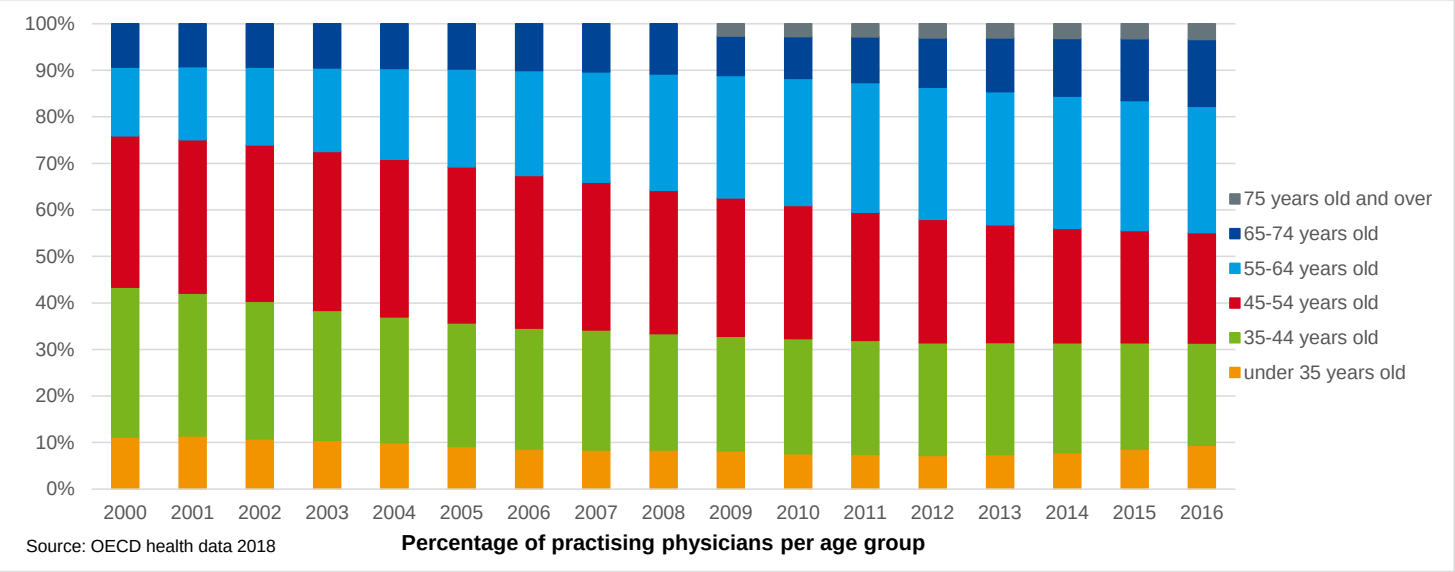
Source: OECD Health Statistics 2018

Table 76 – Number of practising physicians by age category (2014-2016)

Year (OECD)	2014	2015	2016
Total practising physicians	33 353	34 020	34 834
under 35 years old	2 615	2 926	3 275 (9.4%)
35-44 years old	7 878	7 781	7 664 (22%)
45-54 years old	8 180	8 192	8 258 (23.7%)
55-64 years old	9 487	9 502	9 457 (27.2%)
65-74 years old	4 137	4 527	4 996 (14.3%)
75 years old and over	1 056	1 092	1 184 (3.4%)

Source: OECD Health Statistics 2018

Figure 108 – Percentage of practising physicians by age category (2000-2016)



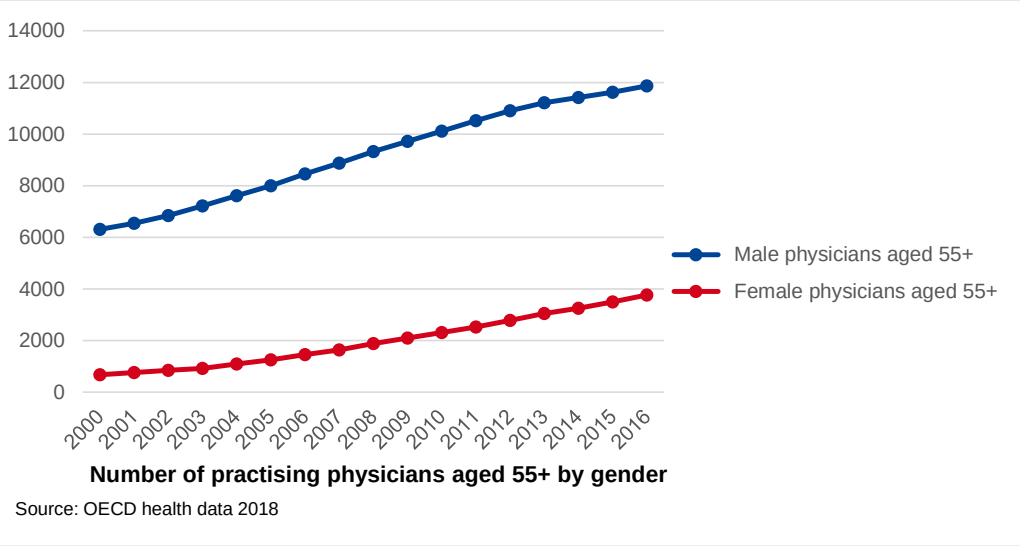
Source: OECD Health Statistics 2018

Table 77 – Number of practising physicians aged 55+ by gender (2000-2016)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Male physicians aged 55+	6 308	6 541	6 838	7 216	7 610	7 994	8 458	8 878	9 321	9 719	10 115	10 517	10 906	11 214	11 423	11 624	11 870
Female physicians aged 55+	677	760	847	923	1 097	1 256	1 461	1 638	1 881	2 103	2 309	2 524	2 782	3 045	3 257	3 497	3 767
Total practising physicians aged 55+	6 985	7 301	7 685	8 139	8 707	9 250	9 919	10 516	11 202	11 822	12 424	13 041	13 688	14 259	14 680	15 121	15 637

Source: OECD Health Statistics 2018

Figure 109 – Evolution of the number of practising physicians aged 55 years and over by gender (2000-2016)



Source: OECD Health Statistics 2018

International comparison

This evolution is observed in all other European countries (Figure 110) and corresponds to the ageing of population, but Belgium has one of the highest share of physicians aged 55 years old and over (compared to 12 countries).

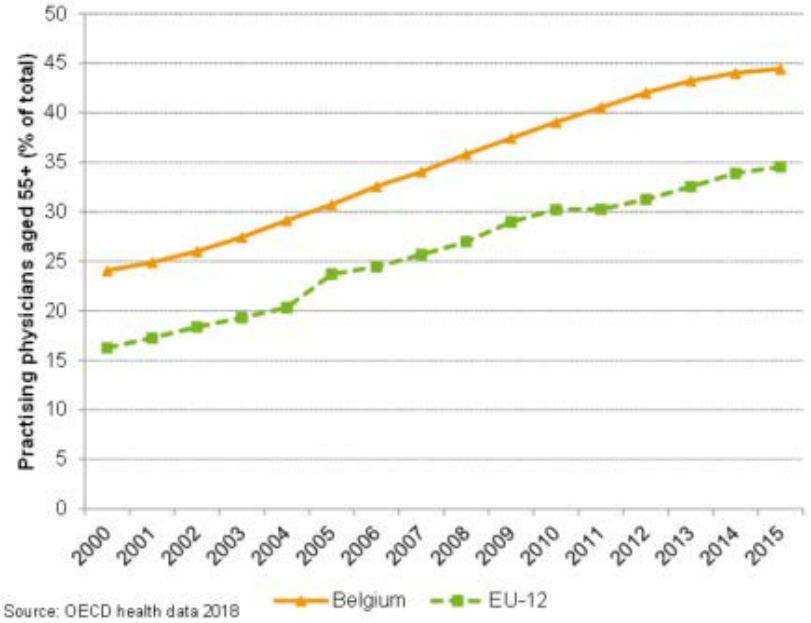
The proportion of physicians aged 55 years and over in Belgium is above the EU-12 average of 34.5%.

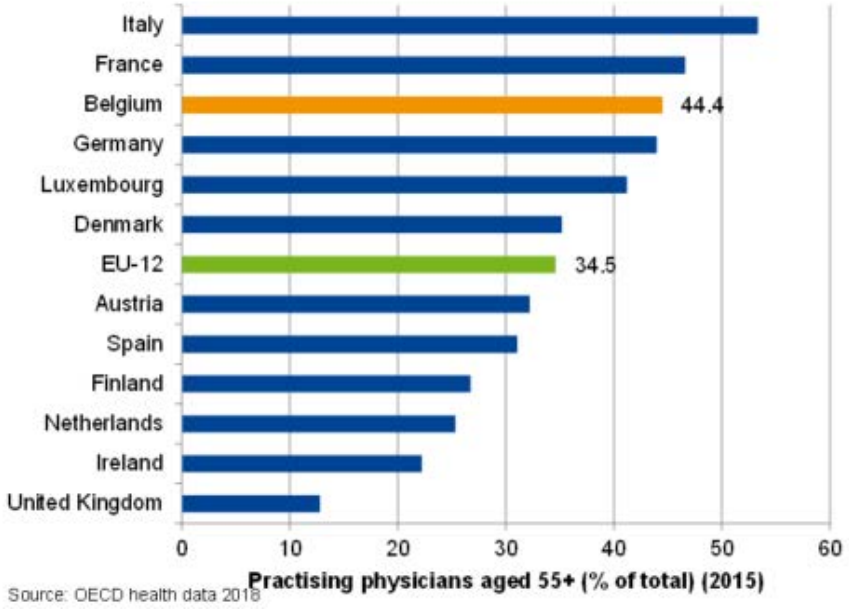
Table 78 – Share of practising physicians aged 55 years and over in Belgium (2000-2016)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Practising physicians aged 55+	24.1%	24.9%	26.0%	27.4%	29.1%	30.7%	32.6%	34.1%	35.8%	37.4%	39.1%	40.5%	42.0%	43.2%	44.0%	44.4%	44.9%

Source: OECD Health Statistics 2018

Figure 110 – Share of practising physicians aged 55 years and older: international comparison (2000-2015) [mm]





Source: OECD Health Statistics 2018

Key points

- **In 2016, 44.9% practising physicians were aged from 55 years old and over in Belgium, compared to 24.1% in 2000. In 2016, the pourcentage of practising GPs aged 55 years old and over was 52.5%.**
- **The evolution is observed in all European countries, but Belgium has one of the highest share of physicians above 55 years and older among 12 European countries.**

References

1. OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017. Available from: http://dx.doi.org/10.1787/health_glance-2017-en

[mm] Because of the lack of data from other European countries, 2015 is taken as the reference in the calculation.

8.7. S-8 Nursing graduates (S-8)

8.7.1. Documentation sheet

Description	Nursing graduates per 100 000 population
Calculation	Numerator: number of students graduating every year from nursing schools (both Bachelor and non-Bachelor: all nursing students who have obtained a recognised qualification required to become a licensed or registered nurse are counted) in Belgium. Denominator: total population
Rationale	Maintaining the number of nurses requires investments in training new nurses as well as investments in the attractiveness of the nursing profession. Many industrialized countries have taken measures to expand the number of students in nursing education programmes in response to concerns about current or anticipated shortages of nurses. Increasing investment in nursing education is particularly important as the nursing workforce is ageing in many countries and the baby-boom generation of nurses approaches retirement.[1] Also in Belgium several policy measures were taken to increase the number of nursing graduates such as Project 600 which offers employees of the healthcare sector the opportunity to study nursing with maintenance of their salary[nn].
Data source	Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Health, Food Chain Safety and Environment OECD Health statistics
Technical definitions	A nurse is a person who has been trained to carry out nursing tasks. Nurses have successfully completed a three-year advanced vocational training course (A2 or HBO-5 leading to obtain a diploma degree) or a Bachelors' programme Nursing (A1 or bachelor leading to obtain a bachelor degree). The number of nursing graduates is based on the number of "visa/visum" delivered by the Federal Public Service Public Health, which are registered in the federal cadastre. Only the first "visa/visum" delivered to practise nursing is taking into account.
Limitations	**Nursing graduates per 100 000 population:** this indicator also counts nursing graduates from foreign countries, completing their nursing training in Belgium, but leaving Belgium afterwards.
International comparability	**Nursing graduates per 100 000 population:** international comparability is partially limited, as educational pathways to become a nurse vary and registration practices for new graduates may differ between countries. Some countries cannot exclude midwife graduates from nurses graduates (e.g. Spain: include midwife graduates)
Dimension	Sustainability of the health system
Related indicators	Number of practising nurses Number of practising nurses above 50+ years old

nn http://www.vlaanderen.be/nl/onderwijs-en-wetenschap/onderwijsaanbod/verpleegkunde-studeren-met-behoud-van-loon

8.7.2. Results

Number of new nursing graduates with Belgian diploma[oo]

In 2017, a total of 6 357 students graduated from nursing schools in Belgium which is an increase of 2 626 in 13 years (Table 79 and Table 80). More students graduated from nursing schools in the Flemish community than in the French Community (57.4% vs 42.6%, see Table 79). In the Flemish Community, as many students graduated with a Bachelor degree (A1) as there are students who graduated with a Diploma (A2) (around 1 800 per year in 2017, Table 80), whereas in the French Community more students graduated with a Bachelor degree (A1). There is a higher proportion of female graduates with Belgian diploma than male graduates (respectively 85.5% and 14.5%, see Table 79) and these proportions remain stable over the time. While 92.1% of nursing graduates resided in Belgium in 2017, 15.9% of the new graduates had not a Belgian nationality (see Table 79).

Table 79 – Number of new nursing graduates with Belgian diploma, by Community and by characteristics (2013-2017)

Year (SPF 2018)		2013	2014	2015	2016	2017
Belgium		5 130	5 463	5 687	6 243	6 357
Community	**French community**	2 123 (41.4%)	2 263 (41.4%)	2 352 (41.4%)	2 534 (40.6%)	2 708 (42.6%)
	Flemish community	3 007 (58.6%)	3 200 (58.6%)	3 335 (58.6%)	3 709 (59.4%)	3 649 (57.4%)
Gender	**Female**	4 356 (84.9%)	4 639 (84.9%)	4 767 (83.8%)	5 286 (84.7%)	5 437 (85.5%)
	Male	773 (15.1%)	824 (15.1%)	920 (16.2%)	957 (15.3%)	920 (14.5%)
	Unknown	1 (0%)	-	-	-	-
Belgian Nationality*	**Yes**	4 521 (88.1%)	4 750 (86.9%)	4 778 (84%)	5 273 (84.5%)	5 346 (84.1%)
	No	609 (11.9%)	713 (13.1%)	909 (16%)	970 (15.5%)	1 011 (15.9%)
Place of residence (at the end of the visa year)	**Residence in Belgium**	4 838 (94.3%)	5 116 (93.6%)	5 181 (91.1%)	5 694 (91.2%)	5 855 (92.1%)
	Residence abroad	255 (5%)	302 (5.5%)	412 (7.2%)	492 (7.9%)	454 (7.1%)
	Unknown	37 (0.7%)	45 (0.8%)	94 (1.7%)	57 (0.9%)	48 (0.8%)

*Source: SPF-FOD Cadastre; *Belgian nationality at the time of the data extraction*

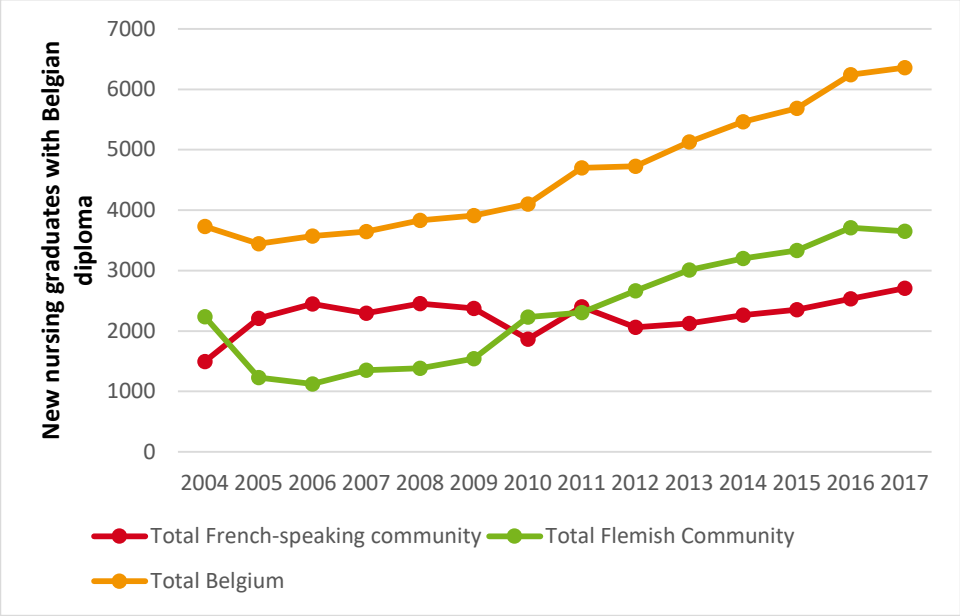
[oo] The term diploma is a generic term to refer to a certificate awarded by an educational establishment to show that someone has successfully completed a course of study. When related to a diploma level (in comparison with Bachelor degree), the symbol A2 will systematically be added.

Table 80 – New nursing graduates with Belgian diploma (2004-2017), per community and per diploma level

SPF 2018		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
French-speaking community	**Bachelor (A1)**	890	566	335	200	595	758	1 064	1 551	1 308	1 286	1 430	1 468	1 629	1 756 (64.8%)
	Diploma (A2)	603	1 646	2 113	2 095	1 856	1 614	803	848	752	837	833	884	905	952 (35.2%)
	Total	1 493	2 212	2 448	2 295	2 451	2 372	1 867	2 399	2 060	2 123	2 263	2 352	2 534	2 708
Flemish Community	**Bachelor (A1)**	1 115	562	327	534	623	1 125	1 217	1 253	1 452	1 601	1 638	1 772	1 938	1 782 (48.8%)
	Diploma (A2)	1 123	669	797	817	759	415	1 015	1 050	1 214	1 406	1 562	1 563	1 771	1 867 (51.2%)
	Total	2 238	1 231	1 124	1 351	1 382	1 540	2 232	2 303	2 666	3 007	3 200	3 335	3 709	3 649
Total Belgium		3 731	3 443	3 572	3 646	3 833	3 912	4 099	4 702	4 726	5 130	5 463	5 687	6 243	6 357

Source: SPF-FOD Cadastre

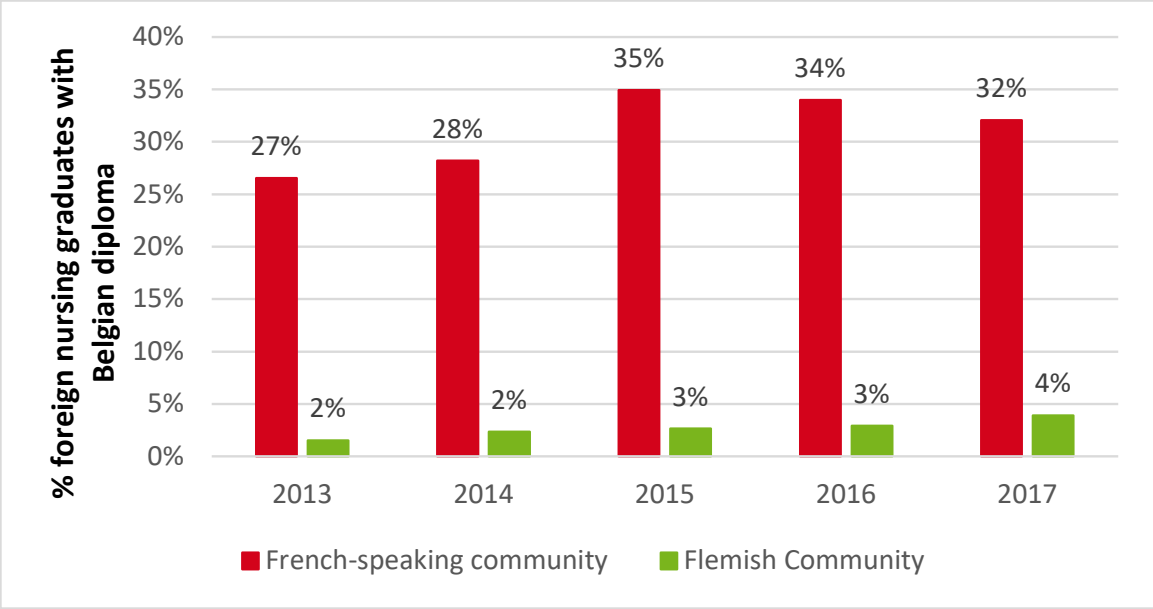
Figure 111 – New nursing graduates with Belgian diploma per community (2004-2017)



Source: SPF-FOD Cadastre; KCE calculations

The pattern of nursing graduates combining a foreign nationality and a Belgian diploma highly differs by community: a stable proportion around 3-4% for the Flemish Community, and a percentage around 30% for the French Community (32% in 2017; see Figure 112). When the place of residence is under scrutiny, one can observe than around 16%[pp] of the nursing graduates in the French Community reside in another country. This is true for around only 1%[qq] of the nursing graduates in the Flemish Community, see Figure 112.

Figure 112 – Percentage of nursing graduates with foreign nationality and Belgian diploma, by Community (2013-2017)

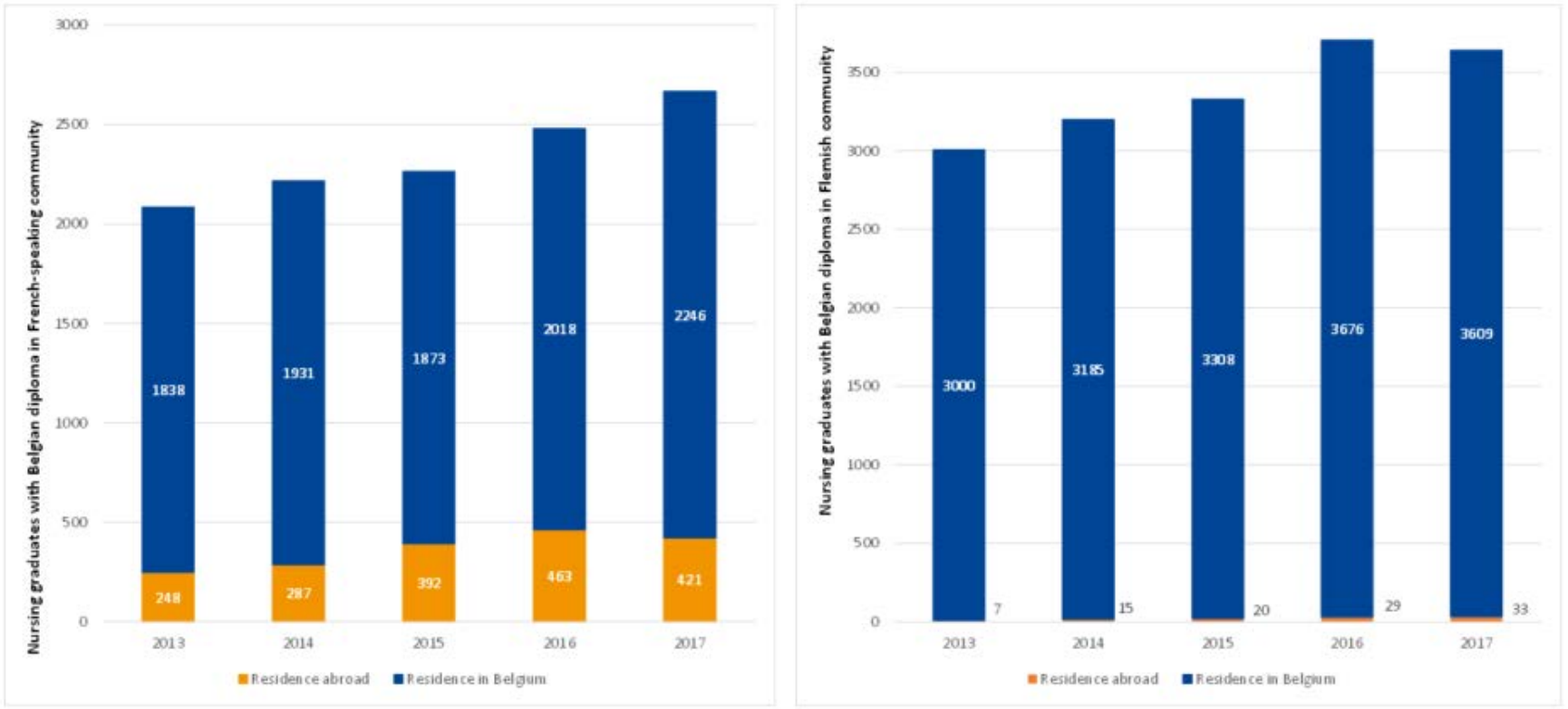


Source: SPF-FOD Cadastre; KCE calculations

[pp] 15.55% with a place of residence abroad; 1.51% with an unknown place of residence; and 82.94% with a residence in Belgium

[qq] 0.9% with a place of residence abroad; 0.2% with an unknown place of residence; and 98.9% with a residence in Belgium

Figure 113 – Nursing graduates with Belgian diploma, by place of residence and by Community (2013-2017)



Source: SPF-FOD Cadastre; KCE calculations

Number of nursing graduates with foreign diploma

In addition to the number of nursing graduates with Belgian diploma (6 357 in 2017), "visa/ visum" are delivered to nurses with foreign diploma. In 2017, a total of 454 nurses with a foreign diploma received a visa to practise in Belgium (see Table 81).

Since 2013, the number of visa delivered to nurses with a foreign diploma is decreasing (see Table 81). The majority of these nurses are foreigners (94.9%) and female (76.4%). More than 60% of them are living in Belgium (see Table 81).

Table 81 – Number of nursing graduates with foreign diploma (2013-2017)

Nursing graduates with foreign diploma (SPF)		2013	2014	2015	2016	2017
Belgium		918	828	704	580	454
Gender	**Female**	702 (76.5%)	650 (78.5%)	546 (77.6%)	445 (76.7%)	347 (76.4%)
	Male	216 (23.5%)	178 (21.5%)	158 (22.4%)	135 (23.3%)	107 (23.6%)
Belgian nationality*	**Yes**	33 (3.6%)	45 (5.4%)	31 (4.4%)	30 (5.2%)	23 (5.1%)
	No	885 (96.4%)	783 (94.6%)	673 (95.6%)	550 (94.8%)	431 (94.9%)
Place of residence (at the end of the visa year)	**Residence in Belgium**	673 (73.3%)	563 (68%)	383 (54.4%)	319 (55%)	290 (63.9%)
	Residence abroad	219 (23.9%)	242 (29.2%)	297 (42.2%)	247 (42.6%)	154 (33.9%)
	Unknown	26 (2.8%)	23 (2.8%)	24 (3.4%)	14 (2.4%)	10 (2.2%)

*Source: SPF-FOD Cadastre; *Belgian nationality at the time of the data extraction*

International comparison

Compared to the density of nurses reported by other European countries (i.e. 42 nursing graduates per 100 000 inhabitants in 2015), Belgium is clearly above this figure (49.7 nursing graduates per 100 000 population, see Figure 114). This density corresponds to the number of nurses who hold a nursing diploma (licensed to practice). This density does not necessarily corresponds to the density of practising nurses.

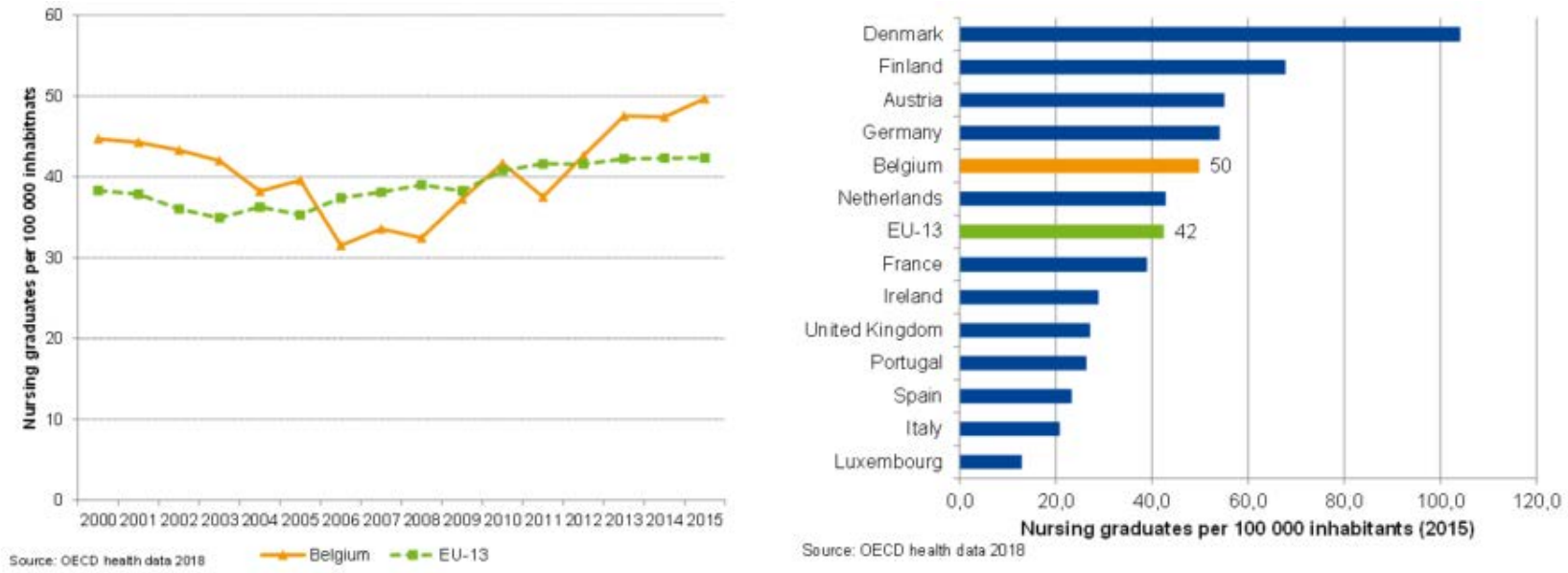
After a drop in the number of nursing graduates per 100 000 pop in 2006/2007/2008, the number of nursing graduates per 100 000 population is increasing again, at least until 2017 (see Figure 114).

Table 82 – Density of nursing graduates with Belgian diploma (2000-2017) in Belgium

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nursing graduates with Belgian diploma (per 100 000 population)	44.7	44.3	43.3	42.0	38.2	39.6	31.5	33.6	32.5	37.3	41.7	37.5	42.6	47.5	47.4	49.7	55.0	57.0

Source: OECD Health Statistics 2018

Figure 114 – Nursing graduates per 100 000 population: international comparison (2000-2015)[rr]



Source: OECD Health statistics 2018

Key points

- **In 2017, a total of 6 357 students were graduated from nursing schools in Belgium.**
- **The density of 50 nursing graduates per 100 000 inhabitants is above the EU-13 average of 42 per 100 000 inhabitants (based on 2015 data).**
- **The proportion of foreign students in the French Community is substantial (32% based on nationality and 15.5% based on the place of residence). A very small proportion of students have a foreign nationality in the Flemish Community (<5%).**

References

1. OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017. Available from: http://dx.doi.org/10.1787/health_glance-2017-en

[rr] Because of the lack of data from other European countries, 2015 is taken as the reference in the calculation.

8.8. Nursing students following the bachelor route (S-9)

8.8.1. Documentation sheet

Description	**Main indicator:** Nursing students following the bachelor route (% of new graduates) **Secondary indicator:** Percentage of professionally active nurses on the Belgian labour market with a bachelor's degree
Calculation	**Main indicator:** Nursing students following the bachelor route (% of new graduates) • Numerator : Number of nurses following the bachelor route • Denominator: Total number of nurses graduates **Secondary indicator:** Percentage of professionally active nurses on the Belgian labour market with a bachelor's degree • Numerator : Number of professionally active nurses on the Belgian labour market with a bachelor's degree • Denominator: Total number of professionally active nurses on the Belgian labour market
Rationale	In many countries, including Canada, Australia, New Zealand, Norway, Spain, Philippines, and many countries in South America, the standardized entry into professional nursing is obtaining a diploma with a bachelor degree. In other countries such as the United States, Belgium,[1] The Netherlands, the United Kingdom, Sweden other (lower educational) entry levels exist besides the Bachelor degree entry-level. Nevertheless, a solid evidence base shows that better patient outcomes are associated with higher educated nurses. A landmark US-study showed that each 10% increase in the proportion of Bachelor-degree trained nursing staff was associated with 5% lower odds on patient mortality after taking into account how sick the patients were and other characteristics of hospitals that had been shown to be associated with mortality rates, including physician qualifications.[2] Replications in other countries with differently organized and financed health care (among which a multi-country European study) yielded remarkably similar findings.[3] These research findings plead for policy recommendations and adoption of measures aiming for a sufficiently educated nursing workforce. In the US, for instance, the Institute of Medicine (IOM) recommended in its report on 'The Future of Nursing'[4] to move to a nurse workforce comprising 80% of nurses with a Bachelor's degree by 2020 (compared to slightly more than 50% in 2010). In Belgium, policy makers did not (yet) formulated such targets but the above evidence suggests the importance of at least monitoring the educational level of nurses over time and encouraging the training and the employment of nurses with a bachelor degree.
Data source	**Main indicator**: Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Health, Food Chain Safety and Environment **Secondary indicator:** PlanCAD nurses 2019[5]
Technical definitions	A nurse is a person who has been trained to carry out nursing tasks. Nurses have successfully completed a three-year advanced vocational training course (A2 or HBO-5 leading to obtain a diploma degree) or a Bachelors' programme Nursing (A1 or bachelor leading to obtain a bachelor degree). The number of nursing graduates is based on the number of "visa/visum" delivered by the Federal Public Service Public Health, which are registered in the federal cadastre. Only the first "visa/visum" delivered to practise nursing is taking into account.
International comparability	No recurrent systematic data collection exists. In 2010, the RN4CAST study holds data about the educational level of nursing staff from 488 general acute care hospitals in 12 European countries, including Belgium.
Dimension	Sustainability
Related indicators	Number of practising nurses per 10 000 population Number of nursing graduates

8.8.2. Results

Nursing students following the bachelor route (% of new graduates)[ss]

Table 83 shows a huge increase of the percentage of nursing students following the bachelor route between 2007 and 2011 (from 20.1% in 2007 to 59.6% in 2011) and then, tended to stabilise around 55%. In Belgium, the percentage of nursing graduates holding a bachelor's degree was 55.7% in 2017 (see Table 83).

Since 2010, the share of nursing students following the bachelor route is higher in the French community than in the Flemish community (see Table 83). In 2017, respectively 48.8% and 64.8% of the nursing graduates in the Flemish community and in the French community had a bachelor degree (see Table 83).

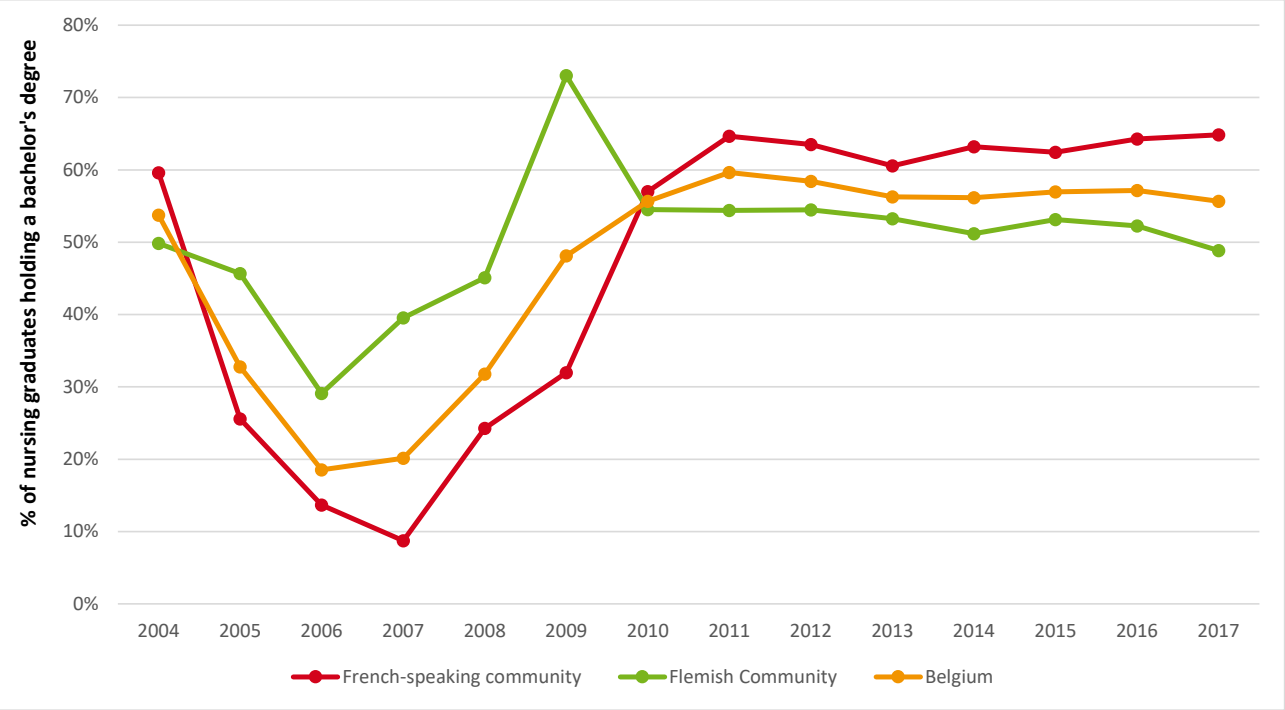
Table 83 – New nursing graduates with Belgian diploma (2004-2017), per community and per diploma level

SPF 2018		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
French-speaking community	Bachelor (A1)	890	566	335	200 (8.7%)	595	758	1 064	1 551	1 308	1 286	1 430	1 468	1 629	1 756 (64.8%)
	Diploma (A2)	603	1 646	2 113	2 095	1 856	1 614	803	848	752	837	833	884	905	952 (35.2%)
	Total	1 493	2 212	2 448	2 295	2 451	2 372	1 867	2 399	2 060	2 123	2 263	2 352	2 534	2 708
Flemish Community	Bachelor (A1)	1 115	562	327	534 (39.5%)	623	1 125	1 217	1 253	1 452	1 601	1 638	1 772	1 938	1 782 (48.8%)
	Diploma (A2)	1 123	669	797	817	759	415	1 015	1 050	1 214	1 406	1 562	1 563	1 771	1 867 (51.2%)
	Total	2 238	1 231	1 124	1 351	1 382	1 540	2 232	2 303	2 666	3 007	3 200	3 335	3 709	3 649
Total Belgium	Bachelor (A1)	2 005	1 128	662	734 (20.1%)	1 218	1 883	2 281	2 804 (59.6%)	2 760	2 887	3 068	3 240	3 567	3 538 (55.7%)
	Diploma (A2)	1 726	2 315	2 910	2 912	2 615	2 029	1 818	1 898	1 966	2 243	2 395	2 447	2 676	2 819 (44.3%)
	Total	3 731	3 443	3 572	3 646	3 833	3 912	4 099	4 702	4 726	5 130	5 463	5 687	6 243	6 357

Source: SPF-FOD Cadastre

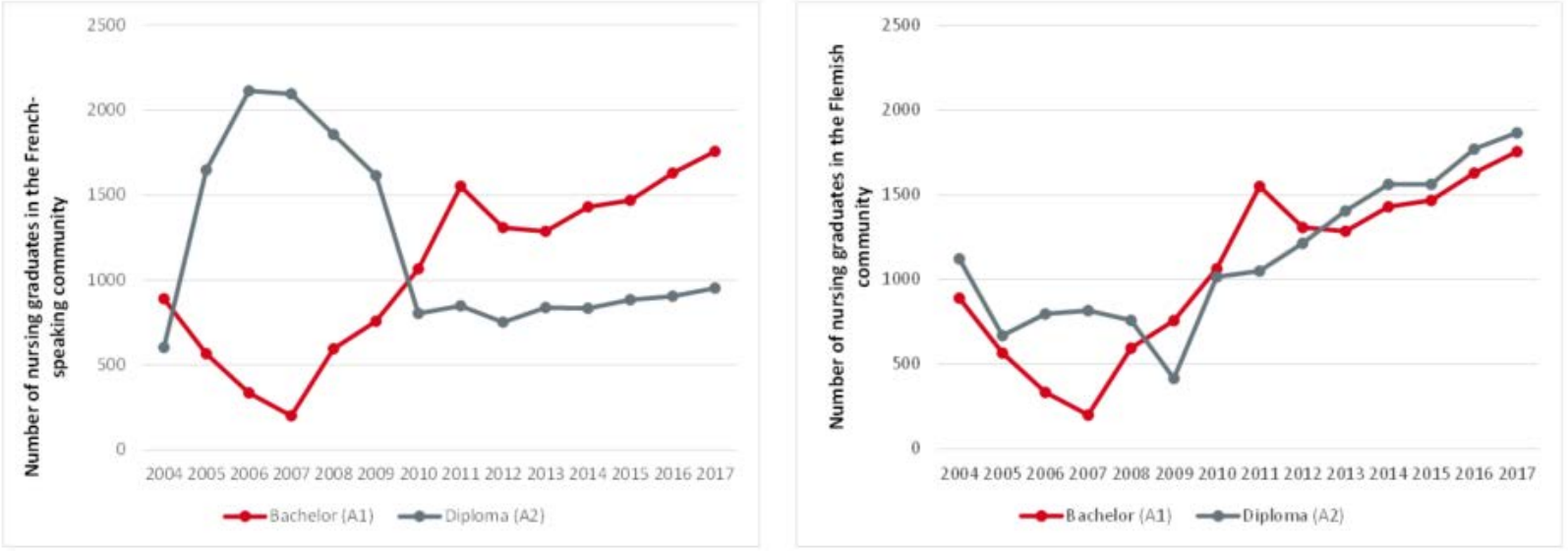
[ss] The term diploma is a generic term to refer to a certificate awarded by an educational establishment to show that someone has successfully completed a course of study. When related to a diploma level (in comparison with Bachelor degree), the symbol A2 will systematically be added.

Figure 115 – Percentage of new nursing graduates with bachelor degree (Belgian diploma), per community (2004-2017)



Source: SPF-FOD Cadastre

Figure 116 – Number of new nursing graduates with a Belgian diploma, per type of diploma and per community (2004-2017)



Source: SPF-FOD Cadastre

Percentage of professionally active nurses on the Belgian labour market with a bachelor degree

In 2016, there were 143 470 professionally active nurses on the Belgian labour market in Belgium (see Table 84). 55.3% of the professionally active nurses had a bachelor degree A1 (i.e. 79 357 nurses) and 35.1% had a diploma (A2). These proportions remain quite stable since 2009.

Table 84 – Professionally active nurses on the Belgian labour market, per type of diploma (2009, 2016)

		Professionally active nurses on the Belgian labour market (PA) in 2009*		Professionally active nurses on the Belgian labour market (PA) in 2016**	
		N	%	N	%
Total in Belgium		126 473	100%	143 470	100%
Type of diploma	Bachelor (A1)	72 684	57.5%	79 357	55.3%
	Diploma (A2)	47 620	37.6%	50 290	35.1%
	Assistant in hospital care***	5 949	4.7%	3 624	2.5%
	Foreign diploma or unknown diploma	220	0.2%	10 199	7.1%

*Source: *PlanCAD nurses 2014[6]; **PlanCAD nurses 2019.[5] ***This diploma was interrupted in 1996.*

Key points

- **In Belgium, the percentage of nursing graduates holding a bachelor degree was 55.7% in 2017.**
- **The percentage of nursing graduates holding a bachelor degree increased between 2007-2011 (from 20.1% in 2007 to 59.6% in 2011) and then, tends to stabilise around 55%.**
- **Based on the new nursing graduates, more nurses followed a bachelor degree in the French community (64.8%) than in the Flemish community (48.8%) in 2017.**

References

[1] Cellule Planification de l'offre des professions des soins de santé. Schéma du parcours des professionnels des soins de santé pour exercer en Belgique. SPF Santé publique, sécurité chaine alimentaire et environnement, DG soins de santé; Juillet 2014.

[2] Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational levels of hospital nurses and surgical patient mortality. JAMA. 2003;290(12):1617-23. doi: 10.001/jama.290.12..

[3] Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, *et al.* Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2014;383(9931):1824-30. doi: 10.016/S0140-6736(13)62631-8. Epub 2014 Feb 26.

[4] Institute of Medecine (US). The Future of Nursing: Leading Change, Advancing Health. Washington (DC): National Academies Press (US). 2011.

[5] Vivet V, Durand C, De Geest A, Delvaux A, Jouck P, Miermans P-J, *et al.* PlanCad Infirmiers 2016. Rapport final sur le couplage des données PlanCad pour la profession infirmière. Bruxelles: Cellule Planification des professions de soins de santé, Service Professions des soins de santé et pratique professionnelle, DG Soins de santé, SPF Santé publique, Sécurité de la chaîne alimentaire et Environnement; 2018.

[6] Somer A, Vivet V, Delvaux A, Dumont G, Miermans P-J, Steinberg P. Eindrapport van de PlanCAD Gegevenskoppeling voor de beroepsgroep van de verpleegkunde. Brussels: Federale Overheidsdienst Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu; 2014 April 2014.

8.9. Proportion of professionally active nurses aged 50 years and over (S-10)

8.9.1. Documentation sheet

Description	Proportion of professionally active nurses aged 50 years and over
Calculation	Numerator: number of professionally active nurses aged 50 years and over Denominator: total number of professionally active nurses
Technical definition	A nurse is considered as professionlly active when he/she is registered as self-employed person into INASTI database or registered into ONSS database with at least 0.1 full time equivalent (FTE) per year. The threshold of 0.1 FTE per year has been established by the nursing working group on nurses from workforce planning cell.[1] The distinction between professionally active nurses and practising nurses is the activity sector. Practising nurses are nurses who are active only on the health sector instead of on the entire Belgian market for professionally active nurses.
Rationale	Beyond the overall number of nurses, the age and gender composition of the nursing workforce also have important implications on the current and future supply of healthcare services. The ageing of nurses in industrialized countries has, for many years, raised concerns that there may not be sufficient new recruits to replace them. An additional concern is that nurses quit their job before the retirement age (see limitations for this indicator). This indicator gives a rough estimation of the share of nurses that will retire within 10 years (although a significant number of nurses may have already quit their job before the official retirement age). It should be analysed together with the current number of practising nurses, and the number of nursing graduates (input).
Data source	PlanCAD Nurses 2019,[1] Federal database of health care professionals, Federal Public Service Health, Food Chain Safety and Environment
Limitation	A high score for this indicator can be interpreted in two ways: first, a high need to invest in new recruits, but also a sign of longer availability on the labour market (retirement at later age) which is a good sign.
International comparability	No standardized data collection available. This indicator is also monitored in UK[tt] and New Zealand[uu].
Related indicators	Number of practising nurses; Number of nursing graduates

[tt] http://www.weds.wales.nhs.uk/sitesplus/documents/1076/rcn%20safe%20staffing%20levels.pdf

[uu] http://www.nursingcouncil.org.nz/Publications/Reports-and-workforce-statistics

8.9.2. Results

In 2016 (31/12/2016), 143 470 nurses were professionally active on the Belgian labour market (see Table 85). Table 85 shows that there are small differences according to age groups. Professionally active nurses are well distributed between each age group: the share of professionally active nurses vary between 10% and 14% depending on age category (see Table 85 and Figure 117). The largest share of active nurses is aged between 50 and 55 years old. One third of professionally active nurses were aged above 50 years old in 2016, while 18.4% was aged 55 years or above (Table 85).

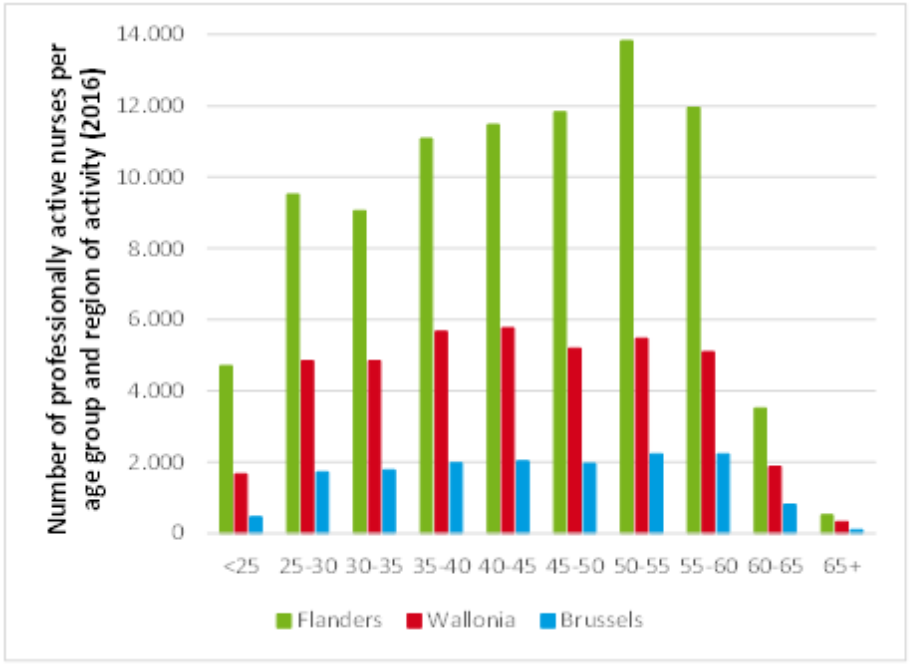
The number of professionally active nurses is higher in Flanders (87 415) than in Wallonia (40 707) or Brussels (15 224). Figure 117 shows that age distribution of professionally active nurses is quite the same between regions. In Flanders and Brussels, the largest share of active nurses is aged between 50 and 55 years old whereas in Wallonia is aged between 40 and 45 years old. In 2016, the share of professionally active nurses aged above 50 years old was 34.1% in Flanders, 31.3% in Wallonia, 35.2% in Brussels (see Table 85).

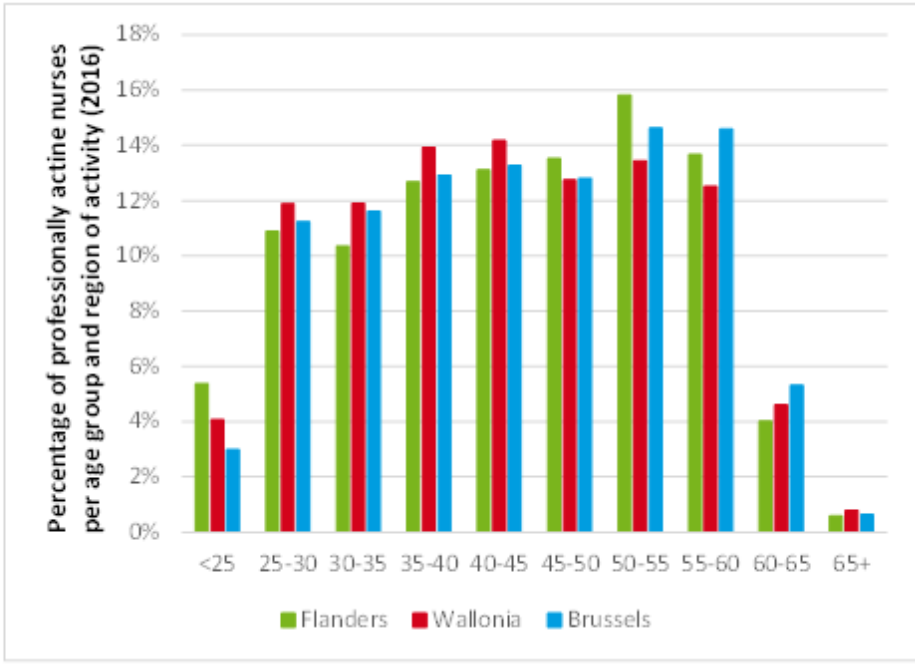
Table 85 – Professionally active nurses per age group and region of activity (2016)

	Total Belgium		Flanders		Wallonia		Brussels	
	N pers.	% pers.	N pers.	% pers.	N pers.	% pers.	N pers.	% pers.
<25	6821	4.8%	4699	5.4%	1658	4.1%	456	3.0%
25-30	16085	11.2%	9516	10.9%	4838	11.9%	1710	11.2%
30-35	15678	10.9%	9050	10.4%	4843	11.9%	1767	11.6%
35-40	18725	13.1%	11078	12.7%	5663	13.9%	1967	12.9%
40-45	19270	13.4%	11463	13.1%	5767	14.2%	2020	13.3%
45-50	18973	13.2%	11825	13.5%	5187	12.7%	1950	12.8%
50-55	21525	15.0%	13820	15.8%	5467	13.4%	2226	14.6%
55-60	19278	13.4%	11954	13.7%	5093	12.5%	2222	14.6%
60-65	6192	4.3%	3506	4.0%	1873	4.6%	809	5.3%
65+	923	0.6%	504	0.6%	318	0.8%	97	0.6%
Total	**143470**	**100%**	**87415**	**100%**	**40707**	**100%**	**15224**	**100%**
> 50 years	**47918**	**33.4%**	**29784**	**34.1%**	**12751**	**31.3%**	**5354**	**35.2%**
> 55 years	**26393**	**18.4%**	**15964**	**18.3%**	**7284**	**17.9%**	**3128**	**20.5%**

Source: PlanCAD Nurses 2019[1]; KCE calculation

Figure 117 – Number and percentage of professionally active nurses per age group and region of activity (2016)





Source: PlanCAD Nurses 2019[1]; KCE calculation

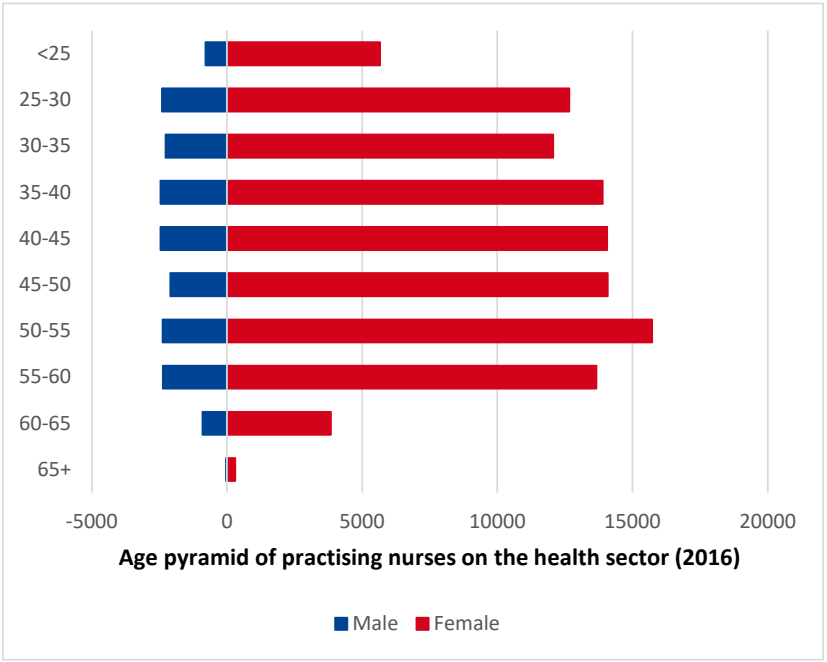
In term of practising nurses **on the health sector**, results are similar and there were 105 983 female and 18 213 male nurses in 2016 (see Table 86). Figure 118 shows that the largest share of practising nurses on the health sector is aged between 50 and 55 years old.

Table 86 – Age distribution of practising nurses on the health sector (2016)

Age category	Female	Male	Belgium
<25	5 657	796	6453
25-30	12 661	2 405	15 066
30-35	12 067	2 272	14 339
35-40	13 902	2 468	16 370
40-45	14 068	2 461	16 529
45-50	14 088	2 103	16 191
50-55	15 723	2 384	18 107
55-60	13 664	2 377	16 041
60-65	3 847	905	4 752
65+	306	42	348
Total	105 983 (85.3%)	18 213 (14.7%)	124 196
Aged 50 or above	**31.6%**	**31.3%**	**31.6%**
Aged 55 or above	**16.8%**	**18.3%**	**17.0%**

Source: PlanCAD Nurses 2019[1]

Figure 118 – Age pyramid of practising nurses on the health sector (2016)



Source: PlanCAD Nurses 2019[1]; KCE calculation

Key points

- **In 2016, 33.4% of the professionally active nurses in Belgium were over 50 years of age (34.1% in Flanders, 31.3% in Wallonia, 35.2% in Brussels), while 18.4% was aged 55 years or above (18.3% in Flanders, 17.9% in Wallonia, 20.5% in Brussels).**

References

1. Vivet V, Durand C, De Geest A, Delvaux A, Jouck P, Miermans P-J, et al. PlanCad Infirmiers 2016. Rapport final sur le couplage des données PlanCad pour la profession infirmière. Bruxelles: Cellule Planification des professions de soins de santé, Service Professions des soins de santé et pratique professionnelle, DG Soins de santé, SPF Santé publique, Sécurité de la chaîne alimentaire et Environnement; 2018. Available from: https://organesdeconcertation.sante.belgique.be/sites/default/files/documents/plancad_infirmiers_2016.pdf

8.10. Share of foreign-trained nurses (S-16)

8.10.1. Documentation sheet

Description	**Main indicator:** Share of foreign-trained nurses **Secondary indicator**: Share of foreign-trained nurses professionally active on the Belgian labour market
Calculation	**Main indicator: Share of foreign-trained nurses** is defined as nurses who have obtained a recognised qualification in nursing in another country and have obtained a nursing "visa/visum" to practice in Belgium ("licence to practice" at the end of the year) • Numerator: Number of foreign-trained nurses (Stock) • Denominator: Total number of nurses licensed to practice (Belgian-trained nurse and foreign-trained nurses) **Secondary indicator: Share of foreign-trained nurses professionally active on the Belgian labour market** is defined as nurses who have obtained a recognised qualification in nursing in another country and are professionally active on the Belgian labour market • Numerator: Number of nurses with a foreign diploma who are professionally active on the Belgian labour market • Denominator: Total number of professionally active nurses on the Belgian labour market
Rationale	Nurses play a critical role in providing health care in hospitals and long-term care institutions, but also in primary care and in the home care setting. In addition, they are in most countries the largest group of healthcare professionals. Monitoring the number of foreign-trained nurses is therefore important in light of the accessibility and sustainability of the healthcare system. These are essential figures for workforce planning.[1] Some European countries also opt for strong recruitment strategy to recruit foreign-educated nurses.[1] The World Health Assembly adopted in May 2010 "The Global Code of Practice on the International Recruitment of Health Personnel"[2] to promote a more ethical recruitment of health personnel and to encourage countries to achieve greater "self-sufficiency" in the training of health workers.

Data source	**Main indicator:** Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Health, Food Chain Safety and Environment; OECD Health statistics **Secondary indicator**: Results from "PlanCAD" 2016, Federal database of health care professionals, Federal Public Service Health, Food Chain Safety and Environment[3] It should be noted that data from the PlanCAD slightly differ from the workforce statistics (HWF STATAN 2017), also published by the Federal Public Service Health, Food Chain Safety and Environment, because of another extraction period and a larger selection in the PlanCad (e.g. inclusion of people with a midwife diploma registered as nurse in the cadastre).
Technical definitions	**Main indicator:** The number of foreign-trained nurses is based on the number of "visa/visum" delivered by the Federal Public Service Public Health, registered in the federal registry ("Cadastre/Kadaster"). Only the first "visa/visum" delivered to practise nursing is taking into account. **Secondary indicator:** The share of foreign-trained nurses professionally active on the Belgian labour market is based on the number of professionally active nurses on the Belgian labour market (not only in the health sector). A nurse is considered as active when s/he is registered as self-employed person into INASTI database or registered into ONSS+ database (i.e. ONSS + ONSSAPL) with at least 0.1 full time equivalent (FTE) per year. The threshold (i.e. 0.1 FTE per year) was set up by the Planning of Healthcare professionals Cell, in order to harmonize the definition of professionally active practitioners among health professional groups.[3]
Limitations	The main indicator, which allows an international comparison, refers to foreign-trained nurses with license to practice and not practising nurses or professionally active nurses.
International comparability	International comparability is partially limited due to methodological differences (some countries refer to practising nurses and others to holders of a licence to practice).
Dimension	Sustainability of the health system
Related indicators	Number of practising nurses Number of practising nurses above 50+ years old

8.10.2. Results

Share of foreign-trained nurses (based on "licence to practice")

In 2017, around 3.5% of all nurses licensed to practice have a foreign diploma (7 248 foreign-trained nurses). The share of foreign-trained nurses is increasing over the time in Belgium (see Table 87). There is a higher proportion of female foreign-trained nurses than male (respectively 79.9% and 20.1%, see Table 88) and almost 90% of them have less than 55 years old. Around 84% of foreign-trained nurses does not have the Belgian nationality and 63% of foreign-trained nurses have their place of residence in Belgium.

Table 87 – Percentage of foreign-trained nurses (2012-2017)

Year (SPF)	2012	2013	2014	2015	2016	2017
% of foreign-trained nurses	2.2%	2.6%	3.0%	3.3%	3.4%	3.5%

Source: SPF-FOD Cadastre

Table 88 – Foreign-trained nurses by personal characteristics (2017)

		2017
Foreign-trained nurses in Belgium		7 248 (3.5%)
Gender	**Female**	5 789 (79.9%)
	Male	1 456 (20.1%)
	Unknown	3 (0%)
Age group	**<35**	3 034 (42.1%)
	35-44	2 171 (30.1%)
	45-54	1 276 (17.7%)
	55-64	538 (7.5%)
	65-74	196 (2.7%)
	>74	33 (0.5%)
Belgian nationality*	**Yes**	1 185 (16.3%)
	No	6 063 (83.7%)
Place of residence (at the end of the visa year)	**Residence in Belgium**	4 549 (62.8%)
	Residence abroad	2 278 (31.4%)
	Unknown	421 (5.8%)

*Source: SPF-FOD Cadastre; *Belgian nationality at the time of the data extraction*

Share of foreign-trained nurses professionally active on the Belgian labour market

The group of professionally active nurses in Belgium is much smaller than the group of nurses licensed to practice (around 70% of all nurses licensed to practice). In 2016, there were 143 470 professionally active nurses on the Belgian labour market in Belgium (see Table 89). There were 10 199 professionally active nurses with a foreign diploma or a diploma with unknown origin in 2016, which represents 7.1% of all professionally active nurses on the Belgian labour market.

Table 89 – Professionally active nurses on the Belgian labour market, per type of diploma (2016)

		N	%
Total in Belgium		143 470	100%
Type of diploma	Bachelor (A1)	79 357	55.3%
	Diploma (A2)	50 290	35.1%
	Assistant in hospital care***	3 624	2.5%
	Foreign diploma or diploma with unknown origin	10 199	7.1%

*Source: PlanCAD nurses 2019.[3] ***This training and related diploma were interrupted in 1996.*

International comparison - Share of foreign-trained nurses (based on "licence to practice")

When coming back to the whole stock of registered nurses (whatever their professional activity) in Belgium, the proportion of foreign-trained nurses is much lower than the proportion of foreign-trained doctors (3.5% in 2017 compared to 12% for foreign-trained doctors, see Table 90). However, absolute numbers are quite similar (7 248 foreign-trained nurses versus 7 606 foreign-trained doctors in 2017, see Table 90). The share of foreign-trained nurses in Belgium is similar to the European average in 2015 (based on 8 countries, see Figure 119). Since 2000, the trend of registered nurses with a foreign-diploma has gradually increased (from 0.5% in 2000 to 3.2% in 2015).

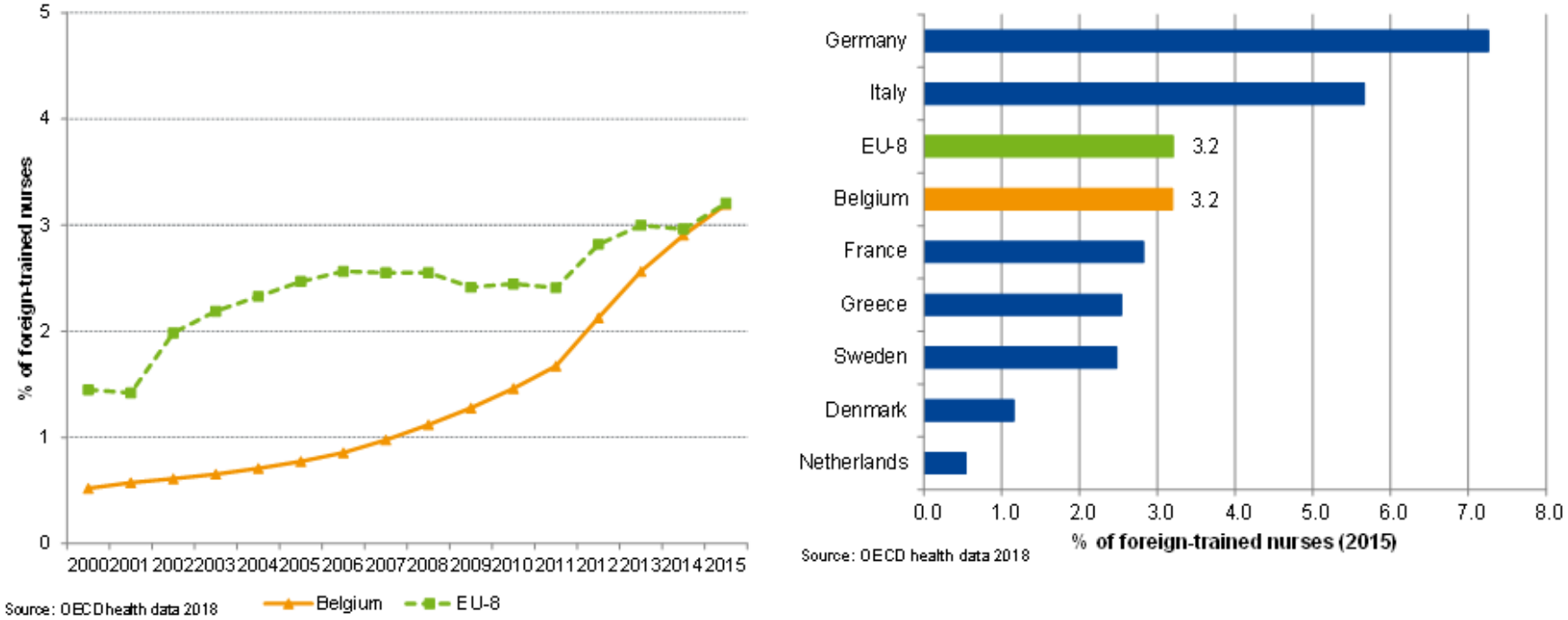
Table 90 – Share of foreign-trained nurses in Belgium (2000-2017)

Year (OECD)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Share of foreign-trained nurses (%)	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.7	2.1	2.6	2.9	3.2	3.4	3.5

Source: OECD Health Statistics 2018[vv]

[vv] Data extracted from OECD Health Statistics 2018 are slightly different from original data source from SPF-FOD Cadastre.

Figure 119 – Share of foreign-trained nurses: international comparison (2000-2015)[ww]



Source: OECD Health Statistics 2018; UK was not taken into account in the analysis because data were available only for 3 years (2006, 2014 and 2015). For information, the share of foreign-trained nurse account for 14.4% in the UK in 2015.

[ww] Because of the lack of data from other European countries, 2015 is taken as the reference in the calculation.

Key points

- **Among all nurses in Belgium, the share of foreign-trained nurses is increasing over the time (from 0.5% in 2000 to 3.5% in 2017)**
- **In 2015, the share of foreign-trained nurses is similar to the EU-8 average.**

References

[1] OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017.

[2] WHO. Global Code of Practice on the International Recruitment of Health Personnel World Health Organization (WHO); 2010.

[3] Vivet V, Durand C, De Geest A, Delvaux A, Jouck P, Miermans P-J, *et al.* PlanCad Infirmiers 2016. Rapport final sur le couplage des données PlanCad pour la profession infirmière. Bruxelles: Cellule Planification des professions de soins de santé, Service Professions des soins de santé et pratique professionnelle, DG Soins de santé, SPF Santé publique, Sécurité de la chaîne alimentaire et Environnement; 2018.

8.11. Curative care bed-days (number per capita) (S-11)

8.11.1. Documentation sheet

Description	Number of days spent in curative (acute care) beds in acute care hospitals (number per capita)
Calculation	Numerator: total number of days of inpatient stays spent in curative care (acute care) beds Denominator: total Belgian population.
Rationale	The number of curative care bed days per capita gives an idea about the population's need for acute care beds, and thus about the needed infrastructure. This indicator gives an idea about how this need is met (sustainability). This indicator combines results from two other indicators: number of hospital admission per capita, and average length of hospitalisation.
Data source	RHM-MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Day hospitalizations are not counted. **OECD definition:** beds indexes included in the data are: • (B) treatment department "TBC", (C) diagnosis and surgical treatment department, (D) diagnosis and medical treatment department, (E) paediatrics, (CD) mixed hospitalisation, (L) contagious diseases, (M) maternity, (NIC) intensive neonatal care, (G) geriatrics in acute hospitals; • Data also include psychiatric care beds: (A) neuropsychiatry for observation and treatment, (A2) night care in neuropsychiatry, (K) infant neuropsychiatry, (K2) night care in infant neuropsychiatry, (TG) day and night care for geriatric patients needing neuropsychiatry treatment, (IB) intensive treatment of psychiatric patients, (T) neuropsychiatry for treatment, (T2) night care in neuropsychiatry for treatment

	Data per region: Concerning the data per region, the repartition is done according to the competent authority of the hospital. It should also be noted that for Belgian data per region, data presented here are based on the actuel length of stays while in OECD data (for the international comparison), data are based on invoiced length of stay.
International comparability	The OECD definition is adopted (curative care bed days). Several countries included in the OECD comparison use different methodologies to calculate the number of curative care bed-days (e.g. including or not geriatric beds, specialised hospitals…). Comparison is therefore potentially biased.{OECD, 2017 #2}
Dimensions	Sustainability
Keywords	Hospital (acute care);Generic
Related indicators	Average length-of-stay after normal delivery; Surgical Day Case Rates.

8.11.2. Results

In 2016, there were 12.4 million days spent in acute care hospitals (excluding day hospitalizations, see Table 91). Per capita, this represents 1.09 acute care bed days in 2016 (see Table 91). Brussels has the lowest figure (1.04 day), data for Flanders and Wallonia are respectively 1.06 and 1.17. (see Table 91 and Figure 120).

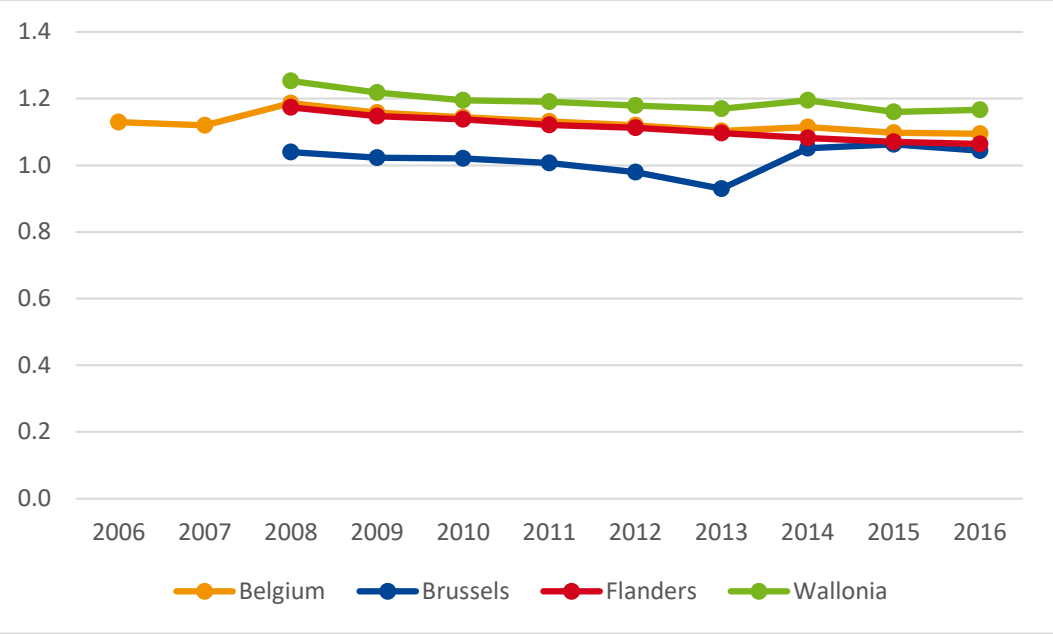
Table 91 – Acute care bed days per capita, per year and hospital region (2000-2016)

Variable	Category	Numerator: Acute care bed days	Denominator: Belgian population (mid-year)	Acute care bed days per capita
Year	2000	12 961 781	10 251 250	1.26
	2001	12 742 759	10 286 570	1.24
	2002	12 516 134	10 332 785	1.21
	2003	12 364 623	10 376 133	1.19
	2004	12 235 347	10 421 137	1.17
	2005	12 160 952	10 478 617	1.16
	2006	11 960 020	10 547 958	1.13

	2007	11 902 397	10 625 700	1.12
	2008	12 706 630	10 709 973	1.19
	2009	12 500 811	10 796 493	1.16
	2010	12 470 704	10 895 586	1.14
	2011	12 440 453	10 993 607	1.13
	2012	12 399 874	11 067 751	1.12
	2013	12 269 875	11 125 035	1.10
	2014	12 465 725	11 179 780	1.12
	2015	12 343 998	11 238 477	1.10
	2016	12 364 995	11 294 999	1.09
Data 2016 by region				
Region	Brussels	1 242 166	1 189 747	1.04
	Flanders	6 912 484	6 496 908	1.06
	Wallonia	4 210 345	3 608 345	1.17

Source: RCM – MKG and RHM – MZG

Figure 120 – Acute care bed days per capita, per hospital region (2008-2016)

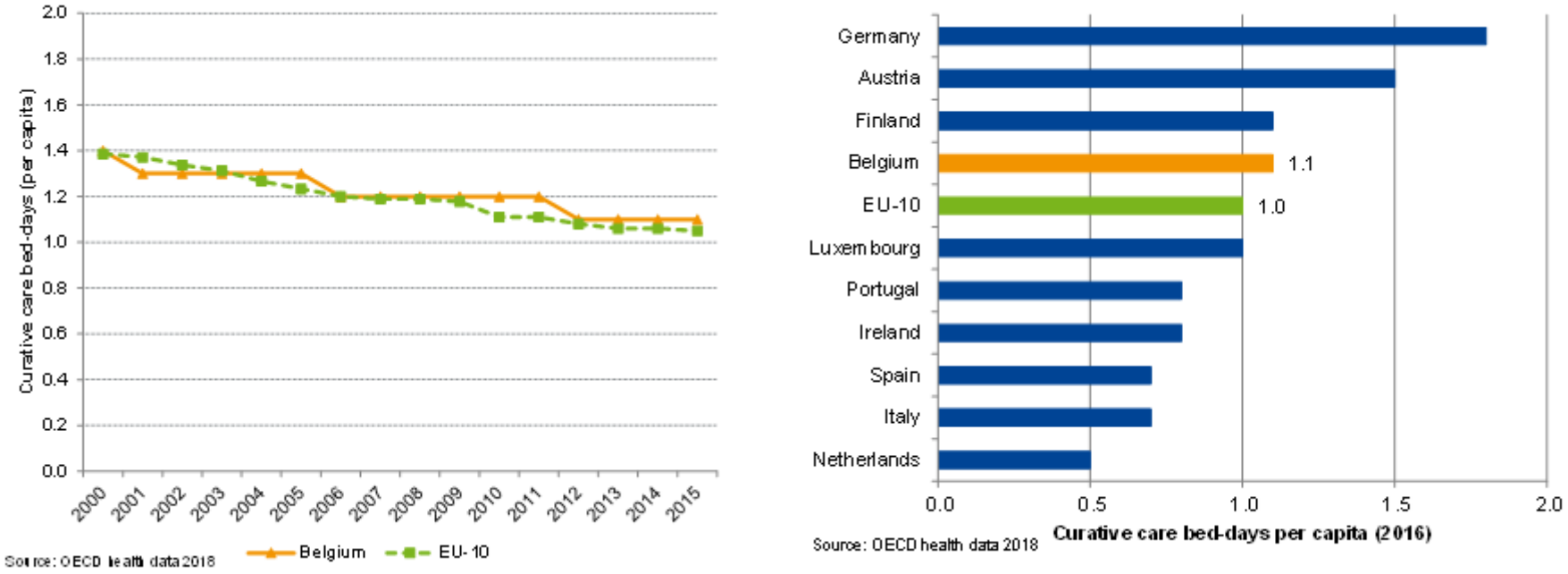


Source: RCM – MKG and RHM – MZG

International comparison

Curative care bed-days per capita slightly decreased in Belgium from 1.26 per capita in 2000 to 1.09 in 2016 (see Table 91). Compared to other European countries, Belgian has a similar number per capita than the EU average (see Figure 121) but is twice higher than in the Netherlands. Curative care bed-days per capita ranged from 0.5 in the Netherlands to 1.8 in Germany (see Figure 121). Curative care bed-days per capita in Belgium has the same decreasing trend than the average of EU-10.

Figure 121 – Curative care bed-days per capita: international comparison (2000-2016)



Source: OECD Health statistics 2018.

Key points

- **The number of days spent in curative care hospitals in Belgium slightly decreased from 1.26 per inhabitant in 2000 to 1.09 per inhabitant in 2016.**
- **Belgian as a similar number of curative care bed days per capita than the EU-10 average but is twice higher than in the Netherlands.**

Reference

[1] OECD. Health Statistics 2015 [Web page]. Organisation for Economic Co-operation and Development; 2015. Available from: http://www.oecd.org/els/health-systems/health-data.htm

8.12. Percentage of GPs using electronic global medical record (eGMR) through MyCareNet (S-13)

8.12.1. Documentation sheet

Description	Percentage of GPs using electronic global medical record (eGMR) through MyCareNet
Calculation	Numerator: number of GPs using electronic global medical record through MyCareNet Denominator: total number of practising GPs
Rationale	This indicator measures the use of electronic medical records among GPs through MyCareNet. MyCareNet is a centralized platform dedicated to health care providers and institutions through which information can be exchanged with sickness funds in a simple, reliable and secure way. By registering electronic records, coordination, continuity and quality of care are expected to increase. Referral to and communication with other care providers could become more efficient, and double investigations or contrasting treatments could be avoided. EMR can also improve quality of care by facilitating reminders (scripts).
Data source	E-health data (reimbursement data base of EMR)
Technical definitions and limitations	A care provider is considered to be practising (RIZIV – INAMI: “profiles”) if he/she provided more than 1 clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year or the 2 preceding years. Because the number of practising GPs is not yet available for 2017 and 2018, the number of practising GPs in 2016 was used as proxy for the denominator (each year and trimester). Data are only available from 2016.
International comparability	Limited (specific to the Belgian system)
Performance dimension	Sustainability; Quality (continuity); Quality (effectiveness); Efficiency
Related indicators	Percentage of persons who have a global medical record (GMR) including an electronic GMR with a general practitioner (GP)

8.12.2. Results

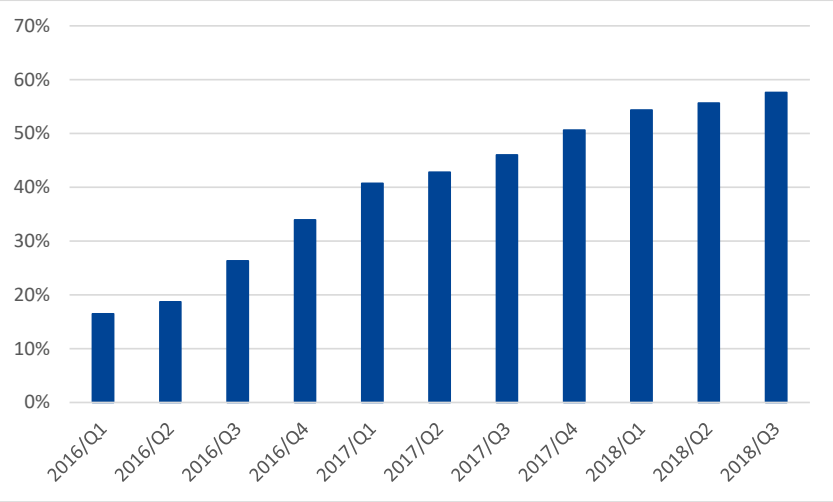
A continuous increase in the proportion of GPs using an eGMR through MyCareNet can be observed since the creation of MyCareNet (from 16% in the first trimester of 2016 to 58% in the third trimester of 2018).

Table 92 – Percentage of GPs using electronic global medical record (eGMR) through MyCareNet

2016/Q1	2016/Q2	2016/Q3	2016/Q4	2017/Q1	2017/Q2	2017/Q3	2017/Q4	2018/Q1	2018/Q2	2018/Q3
16%	19%	26%	34%	41%	43%	46%	51%	54%	56%	58%

Source: eHealth

Figure 122 – Percentage of GPs using electronic global medical record (EGMR) through MyCareNet



Source: eHealth

Key points

- **A continuous increase in the proportion of GPs using an eGMR through MyCareNet can be observed (from 16% in the first trimester of 2016 to 58% in the third trimester of 2018).**

8.13. Electronic Global Medical Record (% of all global medical record) (S-17)

8.13.1. Documentation sheet

Description	**Main indicator:** Share of electronic global medical record among all global medical record (GMR+EGMR)
Calculation	**Secondary indicator:** • Numerator: Total number of electronic global medical record • Denominator: Total number of global medical record (GMR+EGMR)
Rationale	Since 2001, the global medical record (GMR) is implemented in Belgium. Each patient can ask a (unique) general practitioner to manage his/her medical information. By leaving the coordination of medical care to one central person, the quality of care is expected to increase. Referral to and communication with other care providers can become more efficient, and double investigations or contrasting treatments can be avoided. Since 2016, the electronic global medical record is implemented in Belgium.
Data source	IMA-IMA (Atlas); RIZIV-INAMI
Technical definitions	NIHDI billing codes: • GMR codes: 102771, 102793, 102395, 101371, 101393, completed with • eGMR codes (since 2016): 101312, 101334, 103574, 103596.
International comparability	Limitation: • specific indicator to the Belgian system. • nomenclature codes are used as a proxy to calculate the present indicator. Condition for the billing is to have at least a contact with the GP during the year. It means that people without any contact during the year are not registered with a GMR even if they still keep their GMR. This phenomenon affects particularly young patient who less often contact the GP a year.
Performance dimension	Quality (continuity); Quality (effectiveness); Efficiency
Related indicators	Percentage of GPs using electronic global medical record (eGMR) through MyCareNet and Percentage of persons who have a global medical record

8.13.2. Results

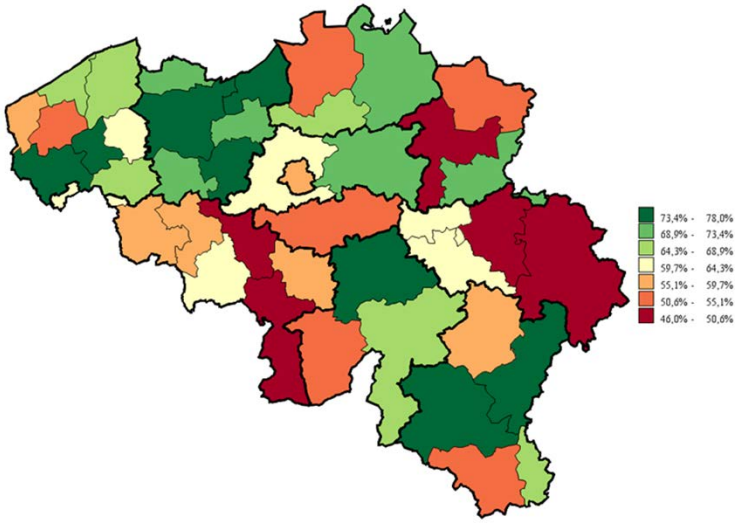
In 2017, more than 60% of insured persons with a GMD had a eGMR (see Table 92). The share of eGMR vary by regions and provinces. There are more eGMR in Flanders than in Brussels or Wallonia (see Table 92). In some provincies (Hainaut, Limburg or Liège), the share of eGMR is lower than 50% (see Figure 123).

Table 93 – Share of electronic global medical record among all global medical record, by regions (2017)

% of EGMR in 2017		
Belgium		**65%**
Regions	Brussels	62%
	Flanders	67%
	Wallonia	59%

Source: NIHDI

Figure 123 – Share of electronic global medical record among all global medical record, by provinces (2017)



Source: NIHDI

Key points

- **In 2016, the percentage of insured persons with a global medical record was 67.5% and more than 65% of these GMR were electronic GMR.**

9. CONTEXTUAL INDICATORS OF EQUITY

9.1. Gini Index (EQ-1)

9.1.1. Documentation sheet

Description	The Gini index is a statistical measure of the degree of inequality in the income distribution of a country. Higher values indicate more income inequality in the population.
Calculation	The Gini index can be calculated from the Lorenz curve, in which the cumulative share of people arranged from the poorest to the richest (x-axis) is plotted against the cumulative share of income (y-axis). If incomes are distributed equally across the population, the Lorenz curve coincides with the 45 degree line. Hence the 45 degree line is defined the line of equality. The Gini index is the ratio of (a) the area between a country's Lorenz curve and the line of equality to (b) the entire triangular area under the line of equality. This ratio is multiplied by 100 to obtain a value between 0 and 100. The more equal a country's income distribution is, the closer its Lorenz curve is situated to the line of equality and the lower its Gini index. If inequality is more important, the Lorenz deviates more from the line of equality and the Gini index is higher. In the extremes, i.e. perfect equality and perfect inequality, the Lorenz curve coincides with the line of equality and the horizontal axis respectively with a Gini index equal to 0 or 100, respectively.
Rationale	This indicator, its evolution over time and its comparison with other countries characterizes the economic context in which the healthcare system is situated. Research has revealed an association between the way income is redistributed in a country (income inequality) and some forms of objective health problems and the perceived health situation or status.[1-8] There is clear evidence that health differences contribute to income inequalities; the causality of the reverse association is debated.[8, 9]
Data source	OECD, Eurostat, EU-SILC
Periodicity	Yearly
Technical definitions and limitations	As inequality may vary by type of income, we apply two different income definitions. Income in a particular year is defined as (1) all household income before direct taxation and transfers (market income) and (2) all household income after direct taxation and transfers (disposable income). Market income includes earnings, self-employment and capital income, transfers from other households and transfers received from employment-related schemes. Disposable income equals market income, plus public cash transfers (e.g. pensions, unemployment benefits etc.), minus income taxes and social security contributions. It is the income households can use for consumption and saving. The disposable income in Eurostat comes from the European Union Statistics on Income and Living Conditions (EU-SILC) and is very broad, including amongst other the use of a company car, meal voucher and rental income. On the other hand, information on income from wealth is limited. This may lead to an underestimation of income inequality. As all countries use the same standardized survey, the limitation applies to all EU countries. The income of the household is attributed to each of its members, with an adjustment to reflect differences in needs for households of different sizes. For the Eurostat results, the adjustment is made using the OECD-modified equivalence scale that attributes a

	value of 1 to the household head, of 0.5 to each additional household member aged 14 years or more and of 0.3 to each child aged 13 years or less. For the OECD results, the adjustment is made using the square root equivalence scale that corrects for household size using the square root of the number of household members. The Gini index is simple to understand and easily comparable between countries and over time. Nevertheless, it remains a very global representation of the distribution of the welfare in a given population. Countries with similar incomes and Gini indices can still have very different income distributions. This is because the Lorenz curves can have different shapes and yet still yield the same Gini index. Taking income before and after taxes and transfers into account does not give a complete picture of the income redistribution in a country. Indeed, free collectives goods increase the welfare of the citizens but have no impact on the Lorenz curve and the Gini index. Nevertheless, it is the best we can get because the lack of data about the consumption of free collectives goods. Moreover, the Gini index has been criticized of being too sensitive to changes in the middle of the income distribution and not being sensitive enough to changes at the top and bottom of the distribution. For that reason, additional measures of poverty and social exclusion in Belgium will be added from the EU-SILC. The additional information includes statistics on severe material deprivation (SMD), households at risk of poverty or social exclusion (AROP and AROPE), household with very low work intensity and the relative poverty gap.
International comparability	Gini indexes are computed by international organizations (Eurostat, OECD) using the same (or a comparable) methodology and are therefore comparable.
Dimension	Contextual indicator of equity
Related performance indicators	Indicators of poverty and social exclusion

9.1.2. Results

9.1.2.1. Gini index

Belgium has one of the lowest levels of income inequality

First, the inequality in the distribution of equivalent disposable income is evaluated by the Gini index. The value ranges between 0 and 100 and a higher value indicates more income inequality in the population. The calculations are based on the EU Statistics on Income and Living Conditions (EU-SILC) data. The results are summarized in Figure 124, Figure 125 and Table 94.

As is shown in Figure 124, Belgium has one of the lowest levels of income inequality in 2017 in comparison with the other EU-15 countries. Only Finland has a lower Gini index of equivalent disposable income. Figure 125 shows that income inequality has improved over the period 2005 – 2017 with a decrease from 28.0 in 2005 to 26.0 in 2017. Over the same period the average Gini index value for the EU-15 fluctuated between 29.0 and 29.8. A complete overview of the Gini index by year (2005-2017) and country (all EU-15 countries) is given in Table 94.

Figure 124 – Gini index of equivalized income (year 2017)*

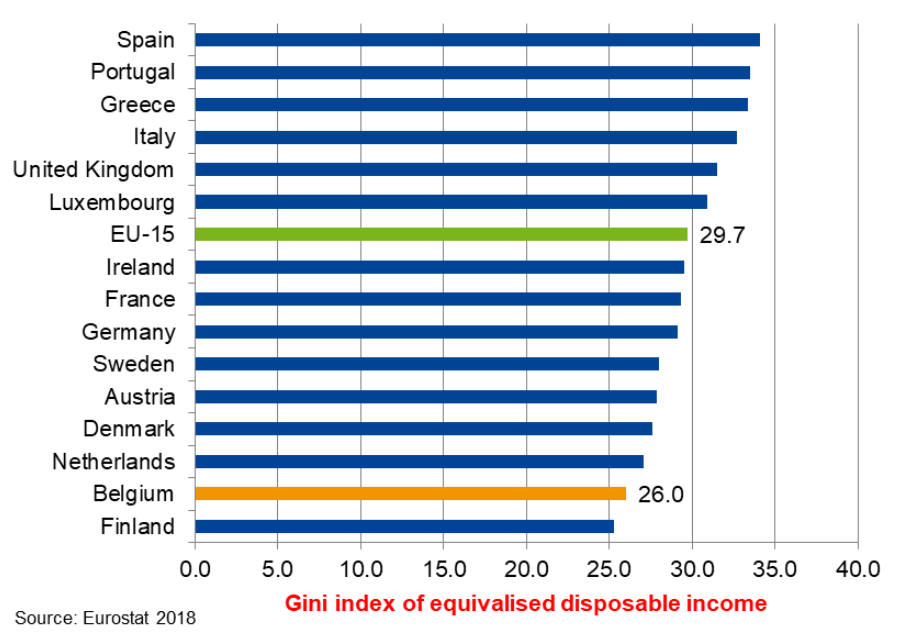
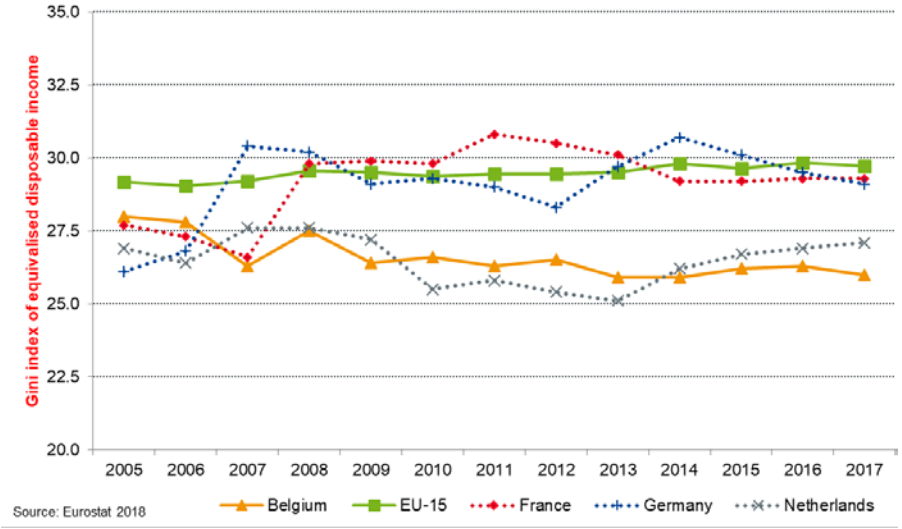


Figure 125 – Evolution of Gini index of equivalized income for selection of countries (years 2005-2017)



* The figures for Ireland and the United Kingdom refer to the year 2016.

Table 94 – Evolution of Gini index of equivalized income for EU-15 countries (2005-2017)

Countries	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Austria	26.3	25.3	26.2	27.7	27.5	28.3	27.4	27.6	27.0	27.6	27.2	27.2	27.9
Belgium	28.0	27.8	26.3	27.5	26.4	26.6	26.3	26.5	25.9	25.9	26.2	26.3	26.0
Denmark	23.9	23.7	25.2	25.1	26.9	26.9	26.6	26.5	26.8	27.7	27.4	27.7	27.6
Finland	26.0	25.9	26.2	26.3	25.9	25.4	25.8	25.9	25.4	25.6	25.2	25.4	25.3
France	27.7	27.3	26.6	29.8	29.9	29.8	30.8	30.5	30.1	29.2	29.2	29.3	29.3
Germany	26.1	26.8	30.4	30.2	29.1	29.3	29.0	28.3	29.7	30.7	30.1	29.5	29.1
Greece	33.2	34.3	34.3	33.4	33.1	32.9	33.5	34.3	34.4	34.5	34.2	34.3	33.4
Ireland	31.9	31.9	31.3	29.9	28.8	30.7	29.8	30.5	30.7	31.1	29.8	29.5	*NA*
Italy	32.7	32.1	32.0	31.2	31.8	31.7	32.5	32.4	32.8	32.4	32.4	33.1	32.7
Luxembourg	26.5	27.8	27.4	27.7	29.2	27.9	27.2	28.0	30.4	28.7	28.5	31.0	30.9
Netherlands	26.9	26.4	27.6	27.6	27.2	25.5	25.8	25.4	25.1	26.2	26.7	26.9	27.1
Portugal	38.1	37.7	36.8	35.8	35.4	33.7	34.2	34.5	34.2	34.5	34.0	33.9	33.5
Spain	32.2	31.9	31.9	32.4	32.9	33.5	34.0	34.2	33.7	34.7	34.6	34.5	34.1
Sweden	23.4	24.0	23.4	25.1	26.3	25.5	26.0	26.0	26.0	26.9	26.7	27.6	28.0
United Kingdom	34.6	32.5	32.6	33.9	32.4	32.9	33.0	31.3	30.2	31.6	32.4	31.5	*NA*
EU-15	29.2	29.0	29.2	29.6	29.5	29.4	29.5	29.5	29.5	29.8	29.6	29.8	29.7

Source: Eurostat 2018

A redistributive tax and social security system

One reason why income inequality is relatively low in Belgium compared to other EU-15 countries is the effective role played by direct taxation and social transfers in the redistribution of income. The redistributive effect of taxes and transfers can be measured by comparing the Gini index of income before taxes and transfers (market income) and after taxes and transfers (disposable income). OECD data provide information on the Gini index for both income concepts. The results are summarized in Figure 126 and Figure 127.

Figure 126 indicates that inequality of income before taxes and transfers is in line with the European average. The Gini index (in blue) is situated at the lower end of the middle group. However, Belgium is among the top performers with respect to the redistributive effect of taxes and social transfers, i.e. the difference between the blue and red dots. Only Finland and Ireland can top the 23.2 percentage points' difference between the Gini indices of market and disposable income in Belgium.

The evolutions of the Gini index before and after taxes between 2007 and 2015 are presented in Figure 127. The Gini indices show diverging trends over time. While income inequality before taxes and transfers is increasing in Belgium, income inequality after taxes and transfers is decreasing. Hence, income disparities are growing in society, but at the same time, the tax and social benefit system becomes more efficient in reducing inequalities.

Figure 126 – Gini index before and after taxes (year 2015)

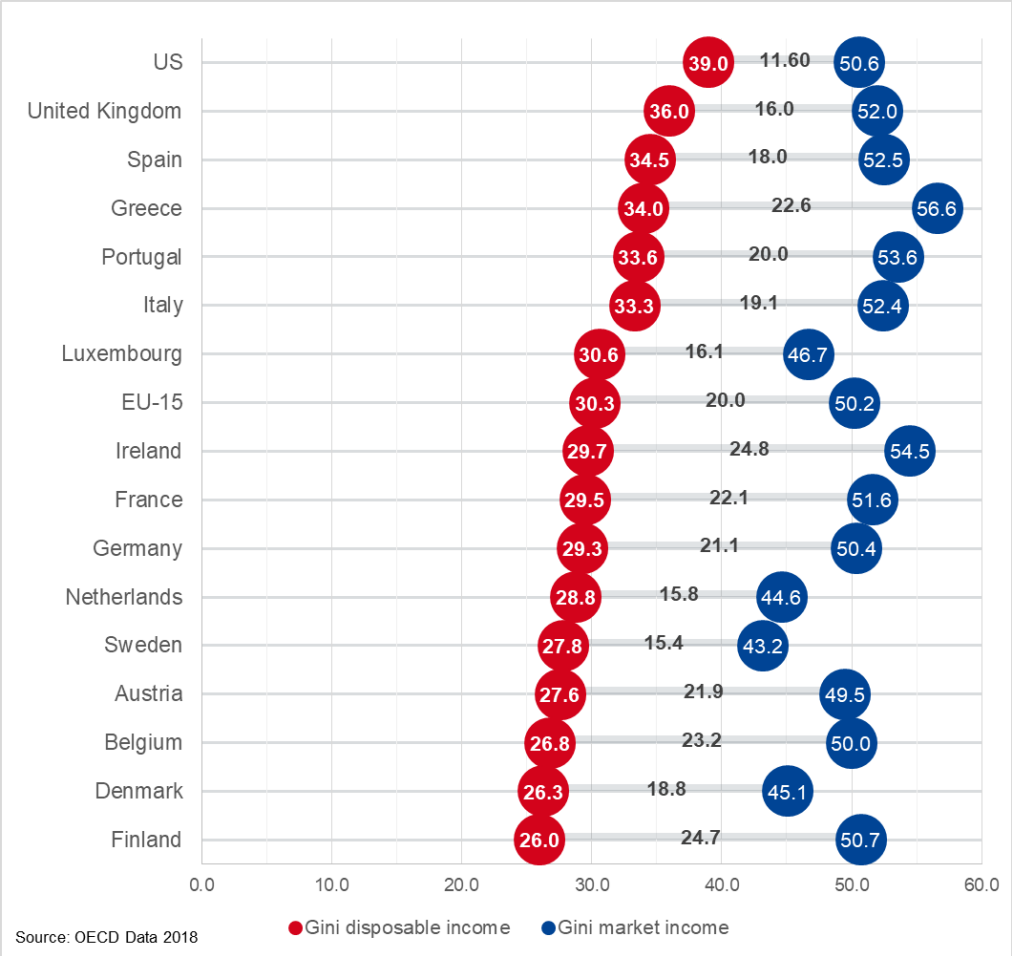
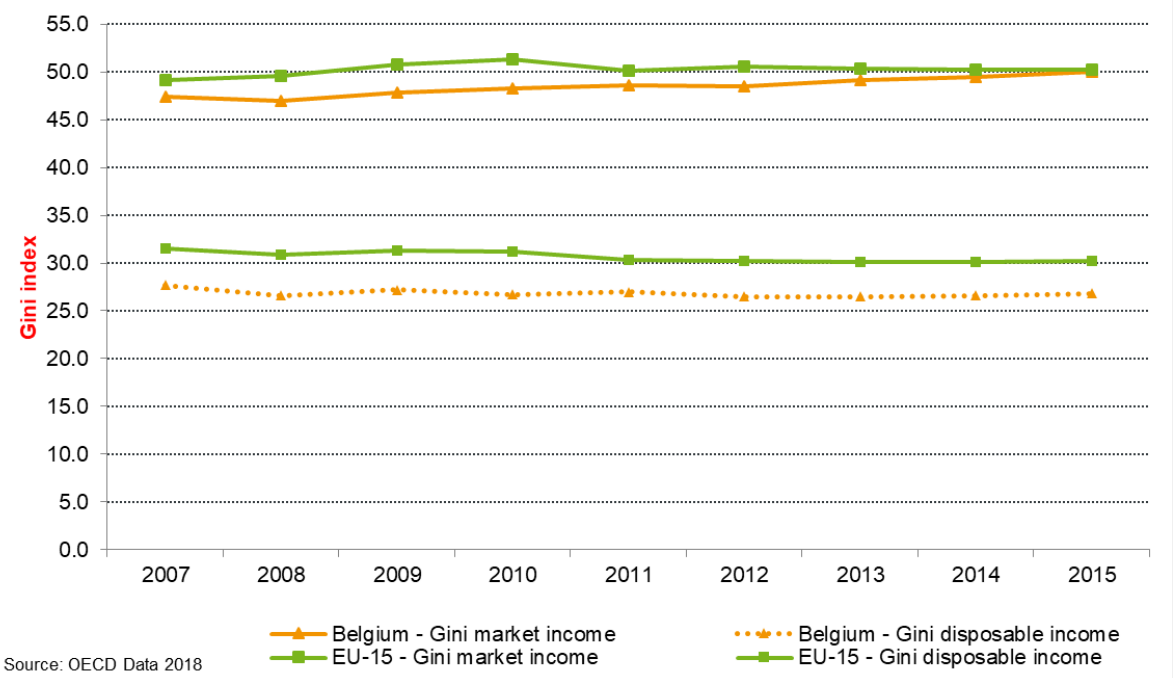


Figure 127 – Evolution of Gini index before and after taxes (years 2005-2017)



Source: OECD Data 2018

9.1.2.2. Beyond income inequalities

Health status and use of healthcare are correlated with the socioeconomic status. Hence, one should look beyond the inequality in the distribution of incomes and also contextualize poverty and material deprivation in Belgium.

A selection of indicators on poverty and social exclusion is considered for which information is collected European wide through the EU-SILC survey. Information is made available by Eurostat allowing for an international comparison. A detailed analysis of the social situation and social protection in Belgium is made annually by the FPS Social Security.[10]

Table 95 – Evolution of indicators on poverty and social exclusion (2005-2017)

Indicator		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
At-risk of poverty & social exclusion (AROPE)	BEL	22.6	21.5	21.6	20.8	20.2	20.8	21.0	21.6	20.8	21.2	21.1	20.7	20.3
	EU-15	21.0	20.8	20.4	20.7	20.9	21.2	21.9	22.4	22.6	22.7	22.3	22.0	21.6
At-risk of poverty (AROP)	BEL	14.8	14.7	15.2	14.7	14.6	14.6	15.3	15.3	15.1	15.5	14.9	15.5	15.9
	EU-15	15.1	15.3	15.2	15.5	15.6	15.6	15.8	16.0	15.9	16.3	16.2	16.3	16.3
Very low work intensity (VLWI)	BEL	15.1	14.3	13.8	11.7	12.3	12.7	13.8	13.9	14.0	14.6	14.9	14.6	13.5
	EU-15	9.7	9.6	9.3	8.7	9.5	10.5	11.2	11.2	12.0	12.2	11.6	11.4	10.8
Severe Material deprivation (SMD)	BEL	6.5	6.4	5.7	5.6	5.2	5.9	5.7	6.3	5.1	5.9	5.8	5.5	5.1
	EU-15	5.1	4.8	4.7	4.9	4.8	4.9	5.5	6.5	6.7	6.5	6.2	5.8	5.4
Persistent AROP	BEL			7.8	9.0	9.2	9.3	8.0	9.9	8.7	9.5	9.8	10.0	10.8
	EU-15			8.9	8.4	8.4	9.2	8.9	9.5	9.2	9.4	10.1	9.8	10.0
Relative poverty gap	BEL	17.8	19.4	17.8	17.2	18.1	18.0	18.6	18.7	19.2	18.8	17.4	19.4	17.7
	EU-15	19.8	20.2	20.1	19.5	19.8	20.3	20.3	21.1	21.7	21.7	21.8	22.3	22.2

Source: Eurostat 2018

Poverty and social exclusion

Table 95 provides an overview of the evolution of the selected indicators. For all indicators, lower values are to be preferred as they indicate lower levels of poverty or social exclusion.

We observe that in 2017 (income 2016), 15.9% of the Belgian population is at risk of poverty (AROP)[xx] (EU-15: 16.3%), 13.5% lives in a household with very low work intensity (VLWI)[yy] (EU-15: 10.8%) and 5.1% is severely materially deprived (SMD)[zz] (EU-15: 5.4%). The trend over the period 2005-2017 is relatively stable for all three indicators, with a minor improvement in SMD, a minor deterioration in AROP and an improvement followed by a deterioration for VLWI. Belgium performs at around the average for AROP

[xx] The **at-risk-of-poverty rate** is calculated as the share of people having an equivalised disposable income that is below 60 % of the national median equivalised disposable income. Contrary to indicators that measure income inequality (as the Gini), poverty indicators use one specific income threshold to determine the risk of poverty.

[yy] People living in households with **very low work intensity** are defined as people aged 0-59 years living in households where the household members of working age (18-59 years, not being a student aged 18-24) worked 20 % or less of their total potential during the previous 12 months.

[zz] Households are considered **severely materially deprived** if they unable to pay for at least four of the following nine items: (1) to pay their rent, mortgage or utility bills; (2) to keep their home adequately warm; (3) to face unexpected expenses; (4) to eat meat or proteins regularly; (5) to go on holiday; (6) a television set; (7) a washing machine; (8) a car; (9) a telephone.

and SMD (see also Figure 128 and Figure 136), but at the lower end with respect to VLWI (see also Figure 132).

Within the framework of the Europe 2020 strategy, a combination of the three indicators – AROP, SMD, VLWI – is monitored, defined as the population **at risk of poverty and social exclusion** (AROPE).[aaa] As shown in Table 95, there has been a slight improvement over time with respect to the AROPE, from 22.6% of the Belgian population at risk in 2005 to 20.3% in 2017. Belgium performs in line with the EU-15 average.

Table 95 provides information on two additional indicators: the population with a persistent risk of poverty[bbb] and the relative poverty gap.[ccc] In 2017 about 10.8% of the population is at a **persistent risk of poverty** (EU-15: 10.0%). This amounts to 67.9% of the population at risk of poverty in 2017 up from 61.2% in 2008. Hence, being at risk of poverty is generally a state that lasts at least several years. While Belgium performed better that the EU-15 average for the AROP indicator, the reverse is true with respect to persistent AROP (see also Figure 139). The **relative poverty gap** indicates that the median income of the population at risk of poverty is 17.7% below the poverty threshold in 2017. It is among the lowest in the EU-15 (EU-15: 22.2%).

In what follows, we look at the evolution of the indicators in comparison with our neighbouring countries and at a decomposition by age groups – children (aged 17 or less), people at working age (18-64 years old) and people age 65 or more – and for some indicators by educational attainment.

Population at risk of poverty

The risk of poverty has evolved differently over time for the different age groups (see Figure 130). The risk of poverty has decreased among the population aged 65, reducing to the poverty risk level in the general population. The risk of poverty remained at the same level for children and shows an upward trend for the population at working age. The poverty risk in the latter group is still lower than in the general population, but with important differences by educational attainment (see Figure 131). There has been a significant increase in poverty risk among the people with a low educational attainment from 18.7% in 2005 to 31.2% in 2017. The poverty risk for individuals with a medium educational attainment has risen from 11.1% in 2005 to 14.7% in 2017. With a value of 5.9% in 2017, the poverty risk is lowest and constant over time for individuals with a high educational attainment.

The share of persons with low educational attainment is, however, decreasing, over time.[10] According to the Labour Force Survey (Eurostat), this share decreased from 32.7% of all individuals at working age in 2005 to 23.3% in 2017. The share of people with medium educational attainment remained more or less constant over time with 38.5% in 2005 and 39.1% in 2017. The share of people with high educational attainment significantly increased from 28.8% in 2005 to 37.6% in 2017.

aaa The population **at-risk of poverty and social exclusion** is the share of people in households being either at risk of poverty, or having a very low work intensity or being severely materially deprived.

bbb The **persistent-at-risk-of-poverty rate** is defined as the share of people having an equivalised disposable income below 60% of the national median equivalised disposable income in the current year and in at least two of the preceding three years.

ccc The **relative poverty gap** is calculated as the difference between the median equivalised disposable income of all people at risk of poverty and the at-risk-of-poverty threshold (i.e. 60% of the national median equivalised disposable income), expressed as a percentage of the at-risk-of-poverty threshold. A higher value indicates lower incomes among the population at risk of poverty.

Figure 128 – Population at risk of poverty

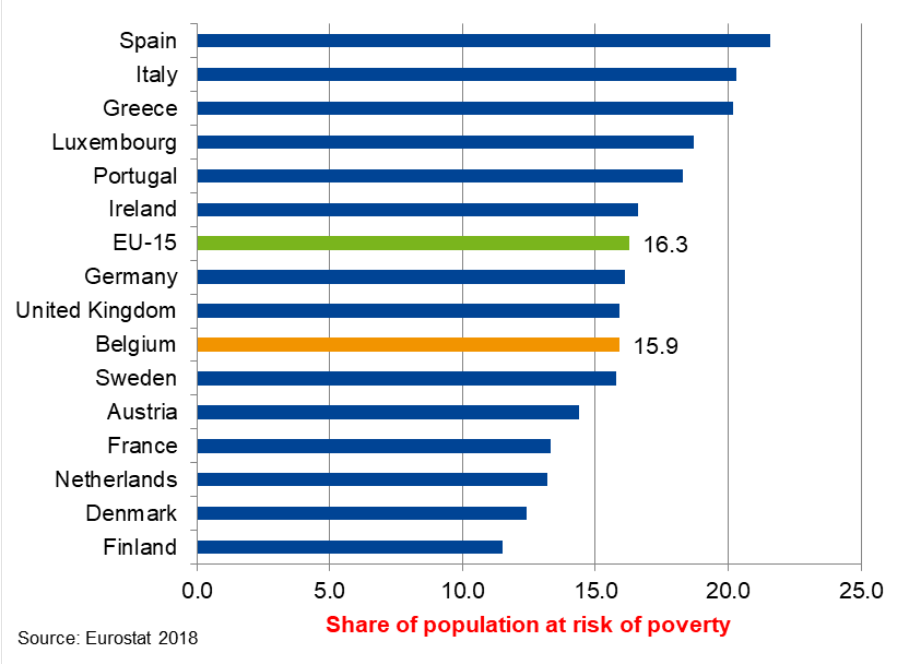


Figure 129 – Evolution of at-risk-of-poverty rate for selection of countries (years 2005-2017)

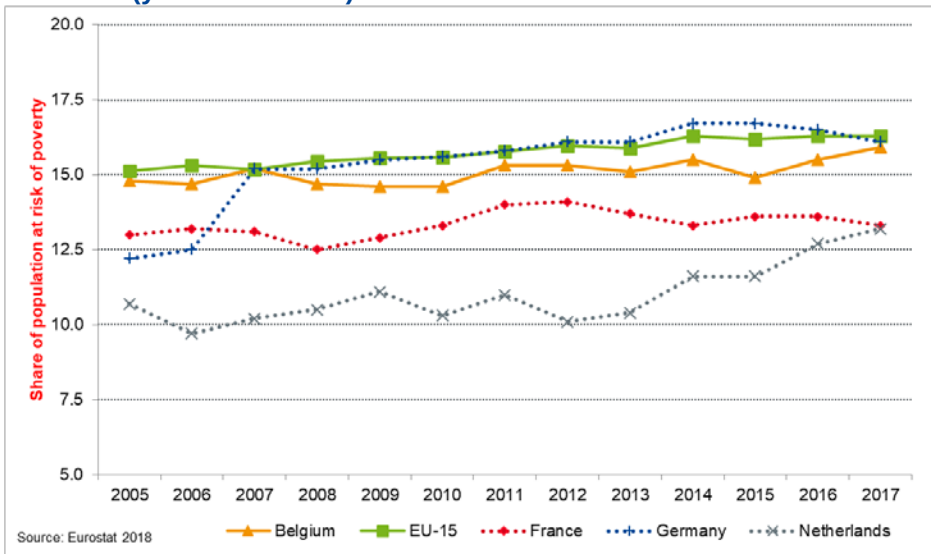


Figure 130 – Evolution of at-risk-of-poverty rate by age group (years 2005-2017)

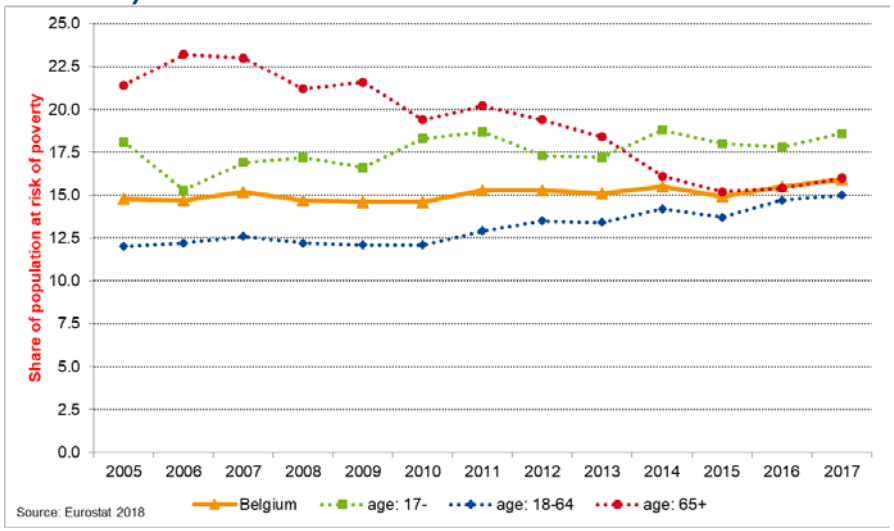
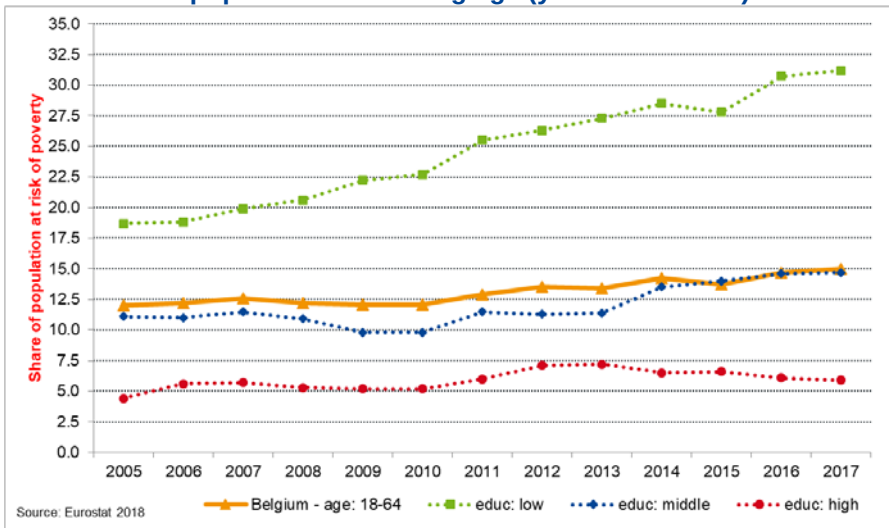


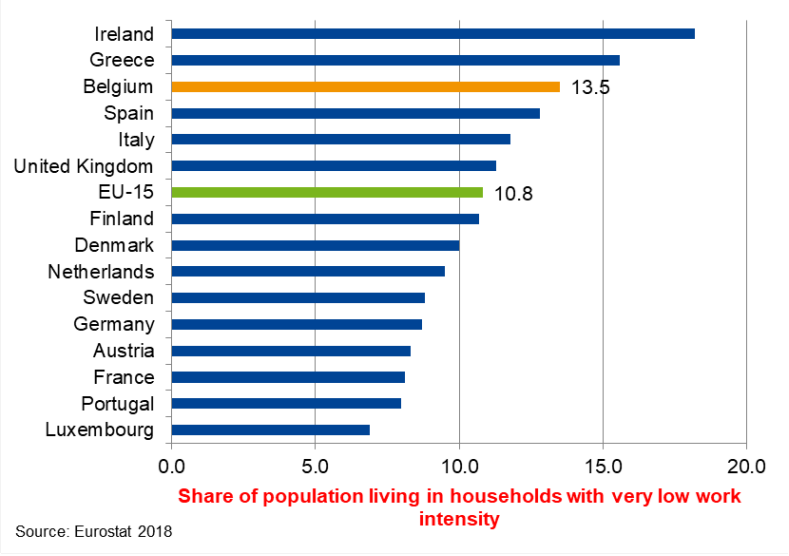
Figure 131 – Evolution of at-risk-of-poverty rate by educational attainment for population at working age (years 2005-2017)



Population living in households with very low work intensity

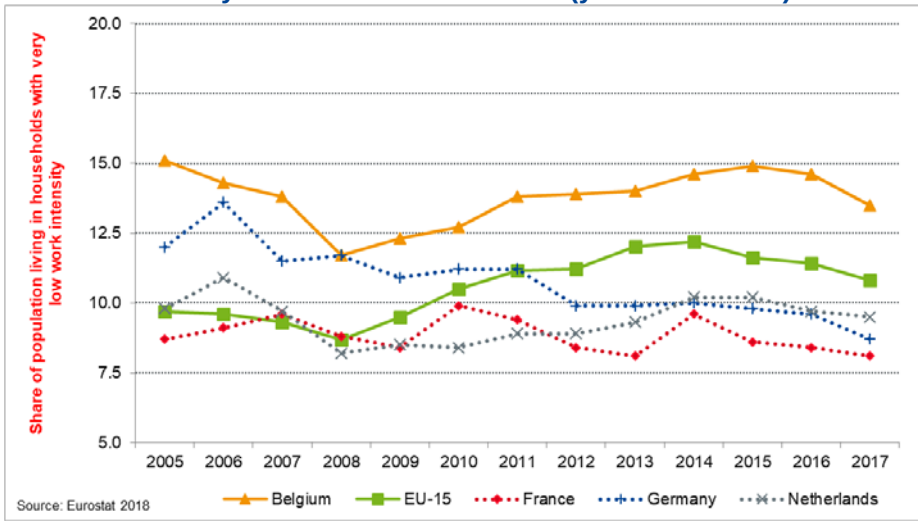
In Belgium a significant larger share of the population lives in households with very low work intensity compared to the neighboring countries (see Figure 132). While there is almost no difference by age group, there are significant differences by educational attainment. In line with the observation for AROP, Figure 135 shows that the indicator value is especially high among people with a low educational attainment. The share of the population living in households with very low work intensity are 31.2%, 13.4% and 5.3% for people with low, medium and high educational attainment, respectively.

Figure 132 – Population living in households with very low work intensity



Source: Eurostat 2018

Figure 133 – Evolution of population living in households with very low work intensity for selection of countries (years 2005-2017)



Source: Eurostat 2018

Figure 134 – Evolution of population living in households with very low work intensity by age group (years 2005-2017)

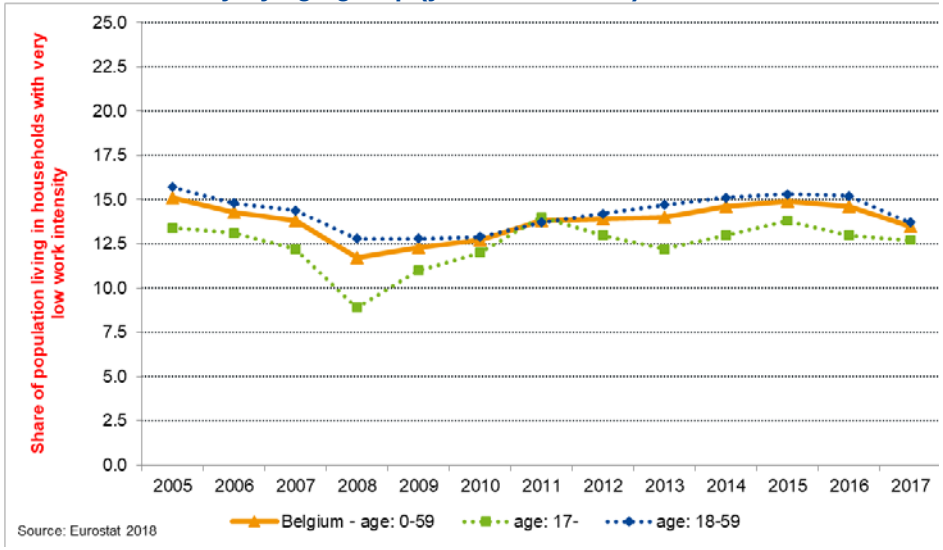
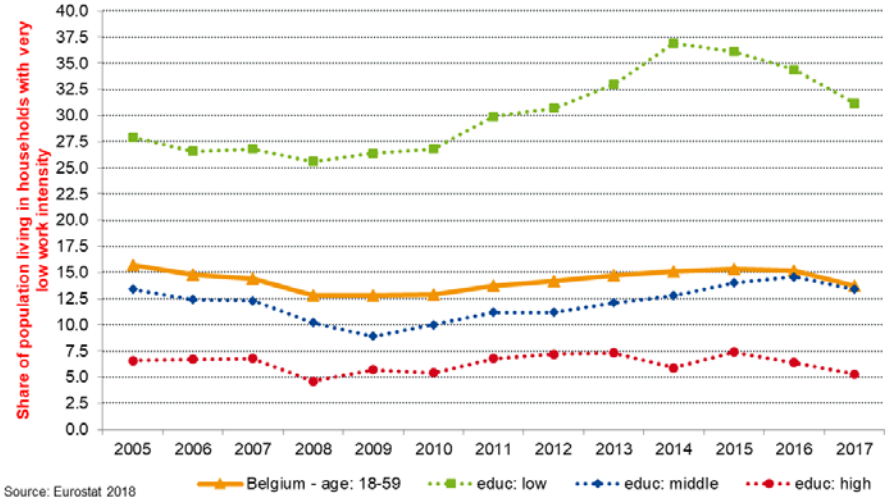


Figure 135 – Evolution of population living in households with very low work intensity by educational attainment for population at working age (years 2005-2017)



Severe material deprivation

The share of the population with severe material deprivation is in line with the EU-15 average, but it exceeds the share observed in our neighboring countries (see Figure 136). Severe material deprivation is markedly lower among individuals aged 65 or more (see Figure 138).

Figure 136 – Population with severe material deprivation

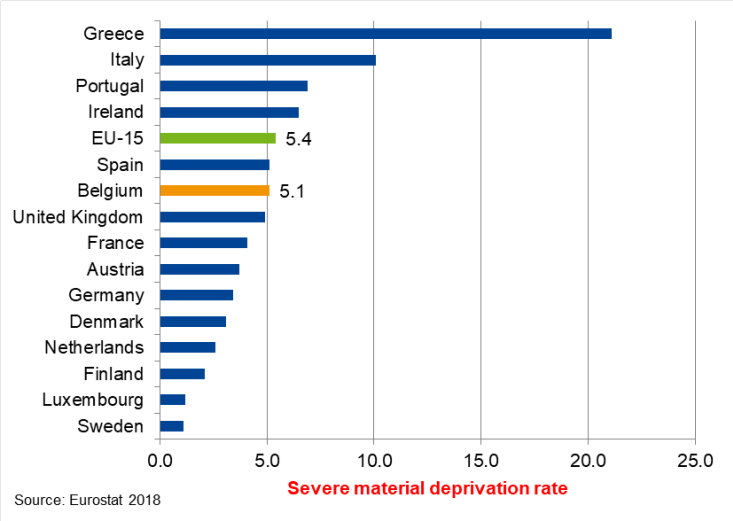


Figure 137 – Evolution of population with severe material deprivation for selection of countries (years 2005-2017)

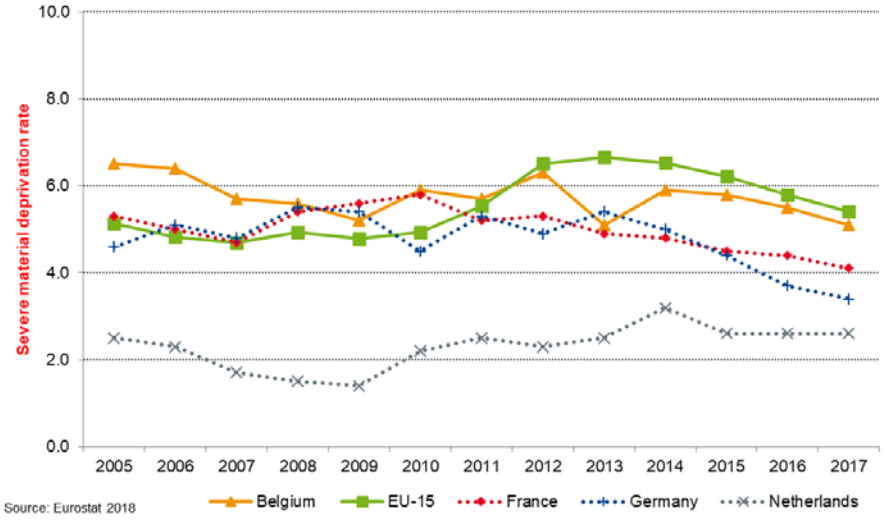


Figure 138 – Evolution of population with severe material deprivation by age group (years 2005-2017)

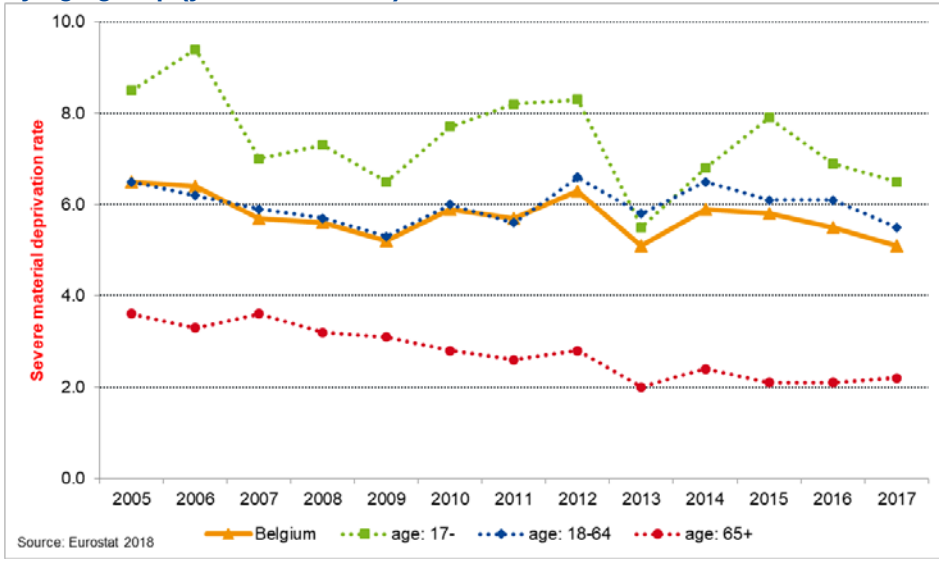
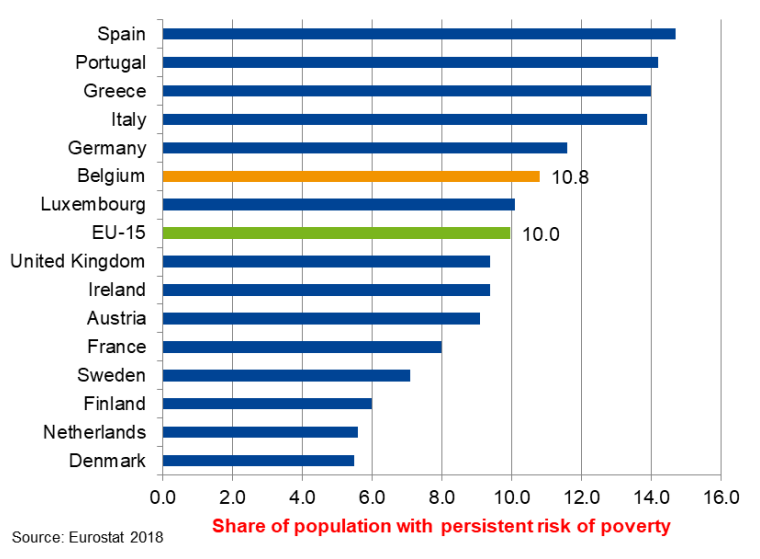


Figure 139 – Population with persistent risk of poverty



Population with persistent risk of poverty

The characteristics of the population with a persistent risk of poverty resemble those of the population at risk of poverty. There is a downward trend for the population aged 65 or more and an upward trend among the population at working age (see Figure 139).

Figure 140 – Evolution of population with persistent risk of poverty for selection of countries (years 2007-2017)

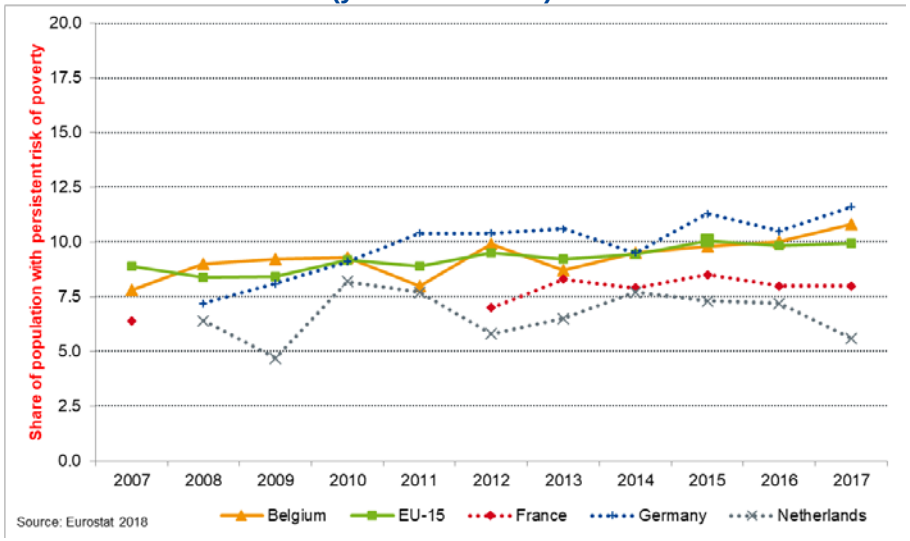
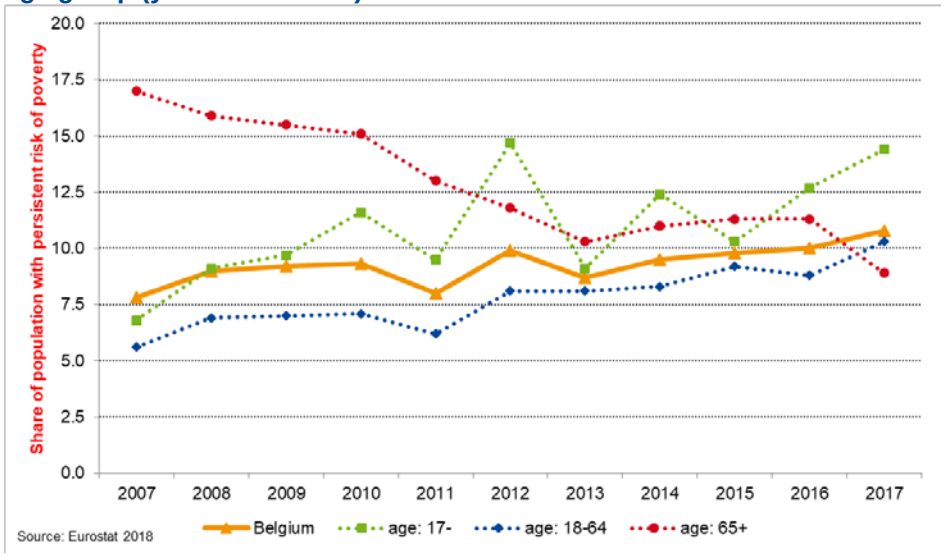


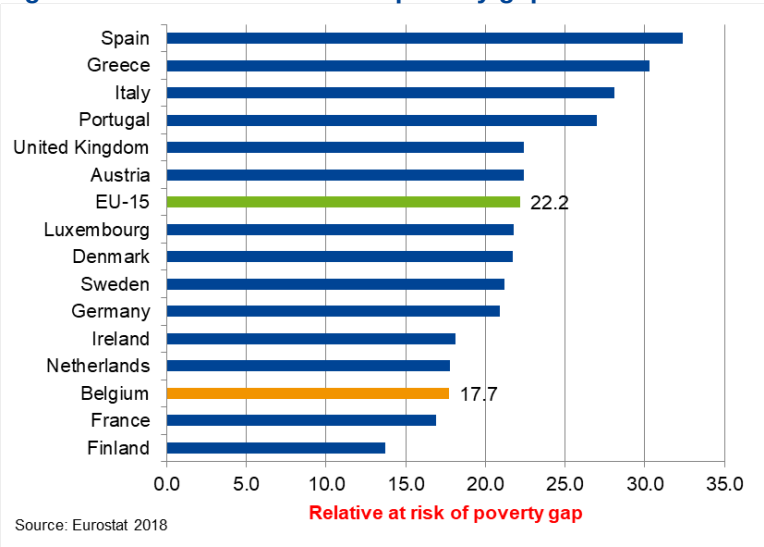
Figure 141 – Evolution of population with persistent risk of poverty by age group (years 2007-2017)



Relative at-risk-of-poverty gap

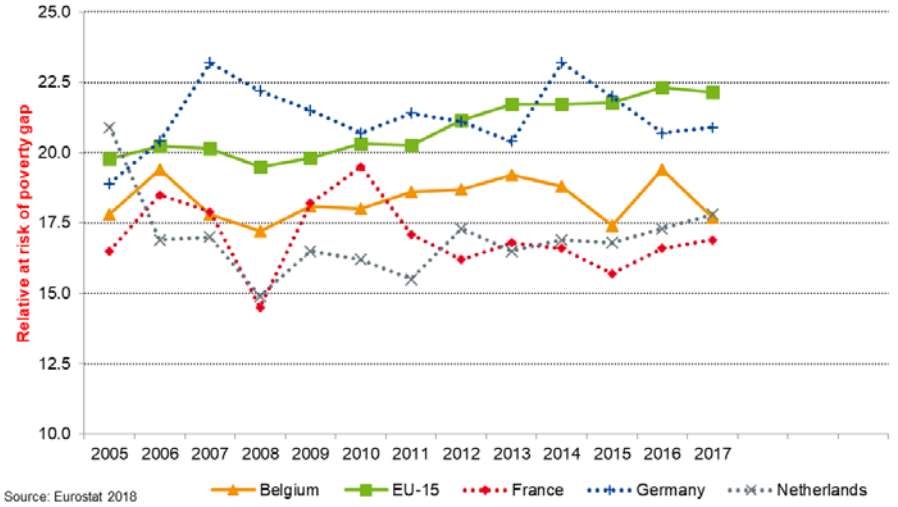
The relative at-risk-of-poverty gap in Belgium is low compared to the EU-15 average. It is in line with the values observed in France and the Netherlands (see Table 141). When looking at the decomposition by age, people aged 65 or more have the smallest value (11.8%) and experienced an improvement between 2005 and 2017 (see Table 142). The gap remained more or less the same for the other groups, with values of 19.3% and 19.5% in 2017 for children and people at working age, respectively.

Figure 142 – Relative at-risk-of poverty gap



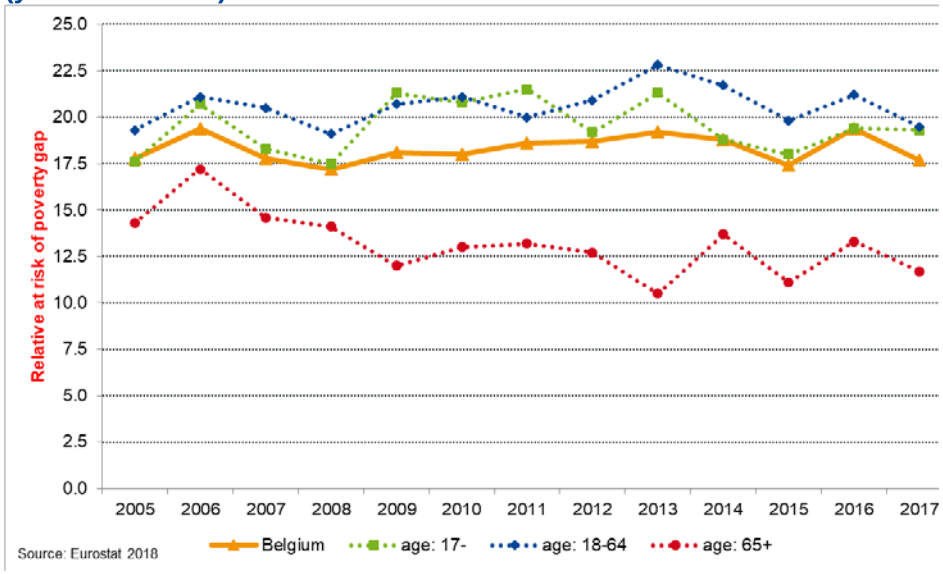
Source: Eurostat 2018

Figure 143 – Evolution of relative at-risk-of-poverty gap for selection of countries (years 2005-2017)



Source: Eurostat 2018

Figure 144 – Evolution of relative at-risk-of-poverty gap by age group (years 2005-2017)



Key points

- **Belgium is characterized by both an important middle class (contributing to a limited income inequality) and a relatively high poverty risk. Especially low educated individuals are at risk of living in households with very low work intensity and at risk of poverty.**
- **The income inequality in Belgium is relative high before the redistributive impact of taxes and transfers. Thanks to the system of taxation and transfers, Belgium is one of the most egalitarian countries.**
- **The high level of income redistribution and the less inegalitarian repartition of disposable incomes might have a positive impact on the different aspects of the Belgian population health and healthcare use**
- **One fifth of the population is at risk of poverty and social exclusion. Belgium performs in line with the EU-15 average. There are important differences by age and education level:**

o persons aged 65 or more have a relatively higher poverty risk that is however decreasing, but score better with respect to material deprivation and the relative poverty gap;

o working age individuals (18-64 years old) have the lowest poverty risk that is, however, increasing, but there exist substantial differences between low and high educated persons with respect to poverty risk and labour market participation;

o children aged 17 or less have an increased risk of poverty and material deprivation compared to the general population, without a clear upward or downward trend in the period 2005-2017.

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9.2. Financing progressivity (EQ-2, EQ-3)

9.2.1. Documentation sheet

Description	**The public healthcare system is financed through a mixture of direct and indirect taxes and social insurance contributions. Different financing sources have different implications with respect to redistribution and solidarity. We assess the progressivity and regressivity of the financing sources of the healthcare system. Progressive [regressive] financing implies an increasing [decreasing] relative contribution as function of income.**
Calculation	Since 2005, the financing of the Belgian social security system is based on the principle of pooling of receipts (the so-called 'financial global management'). That means that all resources used to finance social security are globalized and then transferred to the different branches of the social security in function of their respective financial needs. The financial global management is funded through social contributions, alternative financing (mainly value added tax (VAT), excises and withholding tax on capital income) and state subsidies. Contrary to most branches of the social security, the financing of the healthcare system is only partly funded through the financial global management. The budget also consists of some 'own receipts', that can be categorized as social contributions, alternative financing, and allocated and diverse receipts.. For the years 2007, 2011, 2015 and 2017, we decompose the various financing flows in the underlying parts: social contributions, alternative financing and state subsidies. For each of the sources we indicate whether they are progressive, proportional or regressive (see below). Next, four ratios are calculated: the proportion of, respectively, progressive, proportional, regressive and diverse/allocated receipts in the total receipts. A fifth ratio is calculated as the regressive receipts divided by the progressive receipts.
Rationale	Universal health coverage aims to ensure that everyone can use the health services they need without experiencing financial hardship or deepening poverty. This implies that the financial burden should not disproportionately rest on those who suffer from illness, i.e. it should be largely independent of the health risks. The decoupling of payments from utilization, however, does not provide guidance on what other criteria may be used to raise the necessary funds for the public healthcare system. It is generally presumed that payments should be determined by the household's ability to pay.[1-5] A rationale to relate payments for healthcare to ability to pay is that one does not want that these payments hinder people's ability to seek healthcare when ill. Another rationale is that one want to avoid that payments for healthcare reduce households' ability to consume other necessary goods and services such as food, housing and utilities.[5] It can be argued that income reflects one's ability to pay (consumption expenditures might be another indicator). In that case, the progressivity or regressivity of financing sources provides information on the extent to which financing is in line with ability to pay. Progressivity [regressivity] implies that payments relatively increase [decrease] as income – ability to pay – increases. Proportional financing implies that payments are proportional to ability to pay. The progressivity or regressivity of a financing source is one element to determine its redistributive impact – in addition to the amount of tax revenue raised by the source, and the extent to which households with a similar ability to pay are treated unequally. Progressivity is a necessary condition to have a positive redistributive effect, i.e. a redistribution from individuals with higher ability to pay to those with lower ability to pay. Moreover, it is in line with the vertical equity principle, which states that higher contributions should be made by households with a higher ability to pay.

Source (data and indicator)	FOD Sociale Zekerheid - SPF Sécurité sociale, RIZIV – INAMI, Nationale Bank van België – Banque Nationale de Belgique
Periodicity	2007, 2011, 2015, 2017
Technical definitions and limitations	The financing of the healthcare system can be defined as progressive [regressive] when the average tax rate is an increasing [decreasing] function of income. The financing system is called proportional if the average tax rate is invariant to the income level. The progressivity / regressivity of a financing source depends on the marginal tax rates as well as tax deductions and tax exemptions of some part of the income. We do not calculate the progressivity of each financing source (social contribution, alternative financing, and government subsidies). However, this will be done in a follow-up report on the equity in healthcare use and healthcare finance. Here, we characterize the 'system', in general terms. Based on previous research, we use certain assumptions with respect to progressivity / regressivity in terms of the disposable income.[6-9] - Allocated and divers receipts are not classified. They are about 5% to 7% of the budget for healthcare (see Table 98). - Social contributions are considered proportional. Given that low incomes are not subject to social security contribution, they can be in fact slightly progressive. - Alternative financing is generally composed of regressive financing sources, such as the value added tax (VAT) and excises. However, the withholding tax on capital income is considered progressive. - The status of government subsidies is somewhat ambiguous since they are composed of many different receipts. After subtracting federal taxes that are earmarked for specific purposes (such as the financing of the EU, the communities and regions and the alternative financing of the social security system), we have classified all the different types of receipts of the federal government as regressive or progressive (except for the corporate tax which was not classified). We find that between 2007 and 2014 about two thirds of the remaining receipts are progressive (mainly the personal income tax) and one third regressive (mainly the remaining indirect taxes) (see Table 97). Since the 6th state reform, regressive taxes have gained importance in the general means of the federal government. The reason is that a larger share of the personal income tax is used to finance the regions and communities and a smaller part of the VAT is transferred to the social security system (see Table 97). - Another implication of the 6th state reform is that the communities have taken over certain competences with respect to the healthcare budget. Hence, to follow the evolution of the budget over time in a consistent way, the financing by the communities through state subsidies has to be taken into account. The budget of the regions and communities is split in nearly equal shares between progressive (mainly the personal income tax and wealth tax) and regressive taxes (mainly value added tax and other indirect taxes and contributions) (see Table 97). We consider here the public **financing of the healthcare system**. We do not take into account the amounts paid at the 'point of care' (the out-of-pocket costs) that we consider as a private financing. Wagstaff and van Doorslaer meanwhile present an estimation of progressivity indices for public and private source of financing.[1,2,10]
International comparability	International comparisons are not pertinent because the part of public/private financing of the total healthcare expenditure is substantially different in all countries.
Dimensions	Contextual indicator of equity - Equity of the financing
Related performance indicators	Ratio **proportional** receipts/total receipts, **progressive** receipts/total receipts, **regressive** receipts/total receipts, **regressive** receipts/**progressive** receipts

9.2.2. Results

Table 96 presents a breakdown of the public budget for healthcare by type of financing source for the years 2007, 2011, 2015 and 2017. Table 97 provides an overview of the proportion of progressive and regressive tax revenue in the budget of the federal and regional governments. This distribution is used to subdivide government subsidies to the healthcare budget in progressive and regressive financing sources. Table 98 translates Table 96 into 5 ratios: proportion of progressive receipts in total receipts, proportion of proportional receipts in total receipts, proportion of regressive receipts in total receipts, proportion of other receipts in total receipts, ratio of regressive receipts to progressive receipts.

From these different Tables, we conclude that:

- In the **period 2007 to 2011**, there was an important increase in the budget for healthcare, with an average annual growth of 4.2% in real terms. The increase in the budget was funded mainly through an increase in value added tax (VAT), a source of alternative financing. The share of alternative financing increased from 22.8% to 31.6%. The share in government subsidies remained constant at about 9.5%, while the share of social contributions decreased from 61.5% to 53.8%. As a result the proportion of regressive receipts has increased over this period, whereas the share of proportional receipts has declined.
- In the **period 2011 to 2015**, the increase in the budget for healthcare was limited to an average annual growth of 0.5% in real terms. There is however an important shift in financing sources. We observe an increase in government subsidies from 9.5% to 21.2%. As a consequence of the 6th state reform, the communities take over certain competences related to healthcare and hence contribute to the budget through government subsidies. The alternative financing, and especially the contributions from VAT are reduced. The share of alternative financing drops from 31.6% to 15.5%. Social contributions slightly gain in importance and have a share of 57.8% in 2015. In terms of progressive and regressive receipts, we find an increase of the former and a decrease of the latter. The ratio regressive receipts to progressive receipts has fallen significantly.
- In the **period 2015 to 2017**, the average annual growth remains at 0.5% in real terms. We observe the effects of the tax shift, and in particular the reduction of social contribution from employers. The share of social contributions in the budget decreases to 52.6%. Moreover, the alternative financing of social security has been reformed. Receipts from excises are replaced by receipts from the withholding tax on capital income. This implies a shift from regressive to progressive financing. In addition receipts from VAT have increased again, leading to a higher share (18.0%) of alternative financing.

Table 96 – Structure of the financing of the public healthcare system (2007, 2011, 2015, 2017)

Public financing of the health system	2007		2011		2015		2017 (provisional)	
	Amount (million €)	Budget share	Amount (million €)	Budget share	Amount (million €)	Budget share	Amount (million €)	Budget share
Social contributions - total	13 938	61.5%	15 858	53.8%	18 230	57.8%	17 469	52.6%
Employers	4 074	18.0%	4 494	15.3%	4 866	15.4%	4 832	14.6%
Employees	8 011	35.4%	8 833	30.0%	10 471	33.2%	9 661	29.1%
Self-employed	825	3.6%	1 266	4.3%	1 462	4.6%	1 399	4.2%
Pensioners	719	3.2%	920	3.1%	1 066	3.4%	1 221	3.7%
Special social contribution	310	1.4%	345	1.2%	365	1.2%	357	1.1%
Alternative financing - total	5 172	22.8%	9 298	31.6%	4 905	15.5%	6 934	20.9%
Value added tax	4 124	18.2%	8 168	27.7%	3 660	11.6%	5 963	18.0%
Excises (tobacco and packaging)	825	3.6%	886	3.0%	926	2.9%	0	0.0%
Withholding tax on dividends and interest payments	161	0.7%	158	0.5%	208	0.7%	971	2.9%
Other	62	0.3%	85	0.3%	111	0.4%	0	0.0%
Government subsidies	2 180	9.6%	2 797	9.5%	6 688	21.2%	6 597	19.9%
Federal government	2 180	9.6%	2 797	9.5%	3 008	9.5%	2 077	6.3%
Regional government	0	0.0%	0	0.0%	3 680	11.7%	4 520	13.6%
Own allocated receipts	1 019	4.5%	1 029	3.5%	1 147	3.6%	1 136	3.4%
Diverse receipts	340	1.5%	486	1.6%	589	1.9%	1 052	3.2%
Total	22 648	100.0%	29 468	100.0%	31 558	100.0%	33 188	100.0%
Total (in € 2007)[a]	22 648		26 669		27 222		27 488	

[a] *amounts corrected by the evolution of the consumer price index.*

Sources: SPF – FOD Social Security, Year reports of National Social Security Office, Vade Mecum of financial and statistical data on social protection in Belgium, Year reports of National Institute for the Social Security of the Self-employed, Budget for healthcare by National Institute for Health and Disability Insurance, Book 2018 on Social Security by Court of Audit, National Accounts, KCE calculations

Table 97 – Share of progressive and regressive tax revenue

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Federal government											
Proportion regressive	32%	26%	35%	31%	32%	32%	31%	29%	36%	45%	41%
Proportion progressive	68%	74%	65%	69%	68%	68%	69%	71%	64%	55%	59%
Regions and communities											
Proportion regressive	49%	49%	48%	49%	49%	48%	48%	48%	48%	45%	45%
Proportion progressive	51%	51%	52%	51%	51%	52%	52%	52%	52%	55%	55%

Note: the corporate tax and sources that are earmarked for specific purposes or transferred to other entities are not considered. Progressive = personal income tax, capital income tax, wealth tax; Regressive = indirect taxes on e.g. products, services, insurance premiums, licenses and contributions.
Source: National Bank of Belgium, KCE calculations

Table 98 – Progressivity indicators of the financing of the public healthcare system (2005-2014)

Indicators of progressivity/regressivity	2007	2011	2015	2017 (provisional)
Ratio proportional receipts/total receipts (in %)	61.5%	53.8%	57.8%	52.6%
Ratio progressive receipts/total receipts (in %)	7.3%	7.0%	12.8%	14.1%
Ratio regressive receipts/total receipts (in %)	25.2%	34.1%	23.9%	26.7%
Ratio diverse + own allocated receipts/total receipts (in %)	6.0%	5.1%	5.5%	6.6%
Ratio regressive receipts/progressive receipts	3.47	4.87	1.86	1.89

Sources: SPF – FOD Social Security, Year reports of National Social Security Office, Vade Mecum of financial and statistical data on social protection in Belgium, Year reports of National Institute for the Social Security of the Self-employed, Budget for healthcare by National Institute for Health and Disability Insurance Book 2018 on Social Security by Court of Audit, National Accounts, KCE calculations

Key points

- **The public financing of the healthcare system becomes more progressive, especially since the 6th state reform. Nonetheless, both the share of proportional receipts and regressive receipts exceed the share of progressive receipts.**
- **Proportional receipts follow a downward trend given a declining importance of social contributions as financing source.**

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10. PREVENTIVE CARE

10.1. Vaccination against selected childhood infectious diseases (P-1, P-1, P-3)

Description	Percentage of **infants** who have been fully vaccinated against important infectious childhood diseases. The following coverage will be monitored: Poliomyelitis, Diphtheria, Tetanus, Pertussis, Pneumococcus. Percentage of **infants and adolescents** who have been fully vaccinated against Measles
Calculation	**Diphtheria-tetanus-pertussis, poliomyelitis, pneumococcus** Percentage of infants of 18-24 months who have been fully vaccinated for this age according to national vaccination schedules, against pertussis, diphtheria, tetanus, poliomyelitis (4 doses) or pneumococcus (3 doses). **International comparisons**: Only full vaccination coverage by vaccine preventable disease should be compared. National vaccination schemes differ between countries qua age and number of doses. As currently published international figures do not always display this full coverage, we do not use them and we do not present international comparison. **Measles** Percentage of infants reaching their 2nd birthday in the given calendar year who have been fully vaccinated against measles (first dose). Percentage of adolescents who have received the second dose of vaccination against measles.
Rationale	Immunisation is one of the most powerful and cost-effective forms of primary prevention. It is a classical prevention strategy which should be maintained to ensure collective protection. Moreover, Belgium has signed the international commitment to eliminate measles, which implies a vaccination coverage of 95% for the first and the second dose of measles, and the European Vaccine Action Plan (1;1;2). The choice of the specific vaccine preventable diseases in our indicator set is a sub-selection of the vaccination indicators from ECHIM (3) that has been updated to recent vaccination schemes.
Primary Data source	Regional vaccination coverage surveys organized by the regions/communities ; for adolescents: school surveys in Wallonia and Brussels
Indicator source	By region: vaccination surveys reports: 2015 for Wallonia, 2016 for Flanders and 2012 for Brussels (4-6). For measles coverage in adolescents in Wal-Bxl (7) For the Belgian pooled values : Sciensano (Service of Epidemiology of Infectious Diseases)
Periodicity	Vaccination coverage surveys occur every 3-4 years (5-6 years in Brussels)

Technical definitions and limitations	In Belgium, vaccination is a regional health competence and the vaccination coverage rates are measured at regional level. A "national" vaccination coverage rate is computed afterwards as a weighted average of the 3 regional rates, assuming that the rates remain constant during the inter-survey period. Vaccination schedule: for poliomyelitis, diphtheria, tetanus and pertussis, the complete schedule in Belgium foresees 4 doses. For pneumococcus, it comprises 3 doses. For measles, the target for measles elimination is to reach a 95% coverage of the 1st (at 12 months) and 2nd dose (which is given around 11-12 years in Belgium). However, coverage for the 2nd dose is not measured the same way in Flanders, Brussels and Wallonia, and is therefore difficult to be compared, including the possibility of underestimation in Brussels and Wallonia. Note that it can be that a small percentage of infants was fully vaccinated in a country with another schedule and therefore misclassified as not fully vaccinated.
Targets and critical immunization rates	The critical immunisation rate (minimal level to reach herd immunity ensuring a collective protection) varies according to authors [4]. Based on those ranges, WHO has recommended minimal targets to reach: 90% for DTP and polio, 95 % for measles. The Superior Health Council [8] recommends a 95% coverage for poliomyelitis.

Table 99 – critical immunization threshold and WHO immunization target rates.

Disease	Critical threshold	WHO target	Belgian Superior Health Council
Poliomyelitis	80-93%	90%	95%
Diphtheria	80-85 %	90%	
Pertussis	92-95%	90%	
Pneumococcus	70%	/	
Measles 1 and 2	92-95%	95%	

10.1.1. Results

Table 100 summarises the immunization rates for polio, DTP, pneumococcus and measles at Belgium level. Those national rates are computed by Sciensano as a weighted average from the regional rates.

At national level, there is a stability of the vaccination coverage rate for polio and DTP vaccines, around 93%. This level is sufficient for diphtheria, but slightly lower than the (Belgian) target for polio, and slightly lower than the critical threshold for pertussis.The national coverage is sufficient for pneumococcus.

The national coverage for the 1st dose of measles vaccination has reached the 95% target since 2012. However, the coverage for the 2d dose of measles vaccination is too low.

The regional figures are displayed in Table 101 vaccination coverage used to be much lower in Wallonia and Brussels than in Flanders. The 2015 survey revealed that the rates in Wallonia are now very close to the rates in Flanders (no survey was done in Brussels in 2015-2016). The rates of measles vaccination has now reached the 95% target in Wallonia for the 1st dose. The only exception is the coverage of the 2nd dose of measles vaccination, which is much lower in Wallonia. However, the measurement method differs between the regions, rending the rates difficult to compare.

Table 100 – National immunisation rates (weighted average) by disease, Belgium 2009-2016

Year	2009	2012	2016
Surveys used for calculation of weighted average	VL2008 RW2009 Bxl2006	VL2012 RW2012 Bxl2012	VL2016 (5) RW2015(4) Bxl2012(6) Bxl-Wall 2015-16 for MMR2 (9)
Polio 4	93.0%	92.0%	93.0%
DTP 4	93.0%	91.9%	92.7%
Pneumococcus (PCV) 3		93.3%	93.6%
MMR 1	94.5%	95.6%	95.7%
MMR 2 *	83.1%	85.0%	85.1%

Green: reaching the critical threshold and national target; Yellow: reaching critical threshold but not national target, or very close to critical threshold; Red: far from the target/threshold
VL = Flanders; RW = Wallonia; Bxl = Brussels
Source=official national estimates (Institute of Public Health), computed from the weighted average of the regional survey results

Table 101 – Regional immunization rates against selected diseases by region; 2012 and 2015-2016 regional vaccination surveys.

Vaccine and dose	Flanders 2012	Brussels 2012	Wallonie 2012	Flanders 2016	Brussels 2015	Wallonie 2015
polio 4	93.2%	91.1%	90.4%	93.6%	no new survey	92.9%
DTP 4	93.0%	91.1%	90.4%	93.0%	no new survey	92.9%
Pneumococcus (PCV) 3	96.5%	90.1%	89.2%	94.9%	no new survey	92.9%
MMR 1 / MCV 1	96.6%	94.1%	94.4%	96.2%	no new survey	95.6%
MMR 2	92.5%	75.5% (2008-2009)	75.5% (2008-2009)	93.4%	75.0% (2015-2016)	75.0% (2015-2016)

For MMR2: the method differs by region (school survey for Wallonia and Brussels, survey in general population for Flanders)

Keypoints

- **For the polio vaccine: the coverage of full vaccination (4 doses) reaches the critical threshold for collective immunisation, but not the national target (95%).**
- **For the DTP vaccine: the coverage of full vaccination (4 doses) is near to the critical threshold, but still a bit too low for pertussis. Many small outbreaks are still observed for pertussis.**
- **For the pneumococcus: the coverage is satisfying.**
- **For measles: for MMR1, the coverage of 95% is now reached in the 3 regions. The MMR2 coverage is too low in all the 3 regions; in Flanders it almost reaches the threshold, but in Wallonia and Brussels the coverage is quite low. However, the methodology differs between the regions, and the coverage in Brussels and Wallonia may be underestimated. An effort is still to be done to avoid measles outbreaks.**

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10.2. Vaccination against influenza for the elderly (P-4)

10.2.1. Documentation sheet

Description	Proportion of the population aged 65 years and over that were vaccinated against influenza
Calculation	Numerator: number of individuals aged 65 years and over who received a dose of influenza vaccine during the past calendar year.[ddd] Denominator: number of individuals aged 65 years and over Because results are based on sickness funds data, all calculations are based on elderly patients who are not residing in an institution (see section limitation for details).
Rationale	Influenza vaccines are considered as the most effective preventive tool to reduce disease burden and severe disease due to influenza in individuals. In Belgium, seasonal influenza vaccination is currently recommended for the prevention of influenza for all persons aged 65 years and over and for all persons living in institutions (among other groups). [1] The WHO recommends a target a 75% vaccination rate for the elderly. [2]
Primary data source	There are two sources of results for this indicator: • Results presented in this report are based on billing data (IMA data) of influenza vaccines which have been reimbursed. • Results presented in international databases (OECD, Eurostat) are based on Belgium health interview survey (HIS) (self-reported vaccination status). [3,4]
Technical definitions	In IMA data: all vaccines belonging to the ATC 4 class J07BB (anti-influenza vaccines).
Limitation	In IMA data, only vaccines which have been reimbursed are taken into account.

ddd This definition differs from epidemiological studies, where rates are generally calculated on one influenza season, which usually overlaps two calendar years.

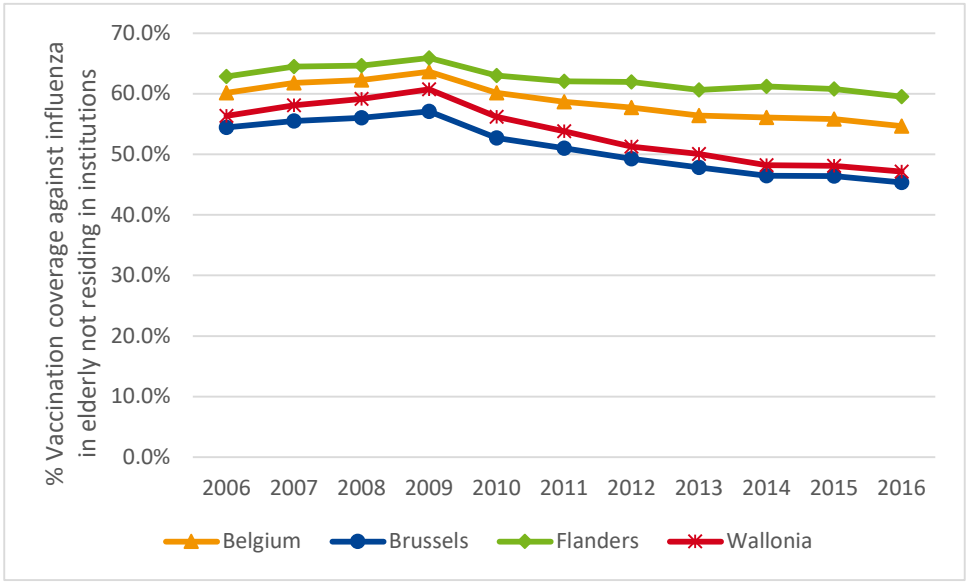
	In Flanders, since 2010, vaccines are free of charges for elderly residing in elderly and nursing homes: vaccines are bought as a group by the Flemish community, and hence are not reimbursed by sickness funds, and do not appear in the IMA database (source: Agentschap voor Zorg and Gezondheid). Hence all calculations for this indicator exclude (from numerator and denominator) elderly residing in elderly or nursing homes, which may result in an underestimation of the true coverage rate. As a sensitivity analysis, this indicator is computed including the elderly residing in elderly or nursing homes, but for Wallonia and Brussels only. In the Health Interview survey, results are based on self-reported vaccination status.
International comparability	ECHIM, OECD and Eurostat data are based on Health interviews. International comparisons are also regularly published by the ECDC, but Belgium did not participate to last publication of the groups. [5]
Dimension	Accessibility of preventive care

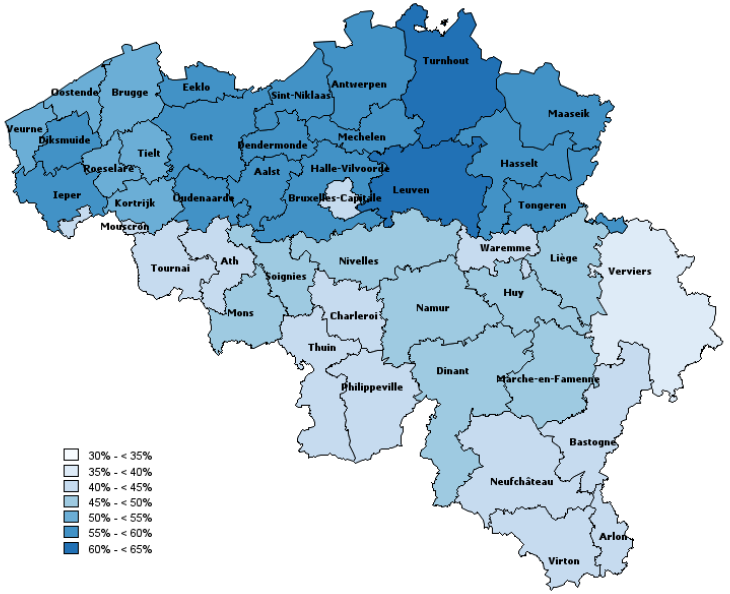
10.2.2. Results

10.2.2.1. Belgium

Based on reimbursement data, vaccination rates against influenza for patients aged 65 years old have increased from 60% in 2006 to 63.6% in 2009, then decreased to 54.7% in 2016 (Figure 145 this decrease has been partly explained by disbelief in flu vaccine after the A/H1N1 epidemics [6]). There is a higher coverage rate in Flanders (59.5%) than in Wallonia (47.1%) and Brussels (45.4%), and larger differences between patient districts (see Table 102 and Figure 145 on the right). All the previous results exclude elderly residing in institution (which account for 8.5% of the population of elderly patients in 2016) because in Flanders influenza vaccines for this population are bought directly by the regional health authority. A sensitivity analysis was performed including elderly residing in institutions, limiting the analysis to Wallonia and Brussels. The vaccination coverage, then globally reaches 49.5% (coming from 46.8%), is improved both in Wallonia (from 47.1% to 49.8%) and in Brussels (from 45.4% to 48.5%) due to the high rate (82.1%) measured in institutions (81.1% in Brussels and 82.3% in Wallonia). There are also large differences in coverage rates by patient age: while the rate only reaches 40.1% for the 64-69 years old, it improves to 68.8% for the 80+ (Table 102). The same data also show that there is no accessibility problem for people having preferential reimbursement entitlement.

Figure 145 – Coverage of vaccination against influenza in people aged 65 years and over, by region (2006-2016) and by district (2016)





Source: IMA data, KCE calculation.
Note: ***People residing in institution are excluded from the analysis*** *(see section limitation in technical fiche for details).*

Table 102 – Coverage of vaccination against influenza in people aged 65 years and over, by patient characteristics (2016)

		BELGIUM CALCULATION, INSTITUTIONS EXCLUDED.			WALLONIA+BRUSSELS CALCULATION, INSTITUTIONS INCL.		
Variable	**Category**	**Numerator**	**Denominator**	**Influenza vaccination coverage**	**Numerator**	**Denominator**	**Influenza vaccination coverage**
Data 2016 by categories							
Age (years)	65-69	237 814	592 504	**40.1%**	81 794	243 300	**33.6%**
	70-74	241 590	462 768	**52.2%**	79 948	176 731	**45.2%**
	75-79	221 945	358 772	**61.9%**	76 108	137 266	**55.4%**
	80-84	191 401	283 404	**67.5%**	71 252	114 486	**62.2%**
	85-89	113 571	161 303	**70.4%**	53 067	78 540	**67.6%**
	90-94	36 786	51 819	**71.0%**	24 463	34 155	**71.6%**
	95-99	5250	7626	**68.8%**	5319	7323	**72.6%**
	>=100	370	607	**61.0%**	548	793	**69.1%**
Gender	Female	582 868	1 056 154	**55.2%**	233 237	460 541	**50.6%**
	Male	465 859	862 649	**54.0%**	159 262	332 053	**48.0%**
Entitlement to increased reimbursement	No	758 146	1 414 012	**53.6%**	272 318	564 527	**48.2%**
	Yes	290 581	504 791	**57.6%**	120 181	228 067	**52.7%**
Long term care	Home care	67 316	95 184	**70.7%**	19 513	31 096	**62.8%**
	Institutions	-	-	**-**	50 207	61 161	**82.1%**
	No long term care	981 411	1 823 619	**53.8%**	322 779	700 337	**46.1%**
Region	Brussels	62 331	137 379	**45.4%**	72 943	150 457	**48.5%**
	Flanders	706 435	1 187 370	**59.5%**	-	-	**-**
	Wallonia	279 961	594 054	**47.1%**	319 556	642 137	**49.8%**
	Brussels + Wallonia (sensitivity analysis)	342 292	731 433	**46.8%**	392 499	792 594	**49.5%**

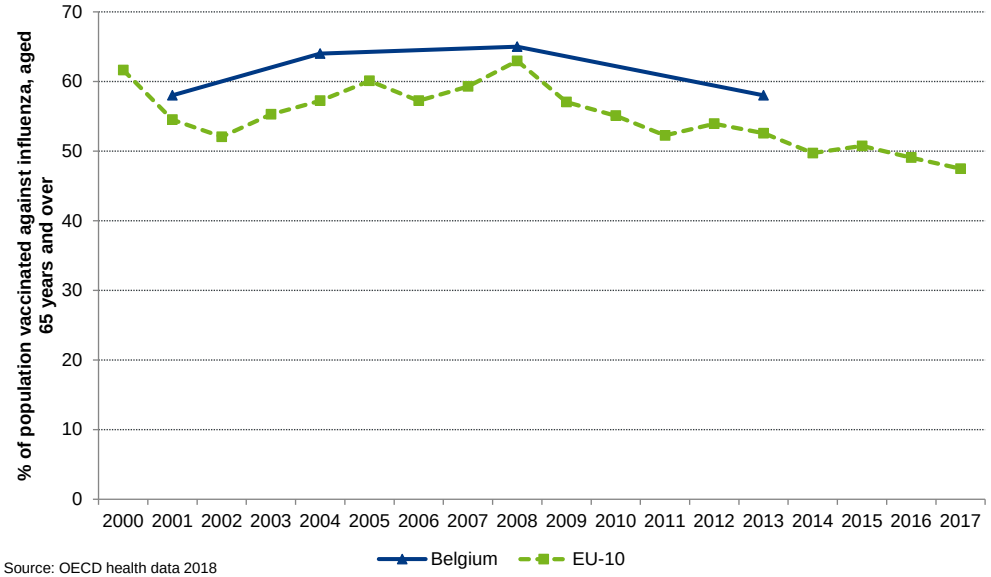
		BELGIUM CALCULATION, INSTITUTIONS EXCLUDED.			WALLONIA+BRUSSELS CALCULATION, INSTITUTIONS INCL.		
Variable	**Category**	**Numerator**	**Denominator**	**Influenza vaccination coverage**	**Numerator**	**Denominator**	**Influenza vaccination coverage**
Province	Antwerpen	192 078	318 808	**60.3%**	-	-	**-**
	Brabant Wallon	33 261	67 141	**49.5%**	37 238	71 798	**51.9%**
	Bruxelles-Capitale	62 331	137 379	**45.4%**	72 943	150 457	**48.5%**
	Hainaut	103 926	220 979	**49.9%**	119 276	239 344	**49.8%**
	Limburg	94 380	153 660	**61.4%**	-	-	**-**
	Liège	84 291	182 965	**46.1%**	96 661	198 377	**48.7%**
	Luxembourg	18 872	41 743	**45.2%**	21 654	45 036	**48.1%**
	Namur	39 611	81 226	**48.8%**	44 727	87 582	**51.1%**
	Oost-Vlaanderen	159 533	268 298	**59.5%**	-	-	**-**
	Vlaams Brabant	120 370	197 169	**61.0%**	-	-	**-**
	West-Vlaanderen	140 074	249 536	**56.1%**	-	-	**-**

Note: ***People residing in institution are excluded from the analysis on Belgium (on the left of the table) but included on the analysis on Wallonia and Brussels (on the right of the table)*** *(see section limitation in technical fiche for details).Source: IMA data, KCE calculation*

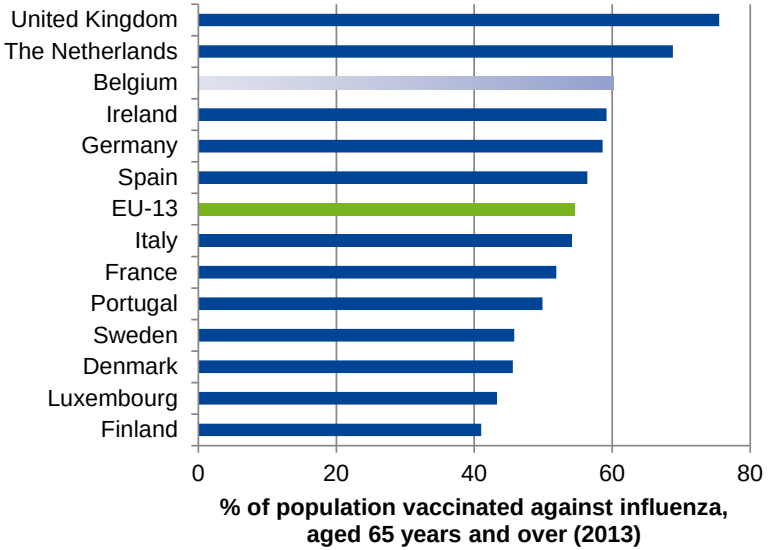
10.2.2.2.International comparison

International comparisons are based on results from HIS survey or reimbursement data. Based on the last results from the Health interview survey, coverage of influenza vaccination in Belgium for 2013 was 60.2% in this age group (this is only slightly superior to the results obtained by the billing IMA data, 56.4%). Compared to other European countries, this is above the EU-15 average (55%).

Figure 146 – Coverage of vaccination against influenza for elderly: international comparison (2013, trend 2000-2017)



Source: OECD health data 2018



Source: OECD Health Statistics 2015

Source: Data from Belgium are based on the Health Interview Survey.
Note: fluctuation of the EU-15 is an artefact of the availability of the coverage data of the different countries.

Key points

- **In 2016, the vaccination coverage against influenza of people aged 65 years and over (and not residing in an institution) was 54.7%, below the WHO target of 75%. It decreased since 2009 (63.6%), as it did in the majority of EU-15 countries.**
- **In 2013, Belgium has a higher influenza vaccination coverage than EU-15 countries.**
- **Vaccination rates for 65+ years old (in 2016) are higher in Flanders (60.6%) than in Wallonia (50.1%) and Brussels (47.8%), and globally also higher for people aged 80+**
- **There is no accessibility problem to influenza vaccine for people entitled to preferential reimbursement.**

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10.3. Incidence of measles (P-5)

10.3.1. Documentation sheet

Description	Incidence of measles per million inhabitants
Calculation	Number of cases of measles notified in a given year, divided by the population
Rationale	Measles is a highly communicable diseases caused by the measles virus; complications are frequent (30%), and very severe complications occur in 4 on 1000 cases in developed countries (death or encephalopathy with permanent brain damages).[1] The European countries have committed to eliminate measles, as proposed by the WHO Regional Office for Europe.[2,3] The target is to reach an incidence rate lower than 1 per million inhabitants.[3]
Primary data source	Sciensano, Service "Epidemiology of Infectious Diseases"[4]
Source of results	For Belgium: Sciensano, Service "Epidemiology of Infectious Diseases" For EU: ECDC publishes yearly data based on TESSy inputs from each member state. These data are available via https://atlas.ecdc.europa.eu/public/index.aspx and are reused for international comparison purposes by OECD and WHO.
Technical definitions	Case definition: cases are defined by the EU as "possible" (clinical only), "probable" (clinical and an epidemiological link with a confirmed case) or "confirmed" (clinical and laboratory).[5] All 3 categories of cases are pooled and reported together for the computation of incidence. From 2003 to 2009, cases were reported through a network of paediatricians, PediSurv, at Sciensano. Mandatory notification in Belgium has only started in June 2009. Since 2010 cases are reported by several sources to Sciensano: • national reference centre for measles, mumps and rubella [https://nrchm.wiv-isp.be/fr/centres_ref_labo/measles_et_rubellavirus/default.aspx] • sentinel laboratories [https://epidemio.wiv-isp.be/ID/Surveillance/Pages/sentinelLabs.aspx] • mandatory notification in the three regions • network of paediatricians Pedisurv [https://www.wiv-isp.be/pedisurv/f_index.htm] The records are pooled based on an identifying key to avoid duplicates.[4] When reporting to WHO on the country's status related to the elimination process, incidence is calculated using only the non-imported cases of measles.
International comparability	Availability: yes, data are published by ECDC, OECD and WHO Standardisation: the data sources and the exhaustiveness of the coverage differ between the countries. Caution is required when interpreting the data because of the diversity of the surveillance systems.
Limitation	Although the cases are reported by several sources to Sciensano, some cases can remain undiagnosed (under-ascertainment), and some may be diagnosed but not reported to one of the used sources (underreporting). This may result in an underestimation of the incidence.
Dimensions	Quality, Effectiveness of preventive care
Related indicators	Measles vaccination

10.3.2. Results

Background: In the pre-vaccine era, measles was endemic in Belgium as in all European countries, and most children got infected. Regular outbreaks occurred at 2–5 year intervals in most populations. Immunisation against measles has completely changed the epidemiology of the disease: in Europe, the incidence has fallen dramatically over the past 30 years, and measles is no longer endemic in some European countries; however, limited outbreaks remain common in countries where subgroups of the population have low levels of immunity. The European countries have committed to eliminate measles, as proposed by the WHO Regional Office for Europe.[2,3] The target is to reach an incidence lower than 1 per million inhabitants.[3] Achieving this target is consistent with progress towards measles elimination but does not define measles elimination or confirm that it has been achieved.

In Belgium, vaccination against measles has been introduced in the vaccination schedule in 1985 (single dose) and 1995 (2 doses). The Superior Health Council has published a recommendation to reach a 95% coverage for each dose of the measles vaccination.[6]

From 1982 to 1999 measles surveillance was conducted through a sentinel network of general practitioners. In 2003, systematic surveillance of measles incidence was set up through a set of several sources, including a sentinel network of paediatricians (see technical definitions).

10.3.2.1. Belgium

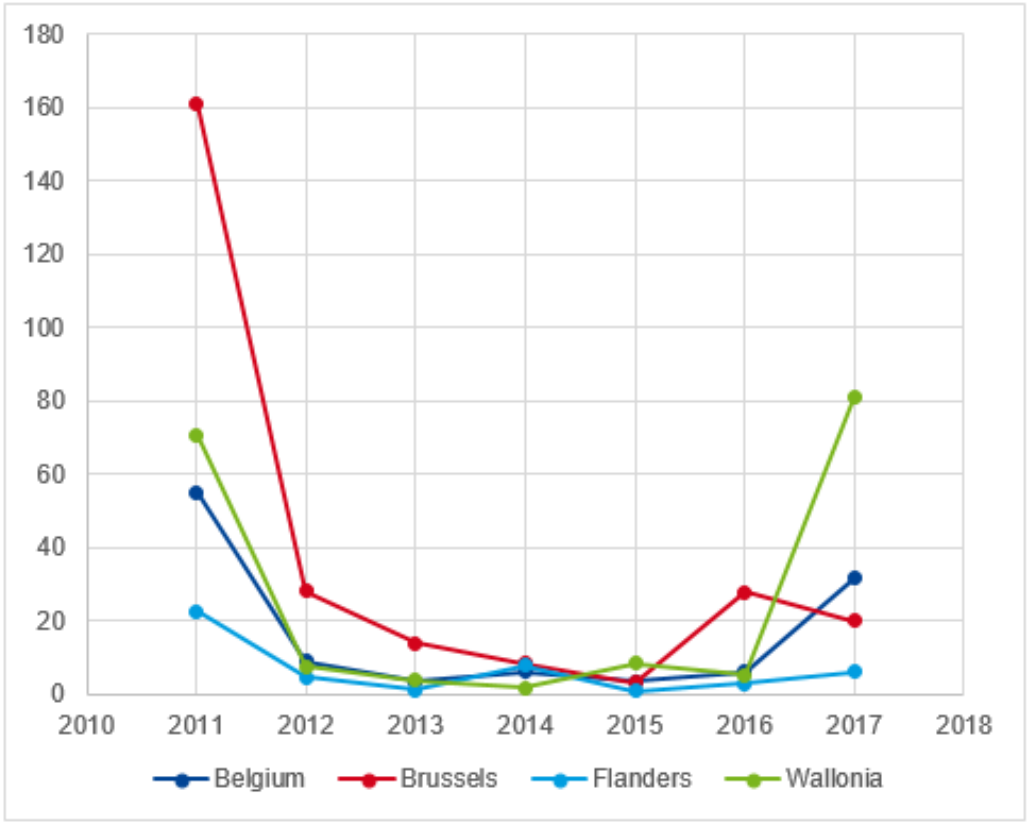
In 2016: the estimated measles incidence was 6.3 per million inhabitants for Belgium as a whole. The incidence was highest in Brussels (27.8 per million), followed by Wallonia (5.3) and Flanders (2.9). Several small outbreaks occurred in Belgium, in all three regions, but particularly in Brussels. Nosocomial transmission played an important role in the spread of measles in Brussels and Wallonia.

In 2017: Belgium faced a new epidemic of measles, resulting in a notification rate of 31.6 cases per million. The epidemic started end December 2016, peaked in March 2017, and faded out in May 2017. The epidemic remained limited to the Walloon Region. The 2016 index case was a Belgian resident who had travelled to Romania during the incubation period and this case was probably imported.[7]

Time trends:

The rate fluctuated between 1 and 9 per million between 2003 and 2010, afterwards, an epidemic occurred in 2011, resulting in a notification rate of 55 cases per million. Figure 1 shows the evolution of the notification rate in Belgium and by region since the epidemic of 2011. After the measles outbreaks in 2011, the estimated incidence of measles decreased again significantly, fluctuating, for the whole of Belgium, between 3 and 6 cases per million inhabitants. The elimination threshold was reached in Flanders in 2015, with 0.9 cases per million inhabitants; afterwards, the incidence in Flanders increased again. In 2017, another outbreak occurred, resulting in a notification rate of 31.6 cases per million for the whole of Belgium. The incidence was highest in Wallonia (80.8 per million), followed by Brussels (20.1) and Flanders (6.3).

Figure 147 – Measles notification rate (per million) in Belgium since the 2011 epidemic, by region (2011-2017)



Source: Annual reports on vaccine-preventable infectious diseases in children. Sciensano, Service "Epidemiology of Infectious Diseases". https://epidemio.wiv-isp.be/ID/Pages/Publications.aspx

10.3.2.2.International comparisons

Figure 148 shows the notification rate by EU-country in 2017[8]. In this year, the EU/EEA experienced a resurgence of measles with several outbreaks and 37 fatalities. With a notification rate of 31.6 cases per million (higher than the EU-15 average), Belgium was one of the most affected countries, after Romania (283.8 per million), Greece (89.7 per million) and Italy (84.0 per million). Conversely, seven countries reported an incidence that meets the WHO-target (lower than 1 per million).

Figure 3 shows the evolution of the notification rate by country since 2008 (OECD Health Data 2018). We see that the measles virus is circulating at low level in Europe, with regular outbreaks occurring in some countries, and moving to other countries form one year to another.

Figure 148 – Measles notification rate (cases per million) in 2017, by country (ECDC measles monitoring)

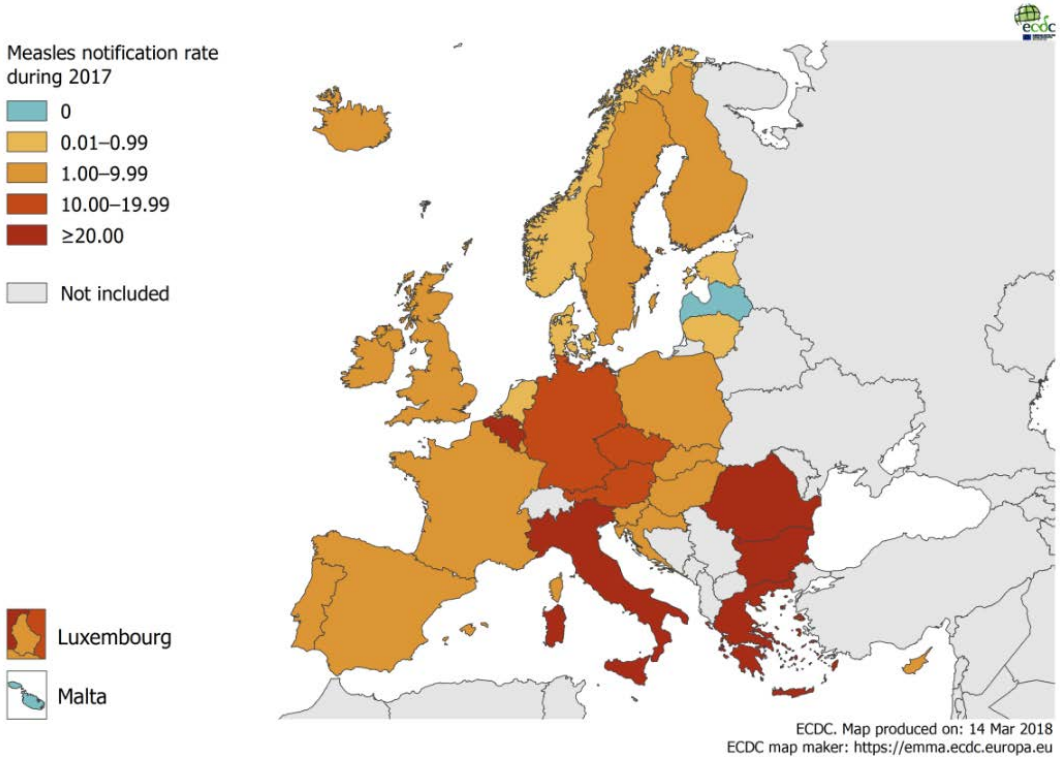
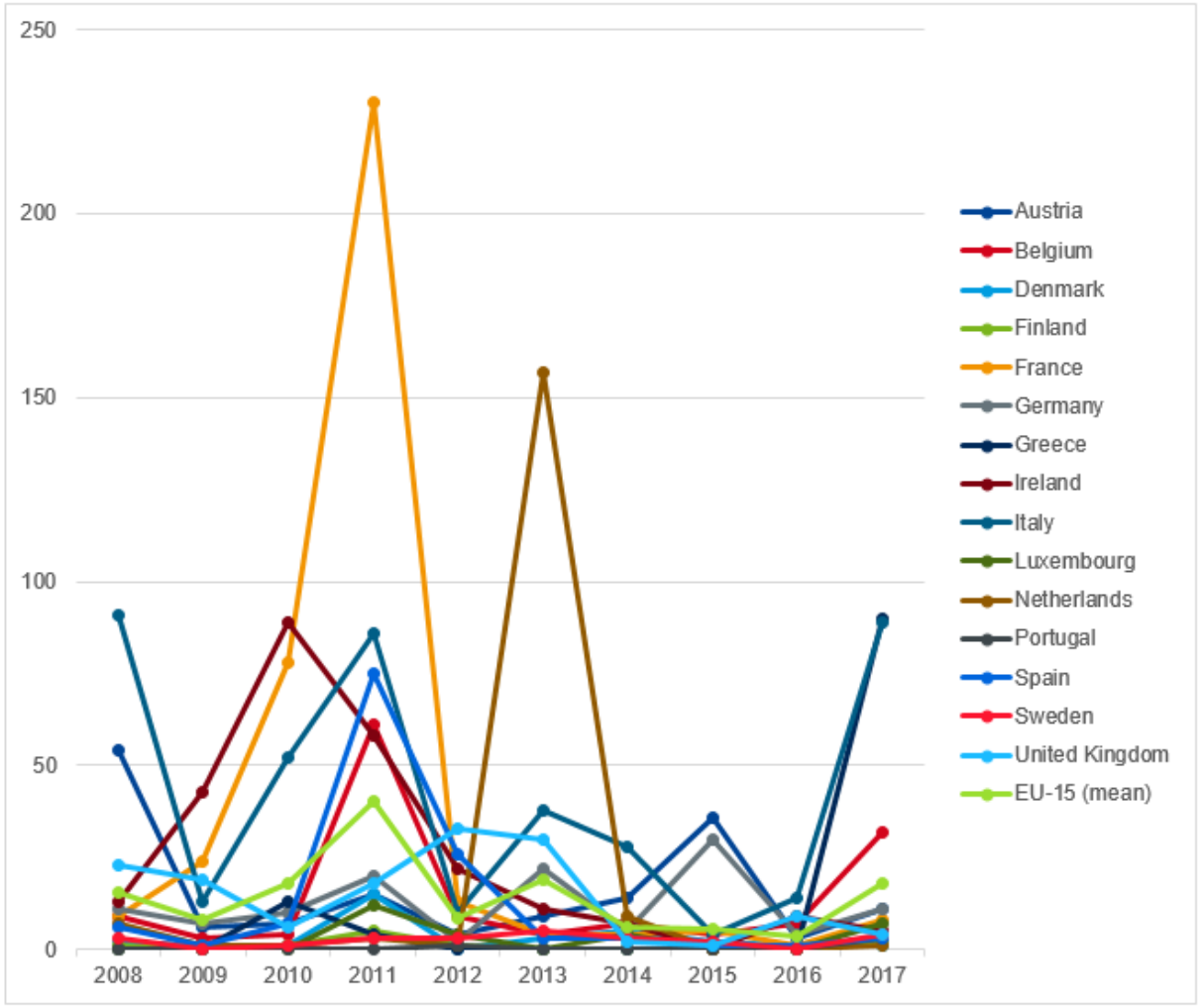


Figure 149 – Measles notification rate (cases per million), EU-15 comparison, 2008-2017



10.3.2.3.Discussion and interpretation

The WHO target (incidence rate lower than 1 per million) has only been achieved in the Flemish Region in 2015. The persistence of epidemics, despite good vaccination coverage for the first dose (>95% in Flanders and Wallonia, and 94% in Brussels) is probably due to some clusters of unvaccinated or incompletely vaccinated people. Those clusters are among people who refuse the vaccination or in children too young to be vaccinated, but also among people who were not covered at the beginning of the vaccination program. Control is further hampered by hospital-acquired cases and nosocomial transmission. Moreover, the coverage rate for the second dose is not optimal, in none of the Belgian regions.

Key points

- **Measles elimination remains a challenge at EU as well as at Belgian level**
- **The incidence rate of measles in Belgium has ranged between 1 and 9 per million since the beginning of the follow up (2003), except during the epidemic years (2011 and 2017).**
- **Across all years considered, the incidence has generally been the highest in Brussels; and has been higher in Wallonia than in Flanders. The 2017 outbreak on the other hand mainly affected Wallonia.**
- **Despite a good vaccination coverage for the first dose, outbreaks are persisting, even in Flanders, probably due to clusters of unvaccinated or incompletely vaccinated people. It therefore remains important to detect these clusters and to target vaccination towards them.**
- **To reach the target of measles elimination a sufficient level of coverage for the first and second vaccination dose should be reached (95%), which is not yet the case for Belgium, especially not for the 2nd dose.**

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10.4. Breast cancer screening (P-6, P-7)

10.4.1. Documentation sheet

Description	Proportion of women aged 50-69 having received at least one mammogram within the last two years 1. Within the context of the organised screening programme (mammogram with a specific billing code for screening) 2. Within or outside the context of the organised screening programme (all mammograms)
Calculation	Numerator: number of women aged 50-69 in a given year, having received a (screening) mammogram within the year or the preceding year. Denominator: Total number of women aged 50-69 affiliated to a Sickness fund in a given year
Rationale	In Belgium, breast cancer is by far the first female cancer in incidence (10 735 cases in 2016),[eee] and is also the leading cause of death by cancer in females (17.0% of all female cancer deaths in 2015). [1] Mammographic screening is so far considered an efficient mean to improve the prognosis. Therefore, since 2001 in Flanders and 2002 in Brussels and Wallonia, a national breast cancer screening programme exists for women aged 50-69 years[fff]. Each woman aged 50 years or more receives every 2 years an invitation to participate in the screening programme. The mammograms realised in the programme follow a specific procedure, and have their own INAMI – RIZIV billing codes. The examination is free of charge for the women. Mammograms having the specific reimbursement code are referred to as "organised screening mammograms" in this report in order to distinguish them from the opportunistic screening using mammogram (i.e. outside the programme). The first indicator measures the proportion of women aged 50-69 undergoing a mammogram in the framework of the organized screening, whereas the second measures the proportion of women aged 50-69 undergoing a mammogram within or outside the organised programme (all mammograms). The first indicator measures the success of the organised programme, the second the whole coverage of mammographic screening in Belgium. There is a generally accepted target of 75% for the breast cancer screening coverage.[2]
Data source	IMA - AIM Atlas, IMA – AIM data
Technical definitions	INAMI – RIZIV billing codes: 450192-450203 (mammogram within the screening programme: organised screening mammograms), 450096, 461090 (other mammography). In the IMA database only the year of birth is available and not the exact date of birth. The age is the difference between the calendar year and the year of birth (snapshot on the 30th of June or the 31st of December). If the woman's age falls between 50 and 69 years, she enters the denominator.
Limitations	It is impossible to distinguish opportunistic screening mammograms (i.e. mammogram made for screening purposes but outside the organised programme) from diagnostic mammograms (i.e. mammogram made for diagnostic reasons, e.g. in women with symptoms or at high risk). Since the fraction of diagnostic mammograms among all mammograms is quite low, the rate of mammograms outside the screening is an acceptable proxy of the opportunistic screening. [3]

eee http://www.kankerregister.org/Statistiques_tableaux%20annuelle

fff http://www.zorg-en-gezondheid.be/Ziektes/Vlaams-bevolkingsonderzoek-naar-borstkanker/ and http://www.sante.cfwb.be/index.php?id=cancerdusein0

	Women with a bilateral mastectomy and women with a breast cancer have not been excluded from the target population. For all those reasons, the total coverage is likely to be slightly overestimated.
International comparability	The OECD publishes the proportion of women aged 50-69 having had a bilateral mammography within the past two years (for the majority of countries), preferably from programme (administrative billing) data, otherwise from survey data; the OECD thus warns for a limited comparability. For Belgium, OECD results are available from IMA – AIM data under the label "programme data". [4]
Dimension	Accessibility of preventive care
Related indicators	Breast Cancer 5-year survival rate Breast cancer screening mammography in women aged 40-49

10.4.2. Results

10.4.2.1. Belgium

At the start of the breast cancer screening programme in 2001 the (total) coverage only reached 43%. [5] From 2003 to 2007, the organised screening programme coverage has risen from 21.5% to 30.3%; the increase has since been slow: the programme has a coverage of 33.2% in 2016 (Table 5) while the total coverage by all mammograms remains stable around 62% since 2007, suggesting a small switch from opportunistic mammograms to organised screening mammograms. This overall coverage is still lower than the 75% European target screening rate. [6]

The total breast cancer screening coverage (organised screening mammograms and other mammograms) is higher for younger women within the target age group (50-69 years).

In both organised and global screening, vulnerable women (those entitled to increased reimbursement) have a lower coverage than the remaining population (respectively 24.9% versus 34.3% and 48.1% versus 65.1% in 2016). This is in line with evidence from other countries: several countries have income inequalities in breast cancer screening (e.g. Czech Republic, Denmark, France, New Zealand and Poland). [7] The breast cancer screening coverage by level of income is considered by the OECD as an indicator of access of care; see also the *equity and inequalities* section in the main report.

As observed in previous performance reports, [8-10] the organised screening coverage is still increasing in Flanders, reaching 50.7% in 2016, while plateauing around 10% in Brussels since 2007 and even slightly decreasing in Wallonia, where the coverage is only 6.8% in 2016.

In Flanders, the total mammograms coverage has plateaued in 2012, then decreased slightly until 2015; 2016 sees a small increase. The high coverage by mammograms outside the organised screening coverage in Wallonia is historically due to the early implantation of the opportunistic breast cancer screening.

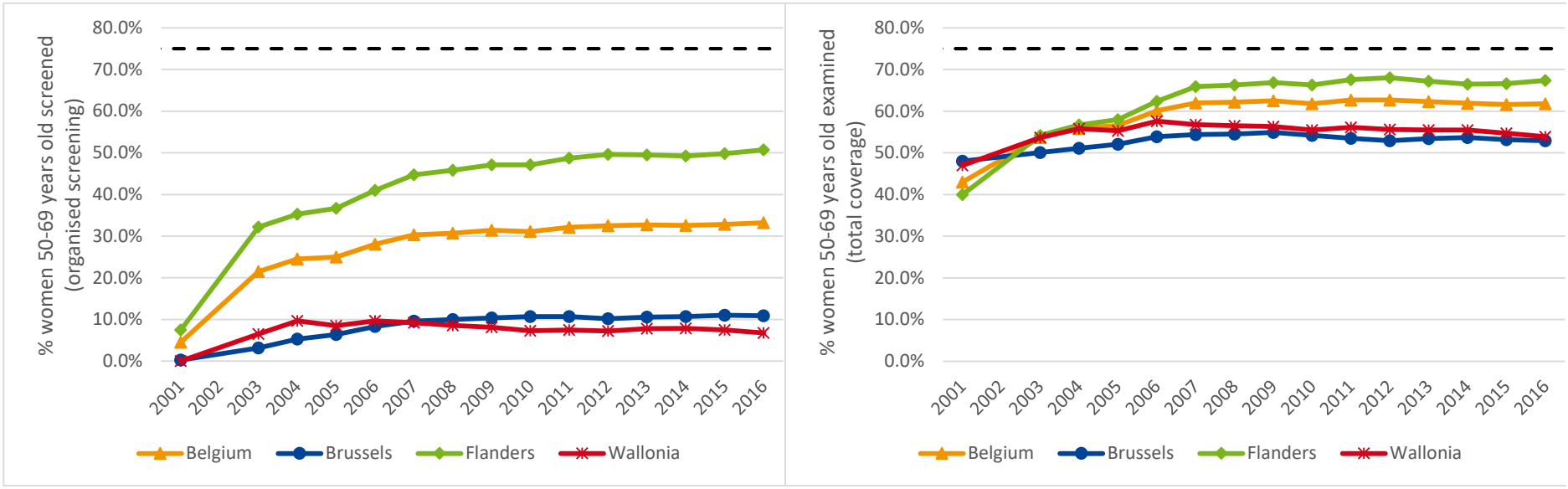
In its report covering the period 2009-2014, the Brussels Health and Social Observatory also found disparities in terms of coverage between the Brussels municipalities: a higher participation to the organised programme in the North of Brussels, but a higher opportunistic screening and overall coverage in the South. [11]

Table 103 – Coverage of breast cancer screening in women 50-69 years old (organised screening mammograms and other mammograms coverage) (2016)

Variable	Category	Organised screening mammograms	Total coverage
Age (years)	50-54	35.3%	66.7%
	55-59	31.0%	59.4%
	60-64	34.1%	61.6%
	65-69	32.1%	58.9%
	Total (50-69)	33.2%	61.8%
Entitlement to increased reimbursement	No	34.3%	65.1%
	Yes	24.9%	48.1%
Region of residence	Brussels	10.9%	52.9%
	Flanders	50.7%	67.4%
	Wallonia	6.8%	53.9%
Province of residence	Antwerpen	48.9%	66.6%
	Brabant Wallon	9.7%	60.4%
	Bruxelles-Capitale	10.9%	52.9%
	Hainaut	7.2%	54.5%
	Limburg	61.3%	72.0%
	Liège	4.7%	51.4%
	Luxembourg	9.3%	50.2%
	Namur	6.8%	54.1%
	Oost-Vlaanderen	50.9%	67.5%
	Vlaams Brabant	43.4%	66.8%
	West-Vlaanderen	52.3%	65.4%

Source: IMA Atlas 2018

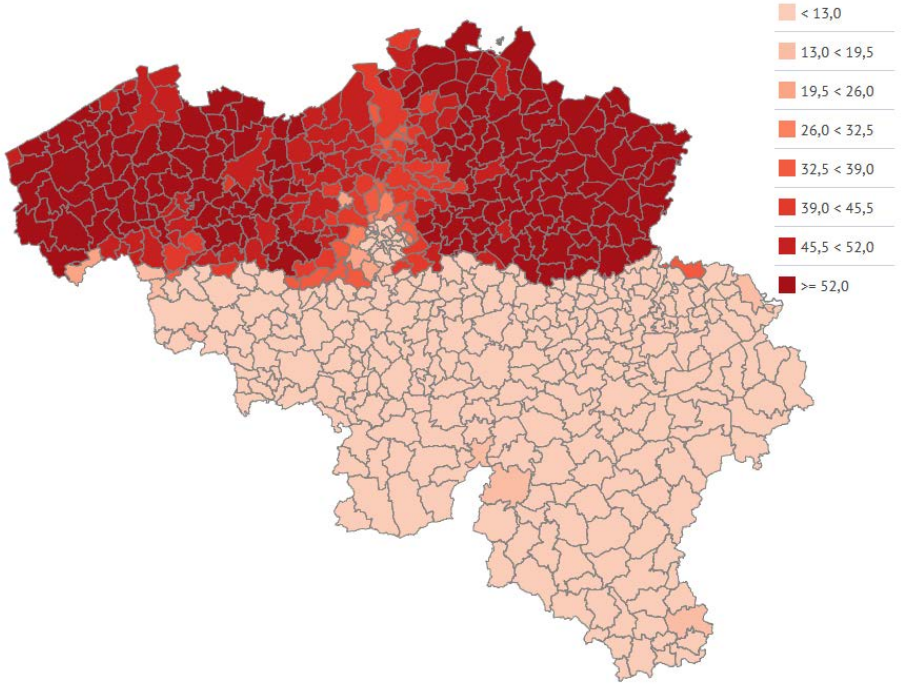
Figure 150 – Coverage of breast cancer screening (organised and all mammograms) in women 50-69 years old, by region (2001-2016)



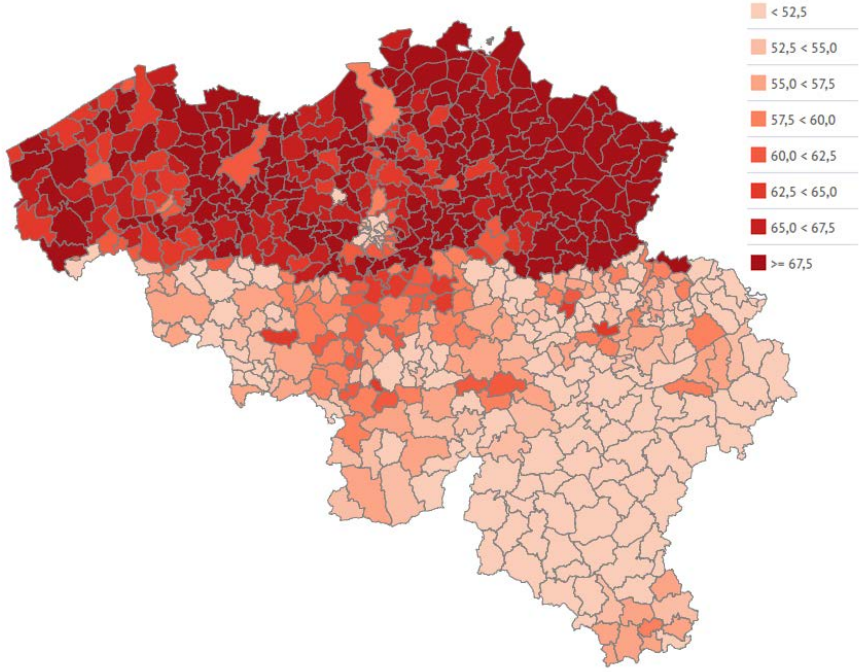
Source: IMA – AIM (2001), IMA – AIM Atlas (2003-2016)
Note: mammogram = organised + opportunistic screening + diagnostic test; Dashed line= European target screening rate.

Figure 151 – Coverage of breast cancer screening (organised and all mammograms) in women 50-69 years old, by municipality (2016)

Organised screening



All mammograms

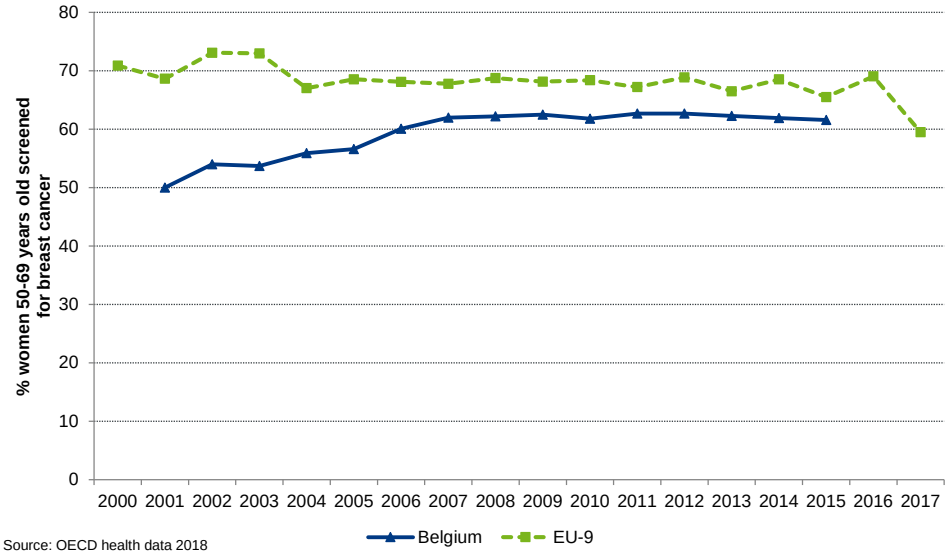


Source: IMA – AIM Atlas 2018

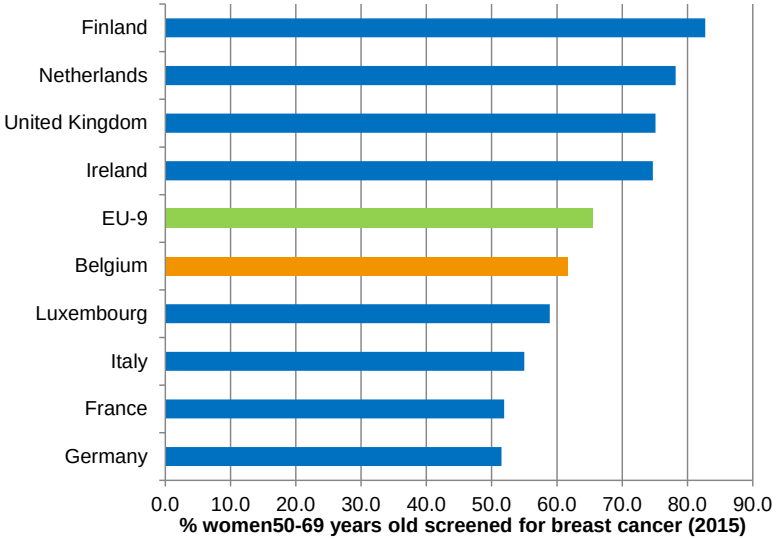
10.4.2.2.International comparison

Only the total mammogram coverage can be compared with other countries; comparisons should be taken with caution, as they mix survey and programme data. The Belgian coverage is consistently below the EU-15 average. Three countries reach the 75% target coverage: Finland, Netherlands and UK, with Ireland very close.

Figure 152 – Coverage of breast cancer screening: international comparison (2000-2017)



Source: OECD health data 2018



Source: OECD health data 2018

Source: OECD Health statistics 2018

Key points

- **The total coverage of breast cancer screening was 61.7% in 2016. This coverage has improved at the early 2000s (it was 43% before the start of the programme and reached 54% in 2003) but has been stagnating since 2010 (62%). In 2016, Flanders reached the highest rate at 67% while the lowest rate of 53% was achieved in Brussels (54% in Wallonia).**
- **The breast cancer screening coverage in Belgium fails to achieve the commonly accepted target of 75%, which is reached by Finland, The Netherlands and UK in 2015. It is also lower than the EU average.**
- **The coverage of the organised breast cancer screening stagnates at a national level around 33%, with very large differences in participation between Regions: Flanders: 51%, Brussels 11%, Wallonia 7%.**
- **There are indications of socio-economic inequalities in the access to breast cancer screening: women with a lower socio economic status have a lower participation rate in the screening procedures than other women.**

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10.5. Regular contacts with a dentist (P-11)

10.5.1. Documentation sheet

Description	Proportion of the population with a "regular contact with a dentist" (defined as at least 2 contacts in 2 different years during the last three years)
Calculation	Numerator: number of individuals 3 years old and older who had a contact with a dentist at least twice in 2 different years during the last three years. Denominator: number of individuals aged 3 years and older in a given year and the two years before.
Rationale	Oral health is a condition in which people can eat, speak and socialize without (oral) disease, discomfort or embarrassment.[1] While having good levels of oral health is important in itself, it has also been linked to general health.[2] Fortunately, some oral disorders (like dental caries and dental erosion) can be prevented. Regular dental visits not only enable the diagnosis and treatment of any dental problem in an early stage, they also help to prevent such problems through dietary and oral hygiene advice and the delivery of professional prophylaxis (i.e. the removal of dental plaque and calculus, the application of fluoride and sealants). Several studies demonstrated (inter- and intracountry) socioeconomic inequalities in access to oral healthcare, oral health and oral health related behaviour (e.g. toothbrushing).[2-7]
Primary data source	IMA – AIM data
Indicator source	IMA – AIM Atlas
Technical definitions	Contact definition: all INAMI-RIZIV nomenclature codes belonging to N group 04 (dentist care) or 16 (stomatology).
International comparability	This is not an international indicator. The definition of regularity varies from one country to another; the most frequently used indicator is yearly contact.
Dimension	Access to dental care

10.5.2. Results

10.5.2.1. Belgium

The proportion of the population who had at least two dental visits in two different years in the last three years, increased from 47% in 2008 to 54% in 2016 (Table 104).The increase in the last years may (in part) be attributed to the information campaigns of the health insurance funds and the dental professional associations on the upcoming dental care program ('Mondzorgtraject' – 'Trajet de soins bucco-dentaires')[ggg] which was finally installed on 1 July 2016.[8] RIZIV – INAMI observed a nearly 10% increase in the (yearly) dental attendance rates between 2014 and 2015.[8]

The proportion of the population with a regular dental contact in 2016, is the highest in children and adolescents (66% and 71% for the age groups 5-14 years and 15-17 years for 2016, respectively), which is not surprising since this is the age span in which many children receive orthodontic diagnosis and/or treatment. The lowest proportion is seen in very young children (3-4 years old, 14%), and in the elderly (75 years and older, 36%).

These results, which are based on billing data, are in line with the results reported in the 2013 Health Interview Survey, in which 62% of the respondents reported that they had consulted a dentist in the preceding year. Likewise, variation across age groups was observed with the highest rate in the 2-14 years old age group (71%) and the lowest in the seniors (aged 75 or older, 34%). The higher attendance rates in the Health Interview Survey are logical as they are based on self-report.[9]

The Health Interview Survey further revealed important sociodemographic differences, even after correction for age and gender: only 36% of the group with a lower educational level reported having seen the dentist in the preceding year and this proportion increases up to 72% in the group who had taken higher education. Similar sociodemographic gradients were reported in the survey performed in 2012-2014 by a team of several Belgian Universities at the request of the RIZIV-INAMI. In the lowest educational group (highest degree primary school or no degree) 72% had a registered contact (IMA data) with a dentist in the preceding 5 years, while in the highest group (higher education) this was 85%. For regular dental visits (defined in the RIZIV – INAMI study as at least three dental contacts in three different years in a time span of 5 consecutive years), the differences between the respective groups were more pronounced: 35% and 65%, respectively.[10]

The regular dental attendance rate was in 2016, as in previous years, much higher in Flanders (58%) than in Wallonia (48%) and Brussels (48%) (Figure 153). Comparable regional differences were observed in the above-mentioned data-registration project (2012-14): 61% of the respondents of the Flemish region had a regular registered contact with a dentist in the preceding 5 years, while the respective proportions for Wallonia and Brussels were 46% and 42%.[10] Likewise, regional peculiarities were reported in the Belgian Health Interview Survey 2013: 7% of respondents in Brussels, 5% in the Walloon region and 3% in Flanders answered that they had never been to a dentist.[9]

[ggg] The concept of the dental care program ('Mondzorgtraject' – 'Trajet de soins bucco-dentaires') is that citizens of 18 years and older who have a dental appointment (during which a reimbursed procedure is performed) every calendar year receive a higher reimbursement (i.e. have a smaller personal share) for curative care (e.g. dental restorations, extractions, prostheses) than those who do not attend a dentist regularly. The following procedures are not included in the dental care program: consultations, preventive care, orthodontics, periodontics and dental radiographs. The dental care program should not be confused with the 'continuity rule', which stipulates (for a long time already) that the reimbursement for a professional dental debridement is halved for citizens who had no reimbursed dental care during the previous year.

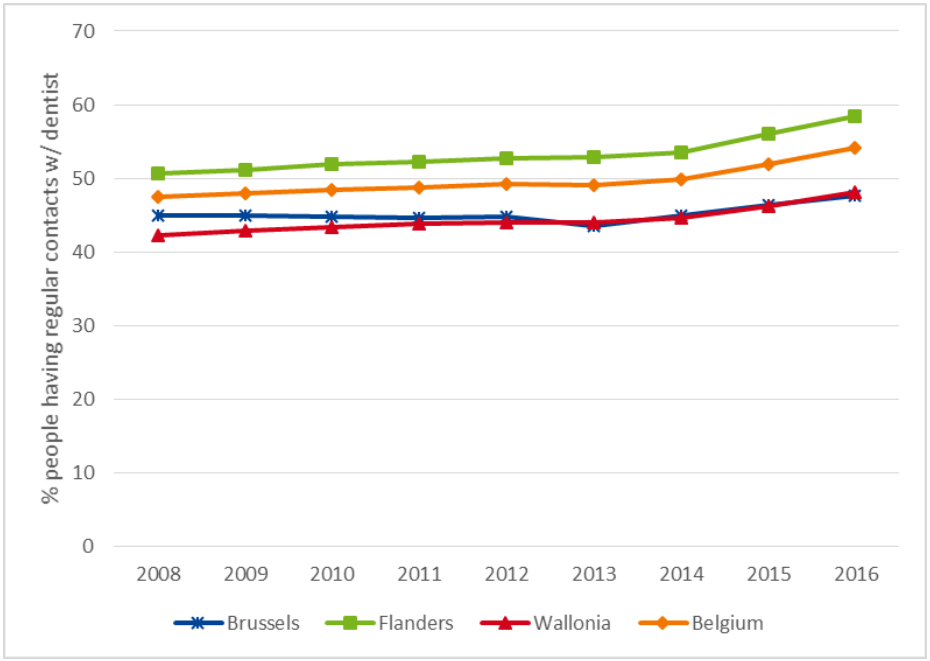
Table 104 – Regular contact with a dentist, by year and patient characteristics (2008-2016)

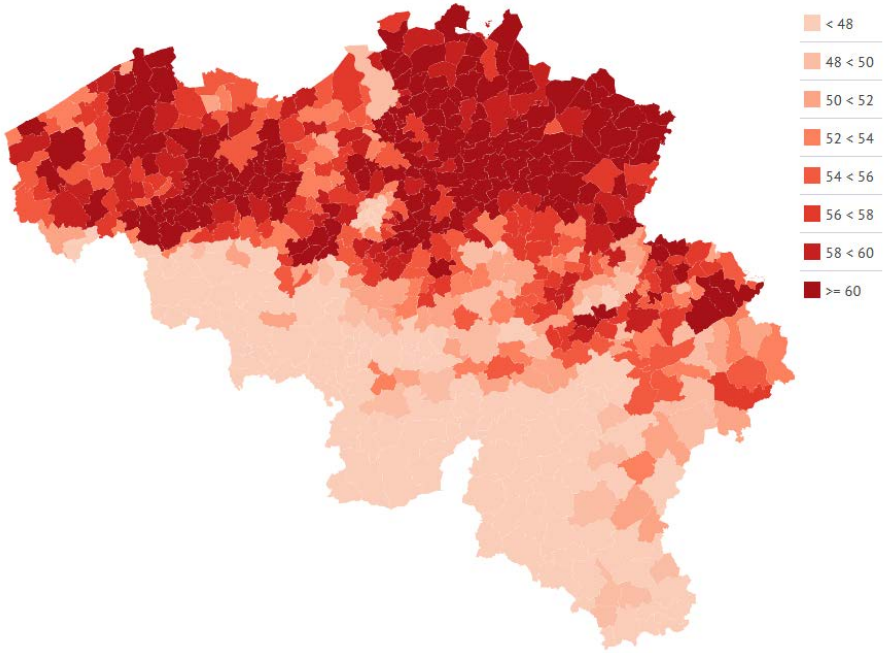
Variable	Category	Proportion[hhh]
Year	2008	47.4%
	2009	47.9%
	2010	48.5%
	2011	48.8%
	2012	49.2%
	2013	49.1%
	2014	49.8%
	2015	51.9%
	2016	54.1%
Age (2016) (years)	03-04	14.0%
	05-14	66.2%
	15-17	71.0%
	18-24	53.0%
	25-44	53.3%
	45-64	58.1%
	65-74	52.4%
	75+	35.5%
Province (2016)	Antwerpen	57.3%
	Brabant Wallon	54.6%
	Brussels	47.7%
	Hainaut	43.2%
	Liège	52.8%
	Limburg	60.8%
	Luxembourg	45.9%
	Namur	47.0%
	Oost-Vlaanderen	57.5%
	Vlaams Brabant	59.3%
	West-Vlaanderen	58.9%
Region (2016)	Brussels region	47.7%
	Flemish region	58.4%
	Walloon region	48.1%

Source: IMA Atlas
Note: contact is defined as two contacts in two different years in the last three years

[hhh] Proportion of the population who had at least two dental visits in 2 different years in the time span 2006-2008; similarly for the other percentages

Figure 153 – Regular contact with a dentist, by patient region (left, 2008-2016) and municipality (right, 2016)





Source: IMA Atlas
Note: regular contact is defined as two contacts in two different years in the last three years.

10.5.2.2. International Comparison

Since “regular dental visit” has been defined in the IMA atlas (the information source for this indicator) as at least two contacts with a dentist in a time span of three consecutive years and since this is not a standard indicator, it is hard to compare these results with international reports and publications.

Key points

- **Just a little over half of the Belgian population had a dental contact at least twice in two different years in the period 2014-2016.**
- **The population seeing a dentist on a regular basis is increasing**
- **The proportion of the population with the highest regular attendance rate is seen in the age groups 5-14 years (66%) and 15-17 years (71%). The regular dental attendance rate was higher in Flanders (58%) than in Wallonia (48%) and Brussels (48%).**
- **It is difficult to benchmark these data with other countries, since "regular dental visit" has been defined in the IMA atlas (the information source for this indicator) as at least two contacts with a dentist in a time span of three consecutive years, which is not a standard indicator.**

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11. MENTAL HEALTHCARE

11.1. Suicide rate (MH-1)

11.1.1. Documentation sheet

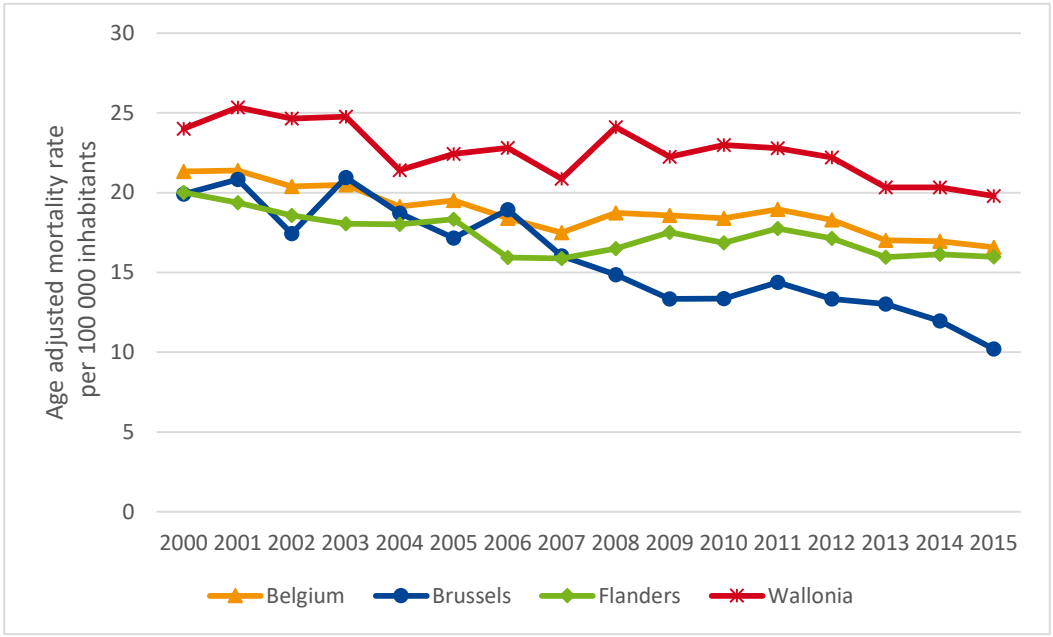
Description	Suicide, in the population per 100 000 inhabitants
Calculation	**Numerator**: number of deaths by suicide (x 100 000) **Denominator**: total population
Rationale	Suicide may be the end-point of a combination of psychological, social and demographic factors. It is more likely to occur during crisis periods associated with upheavals in personal relationships, through alcohol and drug abuse, unemployment, clinical depression or other forms of mental illness. Because of this, suicide is often used as a proxy indicator of the mental health status of a population (including the lack of well-being). However, it remains a controversial indicator because of the instability of suicide rates, difficulty in data collection and the lack of association between suicide and quality of care provided. [1] Therefore, it is recommended to use suicide rates in combination with other mental health related indicators. [2]
Primary data source	The primary data sources are the 2 regional databases of the death certificates (one for Flanders and Brussels, managed by the Vlaams Agentschap voor Zorg en Gezondheid, the other for Wallonia, managed by the Agence pour une Vie de Qualité, AViQ). Data are then pooled and organised at the Belgian level by Statbel. Finally they are transferred to Sciensano (department Public health and Surveillance). Numbers and rates (crude or age-adjusted) are published by the SPMA, an online interactive tool by age, sex, nationality and geographic entities. (https://spma.wiv-isp.be/).[3]
Technical definitions and limitations	Deaths by suicide are classified to ICD-10 codes X60-X84. Validity of the suicide certification depends of a number of reporting criteria; an important criterion in Belgium is the fact that a forensic investigation is carried out. It seems that this procedure has been delayed since a few years in Brussels, hampering the certification of some suicidal deaths that are coded as 'external events from undetermined intent'.
International comparability	The World Health Organization defines suicide as an act deliberately initiated and performed by a person in the full knowledge or expectation of its fatal outcome. Standardised population suicide rates are available in OECD Health Data (extracted from the WHO Mortality database). Comparability of data between countries is affected by a number of reporting criteria, including how a person's intention of killing themselves is ascertained, who is responsible for completing the death certificate, whether a forensic investigation is carried out, and the provisions for confidentiality of the cause of death. Caution is required therefore in interpreting variations across countries. Some countries, for instance, also include the death certificates with the ICD-10 codes Y10 - Y34 and Y87 (http://apps.who.int/classifications/icd10/browse/2010/en) in their suicide statistics. For this report, we only include the codes

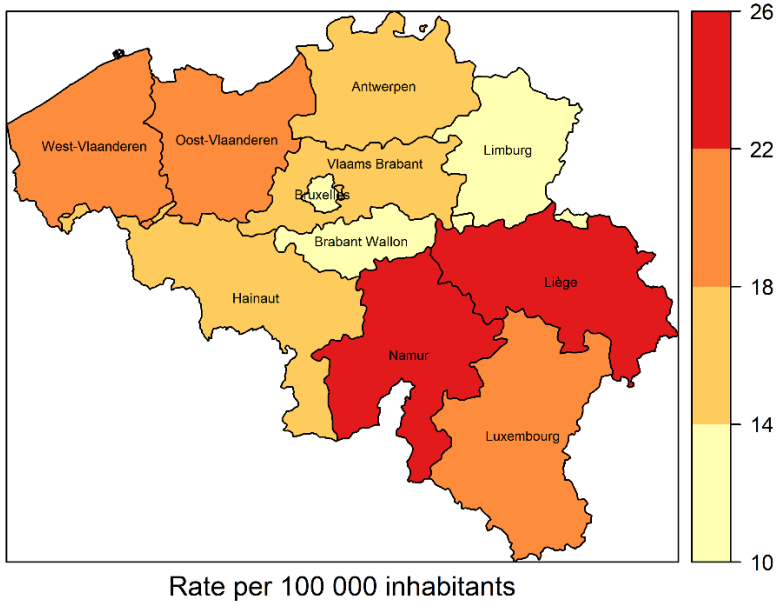
	specified by the OECD (ICD-10: X60-X84). Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. [4] OECD uses direct age-standardization methods to remove variations arising from differences in age structures across countries and over time and thus enhance international comparability. The source they use is the WHO Mortality Database, with the population 2010 as standard population.
Dimensions	Effectiveness of mental healthcare
Related indicators	Average daily quantity of medication (antidepressants /antipsychotics/ hypnotics and anxiolytics) prescribed

11.1.2. Results

Figure 154 illustrates that the number of suicides per 100 000 inhabitants in Belgium has decreased between 2000 and 2015 from 21.3 to 16.6. In addition, it is shown that this figure is considerably higher in Wallonia (19.8% in 2016) compared to Flanders (16.0% in 2016). In Brussels, the suicide rates decreased the most (from 19.9 in 2000 to 10.2 in 2015): this partly due to the fact that the cause of death has to come from a police report (otherwise it is reported as non-natural event of undermined intent), and since the end of the 2000s the reports are sometimes missing. In Flanders, a policy plan was designed to reduce suicide rates. A second version of this plan (2012-2020) aims to decrease the rate by 20% (compared to the rate in 2000) [5].

Figure 154 – Age adjusted suicide rate per 100 000 inhabitants (2000-2015) and per province (2015)

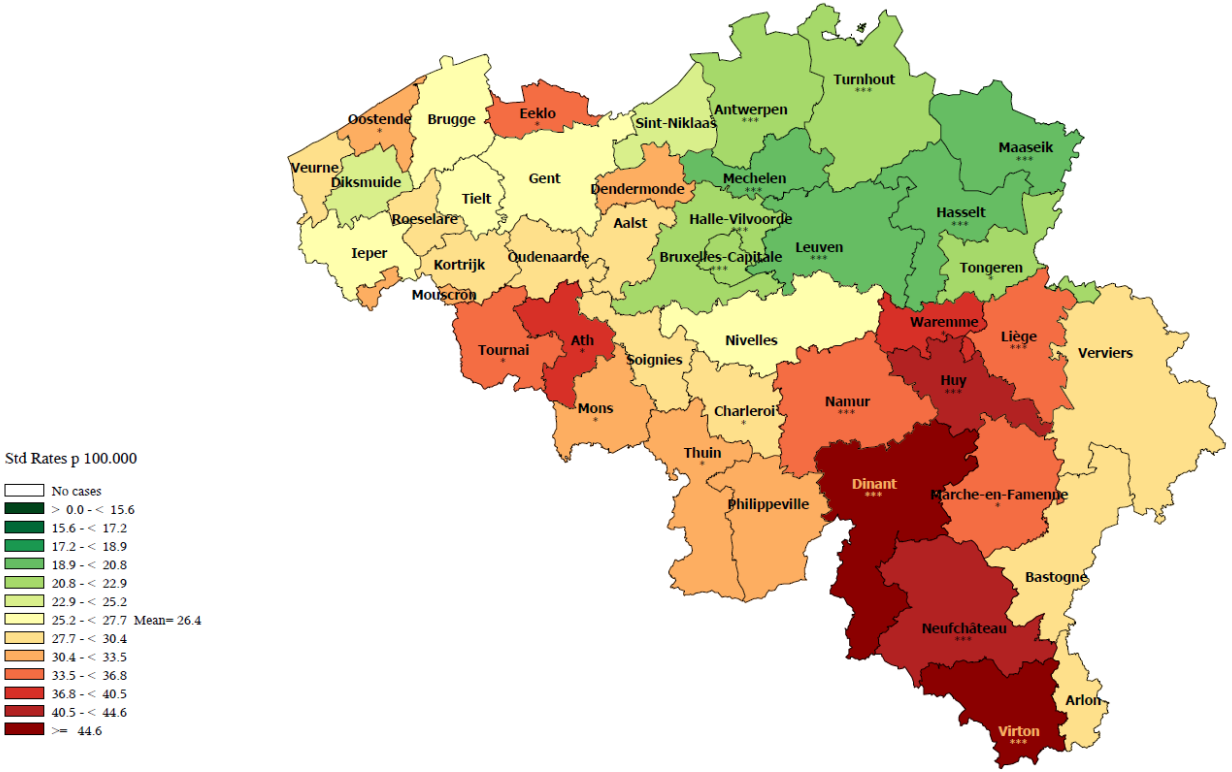




Source: Sciensano (SPMA:Standardized Procedures for Mortality Analysis – Belgium)
Note: Brussels decrease is partly an artefact (see text).

An analysis of the national data of premature mortality among men aged 1-74 years due to suicide shows that results are highly variable across the Belgian territory (see Figure 155). In Flanders highest rates are observed for the provinces West- and East-Flanders. In Wallonia, highest rates are observed in the provinces Namur and Liège.

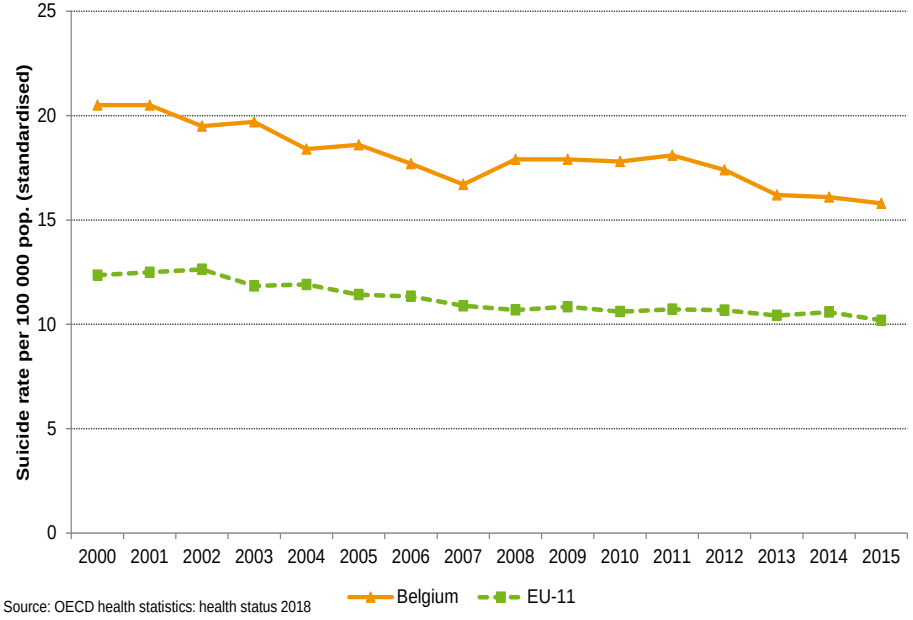
Figure 155 – Suicide Premature mortality in Men (1-74 year) (2003-2009)

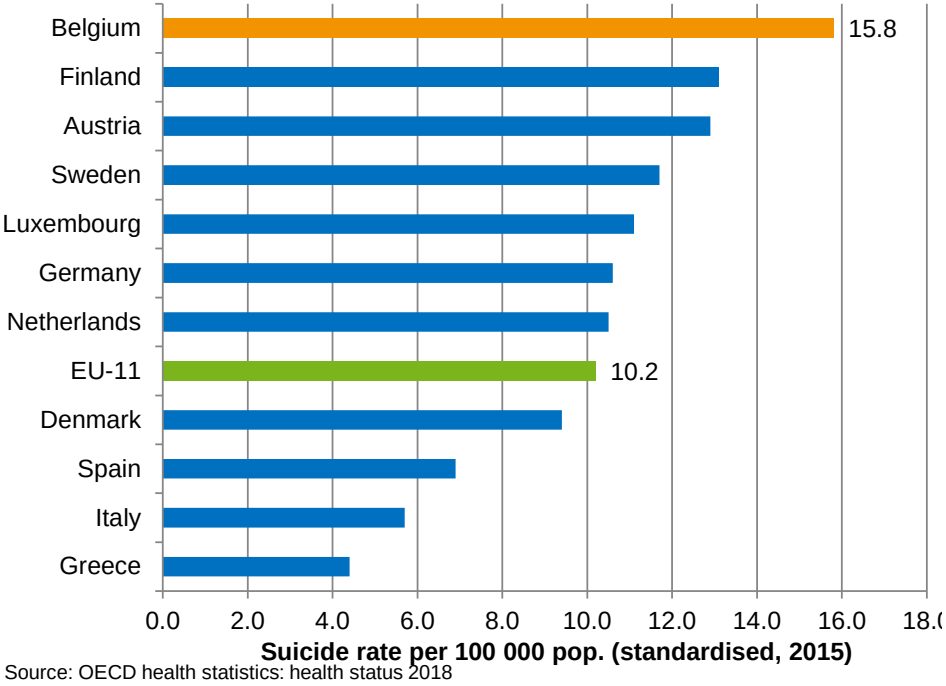


Source : [6]
Note: Age-adjusted mortality rates (standard Belgian population 2000)

It is clear from Figure 156 that the number of suicides per 100 000 inhabitants is remarkably higher in Belgium compared to the benchmark countries. This was already reported in the previous performance reports which stimulated the public authorities to take actions within the field of mental healthcare such as (1) improved support for primary care, (2) implementation crisis intervention teams, (3) better collaboration with emergency care services (e.g. in case of a suicide attempt) and (4) long-term follow-up (by mobile teams for chronic care) of persons with a history of suicide attempts. [7,8] Differences in rates for Belgium come from the fact that OECD and SPMA standardisations are different.

Figure 156 – Mortality rate due to suicide (per 100 000 population): international comparison (2000-2015)





Source: OECD health statistics: health status (2018)

Key points

- **A slight decrease in suicide rates can be observed in Belgium between 2000 and 2015: from 21.3 per 100 000 pop. in 2000 to 16.6 in 2015**
- **Suicides rates are higher in Wallonia than in Flanders, consistently over time. Brussels has understimated figures since 2008. Large geographical variations exist, both within the Flemish and the Walloon regions.**
- **Compared to other European countries, suicide rate in Belgium is relatively high**

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11.2. Number of practising psychiatrists per 1000 population (MH-2)

11.2.1. Documentation sheet

Description	Number of practising psychiatrists per 1000 population
Calculation	Numerator: Number of practising psychiatrists x 1000 Denominator: Total mid-year Belgian population
Rationale	The number of care providers gives important information on the medical workforce and thus the accessibility of healthcare. Together with the number of graduates, this information can be used for health providers supply planning. People with mental health problems may receive help from a variety of professionals but international organisations[1] focus mostly on psychiatrists, as psychiatrists have a pivotal role in the mental health care system and the availability of comparable data on others, such as psychologists, is more limited. Therefore also in this report figures for psychiatrists are reported separately within the results-section.
Primary data source	INAMI – RIZIV annual statistics Results from the PlanCAD (linkage data FOD VVVL - Datawarehouse AM&SB – INAMI – RIZIV) [2] from Federal Public Service Public Health
Technical definitions	A care provider is considered to be practising (INAMI – RIZIV: "profiles") if he/she provided more than 1 clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year or the 2 preceding years. Physicians still in training are not counted. Psychiatrists are medical doctors who specialise in the prevention, diagnosis and treatment of mental illness. They have post-graduate training in psychiatry and may also have additional training in a psychiatric specialty. The Belgian data excludes non-practising physicians, retired professionals and professionals working abroad. Professionals who are of foreign origin are included. In the PlanCAD, the definition of psychiatrists includes adult psychiatrists, child and adolescent psychiatrists. [2] Neuropsychiatrists and neurologists are not included.
International comparability	The OECD differentiates between practising physicians (doctors providing direct care to patients), professionally active physicians (including also doctors working in the health sectors as managers, educators, researchers, etc.) and physicians licensed to practise (i.e. having the required diploma). In addition, OECD countries use different methodologies to calculate the same indicator (such as different levels of activity). Moreover the role of psychiatrists varies across countries (e.g. collaboration with GPs). Comparisons are therefore potentially inadequate. Before 2009, data transferred to OECD for practising psychiatrists included all registered psychiatrists at the INAMI – RIZIV (all psychiatrists having an INAMI – RIZIV number). Since 2009 (and data have been adapted retrospectively) these data are based on the number of practising psychiatrists, giving a better picture of the medical density in Belgium.
Performance dimensions	Accessibility, Health workforce
Related indicators	Medical graduates

11.2.2. Results

In 2016, the number of active psychiatrists in Belgium was 1958, corresponding to a density of 0.17 / 1000 inhabitants. The number of psychiatrists increased since 2000 (1671 at that time), but the density remained stable (Table 105).

At the regional level (based on home address of the psychiatrists), 0.33 / 1000 pop. in Brussels, 0.15 in Flanders and 0.16 in Wallonia in 2016 (see Table 106 for a more complete picture in 2012). It should be noted that this provides little information on the real available workforce per region, as the workplace address is not available and there is potentially a lot of professional mobility between the regions.[2] The total number of head counts are slightly different between the PlanCAD and the OECD results, because the specialities included are not exactly the same (see differences between Table 105 and Table 106).

The conclusions from the PlanCAD synthesis report are the following: [3]

"Psychiatry is a growing speciality (+22.6% from 2004 to 2012) in transformation. Since 2002, doctors cannot start a new training plan to obtain the title of psychiatrist: they need to choose between "adult psychiatrists" or "child and adolescent psychiatrists". This change seems to be implemented differently between Flanders and Wallonia. In Wallonia, many psychiatrists have kept their initial title, which could partly explain the apparent deficits in Wallonia for the two sub-specialities."

Table 105 – Data on practising psychiatrists (2000-2016)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of persons (head counts)	1671	1715	1748	1771	1797	1803	1840	1855	1891	1914	1932	1865	1890	1899	1907	1930	1958
Density per 1000 population (head counts)	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17

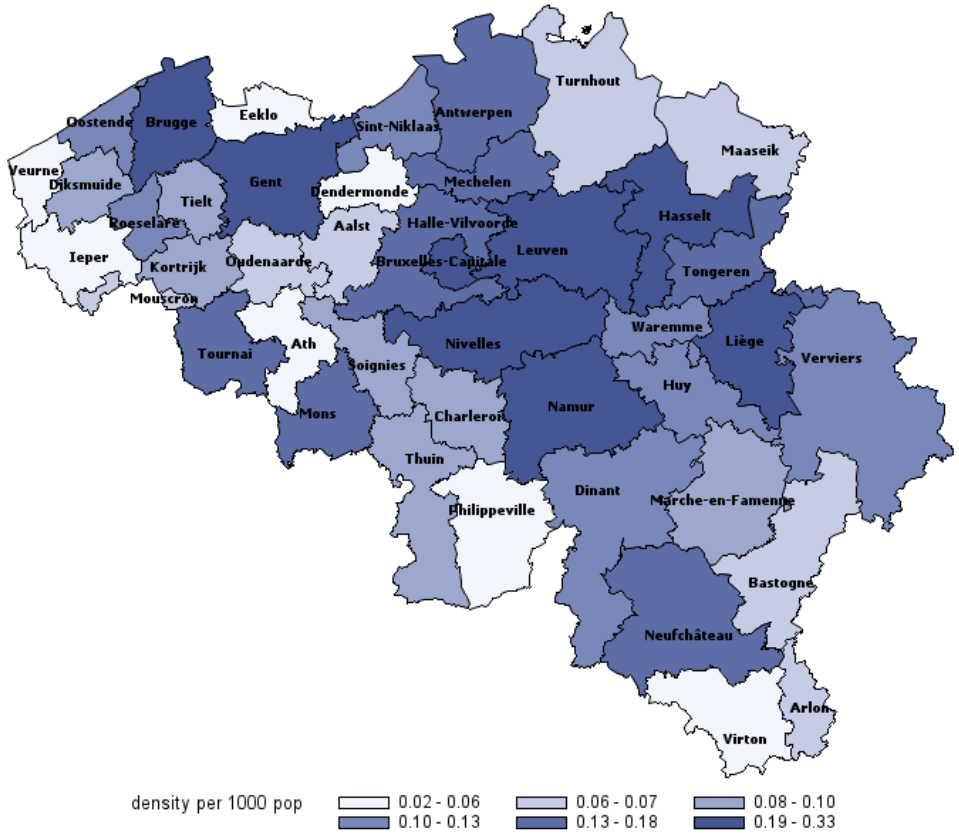
Source: OECD Health statistics 2018

Table 106 – Participation on the labour market per region where psychiatrists (3 titles): head counts (2012)

Region (based on home address psychiatrist)	Accredited	Active on the labour market	Psychiatrists in cadaster with active INAMI/RIZIV billing	Density of Active psychiatrists per 10 000 inhabitants
Brussels	399	369	358	3.10
Flanders	967	874	850	1.33
Wallonia	570	526	520	1.46
Total	1936	1769	1728	1.56

Accredited: Number of accredited psychiatrists (head count) in the FOD/SPF Cadaster
Active on the labour market: number of psychiatrists that is active on the Belgian labour market (as employee or with RIZIV – INAMI activity).
Active INAMI – RIZIV: Number of psychiatrists with a minimal activity (at least 0.1 FTE in the Social security context or at least 2 RIZIV/INAMI activities billed.
Source: [2]

Figure 157 – Density of active psychiatrists: number of active psychiatrists per 1000 inhabitants (2016)



Source: INAMI – RIZIV (based on the home address of the psychiatrist); calculation: KCE

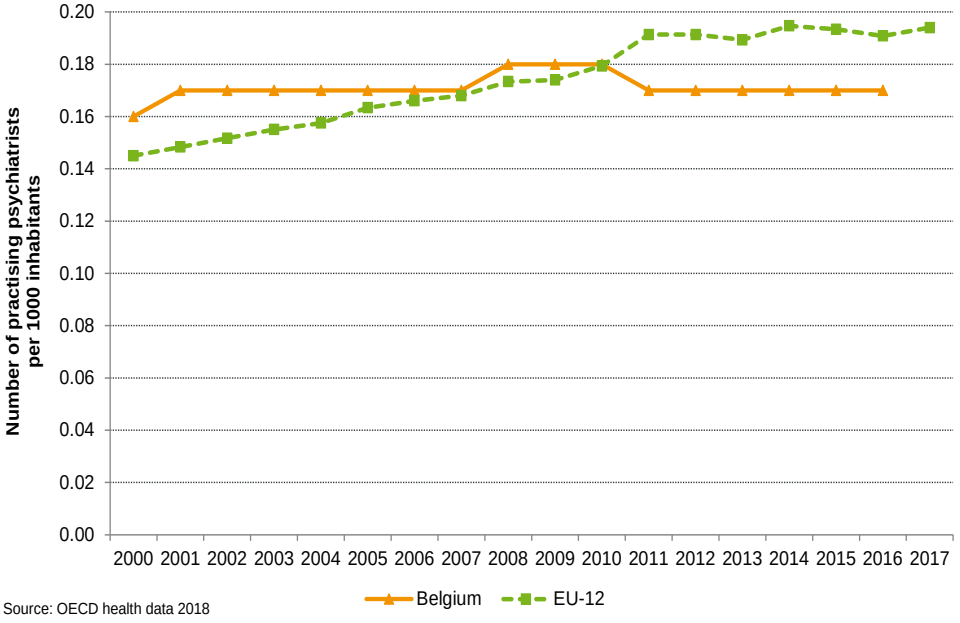
International comparison

The role of psychiatrists and other mental health service providers (e.g. psychologists) varies across countries. For instance, in the Netherlands, there is a high number of psychologists who are very active in providing services that are covered under health insurance systems. In other countries such as France, the number of psychologists is lower and the services that they provide are not covered under public health insurance. [4] In Belgium, since March 2019[iii], some consultations by psychologists are covered with the introduction of a new system to give greater access to psychological care (based on an organisational and financial model of psychological care).[5] An estimation on which types of care providers are consulted per country can be found in Eurobarometer.[4, 6]

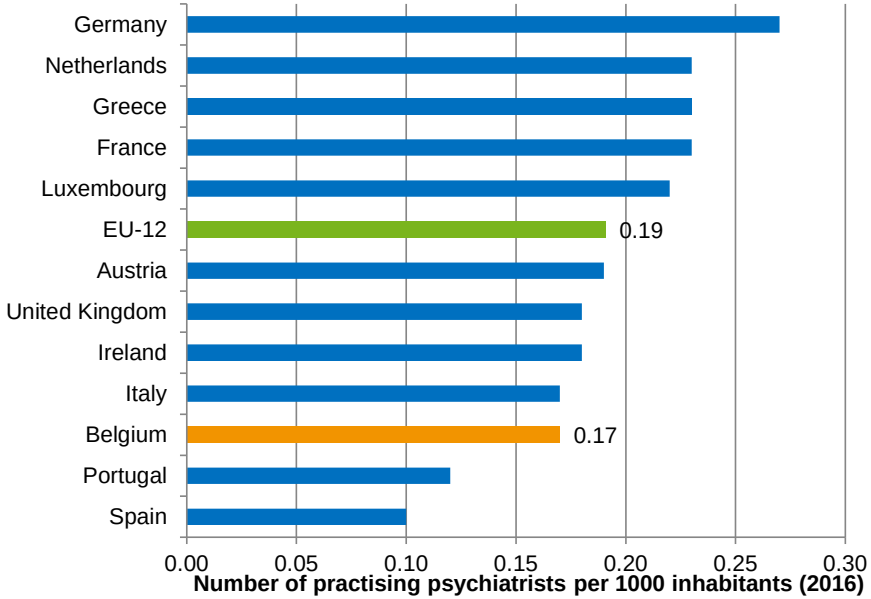
Contrary to what was observed in the PlanCAD project (see Table 106 versus Table 105), data from OECD show no increase in terms of practising psychiatrists density over the period 2000-2016, contrary to the other EU-15 countries.

[iii] https://www.inami.fgov.be/fr/nouvelles/Pages/remboursement-soins-psychologiques-premiere-ligne.aspx

Figure 158 – Number of practising psychiatrists per 1000 pop: international comparison (2000-2016)



Source: OECD health data 2018



Source: OECD health data 2018

Source: OECD health statistics 2018

Key points

- **The density of practising psychiatrists is stable since 2000 at 0.17 pyschiatrist / 1000 pop.**
- **Compared to the EU-15 European countries that report the number of practising psychiatrists to the OECD health data, Belgium has a density of practising psychiatrists just below the European average (0.19 / 1000 pop. in 2016).**
- **The density of psychiatrists in 2016 is higher in Brussels (0.33 / 1000 pop.), compared with Flanders (0.15 / 1000 pop.) and Wallonia (0.16/ 1000 pop.); however, the region is based on the home address of the psychiatrists, giving little information on the effective workplace.**

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11.3. Waiting time for a first face-to-face contact in a centre for ambulatory mental health (MH-3)

11.3.1. Documentation sheet

Description	Waiting time for a first face-to-face contact in a centre for ambulatory mental health
Calculation	• Number of days a patient has to wait for an intake assessment in a centre for ambulatory mental health; • Number of days a patient has to wait for a second contact with a centre for ambulatory mental health.
Rationale	Long waiting times are an important indication for accessibility problems. Moreover, excessive wait times may contribute to clinical deterioration and increased risk for suicide or hospitalisation. [1] Furthermore, the longer the wait, the less likely patients and families are to attend appointments. [2] Therefore, timeliness of access to mental health services can be considered as a key indicator in calls for improvement of the mental health care system. In Belgium, the competencies for mental healthcare services, because of several political agreements about state reforms, are not homogeneously organised at the level of the public authorities (e.g. the federal government is responsible for the payment of psychiatrists and psychiatric wards in acute hospitals while the federated entities are responsible for the organisation and payment of centres for ambulatory mental health care). Because of these scattered competencies, no standardized data sources exist that cover the entire mental health services system. Moreover, the self-employed clinical psychologists were covered nor by the Federal nor by the federated competency levels until the end of 2018; in 2019, a limited number of psychological consultations should be reimbursed at the federal level for 18-64 years old patients[jjj]. As such, problems arise when it is an objective to monitor waiting times for access to the mental healthcare systems. A second best option is to monitor the waiting times for one type of service. In this report, we use the data published by the Flemish Agency of Care about waiting times for the centres for ambulatory mental healthcare. There are 20 such centres in Flanders. They have to submit twice year a set of data based on their electronic patient records (two different systems in use since 2007).
Data source	Agentschap voor zorg en gezondheid: Cijfers Centra voor Geestelijke Gezondheidszorg [3]
International comparability	No international comparison available
Dimension	Accessibility (accessibility mental health services)
Related performance indicators	Percentage of visits to the Emergency Rooms in general hospitals for mental health and/or substance- related problems Suicide rates

[jjj] https://www.deblock.belgium.be/fr/le-remboursement-des-soins-psychologiques-pour-les-adultes-est-une-premi%C3%A8re-%C3%A9tape-vers-un

11.3.2. Results (Flanders)

The **waiting time for a first contact** with an ambulatory mental health centre was <1 month for 56% of all patients in 2017. Another 22% of the patients had to wait between 1 and 2 months, i.e. 22% had to wait more than 2 months. In 2009, 70% of the patients were seen within a month and only 13% had to wait more than 2 months. In 2017, clients for child and adolescent mental health services had to wait for 66 days on average, more than 2 weeks longer than other clients, with 1 out of 4 clients waiting more than 68 days for a first contact; mentally disabled had to wait for 96 days on average (more than 6 extra weeks). Elderly got their first contact with 25 days on average (Table 107).

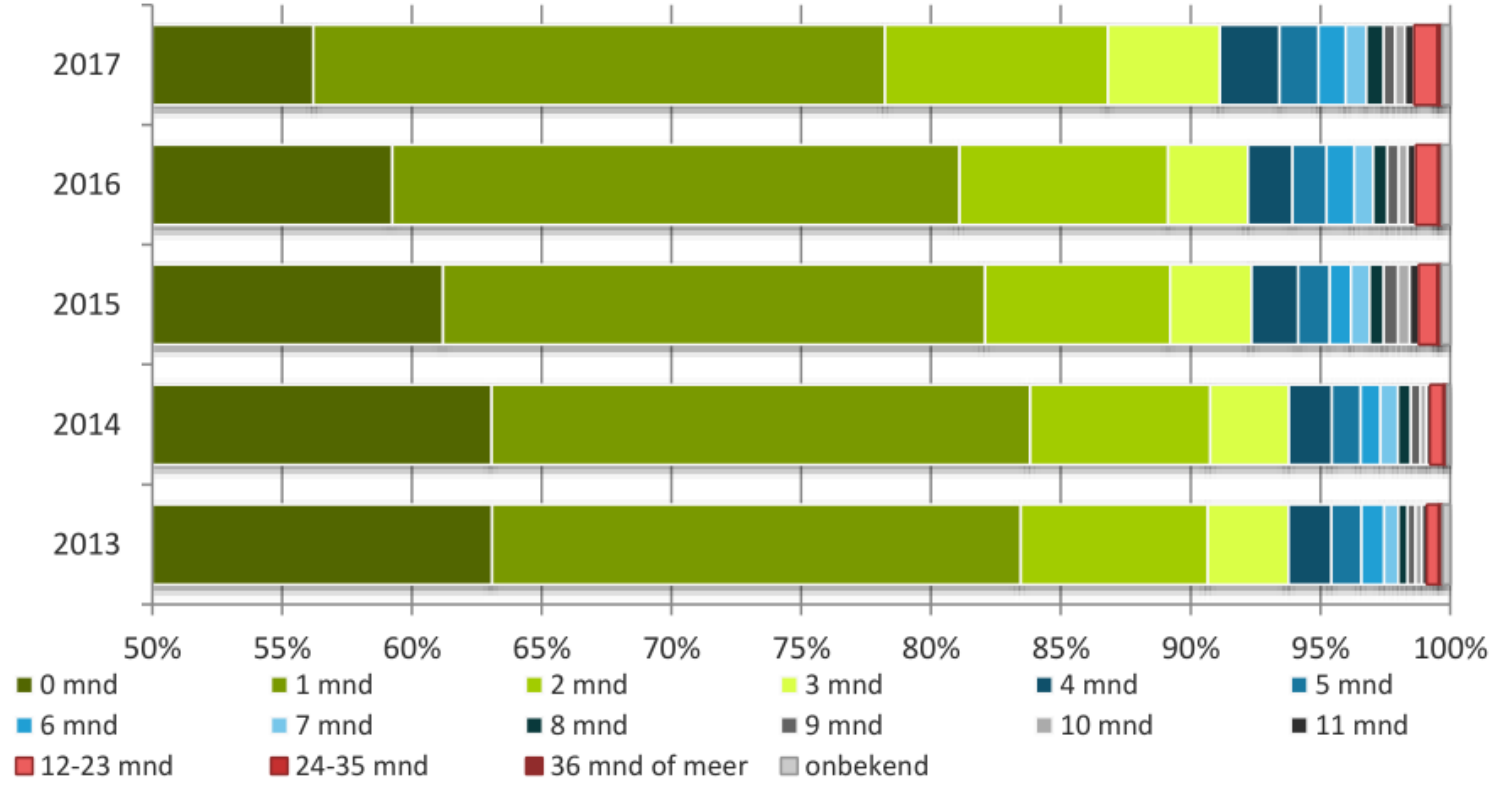
For the **second contact** (usually start of treatment), the proportion of patients seen within a month decreased from 66% in 2009 to 60% in 2017.

Table 107 – Waiting time for ambulatory mental health centres in Flanders (2009-2017)

Year of intake=	Waiting time until first contact									Waiting time after first contact								
year of registration	2009	2010	2011	2012	2013	2014	2015	2016	2017	2009	2010	2011	2012	2013	2014	2015	2016	2017
unknown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0 month	70%	66%	66%	65%	63%	63%	61%	59%	56%	66%	65%	64%	61%	61%	61%	62%	60%	60%
1 month	17%	19%	18%	20%	20%	21%	21%	22%	22%	18%	19%	18%	20%	20%	20%	20%	19%	19%
2 months	5%	7%	6%	7%	7%	7%	7%	8%	9%	7%	7%	7%	7%	7%	7%	7%	7%	7%
3 months	2%	3%	3%	3%	3%	3%	3%	3%	4%	3%	3%	3%	4%	4%	4%	4%	4%	4%
4 months	1%	2%	2%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
5 months	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
6 months	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
7 months	0%	0%	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%
8 months	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	1%	1%	1%	1%	1%	1%	1%
9 months	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%
10 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12-23 months	1%	1%	1%	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
24-35 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
36 months or more	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All files	28 475	28 393	28 582	29 480	30 061	29 407	29 959	30 050	29 174	21 277	21 182	21 190	21 679	21 950	22 019	22 358	22 377	21 095

Source: EPD 2009-2017 [3]

Figure 159 – Waiting time for ambulatory mental health centres in Flanders, first contact (2013-2017)



Source: EPD 2013-2017 [3]

Table 108 – Waiting time for first contact in ambulatory mental healthcare centres in Flanders, by type of care (2017)

Zorgsoort	aantal zorgperiodes	gemiddelde wachttijd	75% van cliënten moet maximaal ... dagen wachten
Alle zorgsoorten	**29.083**	**50**	**53**
Kinder- en jeugdzorg	6.422	66	68
Volwassenenzorg	11.969	53	60
Ouderenzorg	1.961	25	30
Verslavingszorg	2.738	47	48
Forensische zorg	2.736	40	39
Zorg verstandelijk gehandicapten	164	96	135

Source: EPD registration data, 2017 [3]

Key points

- **Data about waiting times for mental health services are not systematically collected for the entire Belgian mental healthcare system. Only data for waiting times to access Flemish ambulatory mental health centres are publicly available.**
- **Almost half of patients have to wait 1 month or more on a first contact (44% in 2017), a percentage that increased over time (30% in 2009).**
- **On average waiting times are longest for mentally disabled mental healthcare services, and shortest for elderly services.**

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11.4. Involuntary committal in psychiatric hospitals (MH-4)

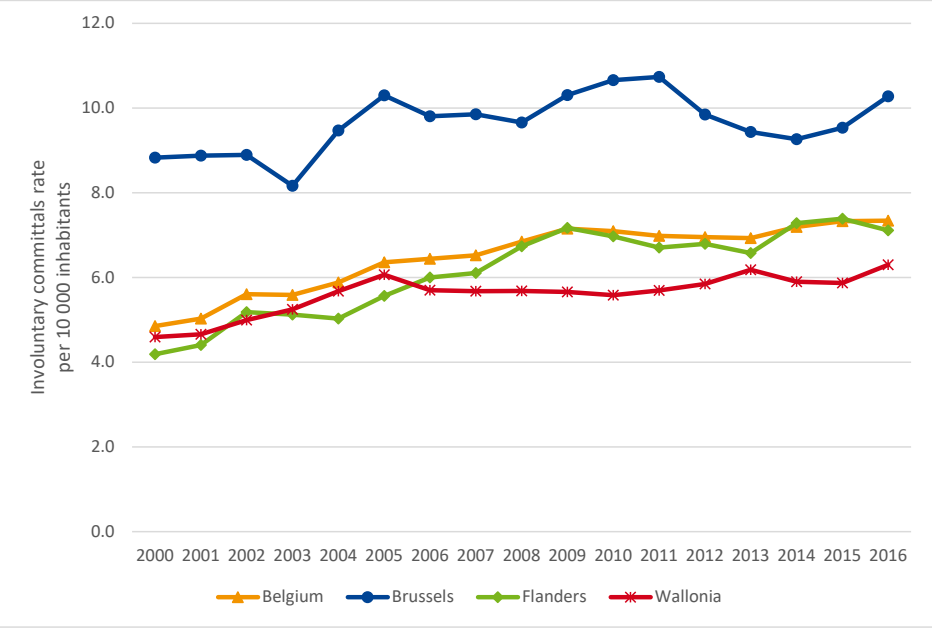
11.4.1. Documentation sheet

Description	Rate of involuntary committals in Psychiatric hospital or psychiatric services per capita
Calculation	Numerator: number of involuntary admissions per year Denominator: Midyear Belgian Population
Rationale	The need to minimize unnecessary involuntary admissions but provide appropriate treatment, supervision and protection for persons with serious mental illness is a key system goal. [1] An involuntary admission is indicative of a crisis episode but can also shed some insights into the availability and adequacy of inpatient resources and alternative forms of care for the group of more demanding patients. [2] In addition, this risk of involuntary admissions has been shown to be greater for ethnic minority groups. [2, 3] In order to better protect psychiatric patients, most European countries have reformed their mental protection laws and reviewed their criteria for involuntary commitment.[2] Despite these reforms, there are international and intra-regional differences in the use of involuntary admissions with rates increasing in some western European countries that cannot be explained by increased prevalence of severe mental disorders. [4] While some authors have expressed concern that an increased number of forensic beds signals re-institutionalization, this has not been accompanied by a consistent rise in forensic involuntary admissions. [4]
Primary data source	MPG
Indicator source	SPF – FOD Public Health
Technical definitions	**Numerator**: All involuntary admissions identified in MPG by variable “MA09 Type of admissions” by the following response categories (21” admission for observation”; 22 “internment”; 23” continuation forced stay”; 24 “probation”; 29 “other legal conditions”). **Denominator**: population For regional figures, calculations are based on patient’s residence.
International comparability	It is included in the International Mental Health Comparisons (adults and older adults services) from NHS Benchmarking Network The interpretation of this indicator in an international context requires investigation into the operation of legislation pertaining to such admissions in the countries under analysis. In Belgium a change in status from involuntary towards voluntary admission during the hospitalisation period is not taken into account whereas this was usually done by other countries. [5]
Dimension	Quality(appropriateness of mental healthcare)

11.4.2. Results

The rate of involuntary committals in psychiatric hospitals increased between 2000 and 2016: from 4.85 per 10 000 inhabitants in 2000 to 7.34 in 2016. It is higher for men (2016: 9.57/10 000) compared to women (2016: 5.18/10 000) and large differences can be observed between regions (in 2016): Flanders 7.11/10 000; Brussels 10.27/10 000; Wallonia: 6.30/10 000). Several initiatives are taken to deal with this increasing trend.

Figure 160 – Rate of Involuntary Committals per 10 000 inhabitants (2000-2014)



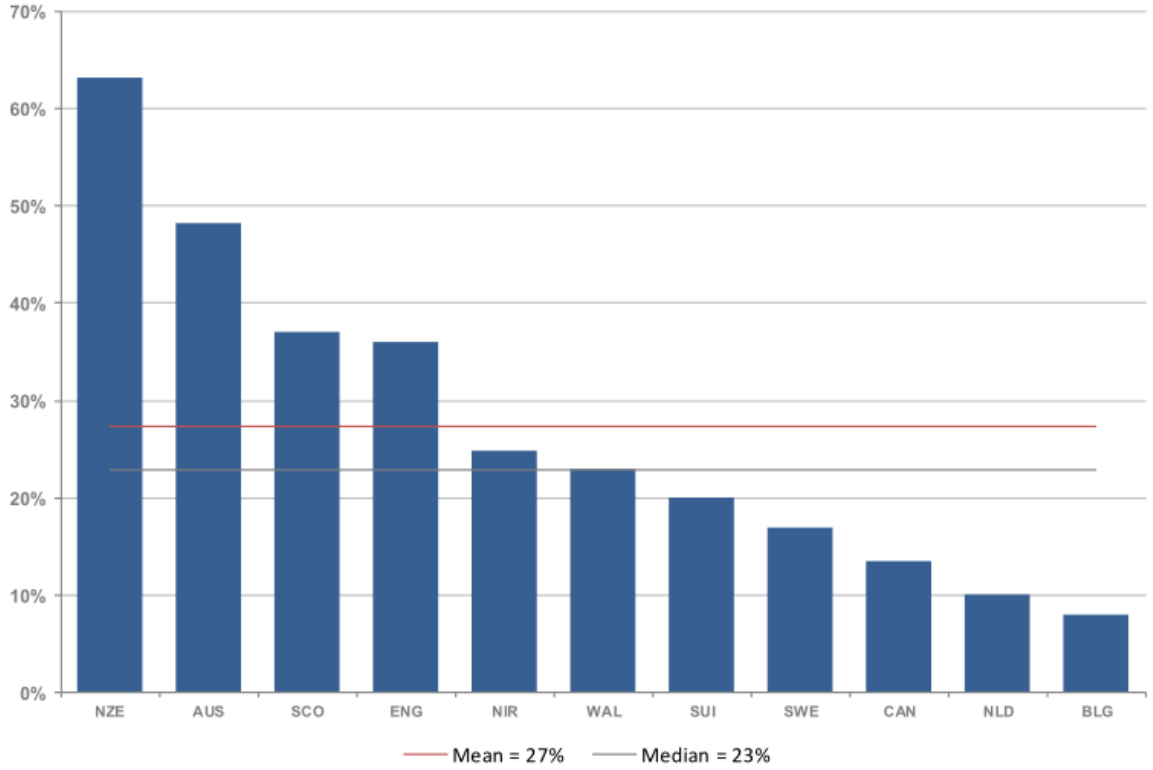
Source: SPF SPSCAE – FOD VVVL

The umbrella organization of Flemish (psychiatric) hospitals (Zorgnet Vlaanderen), for instance, installed a working group which made propositions for legal changes. They plea for a further investment in the development of ambulatory capacity crisis capacity to avoid involuntary committals (and only use them as a last resort).[kkk]

kkk http://www.zorgnetvlaanderen.be/Nieuws/Pages/Noodaanmodernkleedjevoorwetgedwongenopname.aspx

The proportion of admissions that were involuntary is lower in Belgium that in other countries (the Netherlands, Australia, New Zealand, Switzerland, Sweden, Canada (data for only 5 provinces out of 13) and UK, see Figure 161.

Figure 161 – Proportion of psychiatric admissions that were involuntary (international comparison)



Source: International Mental Health Comparisons, NHS Benchmarking Network
NZE: New Zealand, AUS: Australia, SCO: Scotland, ENG: England, NIR: Northern Ireland, WAL: Wales, SUI: Switzerland, SWE: Sweden, CAN: Canada NLD: the Netherlands, BLG: Belgium.

Key points

- **The involuntary committal rate in psychiatric hospitals rose from 4.9 / 10 000 pop. in 2000 to 7.3 / 10 000 pop. in 2016**
- **Large differences between regions exist with higher rates in Brussels (10.3 involuntary commitals per 10 000 inhabitants) compared to Flanders (7.1 / 10 000) and Wallonia (6.3 / 10 000).**

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11.5. Proportion of visits to the Emergency Rooms in general hospitals for mental health related problems (MH-5)

11.5.1. Documentation sheet

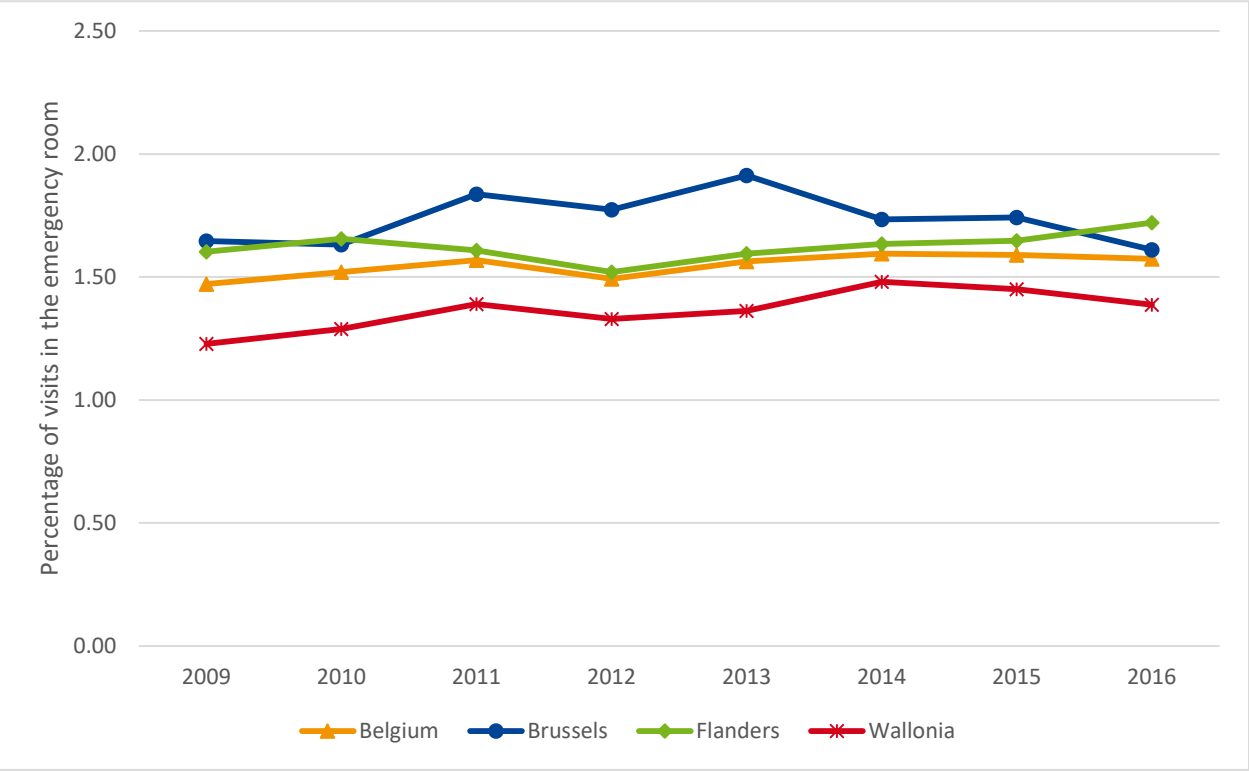
Description	Proportion of visits to the Emergency Rooms in general hospitals for mental health related problems
Calculation	Numerator: number of emergency room presentations with a mental health and/or social problem and/or suicide attempt
	Denominator: total emergency room presentations
Rationale	Although unforeseen and unavoidable emergencies do arise in mental health, mental health related emergency room use is used as an indicator of poor coordination of care and service failures. [1] The community treatment system to support services for people with mental health related problems is regarded as ineffective when utilisation rates of emergency departments of general hospitals are high. [2] Highly accessible outpatient care is considered to help people to enter treatment before reaching the crisis stage and minimise the need for emergency room visits. [1] In addition, it is assumed that effective liaison between emergency rooms and mental health crisis resources reduce the use of emergency rooms for mental health services/clients. High rates of mental health related emergency room visits are not only a concern for members of the mental health community. It is also a concern that overcrowding emergency department results in decreased quality of care and increased likelihood of medical error. [2] In the US, it has been illustrated that mental health related emergency room visits are on the rise for more than one decade[3]. This stresses the importance of the availability of expertise in the field of mental health in emergency rooms to manage these crises. Depending on the number of visits

	for mental health problems, availability of a mental health specialist in every emergency room may not be practical. Still, there should be a minimum protocol by which mental health expertise is accessible for immediate care for every citizen. [4]
Data source	RHM – MZG (hospital administrative discharge data) since 2008, FPS Public Health RHM (information not available in RCM – MKG)
Results source	National feedbacks emergency rooms [5]
Technical definitions	**Denominator = number of visit in emergency room.** **Definition of visit in emergency room using the RHM**: The admissions in emergency department can be identified in the RHM with the following codes: 1. Variable CODE_UNIT beginning with "URG" in dataset STAYUNIT (A5) 2. ORDER_UNIT = 1 in dataset STAYUNIT (A5) Excluding the long stays with A2_HOSPTYPE_FAC = N, M or L in STAYHOSP **Distinction between type of admission:** 1. Ambulatory emergency (A2_HOSPTYPE_FAC = U in dataset STAYHOSP (A2)) 2. ONE day (A2_HOSPTYPE_FAC = C & D in dataset STAYHOSP (A2)) 3. Classic hospitalization (A2_HOSPTYPE_FAC = H & F in dataset STAYHOSP (A2)) **Numerator = Number of visit in emergency room (see definition of denominator) with mental health/substance related problem records** **Definition of mental health/substance-related problem records in emergency room using the RHM**: we can identify the reason of admission for suicide attempt or mental/psychological reasons. These codes are, however, not specific enough as they also include non-mental health related problems (e.g. social problems). The following selection was used to detect these cases: M6_TYPE_INFO_URG = R and M6_CODE_INFO_URG = F or S in the dataset URGADMIN (M6)
Limitation	This indicator should be considered as a proxy indicator since it is based on the symptoms/complaints with which the patients arrives to the emergency room. The flagged symptoms/complaints include besides suicide attempts, mental and psychic reasons also social reasons. A more detailed analysis with linkages with the verified admission diagnosis (or secondary diagnoses) via the Belgian hospital discharge dataset (MZG/RHM) is beyond the scope of this study.
International comparability	This indicator is not standardised for international comparison. The Health Care Utilization Project (HCUP) of HARQ gives the most detailed description of this indicator and makes use of a similar data source and coding structure as the MKG – RCM.[2] Similar data are reported by NHS Scotland. [6]

11.5.2. Results

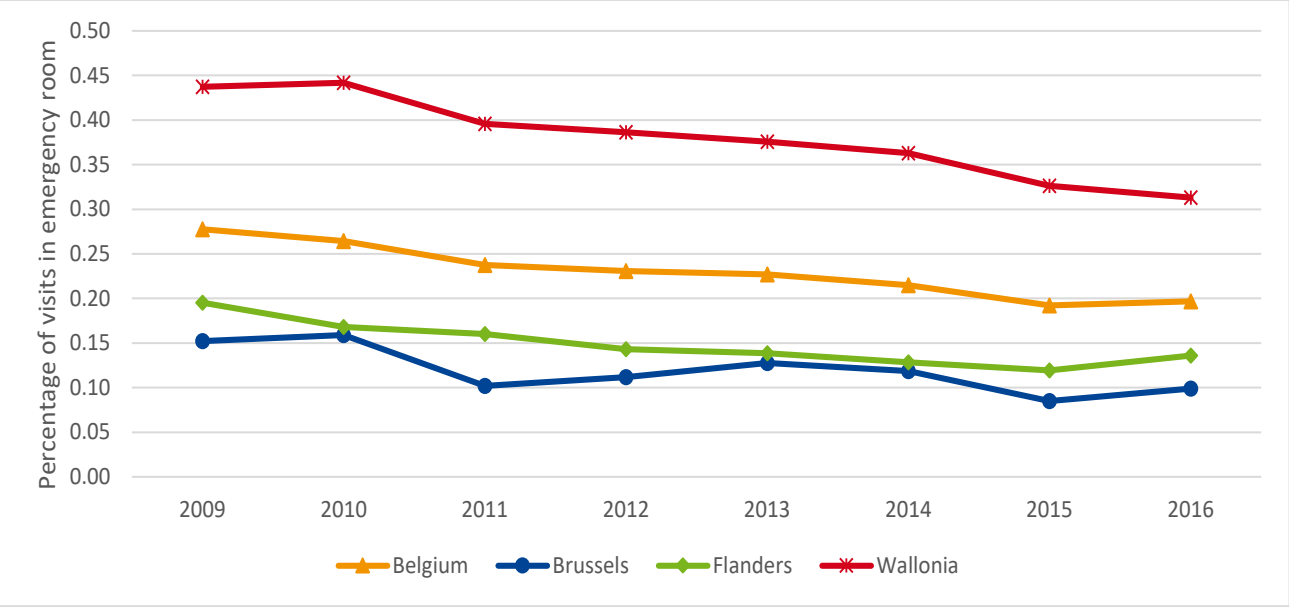
From the 3 506 831 emergency admissions in 2016 there are 6898 admissions for suicide attempts (0.2%) and 55 164 admissions for social, mental or psychiatric reasons (1.6%). These percentages are relatively stable over time (2012-2016). The proportion of suicide attempts is higher in Wallonia (0.4%) compared to Brussels (0.1%) and Flanders (0.1%). For the proportion of patients with social, mental or psychic complaints, Flanders (1.7%) has the highest rate in 2016, followed by Brussels (1.6%) and Wallonia (1.4%).

Figure 162 – Percentage of visits in emergency rooms for social, mental or psychic reasons (2009-2016)



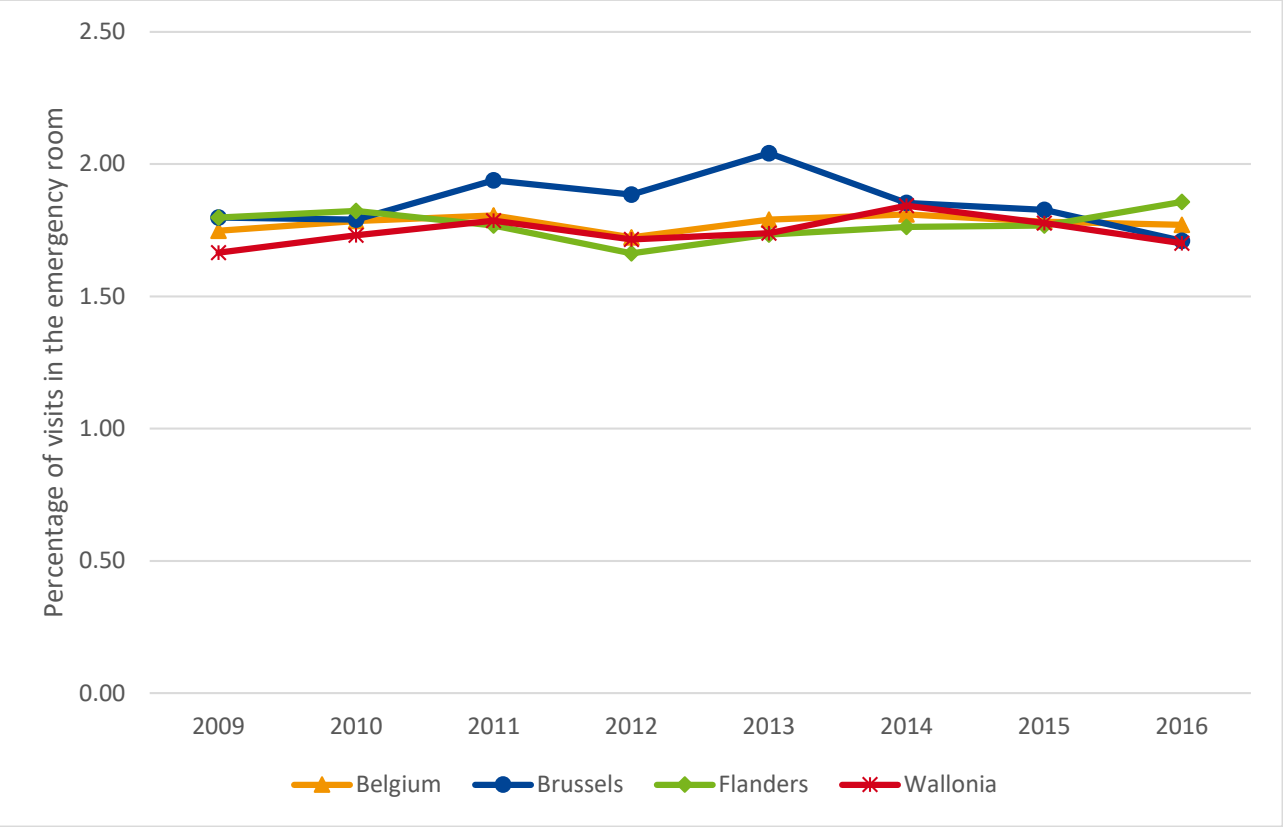
Source: National feedback on the use of emergency services[5]

Figure 163 – Percentage of visits in emergency rooms for suicide attempts (2009-2016)



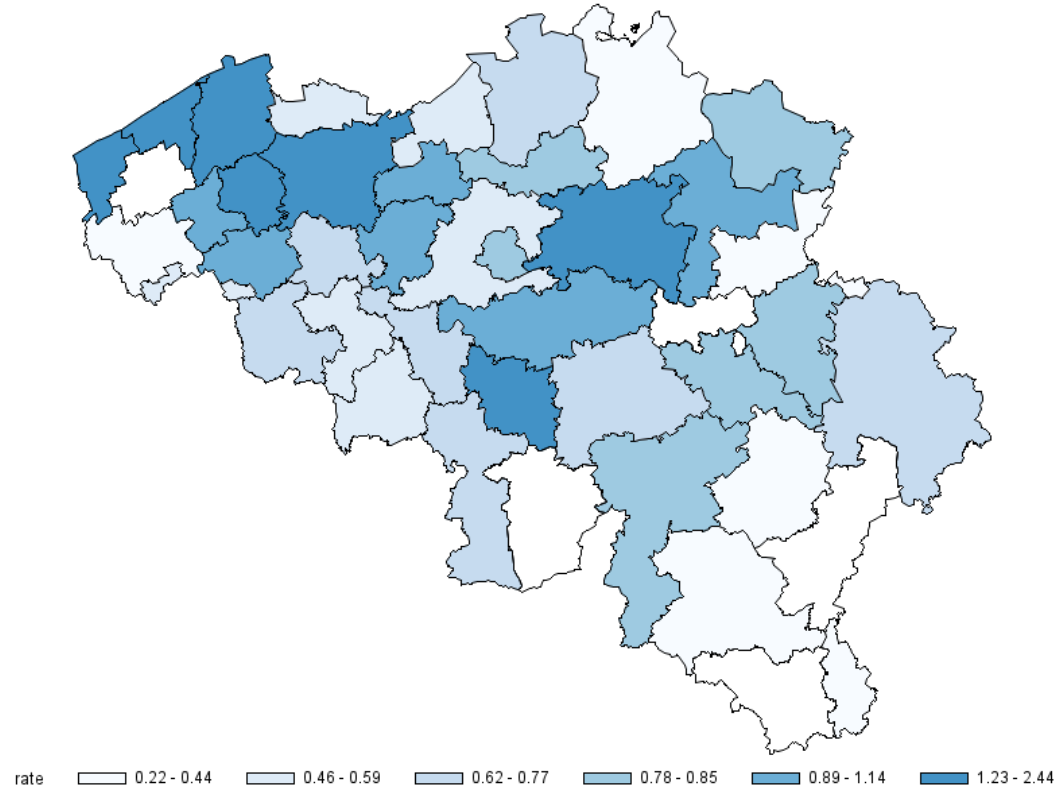
Source: National feedback on the use of emergency services[5]

Figure 164 – Percentage of visits in emergency rooms for social, mental or psychic reasons or suicide attempts (2009-2016)



Source: National feedback on the use of emergency services[5]

Figure 165 – Proportion (%) of visits in emergency rooms for social, mental or psychic reasons or suicide attempts by district (2016)



Source: National feedback on the use of emergency services[5]
No data for the following districts: Bastogne, Diksmuide, Philippeville, Virton and Waremme.

Key points

- **The percentage of visits to the Emergency Rooms in general hospitals for mental health related problems is relatively stable over time (1.75% in 2009, 1.77% in 2016) .**
- **The percentage of admissions for social, mental or psychic problems is the highest in Flanders (1.72%, for 1.61% in Brussels and 1.39% in Wallonia in 2016).**
- **In 2016, there are more admissions in Wallonia for suicide attempts (0.31%) than in Flanders (0.14%) and Brussels (0.10%).**

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11.6. Antidepressant medication (MH-6, MH-7, MH-8)

11.6.1. Documentation sheet

Description	There are three indicators to assess the appropriateness of antidepressants prescription 1. The total volume prescribed per day (defined daily dosage of antidepressants per 1000 inhabitants per day); 2. Percentage of 15 or older persons with antidepressants prescribed 3. Percentage of very short antidepressant treatment episodes for adult patients (18 years or older)
Calculation	**Number of Defined Daily Doses (DDD) of antidepressants (ATC code=N06A) per 1000 inhabitants per day** Numerator: Total DDDs of antidepressants per day (=total number of DDD on the year divided by 365 days) delivered; Denominator: Number of insured population. **Percentage of adults with antidepressants prescribed** Numerator: Number of persons (≥18 years) with at least 1 prescription of antidepressant; Denominator: Number of insured persons (≥18 years). **Percentage of very short antidepressant treatment episodes for adult patients (18 years or older)** Numerator: a. Number of adults (≥18 years) with at least 1 antidepressant delivered, for which the treatment episode is less than or equal to 3 months; b. Number of adults (≥18 years) with at least 1 antidepressant delivered, for which the treatment episode is less than or equal to 6 months. Denominator: Number of adults (≥18 years) with at least 1 antidepressant delivered. Both in case a and b, the percentage is measured each year, except for the first and last available years, which are considered "buffer years" to be able to measure 6 months treatments spreading over two years. A treatment is considered over if no prescription is found 6 months after the last prescription date.
Rationale	The use of antidepressant drugs increases year by year. The DDDs for antidepressants provided by community pharmacies, for instance, increased between 2001 & 2009, from 157 to 262 million. [1] The reasons for this and other increases (e.g. antipsychotics), however, are unclear. Several Belgian reports[2,3] have pointed out that there is an inappropriate use (wrong indication; wrong duration; wrong type of medication) of the psycho-pharmaceutical drugs which not only causes a risk for public health but also results in unnecessary societal costs. Antidepressants are indicated for the treatment of severe depression, panic and anxiety disorder and obsessive compulsive disorder. Yet, to be effective, long-term use (at least 6 months), in combination with high-intensity psychological intervention, is required. [4] In this report, we will use a proxy to measure adherence to this guideline. Since we have no data about the diagnosis we will consider all treatment episodes less than 3 or 6 months as inappropriate. The inappropriate use will as such include patient groups for which the use of antidepressants is not indicated (e.g. mild depression) and for whom the treatment episode is inappropriate (e.g. major depression with a treatment episode of 1 month). What is more the duration of use can only be estimated. It is assumed that patients to whom a package of drugs is delivered also take all doses included in the package at a uniform defined daily dose (DDD) regimen and at 100% adherence. [5]
Primary data source	RIZIV – INAMI (Pharmanet – Farmanet) for indicator 1, EPS (IMA – IAM, calculation: INAMI – RIZIV) for indicator 2, IMA –AIM data for indicator [3]

Technical definitions	The medications studied are classified into the following ATC classe: Antidepressant: N06A
Limitations	Data do not include medicines provided by hospital pharmacies.
International comparability	Only for the DDD antidepressants per 1000 inhabitants international comparable data are available. [6]
Dimension	Quality (appropriateness in mental healthcare)

11.6.2. Results

11.6.2.1.DDD antidepressants

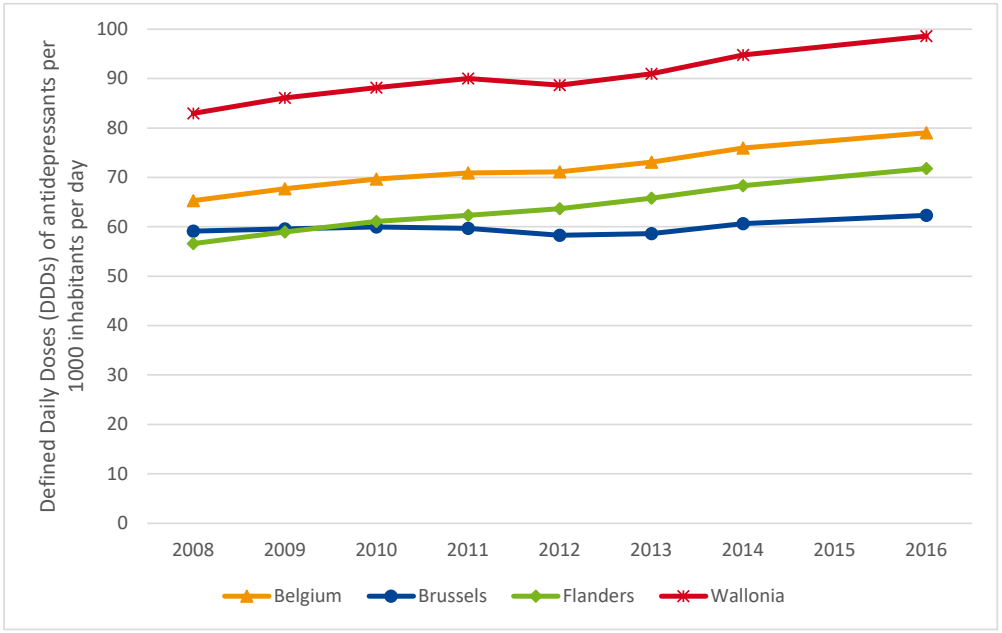
The consumption of antidepressants (N06A) increased from 42 DDDs per 1000 inhabitants per day in 2002 to 79.0 DDDs per 1000 inhabitants per day in 2016, with large differences between regions (higher from Wallonia than in Brussels and Flanders), as shown in Figure 166. This trend of increasing use is also seen internationally (see Figure 167 right hand-side) but Belgium is consistently above the EU average (e.g. in 2016: 79.0 in Belgium compared to 70.2 for the EU-15).[6] A significant difference is observed between the consumption of persons aged 75 and over in nursing home who receive 362.2 DDDs per 1000 inhabitants per day and those of the same category not in nursing homes, who received 134.5 DDDs per 1000 inhabitants per day in 2016.

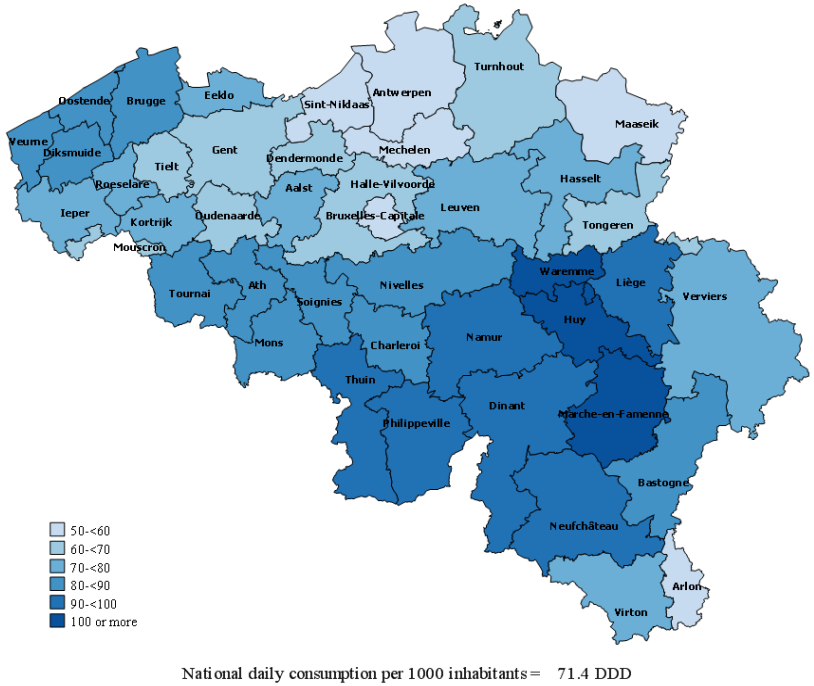
Table 109 – Defined Daily Doses (DDDs) of antidepressants per 1000 inhabitants per day, by patient characteristics (2016)

Variable	Category	Total DDDs/ 1000 inhabitants per day
Data 2013 by categories		
Age (years)	00-14	0.4
	15-34	27.3
	35-49	91.4
	50-64	131.8
	65-74	134.6
	75-84	154.1
	85+	174.7
Gender	Female	104.1
	Male	53.0
Province	Antwerpen	61.7
	Brabant Wallon	91.8
	Bruxelles-Capitale	62.3
	Hainaut	97.3
	Liège	100.2
	Limburg	78.5
	Luxembourg	109.4
	Namur	99.2
	Oost-Vlaanderen	71.9
	Vlaams Brabant	72.1
	West-Vlaanderen	82.4

Source: IMA – AIM (EPS): Pharmanet – Farmanet; calculation:INAMI – RIZIV

Figure 166 – Defined Daily Doses (DDDs) of antidepressants per 1000 inhabitants per day, by patient region (2008-2016) and district (2013)

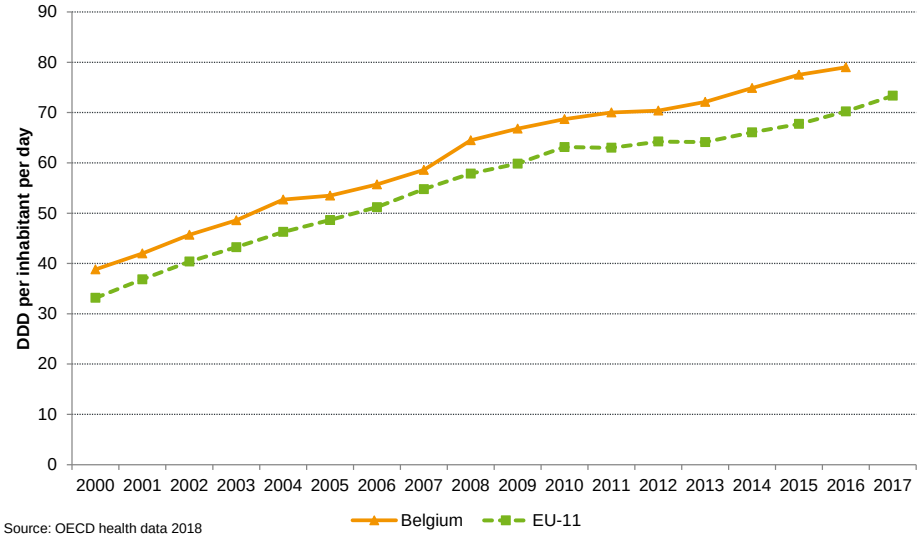




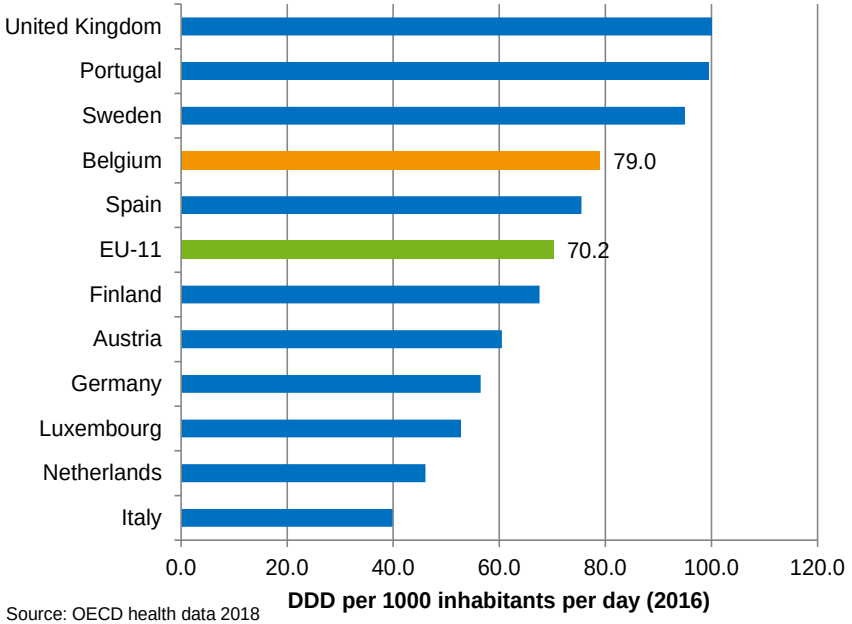
National daily consumption per 1000 inhabitants = 71.4 DDD

Source: Pharmanet – Farmanet ; calculation: INAMI – RIZIV

Figure 167 – DDDs of antidepressants: international comparison (2000- 2016)



Source: OECD health data 2018



Source: OECD health data 2018

Source: OECD Health statistics 2018

11.6.2.2.Percentage of adults with antidepressants prescribed

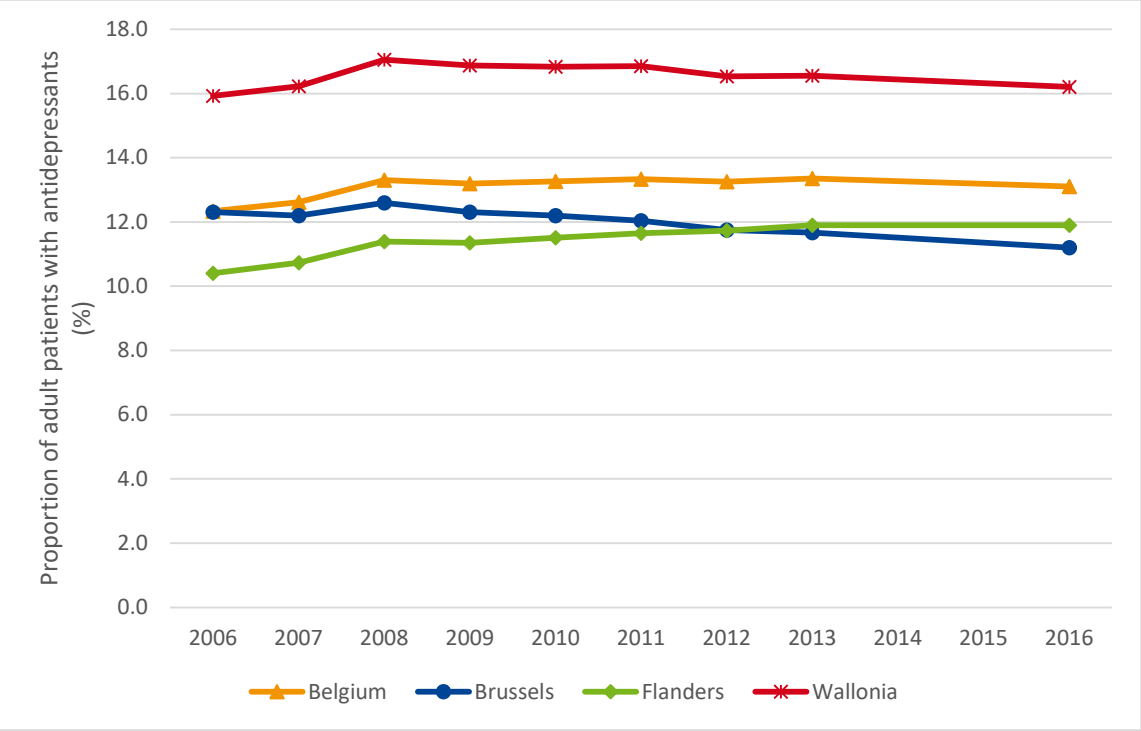
In contrast with the DDD per 1000 inhabitants per day, the percentage of adults only slightly increased: from 12.3% in 2006 to 13.1% in 2016 (males: 9.1%; Females: 16.9%). There are, however, large differences between the regions: Flanders: 11.9%; Wallonia: 16.2%; Brussels: 11.2%. From Table 110, it is clear that this percentages increases with age with 20% or more of adults with delivered antidepressants for patients of ≥75 years old. There is also a large difference in patients of 75 years or older regarding the type of care they receive: nursing homes (48.6%) or not (18.9%).

Table 110 – Percentage of adults with antidepressants prescribed, by patient characteristics (2016)

Variable	Category	Percentage with antidepressants
Data 2013 by categories		
Age (years)	18-34	5.2%
	35-49	12.2%
	50-64	16.3%
	65-74	17.1%
	75-84	20.9%
	>=85	25.5%
Gender	Female	16.9%
	Male	9.1%
Long term care (75 years or +)	Institutions	48.6%
	no institutions	18.9%
Province	Antwerpen	10.4%
	Brabant Wallon	14.9%
	Bruxelles-Capitale	11.2%
	Hainaut	16.1%
	Limburg	12.9%
	Liège	16.1%
	Luxembourg	17.4%
	Namur	17.0%
	Oost-Vlaanderen	11.9%
	Vlaams Brabant	12.0%
	West-Vlaanderen	13.2%

Source: EPS (IMA – AIM), calculation: INAMI – RIZIV

Figure 168 – Percentage of adults (≥18 years) with antidepressants (2006-2016)



Source EPS (IMA – AIM), calculation: INAMI – RIZIV

11.6.2.3.Percentage of very short antidepressant therapies

After a stable period from 2009 to 2012, the percentage of adults with a very short term antidepressant therapy (<3 months) decreased from 46.9 % in 2013 to 42.6% in 2016 (Figure 169). In 2016, the percentage of short therapies is higher among men (<6 months: 60.3%; <3 months 42.4%) compared to women (<6 months: 56.9%; <3 months 41.5%), see Table 111.

The highest percentages of short therapies (<6 months) can be observed among the younger age groups with ≥65% in the age groups 90 or more years. There are no large differences for very short term therapy (<3 months) between regions: Flanders 43.2%, Wallonia 41.3% and Brussels 43.7%. There are differences for patients of 65 years or older regarding the type of care they receive: no long-term care (43.5%); home care (39.3%); nursing homes (49.5%).

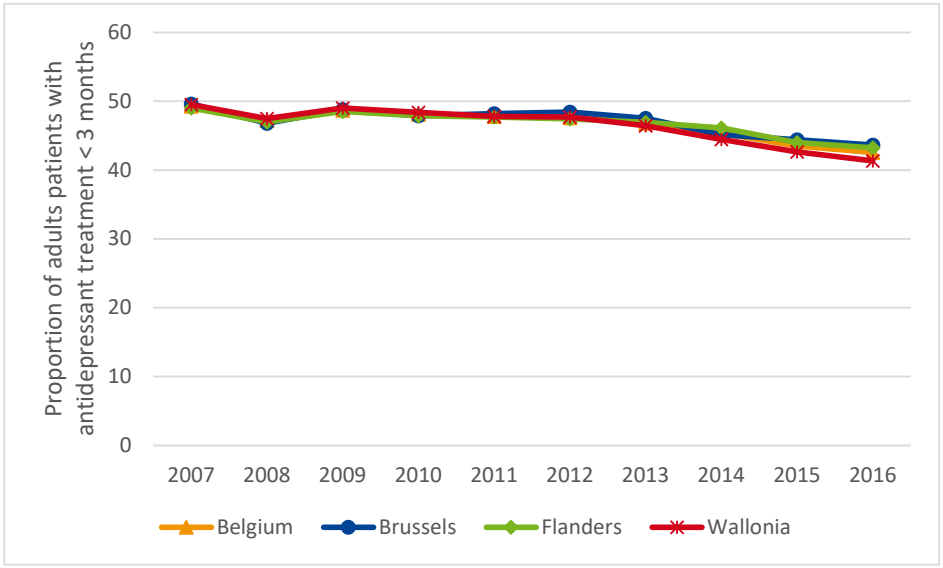
Table 111 – Percentage of adults with short-term antidepressants prescribed, by patient characteristics (2016)

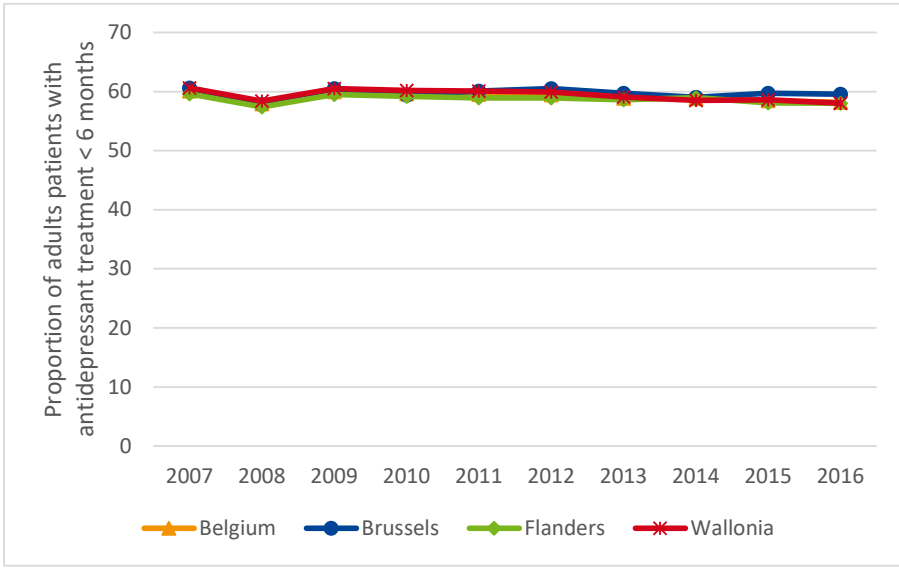
Variable	Category	Numerator (<3 months)	Numerator (<6 months)	Denominator	Percentage with antidepressants < 3 months	Percentage with antidepressants < 6 months
Age (years)	18-19	1960	2713	4385	44.7%	61.9%
	20-24	6789	9437	15205	44.7%	62.1%
	25-29	9916	13612	22052	45.0%	61.7%
	30-34	11779	16356	27389	43.0%	59.7%
	35-39	13888	19381	33434	41.5%	58.0%
	40-44	15037	20929	36546	41.2%	57.3%
	45-49	16853	23131	40730	41.4%	56.8%
	50-54	17980	24471	43283	41.5%	56.5%
	55-59	16785	22829	40333	41.6%	56.6%
	60-64	13310	17995	31323	42.5%	57.5%
	65-69	11833	15926	27603	42.9%	57.7%
	70-74	10041	13517	23363	43.0%	57.9%
	75-79	9382	12578	21840	43.0%	57.6%
	80-84	8404	11300	19549	43.0%	57.8%
	85-89	5729	7787	12679	45.2%	61.4%
	90-94	2293	3084	4649	49.3%	66.3%
	95-99	444	587	817	54.4%	71.9%
	>=100	27	39	51	52.9%	76.5%
Gender	Female	105 186	144 232	253 439	41.5%	56.9%
	Male	69 977	95 211	157 936	44.3%	60.3%
Entitlement to increased reimbursement	No	130 280	177 992	307 043	42.4%	58.0%

Variable	Category	Numerator (<3 months)	Numerator (<6 months)	Denominator	Percentage with antidepressants < 3 months	Percentage with antidepressants < 6 months
	Yes	44 785	61 314	104 134	43.0%	58.9%
Long term care (65 years or +)	Home care	4116	5564	10 479	39.3%	53.1%
	Institutions	4497	6510	9078	49.5%	71.7%
	no LT care	39 540	52 744	90 994	43.5%	58.0%
Province	Antwerpen	23 960	32 028	55 245	43.4%	58.0%
	Brabant Wallon	6332	8828	15 729	40.3%	56.1%
	Bruxelles-Capitale	16 166	22 067	37 035	43.7%	59.6%
	Hainaut	25 840	36 150	60 679	42.6%	59.6%
	Limburg	12 856	17 854	31 209	41.2%	57.2%
	Liège	17 721	25 420	44 583	39.8%	57.0%
	Luxembourg	3890	5373	9571	40.6%	56.1%
	Namur	9637	13 274	22 881	42.1%	58.0%
	Oost-Vlaanderen	22 594	29 839	51 096	44.2%	58.4%
	Vlaams Brabant	15 716	21 042	36 800	42.7%	57.2%
	West-Vlaanderen	19 514	26 203	44 502	43.9%	58.9%

Source: IMA – AIM

Figure 169 – Short-term antidepressant use per region: treatment < 3 months and treatment < 6 months (2012-2016)





Source: IMA – AIM

Key points

- **The prescription of antidepressant medication increased from 42 DDDs per 1000 inhabitants per day in 2002 to 79 DDD per 1000 inhabitants per day in 2016, with large differences between regions (higher in Wallonia than in Brussels and Flanders).**
- **The same increasing trend is observed in all European countries. With 79 DDDs / 1000 pop. / day, Belgium is above the European average of 70 DDDs / 1000 pop. / day.**
- **Yet, the number of adults with antidepressant medication increased only from 12.3% in 2006 to 13.1% in 2016 but with the same large variation between regions (higher in Wallonia than Brussels and in Flanders, but slightly decreasing in Wallonia and Brussels since 2009).**
- **Especially among the elderly (≥ 75 years old) in nursing homes, the proportion of persons with antidepressants is high: 48.6% (vs 18.9%)**
- **A high percentage of adults receive only antidepressant therapy for very short periods (<3 months): 42.6% in 2016, but the situation is getting better (49.3% in 2007); there are no regional differences.**

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11.7. Prescription on anticholinergic antidepressant drugs among the elderly (MH-9)

This indicator has been analysed together with the indicator Prescription of anticholinergics in the elderly (ELD-10).

11.8. Number of hospitalisations days in psychiatric hospital wards per capita (MH-10)

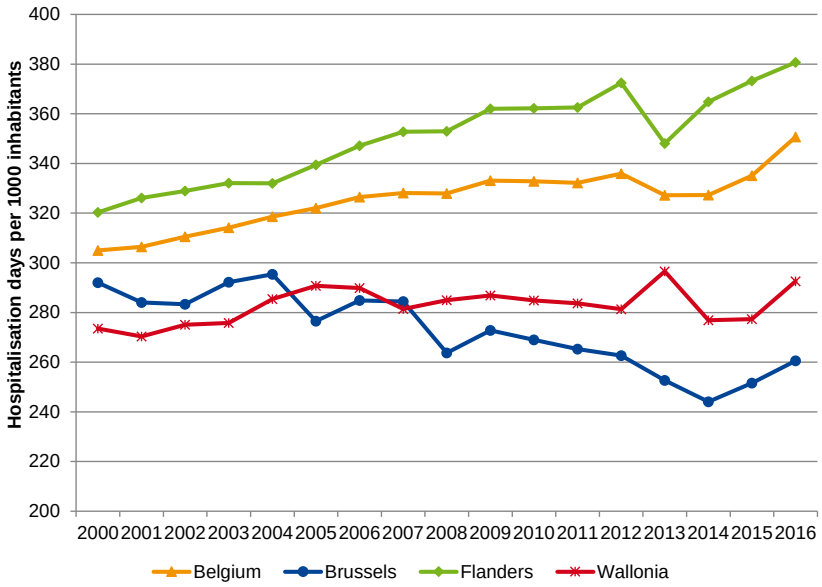
11.8.1. Documentation sheet

Description	Number of hospitalisations days in psychiatric hospital per capita
Calculation	**Numerator**: Number of hospitalisation days in psychiatric hospital or in psychiatric services of general hospital with at least one overnight. **Denominator**: Mid-year population
Rationale	This indicator provides contextual information on the utilisation of mental healthcare services outside ambulatory setting. It may reflect differences between regions, such as the health of the population, differing health service delivery models and variations in the availability and accessibility of specialised, residential and/or ambulatory and community-based services. We acknowledge that monitoring psychiatric hospital service use captures only a relatively small proportion of individuals who require mental healthcare services. However, in Belgium (like in other Western countries), recent reforms (e.g. art. 107 projects) in mental healthcare aim to shift the organisation of mental healthcare from a model that was based on 'large isolated institutions' towards a balanced care model. This implies that care is offered and delivered as close as possible to the patient's living environment, and only if necessary in an institution. As such, one may expect a decreasing trend of psychiatric hospitalisation days. [1]
Primary Data source	RPM – MPG from FPS Public Health Period 2000-2016
Periodicity	Yearly
Technical definitions and limitations	The **number of days** is calculated as the discharge date – admission date. This implies that one-day stays are not included in the calculation. Data is reported based on the region of the patient's residence.
International comparability	This indicator is not included in standardised international indicator sets. A similar indicator (mental Illness Patient Days rate) is also monitored by the Canadian Health Agency. [2]
Dimensions	Quality (Appropriateness)

11.8.2. Results

The number of psychiatric hospitalisation days per 1000 inhabitants increased from 305 in 2000 to 351 in 2016. The increase is steepest for Flanders (from 320/1000 in 2000 to 381/1000 in 2016 or +19%), while in Wallonia the increase is milder (from 274/1000 in 2000 to 293/1000 in 2016 or +7%). In Brussels, the trend is even decreasing (from 292/1000 in 2000 to 261/1000 in 2016 or -11%). For all three regions, there has been an increase in the last year (2016).

Figure 170 – Number of hospitalisation days in psychiatric hospital or in psychiatric services in general hospital per 1000 capita, by patient region (2000-2016)



Source: SPF SPSCAE – FOD VVVL (RPM – MPG)

Key points

- **Despite recent reform efforts aiming to make a shift from inpatient mental health care towards ambulatory alternatives, the number of psychiatric hospitalization days increased from 305/1000 inhabitants in 2000 to 351/1000 in 2016. There are large differences between regions: a steep increase in Flanders (+19% from 2000 to 2016), a small increase in Wallonia (+7%) and a decrease in Brussels (-11%).**

References

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11.9. Unplanned hospital re-admissions for mental illness (MH-11)

11.9.1. Documentation sheet

Description	Proportion of readmissions within 30 days in psychiatric hospitals
Calculation	**Numerator**: Number of readmissions in the same hospital within 30 days after discharge. **Denominator**: Number of stays in psychiatric hospital (PH) or in psychiatric services of general hospital (PSGH)
Rationale	Hospital readmission rates are commonly used as proxy for relapse or complication following a psychiatric inpatient stay: they can point to premature discharge or lack of coordination with outpatient care or a lack of continuity of care.
Primary Data source	RPM from FPS Public Health Period 2010-2016
Periodicity	Yearly
Technical definitions and limitations	Data is reported based on the region of the patient's residence. Some hospitals have a unique stay number rather than a unique patient number (readmissions are not counted as such). Only hospital stays where the patient was discharged are included.
International comparability	This indicator is currently included in the international mental health comparison from the NHS Benchmarking Network[III], it was proposed by the OECD mental care panel[1]
Dimensions	Quality (Appropriateness)

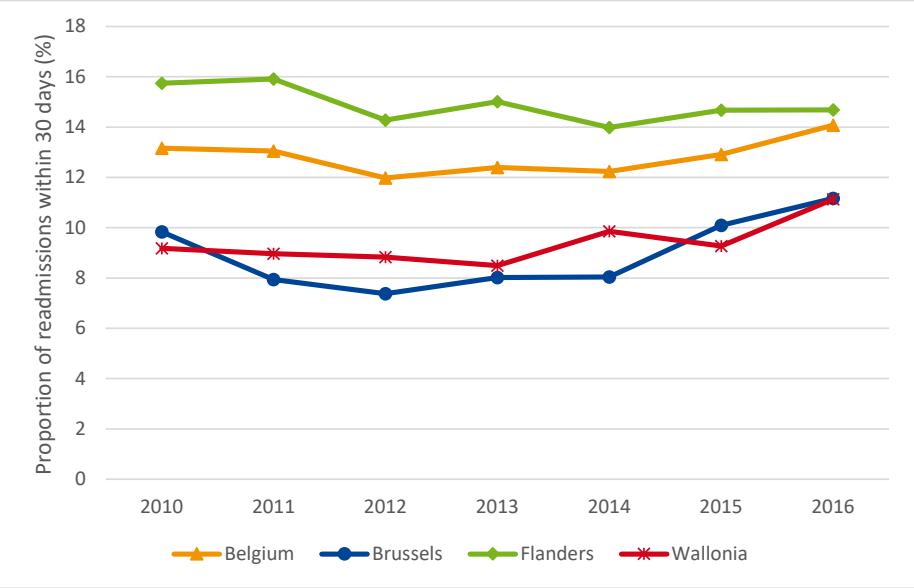
11.9.2. Results

Belgium

The rate of 30 days readmissions is 14.1% in Belgium in 2016. At the regional level, while Flanders is the only region with a stable trend, it has a higher rate (14.7% in 2016) than Wallonia (11.1%) and Brussels (11.1%). The lower rates for these two regions until 2015 come partly from an artefact: Brussels had two psychiatric services of general hospital (out of a total of 19 for both PH and PSGH) that had a unique number for stays instead of a unique number for patient: those hospitals had a nil readmission rate. Wallonia had a similar problem with one psychiatric service of a general hospital (out of a total of 41 for both PS and PSGH). These problems have been resolved from 2016 on.

[III] https://s3.eu-west-2.amazonaws.com/nhsbn-static/Other/2018/International%20MH%20Report%202018.pdf

Figure 171 – 30 days readmission rate in Psychiatric hospital or in Psychiatric services in general hospital, by patient region (2010-2016)

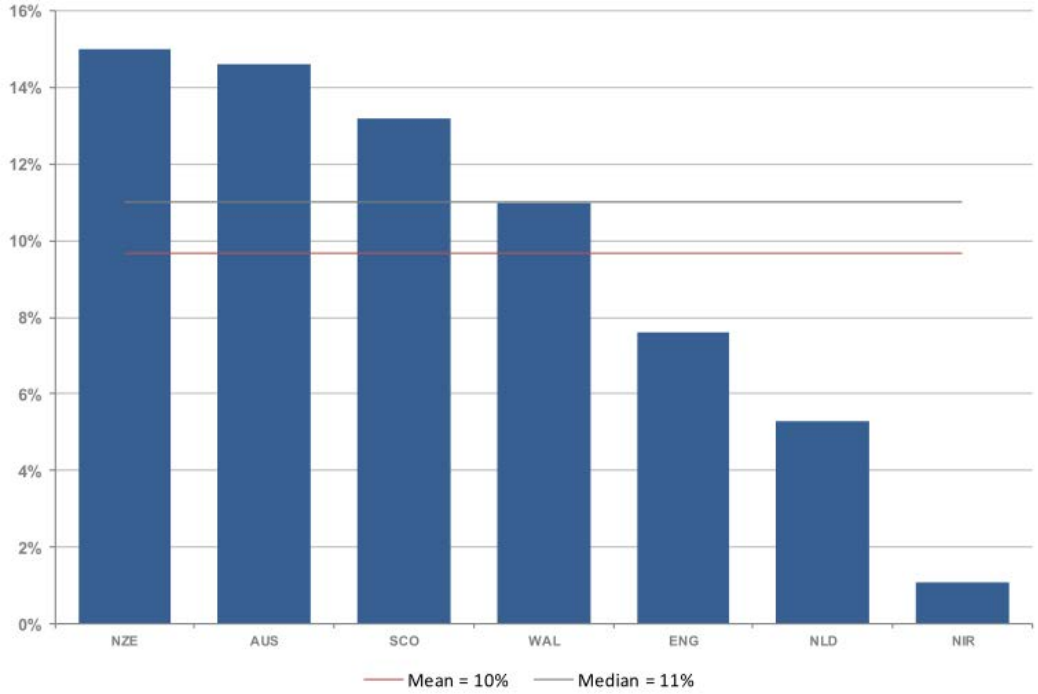


Source: SPF Public Health Institute (MPG – RPM)

International comparison

The NHS Benchmarking Network is setting up an initiative to compare mental health service for adults and older adults; emergency readmissions is in the indicators set. The mean readmission rate among the countries (Netherlands, Australia, New Zealand and UK) is 10% and the median 11%.

Figure 172 – Unplanned readmission rate for adults in mental healthcare: international comparison



Source: NHS Benchmarking Network 2018
NZE: New Zealand, AUS: Australia, SCO: Scotland, WAL: Wales, ENG: England, NLD: the Netherlands, NIR: Northern Ireland.

Key points

- **Belgium has a 30 days readmission rate for mental illness of 14.1% in 2016, which is in the range of other similar countries**
- **Flanders has a higher rate (14.7%) than Wallonia (11.1%) and Brussels (11.1%)**

References

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12. LONG-TERM AND ACUTE CARE FOR THE ELDERLY

12.1. Elderly population receiving long-term care, in institution (ELD-1) or at home (ELD-2)

12.1.1. Documentation sheet

Description	Proportion of population aged 65 years and over receiving long-term care, in institution or at home
Calculation	Numerator: total number of recipients of long-term care, in elderly or nursing homes, or at home Denominator: total population aged 65+
Rationale	Due to the ageing of the population future needs of long-term care are expected to grow in the coming decades. According to the demographic projections made by the Belgian Federal Planning Bureau, the share of older persons in the total population (aged 65 or older) is expected to rise from around 21% in 2025 to almost 26% in 2050. This demographic trend will translate in growing numbers of older people in need of long-term care. Long-term care can be delivered either formally by professionals, or informally by family or friends. In this section we focus on formal care. Formal care can take place either in an institution (such as homes for the elderly and nursing homes) or at home by home nurses. Monitoring the evolution over time of the share of population receiving formal long-term care is an indicator of the accessibility and sustainability of the long-term care component of the health system. The extent to which a country relies on formal or informal care and the extent to which this is provided in institutions or at home are important determinants of public expenditure on long-term care. [1]
Data source	IMA
Technical definition	International institutions like OECD, Eurostat and WHO have defined long-term care services as a range of services required by persons with reduced degree of functional capacity (physical or cognitive) and who consequently need help for an extended period of time for their basic and/or instrumental activities of daily living (ADL).[1] Basic ADL include but are not limited to bathing and showering, personal hygiene and grooming, dressing, getting to toilet, transferring ourselves and feeding ourselves. Instrumental ADL include amongst other cleaning and maintaining the house, preparing meals and taking prescribed medications. Help with basic ADL is often combined with basic medical services (such as nursing care), domestic help or help with instrumental activities of daily living (IADL).[2] In the residential sector, **homes for the elderly**[mmm] provide nursing and personal care as well as living facilities to older persons with mainly low to moderate limitations. Older persons who are strongly dependent on care but who do not need permanent hospital treatment are admitted to **nursing homes**[nnn]. Each nursing home has to have a functional link with a hospital.[3]

[mmm] Dutch: **rustoorden voor bejaarden** (ROB; now called woonzorgcentra)
French: **maison de repos pour personnes âgées** (MRPA)

[nnn] Dutch: **rust-en verzorgingstehuis** (RVT; now called woonzorgcentra)
French: **maison de repos et de soins** (MRS)

Eligibility for residential care, or more precisely the level of care covered by the public health insurance scheme, depends on the degree of care dependency, and is evaluated using the same criteria as in home nursing (6 activities of daily living (ADL) items and disorientation in time or space, see below). While medical costs and costs of care in residential care facilities are covered by public health insurance, board and lodging costs are to be paid by the resident.[3]

Table A6.1: Scale of disability used by Belgian NIHDI to determine dependency. Part B: Categories.

Category	Level of physical dependence*		Level of mental dependence*
O	No dependence	AND	No dependence
A	Dependent in washing and/or dressing	OR	Disoriented in time and space, but physically independent
B	Dependent in washing and dressing, AND dependent for moving and/or going to the toilet	OR	Disoriented in time and space, AND dependent in washing and/or dressing
C	Dependent in washing and dressing, AND dependent for moving and going to the toilet AND dependent for incontinence and/or eating	AND	No dependence
Cdement	Dependent in washing and dressing, AND dependent for moving and going to the toilet AND dependent for incontinence and/or eating	AND	Disoriented in time and space

** A score of 3 or 4 on an item is regarded as 'being dependent' or 'being disoriented'*
Source: Rijksinstituut voor Ziekte en Invaliditeitsverzekering (no date), Dienst voor geneeskundige verzorging, Richtlijnen bij het gebruik van de evaluatieschaal, van toepassing vanaf 2006, Brussels, document.

Source : [3]

The following lump sums are used in residential care: 763011-763571, 763711-763755, 764094-764190, 764315-764455, 764610-764794.

Home care per diem fees are based on the same dependency scale: :
- Lump sum A (425272, 425670, 426075)
- Lump sum B (426090, 425692, 425294)
- Lump sum C (426112, 425316, 425714)

International comparability

Data in this field are reported by

- OECD Health Statistics. As several countries use slightly different methodologies, results are not completely comparable.

Dimension

Care for the elderly; Accessibility; Sustainability

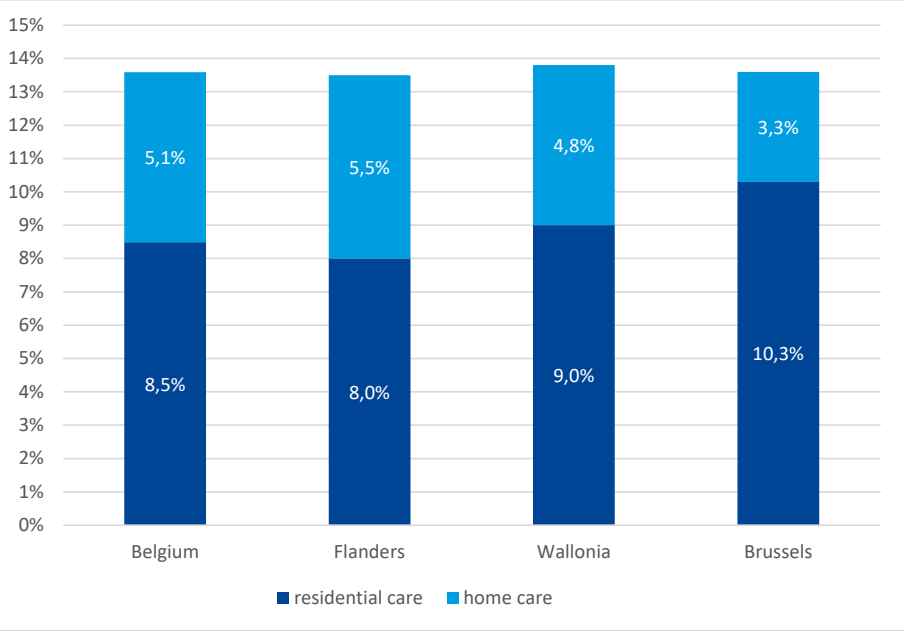
12.1.2. Results

In 2016, a total of 13.6% of the population aged 65 years and over received long-term care, either in residential setting (8.5%), or at home (5.1%). In Wallonia and Brussels, a higher rate of residential care is found (respectively 9.0% and 10.3%) compared to Flanders (8%). At the same time in Wallonia and Brussels, a lower rate of home care is found compared to Flanders (4.8% and 3.3% versus 5.5% respectively) (see Figure 173).

In the period 2013-2016, there was a very slight increase in the residential care rate in Flanders and Brussels and a very slight decrease in Wallonia (see Figure 174). Over the same period, there was a very slight increase in the home care rate in all regions.

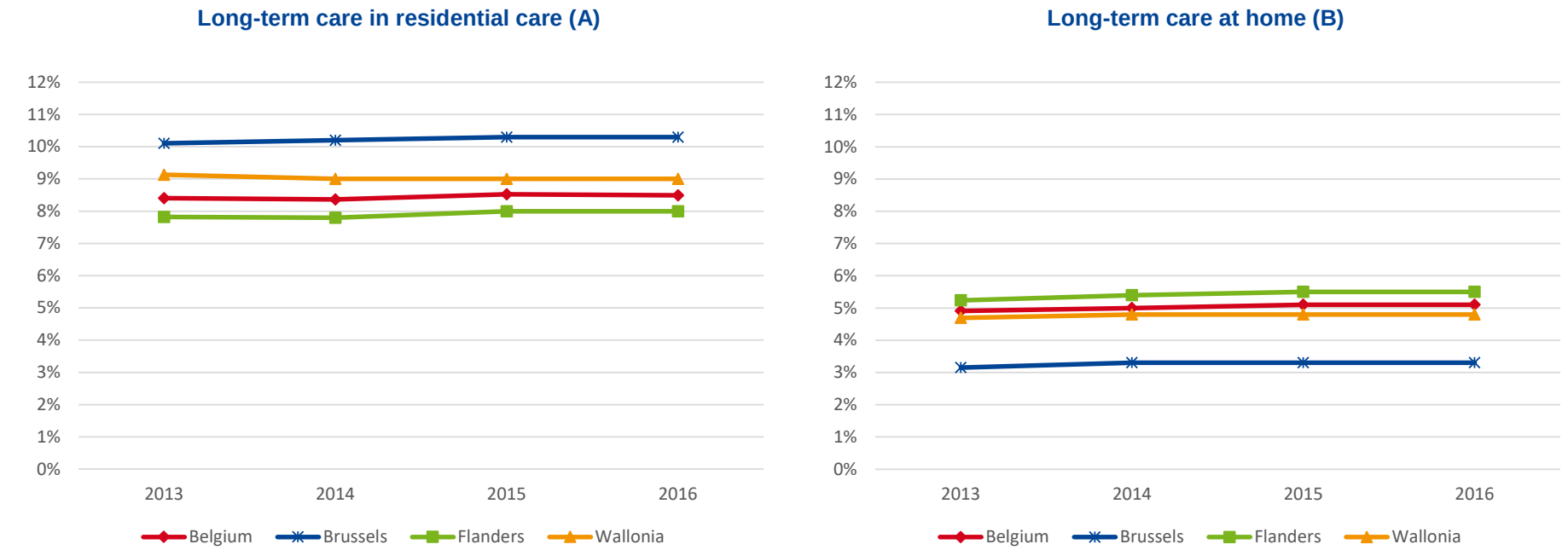
The proportion of the population in residential care increases by age. Only 1% of the 65-69 years old is in residential care. This proportion increases to 43% for 90-94 years and more for the highest age groups. More women are in residential care than men: 11% of women, 5% of men. Persons with preferential reimbursement entitlement have a higher rate of residential care than persons without (16% compared to 5%) (see Table 112). The same trends are observed for recipients of home care, but with less pronounced differences.

Figure 173 – Proportion of population aged 65 years and over receiving long-term care (residential vs home care), by region (2016)



Source: Based on IMA data

Figure 174 – Proportion of population aged 65 years and over receiving long-term care (residential vs home care), by region (2013-2016)



Source: Based on IMA data

Table 112 – Proportion of population aged 65 years and over receiving long-term care (residential care vs home care) by patient characteristics (2016)

Variable	Category	Numerator (institution)	Numerator (home care)	Denominator	Proportion in institution	Proportion receiving home care
Data 2013 by categories						
Age (years)	65-69	6 314	9 064	605 241	1.0%	1.5%
	70-74	9 427	12 207	479 358	2.0%	2.5%
	75-79	18 092	17 813	385 292	4.7%	4.6%
	80-84	35 975	26 554	329 777	10.9%	8.1%
	85-89	54 064	26 723	225 279	24.0%	11.9%
	90-94	43 161	14 165	100 654	42.9%	14.1%
	95-99	13 697	3 293	22 810	60.0%	14.4%
	>=100	1 932	368	2 742	70.5%	13.4%
Gender	Female	133 438	72 701	1 210 958	11.0%	6.0%
	Male	49 224	37 486	940 195	5.2%	4.0%
Entitlement to increased reimbursement	No	81 464	52 328	1 525 746	5.3%	3.4%
	Yes	101 198	57 859	625 407	16.2%	9.3%
Province	Antwerpen	28 912	13 913	355 368	8.1%	3.9%
	Brabant Wallon	5 868	2 551	74 647	7.9%	3.4%
	Bruxelles-Capitale	16 289	5 141	157 449	10.3%	3.3%
	Hainaut	22 894	16 795	250 871	9.1%	6.7%
	Limburg	11 345	14 764	168 652	6.7%	8.8%
	Liège	19 467	6 866	207 809	9.4%	3.3%
	Luxembourg	4 127	1 532	47 066	8.8%	3.3%
	Namur	7 867	4 293	91 418	8.6%	4.7%
	Oost-Vlaanderen	25 963	17 160	300 735	8.6%	5.7%
	Vlaams Brabant	17 572	9 740	219 386	8.0%	4.4%
	West-Vlaanderen	22 358	17 432	277 752	8.0%	6.3%

Source: IMA data

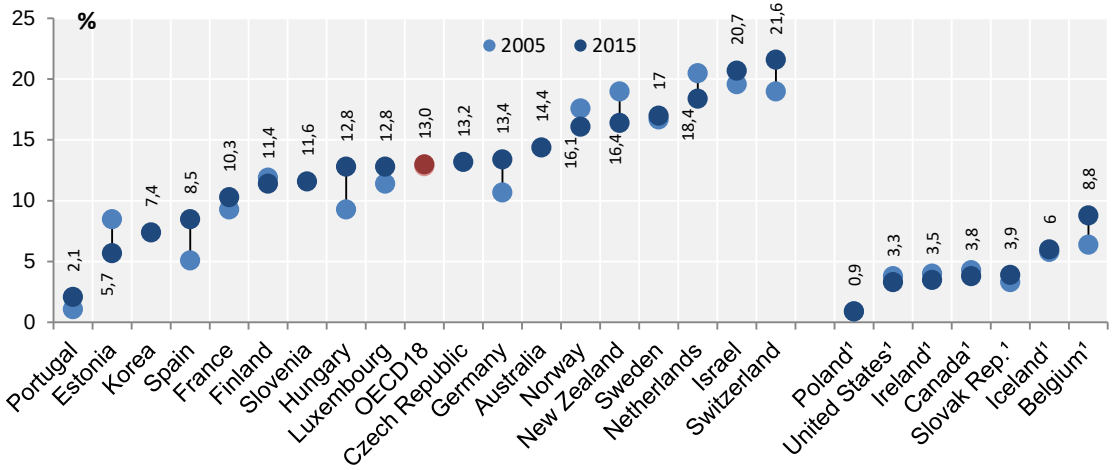
International comparison

The most recent edition of OECD Health Statistics (2017)[4] reports that 8.8% of the Belgian population aged 65 years and older received long-term care in institutions in 2015 (See Figure 175). Note that for the countries on the left side of the graph also home care is included, whereas for the countries on the right side (Poland, the United States, Ireland, Canada, the Slovak Republic, Iceland and Belgium) only long-term care in institutions is included.

Data on home care are not available for Belgium in OECD Health Statistics (See Figure 176), but we can compare average OECD data with the data of IMA above. On average across the OECD, 13% of people over 65 receive long-term care, either in institutions or at home (2015 data) (See Figure 175). This is very close to the Belgian situation, where a total of 13.6% of people over 65 receive long-term care (2016 data).

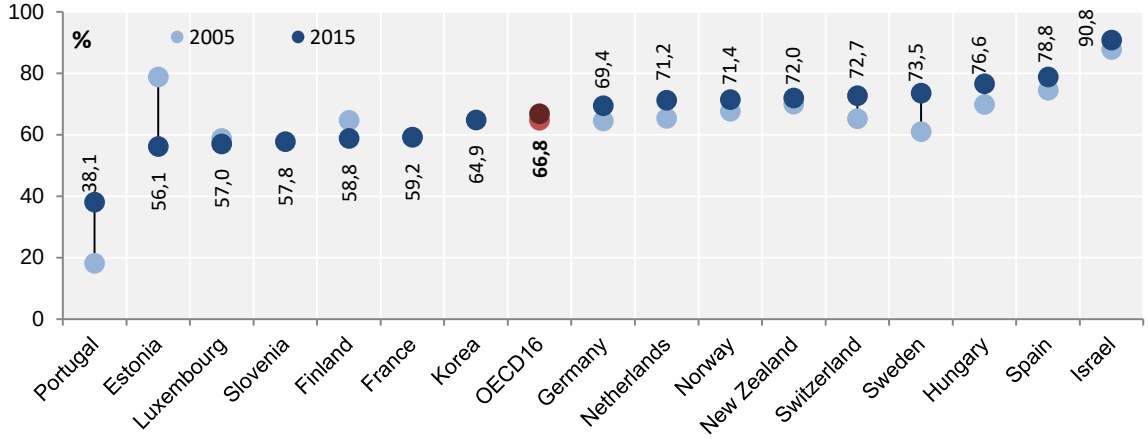
In the OECD dataset, long-term care at home is defined as care for people with functional restrictions who receive most of their care at home. Home care also applies to the use of institutions on a temporary basis, community care and day-care centres and specially designed living arrangements. Long-term care institutions refer to nursing and residential care facilities which provide accommodation and long-term care as a package. According to the OECD report, cross-country variation in the percentage of care recipients of long-term care could be partly explained by cultural differences as to the availability of informal care and by the type of funding of long-term care services (public versus private funding).[4] The possible difference in funding however also makes that data on long-term care services are difficult to compare as some countries only refer to people receiving publicly-funded care, while other countries also refer to people who are paying for their own care.

Figure 175 – Percentage of population over 65 years being recipient of long-term care (in institutions and at home): international comparison (2005-2015 or nearest year)



1. These values cover only receivers of long-term care in institutions.
Source: OECD Health Statistics 2017; StatLink dx.doi.org/10.1787/888933605882

Figure 176 –Percentage of long-term care recipients (aged 65 years or older) receiving long-term care at home: international comparison (2005-2015 or nearest year)



Note: No data available for Belgium.
Source: OECD Health Statistics 2017; StatLink dx.doi.org/10.1787/888933605920.

Key points

- **A total of 13.6% of people over 65 received long-term care in 2016: 8.5% in residential care and 5.1% at home.**
- **There is considerable geographical variation in the provision and utilisation of home care, ranging from 3.3% of elderly in the provinces of Brussels-Capital, Liège and Luxembourg to 6.7% and 8.8% of elderly in the provinces Hainaut and Limburg respectively.**
- **Percentages of elderly institutionalized are higher in Wallonia and Brussels than in Flanders.**
- **On average across the OECD, 13% of people over 65 receive long-term care, either in institutions or at home (2015 data). This is very close to the Belgian data.**

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12.2. Informal care at home for elderly persons (ELD-3)

12.2.1. Documentation sheet

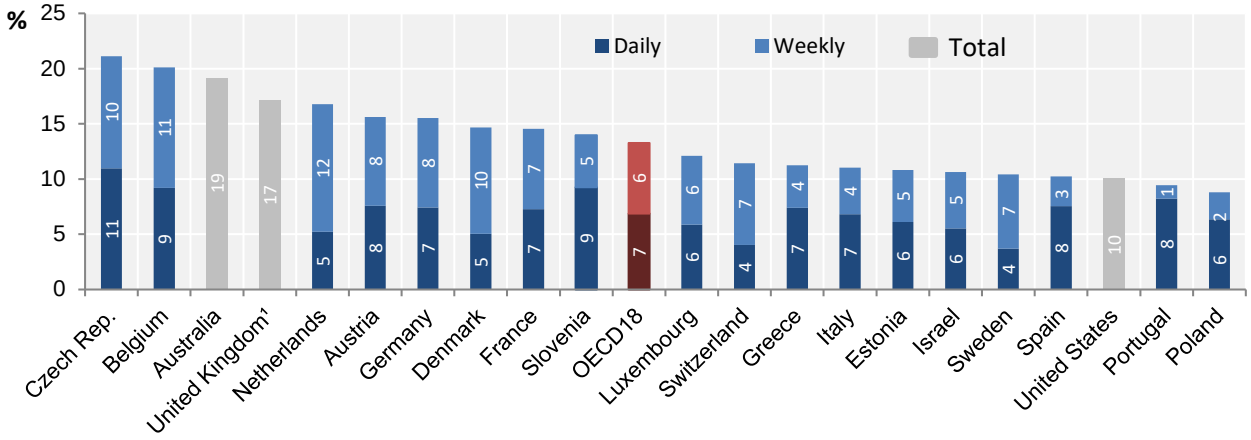
Description	Proportion of persons reporting to be informal carers
Calculation	SHARE survey: • Numerator: population aged 50 and over reporting to be informal carers • Denominator: population aged 50 and over HIS: • Numerator: population aged 15 and over reporting to be informal carers • Denominator: population aged 15 and over (included in HIS)
Rationale	Informal carers are defined as people providing help to family members, friends and people in their social network, living in or outside of their household, who require help for Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). Due to the ageing population the need for long-term care services, both formal and informal, is expected to increase over the coming decades. However, due to declining family size, increased geographical mobility and rising participation rates of women in the labour market, the availability of informal carers is expected to decline in the coming decades. Informal care is often regarded as a cost-effective way to avoid or delay the need for institutionalisation.[1] However, it should not be overlooked that there are indirect costs linked to informal care, both for individuals as for the state, in terms of forgone employment and possible negative impact on the informal carers' health.[2] Enabling informal care and supporting informal carers should be seen as a key policy goal in relation to long-term care in the coming decades. Policies that formalise informal care through cash payments, legal rights, social security, and training opportunities can have substantial positive effects on informal caregivers and the receivers of care and can work to incentivise informal caregiving overall.[1]
Data source	Wave 6 of SHARE (2015)[3] As soon as the new HIS data will be available (expected for 2019), the results will be added to the online version of this report on www.healthcareinbelgium.be.
Technical definition	For the detailed questionnaire of the SHARE survey, see references SHARE.[3]
International comparability	Comparison between European countries is possible on the basis of SHARE. However, it must be noted that because of the informal nature of care provided, it is not easy to get comparable data on the number of people caring for family and friends across countries, nor on the frequency of their caregiving.[4]
Dimension	Care for the elderly; Accessibility; Sustainability

12.2.2. Results

According to Health at a Glance 2017, which combines data from SHARE Wave 6 with surveys from England, Australia and the United States, 20% of the Belgian population over 50 reports to provide informal care on daily or weekly basis (See Figure 177). For comparison, in 2010 this proportion was 21%.[ooo] 20% is amongst the highest rates observed in the OECD dataset, Belgium only being outperformed by Czech Republic. 9% of the Belgian population over 50 reports to provide care on daily basis, 11% on weekly basis.

The high share of informal carers in Belgium is a strength for the Belgian health system. However this kind of caregiving has also been associated with a reduction in labour force attachment for caregivers of working age, higher poverty rates and a higher prevalence of mental health problems in caregivers.[5] One of the support measures in Belgium to prevent these problems is the paid care leave. More information on the support measures for informal caregivers in Belgium can be found in the KCE report n° 223 on the support for informal caregivers.[6]

Figure 177 – Population over 50 reporting to be informal carers either on daily or weekly basis (2015 or nearest year)



1. United Kingdom refers to England. *Note:* The definition of informal carers differs between surveys.

Source: OECD Health Statistics 2017 (StatLink http://dx.doi.org/10.1787/888933605939*)*. Data are based on *Wave 6 of the Survey of Health, Ageing and Retirement in Europe (2015), Survey of Disability, Ageing and Carers for Australia (2015), wave 7 of the English Longitudinal Study of Ageing (2015), wave 12 of the Health and Retirement Survey for the United States (2014).*

[ooo] KCE Performance report 3

Key points

- **According to 2015 data from the SHARE survey, Belgium has a high proportion of persons over 50 reporting to be informal carers compared to other European countries; xx% of Belgian respondants report to be informal carer.**
- **In the future due to a decreasing number of informal carers and an increasing number of dependents, a shift towards more formal care can be expected.**
- **Several policy initiatives are needed to temper this shift and to facilitate informal care, taking into account the opportunity cost of informal care concerning labour market participation and health status of the informal caregiver.**

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12.3. Beds in residential long-term care facilities for the elderly (ELD-4)

12.3.1. Documentation sheet

Description	Number of beds in residential long-term care facilities for the elderly (per 1 000 population aged 65 and over)
Calculation	Numerator: Number of beds in residential long-term care facilities for the elderly x 1 000 Denominator: Population 65 and over
Rationale	Based on a forecast model developed by the Federal Planning Bureau and KCE it was forecasted that due to the ageing population, 149 000 to 177 000 residential care beds will be needed in 2025. After 2025, the growth in needed beds will even accelerate. The increase in need could be partly tempered by organising more home care and by using beds by priority for older persons needing more intensive levels of care. This in turn requires alternative care for persons now institutionalised with low care dependency. [1]
Data source	RIZIV-INAMI; OECD Health Statistics 2017 Population data: 1991-2018 : observations, Statbel; 2019-2071 : perspectives, BFP and Statbel
Technical definition	**Belgian data** Beds in homes for the elderly: ROB/MRPA and nursing homes: RVT/MRS **OECD data** Residential long-term care facilities comprise establishments primarily engaged in providing residential long-term care that combines nursing, supervisory or other types of care as required by the residents. In these establishments, a significant part of the production process and the care provided is a mix of health and social services, with the health services being largely at the level of nursing care, in combination with personal care services. The medical components of care are, however, much less intensive than those provided in hospitals. Inclusion - Long-term nursing care facilities - Other residential long-term care facilities Exclusion - Beds in hospitals dedicated to long-term care - Beds in residential settings such as adapted housing that can be considered as people's home. Data for Belgium on residential long-term care facilities include beds in homes for the elderly and nursing homes. Numbers correspond to licensed beds.[2]
International comparability	Data available from OECD Health Statistics 2018
Dimension	Care for the elderly; Sustainability

12.3.2. Results

As Table 113 illustrates, the number of beds in homes for the elderly has fluctuated around 64 000 beds in the years 2011 to 2015, after which they steadily increased to reach nearly 70 000 beds in 2018. The number of beds in nursing homes has steadily increased over the whole period from 2011 to 2018, from around 65 000 in 2011 to 74 000 in 2018. In total, whilst the absolute number of beds has steadily increased in the period 2011-2018, the number of beds relative to the 65+ population has decreased in the period 2011 to 2014. From 2015 onwards the relative number of beds has increased to reach 68 beds per 1 000 persons 65+ in 2018.

Table 114 shows the number of beds for each of the regions and for the German-speaking community separately. There are remarkable differences. The German-speaking community has the lowest density of beds (50 beds per 1 000 persons 65+), followed by Flanders (61 beds), Wallonia (74 beds) and Brussels (99 beds).

Table 113 – Evolution of the number of beds in residential care facilities

Year	Nursing homes	Homes for the elderly	Coma beds	Total beds	Beds/1 000 persons 65 and over	Beds/1 000 persons 75 and over
2011	65 325	64 255	152	129 732	69	136
2012	68 262	62 775	155	131 192	68	135
2013	69 217	63 092	155	132 464	68	135
2014	70 180	64 117	155	134 452	67	135
2015	71 898	64 923	155	136 976	67	136
2016	71 844	67 450	155	139 449	68	138
2017	73 018	69 352	155	142 525	68	142
2018	74 430	69 814	155	144 399	68	143

Source: RIZIV-INAMI

Table 114 – Number of beds in residential care facilities per region/community

Region	Nursing homes	Homes for the elderly	Coma beds	Total beds	Beds/1 000 persons 65 and over	Beds/1 000 persons 75 and over
Flanders	45 441	34 515	80	80 036	61	127
Wallonia*	22 922	25 733	65	48 720	74	163
Brussels	6 067	9 566	10	15 643	99	203
Total	**74 430**	**69 814**	**155**	**144 399**	**68**	**143**

** Wallonia: German-speaking Community included*

Community	Nursing homes	Homes for the elderly	Coma beds	Total beds	Beds/1 000 persons 65 and over	Beds/1 000 persons 75 and over
German-speaking Community	464	269	0	733	50	98

Source: RIZIV – INAMI

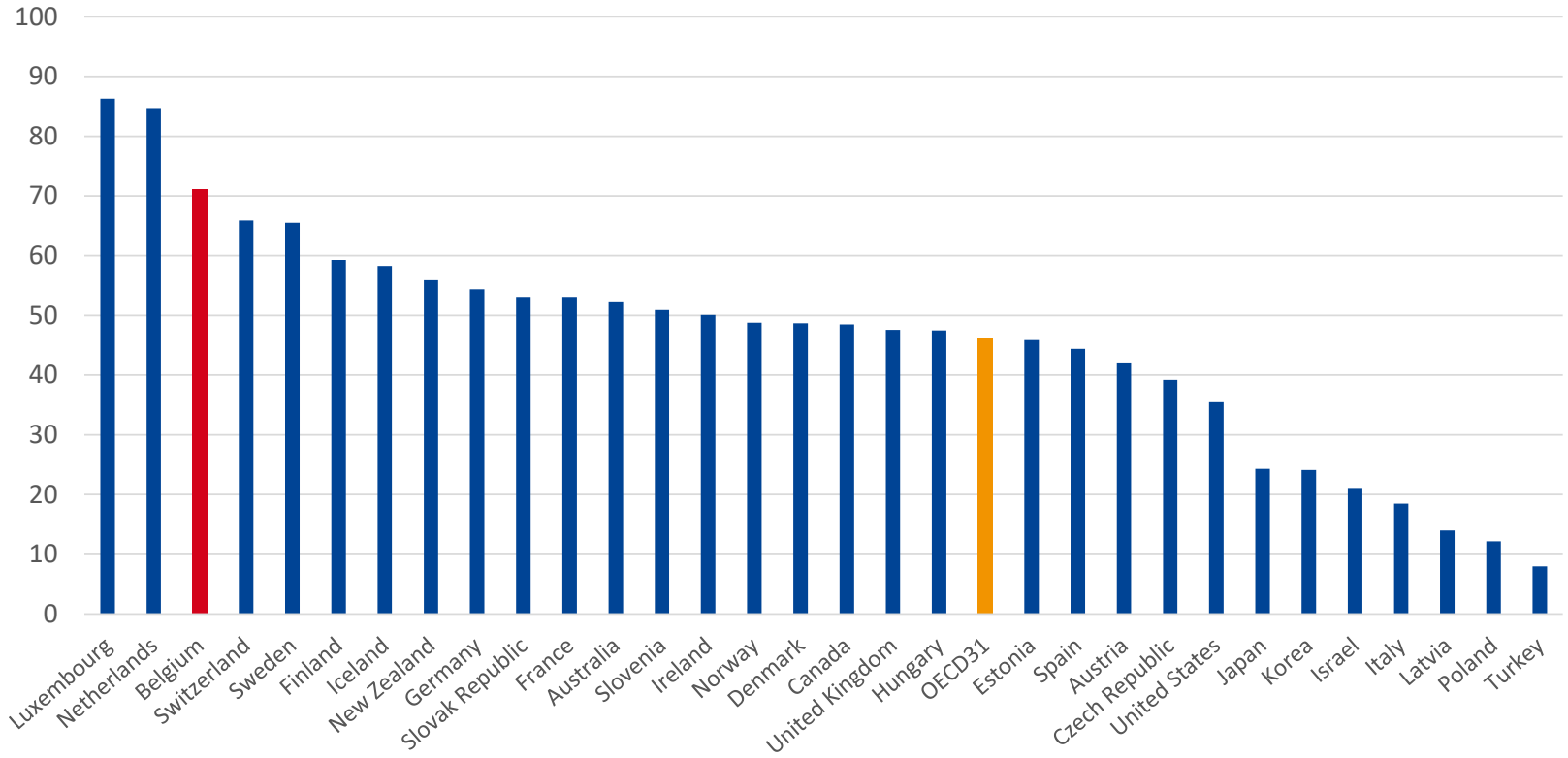
International comparison

International data are not always completely comparable as several countries only include beds in publicly-funded long-term care institutions, while others also include private institutions (both profit and non-for-profit). Still, the available data show that on average OECD countries had 46 long-term care beds in residential institutions per 1 000 people aged 65 and over. There is substantial variation between countries. Luxembourg and Netherlands have the highest number of beds with 86 and 85 beds respectively. Belgium ranks third in place, with 71 beds (2012 data). Italy, Latvia, Poland and Turkey rank lowest with less than 20 beds.

Across the OECD countries, a number of countries with comprehensive long-term care systems like Sweden, Iceland, Canada and Norway have significantly reduced residential long-term care capacity in the last years and have put more resources into home care.

For people with intensive care needs, long-term care can be organised more efficiently in institutions than at home, as economies of scale can be realized and care workers do not need to travel to each person's home. However, from the public budget point of view, the total cost of care in institutions is often higher than for home care given the fact that board and lodging costs have to be covered as well and as informal carers may provide less help to persons when institutionalised. Furthermore, long-term care users generally prefer to remain at home as long as possible. This has lead countries to take steps to meet this preference and to promote home care. Still, as for many people with high care need institutionalisation is inevitable, it remains indispensable that countries retain an appropriate level of residential long-term care, provided in a way that promotes dignity and autonomy.[3]

Figure 178 – Long-term care beds in institutions, 2015 (or nearest year) per 1000 population aged 65 and over – international comparison



Source: OECD Health Statistics 2017 StatLink http://dx.doi.org/10.1787/888933606053

Key points

- **Belgium has a relatively high number of beds in residential long-term care facilities compared to other OECD countries. The number of beds per 1 000 persons 65+ reached 68 in 2018.**
- **In total there were around 144 000 beds in 2018. Based on a forecast model developed by the Federal Planning Bureau and KCE it was forecasted that 149 000 to 177 000 residential care beds will be needed by 2025.**

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12.4. Low care-dependent persons in residential and nursing facility for elderly (ELD-5)

12.4.1. Documentation sheet

Description	Percentage of elderly living in residential or nursing facility for elderly (ROB – MRPA; RVT - MRS) with low care-dependency, i.e. in category O or A of the Katz scale. Note that persons in category O and A can only stay in ROB-MRPA, not in RVT–MRS.
Calculation	Numerator: number of persons 65+ with a lump sum O or A Denominator: total number of persons 65+ in residential or nursing facility for elderly
Rationale	Places in residential facility for elderly should primarily go to dependent persons. In general, people should stay at home as long as possible, where they are in convivial and family environment. For persons with low care-dependency (category O or A of the Katz scale) it can be questioned whether moving to residential facility is the most appropriate option. Home care services can play an important role to prevent too early institutionalisation. Often however it concerns persons in need of mental healthcare or social lodging who cannot find a place elsewhere and for whom the residential facility is a last resort solution. Solving the issue of persons with low care needs in residential facilities therefore also requires expansion of alternative care options for these persons. Also service flats can play a role as some people may experience social isolation at home. For an exploration of policy alternatives we refer to a study recently performed for the “Observatorium voor Gezondheid en Welzijn van Brussel-Hoofdstad”/”Observatoire de la Santé et du Social de Bruxelles-Capitale”.[1 2] The care dependency of persons in nursing or residential facility for elderly is measured on the Katz scale. Persons classified in category O of the Katz scale are: - physically fully independent AND - not demented.

	Persons classified in category A are: - physically dependent for getting washed and dressed OR - psychically dependent, disoriented in time and space but physically fully independent
Data source	RIZIV – INAMI
Technical definition	Percentages based on billed days per year communicated by the institutions to RIZIV-INAMI. Including residential and nursing facilities for elderly (ROB – MRPA; RVT - MRS); excluding short stays.
International comparability	No international comparability
Dimension	(Long-term) Care for the elderly

12.4.2. Results

Table 115 shows the proportion of residential care patients by level of dependency. In 2018 32% of patients were in the highest dependency level Cd, 12% were in level C, 30% in level B, 15% in level A and 10% in level O. Over the period 2011-2018, the proportion of patients in level O or A has steadily decreased, from 32% in 2011 to 25% in 2018.

Table 116 shows the level of dependency of residential patients by region and for the German-speaking community separately. The table shows considerable variation. In Flanders, 20% of residents has still certain autonomy (level O or A), in Wallonia this proportion is 31%, in Brussels 34% and in the German-speaking community 28%.

Table 115 – Residential care patients by level of dependency (2011-2018)

Care category	2011	2012	2013	2014	2015	2016	2017	2018
O	16,04%	15,01%	13,81%	12,82%	11,90%	11,28%	10,64%	10,12%
A	16,02%	16,04%	15,15%	15,02%	14,88%	14,96%	14,98%	15,04%
B	25,24%	26,15%	27,16%	27,79%	28,55%	29,01%	29,71%	30,33%
C	12,36%	12,31%	12,66%	12,61%	12,59%	12,49%	12,38%	12,21%
Cd	30,35%	30,49%	31,23%	31,76%	32,07%	32,25%	32,28%	32,30%
Total	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**
O + A	32,06%	31,05%	28,95%	27,84%	26,78%	26,24%	25,63%	25,16%

Source: RIZIV – INAMI

Table 116 – Level of dependency of residential care patients by region/community (2018)

Care category	Flanders	Wallonia*	Brussels	German-speaking Community
O	7,47%	12,39%	16,83%	11,01%
A	12,68%	18,21%	16,86%	16,56%
B	33,09%	27,17%	26,24%	30,37%
C	12,50%	12,05%	11,19%	12,32%
Cd	34,25%	30,19%	28,89%	29,74%
Total	**100,00%**	**100,00%**	**100,00%**	**100,00%**
O + A	20%	31%	34%	27,57%

Source: RIZIV – INAMI
** Wallonia: German-speaking Community included*

Key points

- **Over the period 2011-2018, the proportion of patients in level O or A has steadily decreased, from 32% in 2011 to 25% in 2018. There is considerable variation between the regions.**
- **Solving the issue of persons with low care needs occupying places in residential facilities also requires expansion of alternative care options for these persons.**

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12.5. Supply of healthcare professionals: number of practicing geriatricians (ELD-6)

12.5.1. Documentation sheet

Description	Number of practicing geriatricians per 10 000 population
Calculation	Numerator: Number of practising geriatricians x 10 000 Denominator: Total Belgian population
Rationale	There is a shortage of geriatricians in our country. The High Council for physicians-specialists and general practitioners has worked on a reform of the studies for specialists in internal medicine. The reformed study trajectory of six years starts with a joint trajectory of 3 years in which every student also acquires experience in geriatrics. Only after these 3 years, a definite choice for subspecialties has to be made. It is hoped that this new approach will motivate more physicians to choose for geriatrics. Furthermore, more RIZIV – INAMI codes were created to improve the remuneration of geriatricians. This indicator is used to monitor the evolution of the geriatric medical workforce, considering that even more geriatricians will be needed in the future because of the ageing population.
Data source	RIZIV – INAMI
Technical definition	
International comparability	No OECD data are available. Two data sources were detected in the literature: - Results for G-7 countries (Canada, Japan, Germany, Italy, USA, France, UK) in a systematic review published in 2017.[1] - Results of a survey on the status of geriatrics in 22 countries published in 2018.[2]
Dimension	Care for the elderly; Accessibility; Sustainability

12.5.2. Results

Belgian data

RIZIV – INAMI data show that in 2015 318 geriatricians were entitled to perform activities. In 2016 331 geriatricians were entitled to perform activities. This is an increase by 13 in geriatricians compared to 2015. However, in its formal advice of 2016, the Planning commission for medical supply advises a yearly quota of 29 students to get admission to the education for a title of geriatrician (16 in the Flemish Community, 13 in the French Community).[3] The observed increase of 13 therefore cannot be considered as sufficient.

Table 117 – Number of geriatricians RIZIV – INAMI data 2015-2016

YEAR	N (entitled to perform activities)	N (practising)	N ETP	% ETP Dutch speaking*	% ETP French speaking*	% ETP German speaking*	N ETP Dutch speaking*	N ETP French speaking*
2009	246	237	166,35	65%	35%	0%	108,13	58,22
2010	308	262	176,67	64%	36%	0%	113,07	63,60
2011	326	276	184,85	64%	36%	0%	118,30	66,55
2012	290	265	196,41	66%	34%	0%	129,63	66,78
2013	297	274	200,93	64%	36%	0%	128,60	72,33
2014	306	279	202,1	63%	37%	0%	127,32	74,78
2015	318	289	215,12	62%	38%	0%	133,37	81,75
2016	331	296	213,31	63%	37%	0%	134,39	78,92

*Source: RIZIV – INAMI ; * Based on preferred communication language with RIZIV-INAMI*

International comparison

In the G-7 countries, rates for number of geriatricians per 10 000 population 65 and over range from 0.4 in Canada up to 2.4 in the UK. Compared to G-7 countries, Belgium has the lowest geriatrician workforce with 0.3 per 10 000 population aged over 65.[1]

Another recent publication reported on the status of geriatrics in 22 countries. According to this publication, the size of the population over 80 per geriatrician varies with a median of 1 500 (in Switzerland) and with low numbers of 450 (in Austria) and 820 (in Iceland) rising to 5 000 (in Lithuania) and 25 000 (in Turkey).[2] Note however that these data are not based on official sources but on a small survey filled out by individual geriatricians; therefore results could be flawed and have to be interpreted with caution.

Key points

- **There was a slight increase in number of geriatricians entitled to perform activities from 2015 to 2016. The number increased by 13, from 318 in 2015 to 331 in 2016. However, this increase was lower than the advised yearly increase of 29 by the Planning commission for medical supply.**

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12.6. Fall incidents in the elderly (ELD-7)

12.6.1. Documentation sheet

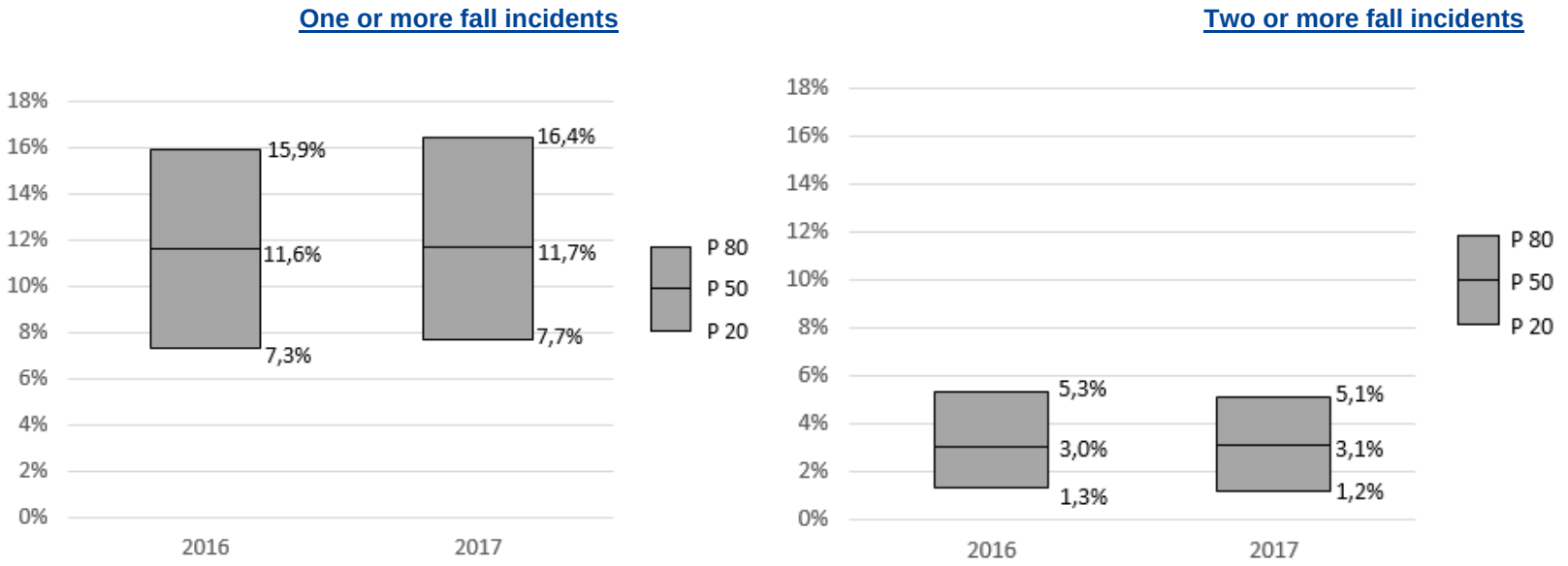
Description	Percentage of residents who had a fall incident in the previous month (data from Flemish quality indicators in homes for the elderly)
Calculation	Numerator: number of residents who had at least one fall during the month of May Denominator: total number of residents in the month of May
Rationale	Fall incidents are a common cause of morbidity and mortality in elderly. Persons who fell once, have an increased risk on future fall incidents. It is estimated that one in 10 falls result in a hip fracture or other severe injury, which often lead to functional impairment and even death.[1, 2] The recovery from a fall is strongly related to the functional status of the elderly before the fall.[3] The European Injury Database (IDB) showed that falls are a major cause of death (28%) in older people (60+y), particularly in women. Fall injuries lead also to a higher than average hospitalisation rate and an excess share in medical costs due to injuries in this age group.[4] Due to the ageing population, the incidence of falls, related injuries and healthcare costs are expected to increase. In the future nationwide data collection on this indicator should be possible by the roll out of BelRAI. This will also facilitate the analysis on evolution over time. BelRAI measures fall incidents as part of the Long-Term Care Facility (LTCF) and Home Care (HC) modules. Currently BelRAI is being implemented but not yet nationally fully operational in all care settings. (http://wiki.belrai.org/nl/)
Data source	• Flemish quality indicators in nursing homes: o 2016 data, based on 756 WZC [5, 6] o 2017 data, based on 779 WZC [7] • HIS: New data from HIS are expected for 2019. As soon as the new data are available, the results will be added to the online version of this report on www.healthcareinbelgium.be.
Technical definitions	Flemish quality indicator projects: • Numerator: number of residents that had at least one fall incident in the month of May • Denominator: number of residents that were present for at least one day in the homes for the elderly (WZC) in the month of May
International comparability	In the OECD long-term care quality project the indicator on the incidence of falls and fall-related fractures is proposed as example of a quality outcome on user safety.[8]
Dimensions	Quality (safety)

12.6.2. Results

Recent data on fall incidents in elderly are only available for the Flemish community, where they are measured in the context of the Flemish Indicator Project in the homes for the elderly. Fall incidents were previously reported for the whole Belgian population in the Health Interview Survey (HIS), but as the most recent data date back to the year 2013 and were presented in the previous performance report, we do not include them in this report. New data from HIS are expected for 2019 and as soon as available we will add the results to the online version of this report on www.healthcareinbelgium.be.

The Flemish data show that a median of 12% of residents in homes for the elderly had a fall incident during a period of a month in 2017. Data for 2016 are relatively similar. Further data collection in the future will allow to monitor the evolution over time.

Figure 179 – Percentage of residents with one or more (left graph) or two or more fall incidents (right graph) in one month



Source: Vlaams Indicatorenproject Woonzorgcentra (Vlaams Agentschap voor Zorg en Gezondheid)

Key points

- **A median of 12% of residents in Flemish WZC had a fall incident in a month time in 2017.**
- **More policy initiatives should be taken to prevent fall injuries in the elderly.**

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12.7. Pressure ulcers (grade II-IV) in the elderly (ELD-8)

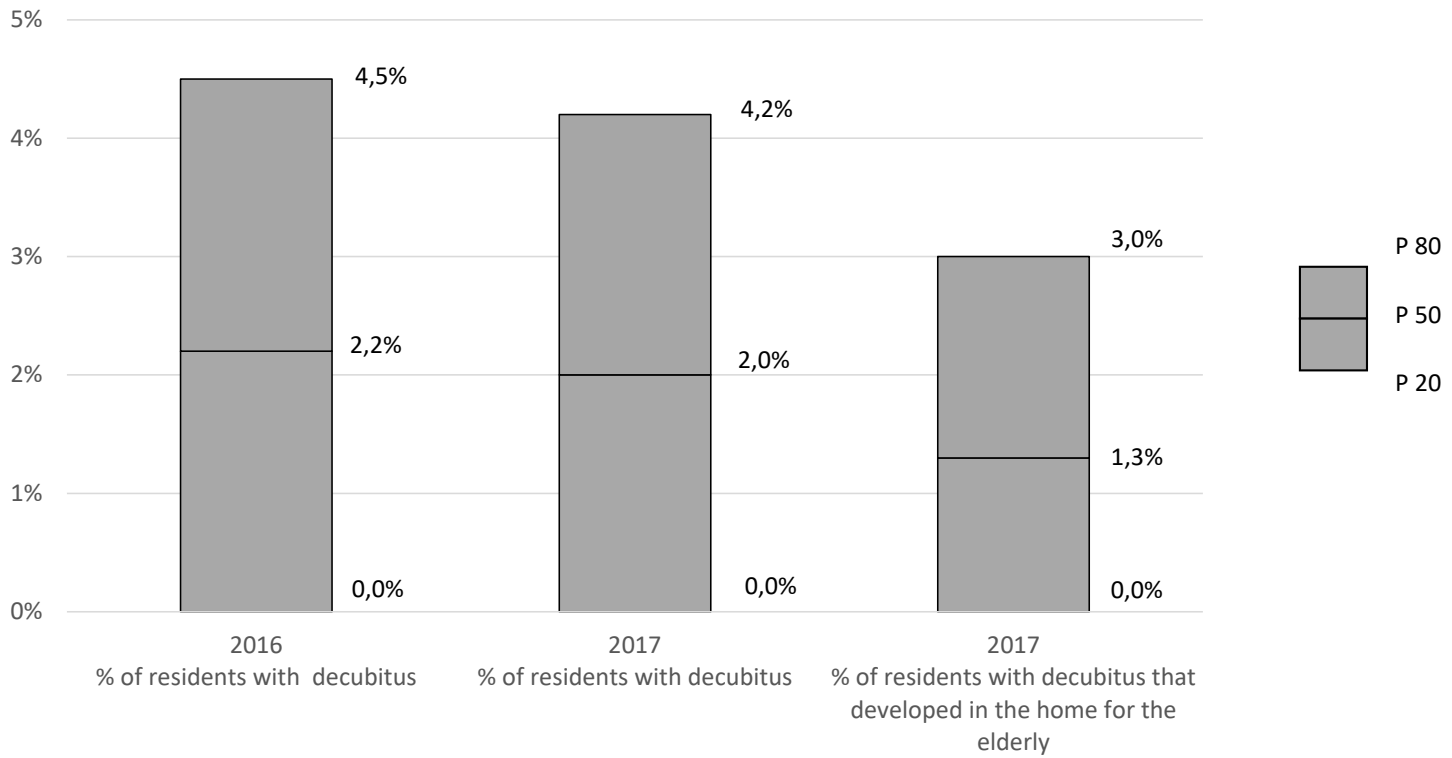
12.7.1. Documentation sheet

Description	Prevalence of pressure ulcers in residential care (prevalence on one day)
Calculation	Numerator: number of residents with a pressure ulcer of category 2, 3, 4 or undetermined on the reference day Denominator: total number of residents in the home for the elderly present on the reference day
Rationale	The occurrence of pressure ulcers, also known as bedsores, in a patient (hospitalized or in residential care) has a serious negative impact on the individual's health. Pressure ulcers can be prevented with good quality nursing care. The occurrence of pressure ulcers is one of the quality indicators measured in the Flemish project on quality indicators in homes for the elderly.[1, 2] In the future, the BelRAI will be nationally rolled out and this indicator will be recorded in the Long-term Care Facilities and Home Care modules.(http://wiki.belrai.org/nl/)
Data source	One-day measurements within the Flemish project on quality indicators in homes for the elderly.[1, 2]
Technical definitions	The severity of pressure ulcer can be categorized in: • Category 1: non-blanchable erythema • Category 2: partial thickness skin loss (blister/abrasion) • Category 3: full thickness skin loss (superficial pressure ulcer) • Category 4: full thickness tissue loss (deep pressure ulcer)
International comparability	This indicator is measured by many countries, however definitions vary as to included severity levels.[3]
Related indicators	Incidence of pressure ulcers in hospitals.
Dimensions	Quality (Safety); (Long-term) Care for the Elderly

12.7.2. Results

Recent data on decubitus in long-term care for the elderly are only available for the Flemish community, where they are measured in the context of the Flemish Indicator Project in the homes for the elderly. The data are presented in Figure 180. Pressure ulcers of category 1 are excluded.

Figure 180 – Percentage of residents with a pressure ulcer of category 2, 3, 4 or undetermined



Source: Vlaams Indicatorenproject Woonzorgcentra (Vlaams Agentschap voor Zorg en Gezondheid)

2017 data show that in 2.0% of the residents a pressure ulcer of category 2, 3, 4 or undetermined was found. Only in 1.3% of the residents the decubitus developed in the home for the elderly. Prevalence data of 2016 are somewhat higher, however as there is only data over 2 years, no meaningful time analysis can yet be performed.

Key points

- **Flemish data show that in 2.0% of the residents of a home for the elderly a pressure ulcer of category 2, 3, 4 or undetermined was found.**
- **Only in 1.3% of the residents the decubitus developed in the home for the elderly.**

References

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12.8. Prevalence of MRSA carriage in long-term care facilities (ELD-9)

12.8.1. Documentation sheet

Description	Prevalence of MRSA (Methicillin-resistant *Staphylococcus aureus*) colonisation in a sample of Belgian nursing homes (NH).[1]
Calculation	Weighted prevalence referred to the prevalence adjusted for the participation rate in each NH. Weighted mean MRSA prevalence: % MRSA carriers / screened residents.
Rationale	Considering the important proportion of MRSA present at admission in acute-care facilities, especially among admitted NH residents, it is important to investigate the extent and the evolution of the reservoir of MRSA carriers in long-term care facilities. The better understanding of the MRSA reservoir in nursing homes should allow the readjustment of the MRSA control policies in Belgian hospitals and in long-term care facilities.
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance (www.nsih.be) National Reference Centre for *Staphylococcus aureus*, ULB-Hospital Erasme, Brussels, Belgium
Source of results	National prevalence study of carriage of antibiotic-resistant bacteria among residents of 29 nursing homes in Belgium in 2015.[1] National prevalence study of carriage of antibiotic-resistant bacteria among residents of 60 nursing homes in Belgium in 2011.[2] National prevalence study of carriage of antibiotic-resistant bacteria among residents of 60 nursing homes in Belgium in 2005.[3]
Technical definitions	Dry screening swabs from anterior nares, throat, perineum and wounds were collected and sent for analysis to the National Reference Center. The swab collection in each nursing home was performed in one day.

International comparability	Comparison with other countries is difficult/impossible because of important differences in methodology, aims and study population of the few existing nationwide and representative NH-prevalence studies performed in European countries.
Limitation	Limited periodicity; No international comparisons possible.
Dimensions	Quality (safety)
Related indicators	Prevalence of healthcare-associated infections, Incidence of hospital acquired MRSA infections

12.8.2. Results

Belgium

So far, three Methicillin-resistant *Staphylococcus aureus* (MRSA) carriage surveys have been conducted in Belgian nursing homes, i.e., in 2005, 2011 and 2015 (Table 118).

Twenty-nine NHs participated in the 2015 MRSA carriage survey. Of the 1447 residents in whom a sample collection was performed for MRSA screening, 133 (9.2%) were identified as carriers of MRSA. Across NHs, the prevalence ranged from 0% to 21.6% (Figure 1). The weighted average prevalence of MRSA carriage was 9.0% (95%CI 8.1-10.3).

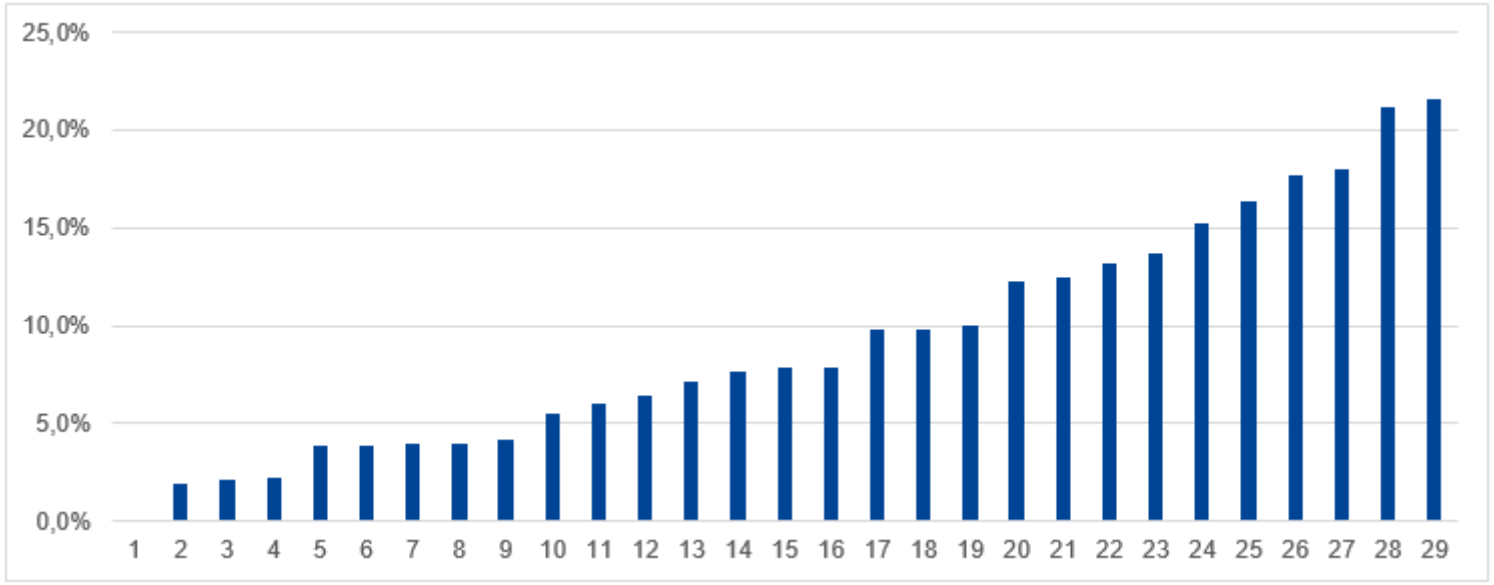
When comparing the results of the three MRSA carriage surveys, a continuous decrease in the prevalence of MRSA carriage in NHs is observed, from 19% in 2005 over 12.2% in 2011 to 9.0% in 2015 (Figure 181). This decrease mirrors the decrease in incidence of MRSA infections in acute care hospitals.

The prevalence of MRSA carriage was not significantly associated with NH type (public, caritative private, commercial private), NH size, or the proportion of high care beds. However, there was a tendency for lower MRSA carriage prevalence in NHs with more (high care) beds, which could be a reflection of the higher levels of resources and expertise in those facilities. Significant resident-level determinants of MRSA carriage were history of carrier status / current or recent MRSA infection (aOR 3.9 [1.6-9.2]; p<0.001), recent treatment (past 3 months) with moxifloxacin (aOR 4.0 [1.3-12.7]; p=0.002), and hospitalization in the last 12 months in different hospital departments (intra-hospital transfers) (aOR 4.4 [1.1-17.9]; p=0.007).

Table 118 – Summary of Belgian MRSA carriage surveys

Survey year	Number of participating nursing homes	Number of swabbed residents	Number of MRSA carriers	Percentage MRSA carriers	Weighted average MRSA carriage prevalence (95% CI)	Source
2015	29	1447	133	9.2%	9.0% (8.1-10.3)	Jans et al., 2016[1]
2011	60	2789	366	13.1%	12.2% (11.3-13.1)	Jans et al., 2013[2]
2005	60	2953	588	19.9%	19.0% (16.5-21.5)	Denis et al., 2009[3]

Figure 181 – Percentage of MRSA carriers in 29 participating nursing homes, 2015



Source: Jans et al., 2016[2]

Regional comparisons

In the 2015 MRSA carriage survey, 16 of the 29 participating NHs (56.1%) were in Flanders, 11 in Wallonia (37.8%) and 2 in Brussels (6%). Due to the small sample size, the results are not representative at regional level and no valid regional comparisons can be made.

International comparisons

Previous studies performed in other European countries have reported a broad range of prevalence of multidrug resistant microorganisms. Variations in the screening sampling sites and in the microbiological methods, differences in the definitions of criteria for the targeted microorganisms, differences in the population case-mix and in local practices as well as true epidemiological variations may probably altogether explain this large variability across countries.

Key points

- **The weighted mean MRSA prevalence of nursing home residents in 2015 was 9.0% (95%CI 8.1-10.3)**
- **National guidelines to prevent the spread of MRSA in nursing homes have been developed in 2006. When comparing the results of the three available Belgian MRSA carriage surveys, a continuous decrease in the prevalence of MRSA carriage in nursing homes is observed, from 19% in 2005 over 12.2% in 2011 to 9.0% in 2015.**

References

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12.9. Prescription of anticholinergics in the elderly (ELD-10)

12.9.1. Documentation sheet

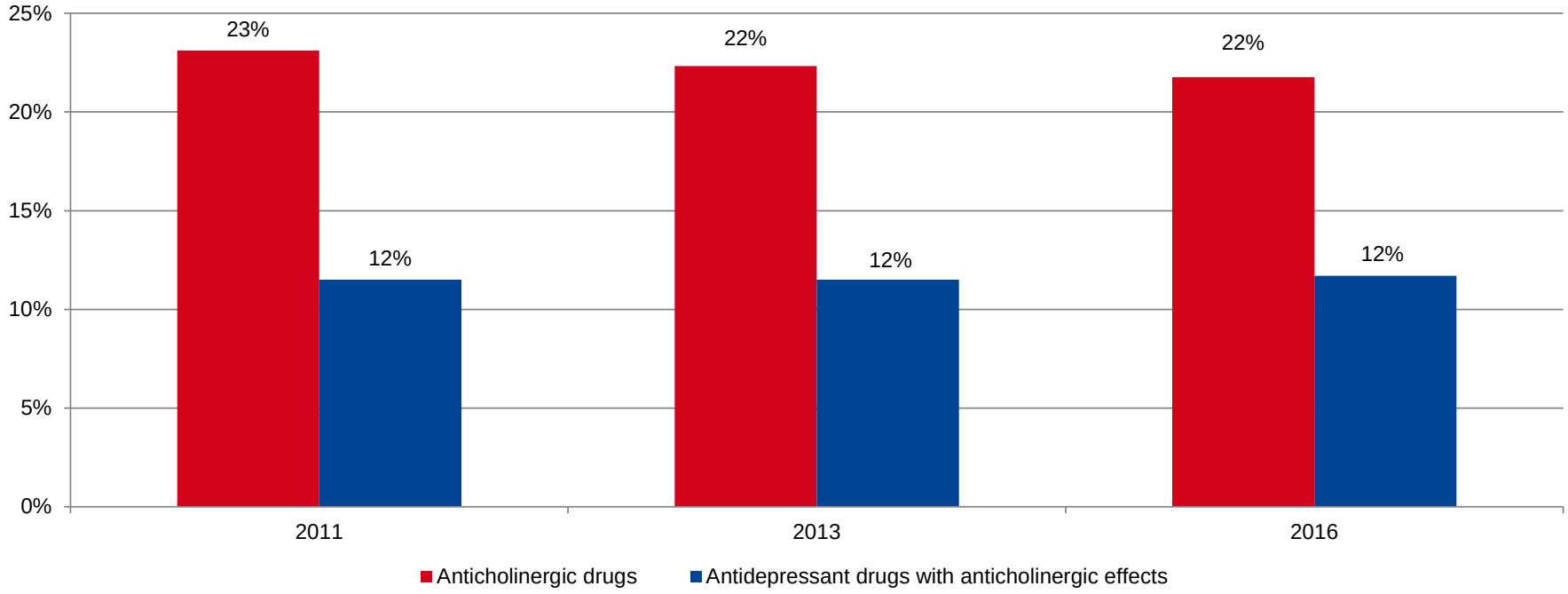
Description	Percentage of persons aged ≥*65* years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects
Calculation	Percentage of elderly (≥*65* years) with anticholinergics prescribed Numerator 1: Number of elderly (≥*65* years) prescribed anticholinergic drugs (> 80 DDD) Numerator 2: Number of elderly (≥*65* years) prescribed antidepressant drugs with anticholinergic effects (> 80 DDD) Denominator: Number of elderly ≥*65* years
Rationale	Because of their side effects especially in older patients, anticholinergic drugs should be avoided as much as possible in the elderly.[1] Anticholinergic drugs are drugs that reduce acetylcholine activity. Acetylcholine is a neurotransmitter that plays an important role in the nervous system. Anticholinergic drugs can cause side effects like confusion, sedation and orthostatic hypotension. Older adults, especially those with dementia, are more at risk to have confusion and sedation side effects. The appropriateness of prescribing behaviours by clinicians within the health system can be increased through education and training and the use of guidelines.
Data source	EPS
Technical definitions	Anticholinergic drugs = N06AA09 * N06CA01 * N06AA04 * N05AH02 R06AA02 R06AA52 N06AA12 * N05BB01 N05BB51 N06AA02 * N05AA02 R06AD52 N06AA10 M03BX02

	G04BD04 G04BD07 N04AA01 R03BB01 R03AL01 R03AL02 R06AD02 R06AD52 N04BB01 N03AE01 N05BA01 N02AB03 N06AB03 * N06CA03 * N05AH03 N02AA05 N06AB05 * A02BA01 N.B. N06 (marked with *) = antidepressant drug with anticholinergic effects. This list is based on a list of active substances with anticholinergic properties (n = 41) identified in drug lists of older adults in Belgium. [2] Note that a threshold is used of >80 DDD as an indicator for chronic use of the drug.
Limitations	Farmanet does not include hospital pharmacies
International comparability	No international data available
Dimension	Appropriateness / safety
Related performance indicators	
Keywords	

12.9.2. Results

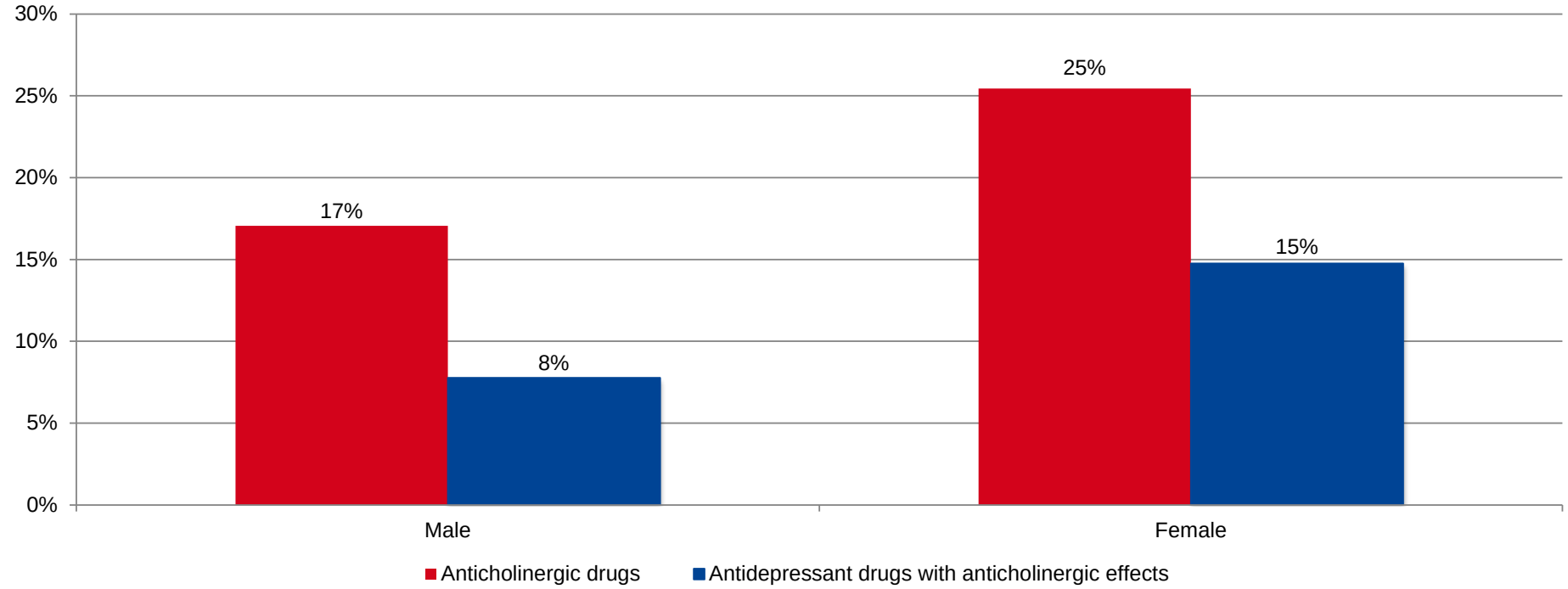
In 2016, 22% of the population over 65 years was prescribed >80 DDD of anticholinergic drugs, amongst which 12% were prescribed an antidepressant drug with anticholinergic effects. Figure 182 illustrates that this indicator has not shown any improvement over the years 2011-2013-2016. Woman are more likely to be prescribed these drugs than men: 25% of woman over 65 years are prescribed anticholinergic drugs, versus 17% of men (see Figure 183). Prescriptions also increase with age, 29% of the population over 85 years was prescribed anticholinergic drugs, compared to 19% of the population aged 65-74 years (see Figure 184. There is also some regional variation: prescriptions are highest in Wallonia (26% of population over 65 years), followed by Brussels-Capital (24%) and Flanders (20%) (see Figure 185). Finally, the problem appears most acute in institutions, where 52% of residents over 75+ are prescribed anticholinergic drugs, compared to 22% in persons 75+ living at home (Figure 186).

Figure 182 – Percentage of the Belgian population aged ≥*65* years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects (>80 DDD): evolution 2011-2013-2016



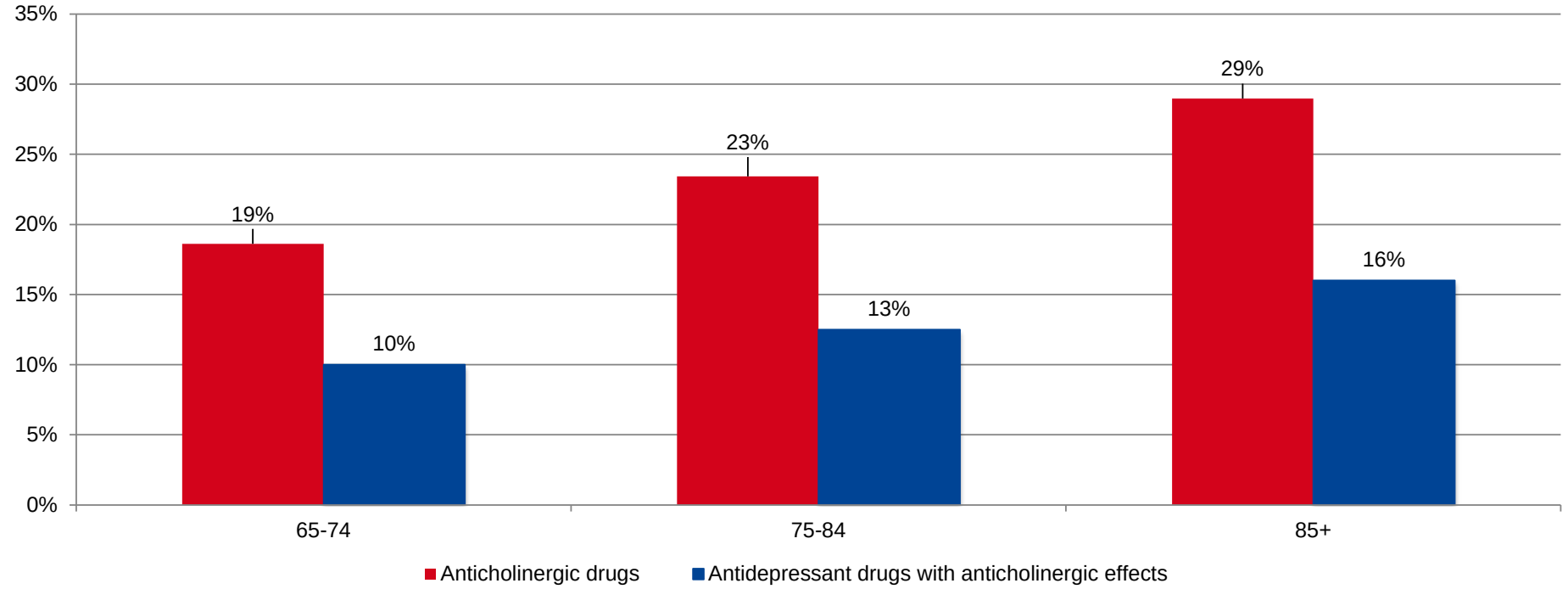
Source: RIZIV – INAMI (data EPS)

Figure 183 – Percentage of the Belgian population aged ≥*65* years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects (>80 DDD), by gender (2016)



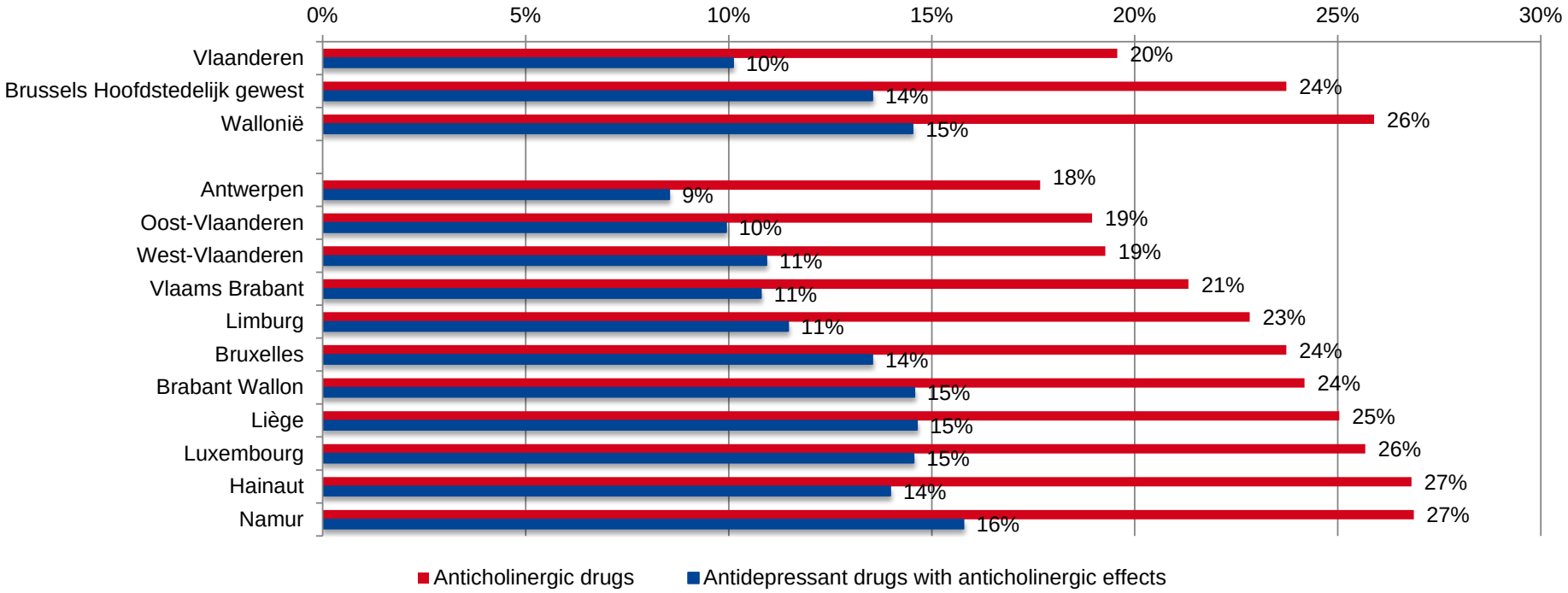
Source: RIZIV – INAMI (data EPS)

Figure 184 – Percentage of the Belgian population aged ≥*65* years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects (>80 DDD), by age group (2016)



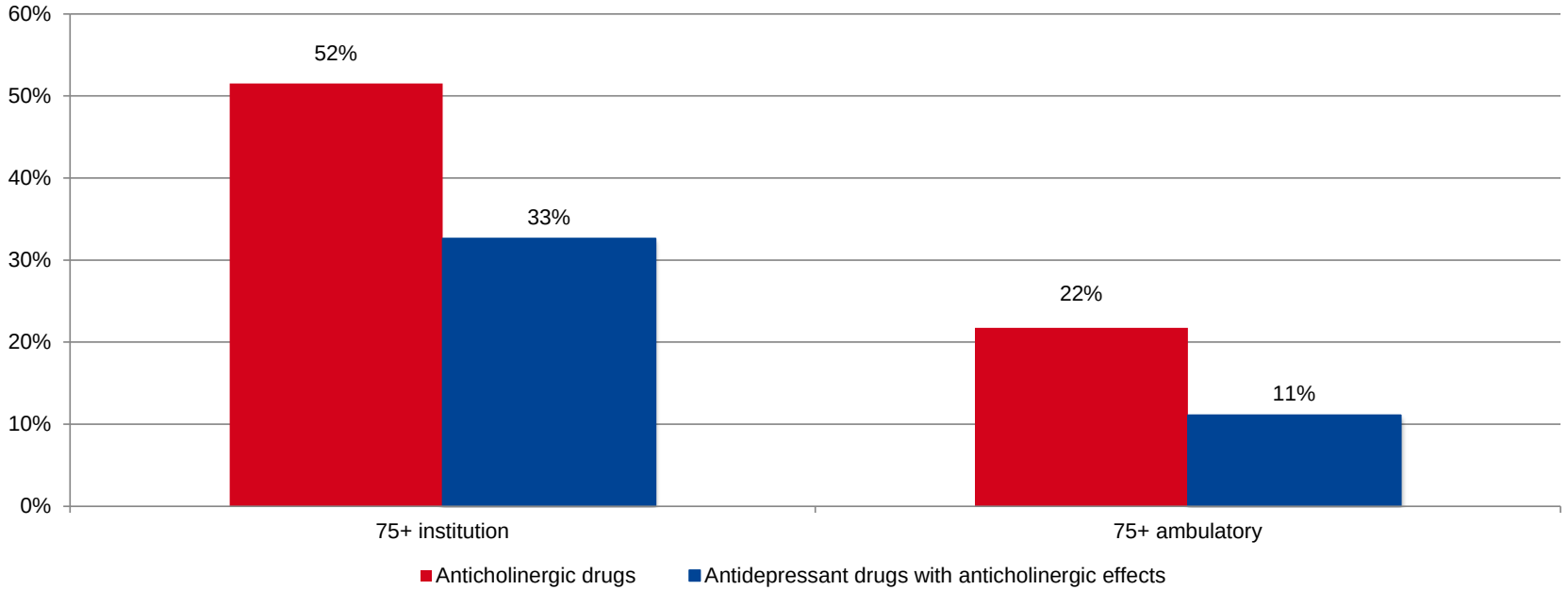
Source: RIZIV – INAMI (data EPS)

Figure 185 – Percentage of the Belgian population aged ≥*65* years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects (>80 DDD), by region and province (2016)



Source: RIZIV – INAMI (data EPS)

Figure 186 – Percentage of the Belgian population aged ≥75 years prescribed anticholinergic drugs or antidepressant drugs with anticholinergic effects (>80 DDD), institution versus ambulatory (2016)



Source: RIZIV – INAMI (data EPS)

- **Because of their side effects especially in older patients, anticholinergic drugs should be avoided as much as possible in the elderly.**
- **In 2016, 22% of the population over 65 years was prescribed >80 DDD of anticholinergic drugs, amongst which 12% were prescribed an antidepressant drug with anticholinergic effects. Woman are more likely to be prescribed these drugs than men. The problem appears most acute in institutions, where 52% of residents over 75+ are prescribed anticholinergic drugs, compared to 22% in persons 75+ living at home. There is also considerable regional variation.**

- **This indicator has not shown any improvement since 2011.**

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12.10. Prescription of antipsychotics in elderly in (ELD-11) versus outside residential/nursing facility (ELD-12)

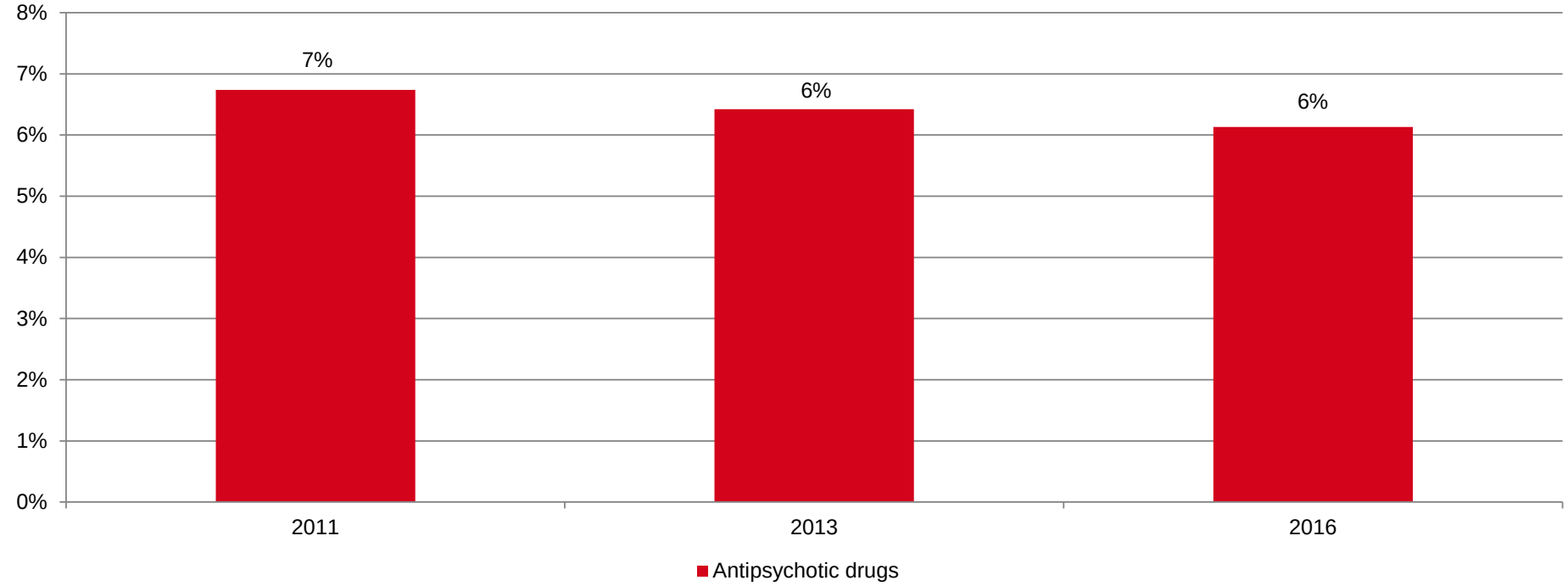
12.10.1. Documentation sheet

Description	Percentage of elderly with antipsychotics prescribed
Calculation	Percentage of elderly with antipsychotics prescribed Numerator: Number of elderly with antipsychotics; Denominator: Number of elderly.
Rationale	Elder people with dementia may present behavioral and psychological symptoms which make it difficult to care for them. Antipsychotics are often prescribed in this population to reduce the symptoms. However, given the associated risks, antipsychotics should be avoided as much as possible in this population. In patients with dementia, a higher risk of CVA and sudden death has been documented in the use of different classes of antipsychotics. Non-pharmacologic interventions are the recommended first step for problem behaviour in dementia. Antipsychotic drugs should only be used if the behavior of the patient poses a danger to him/herself or to persons in the environment. If the drugs are used, the duration of treatment should be as short as possible and the dosis as low as possible and the continuation of the treatment should be regularly reviewed.[1]
Data source	EPS
Technical definitions	Antipsychotics = ATC-code N05A Criteria > 0 DDD
International comparability	OECD Health Statistics 2017
Dimension	(Long-term) Care for the elderly; Appropriateness of Care; Safety of Care
Keywords	

12.10.2. Results

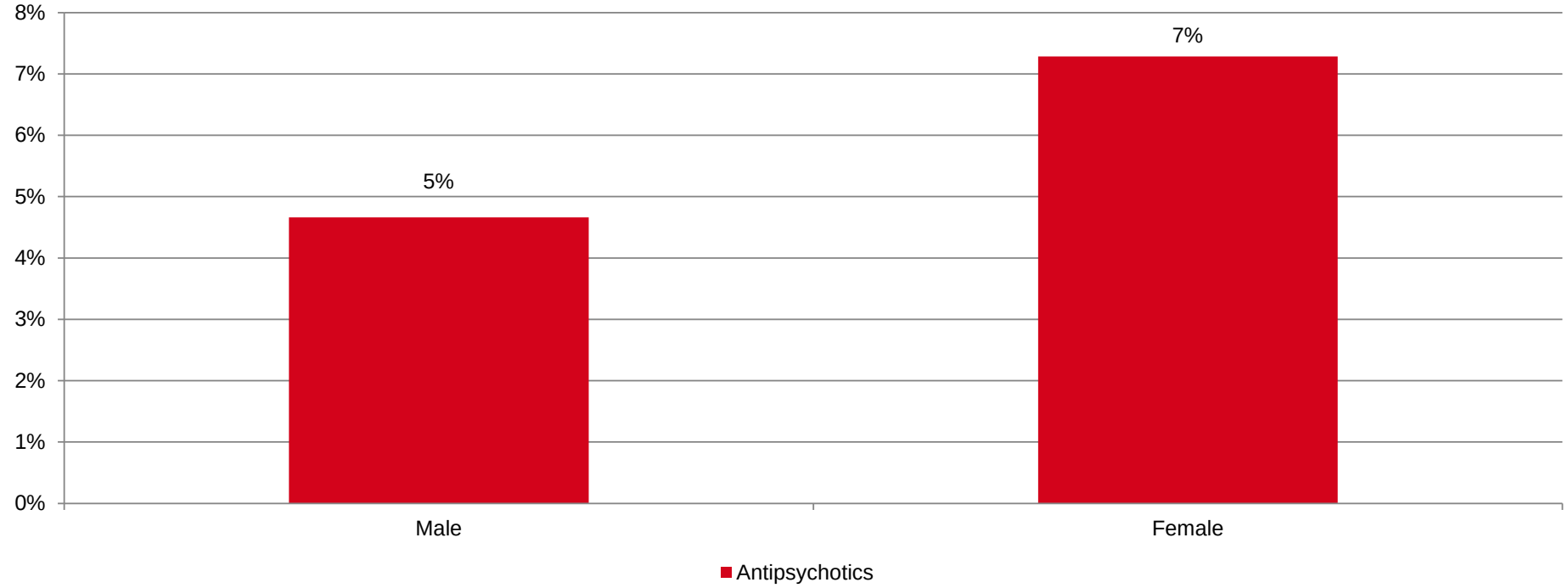
In 2016, 6% of the population over 65 years was prescribed antipsychotic drugs (>0 DDD). Figure 187 illustrates that there has been a modest decrease since 2011. Woman are more likely to be prescribed antipsychotics than men: 7% of woman over 65 years versus 5% of men (see Figure 188). Prescriptions increase with age, 11% of the population over 85 years was prescribed antipsychotics, compared to 4% of the population aged 65-74 years (see Figure 189). There is also some regional variation: prescriptions are lowest in the province of Antwerp (4% of population over 65 years) and highest in the province of Limburg (8%) (see Figure 190). Finally, the problem appears most acute in institutions, where 32% of residents over 75+ are prescribed antipsychotics, compared to 5% in persons 75+ living at home (Figure 191).

Figure 187 – Percentage of the Belgian population aged ≥65 years prescribed antipsychotics (>0 DDD): evolution 2011-2013-2016



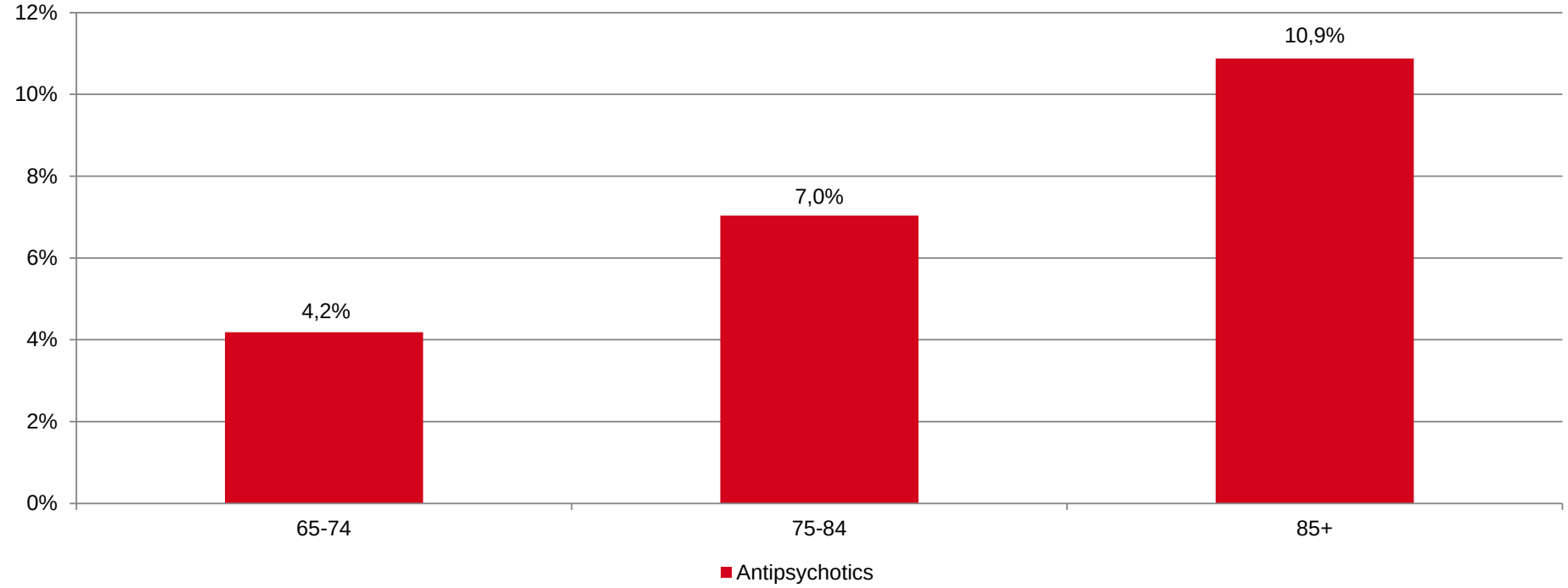
Source: RIZIV – INAMI (data EPS)

Figure 188 – Percentage of the Belgian population aged ≥*65* years prescribed antipsychotics (>0 DDD), by gender (2016)



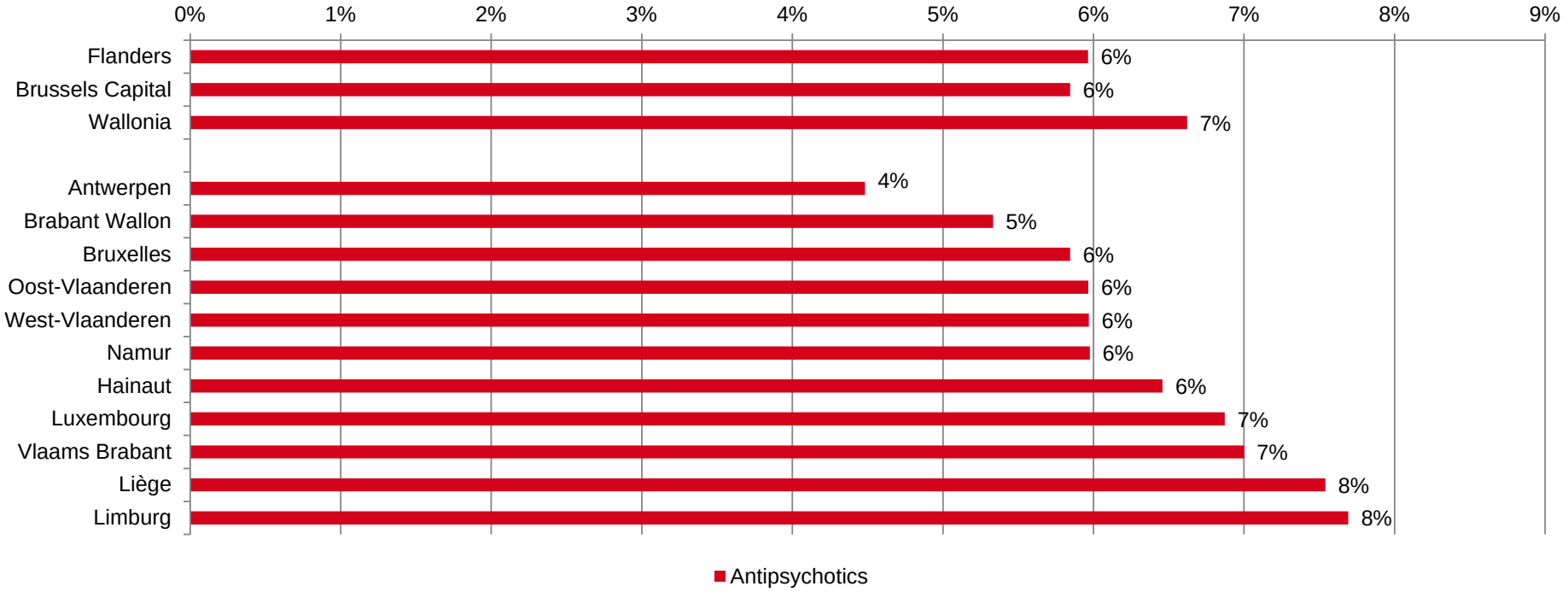
Source: RIZIV – INAMI (data EPS)

Figure 189 – Percentage of the Belgian population aged ≥*65* years prescribed antipsychotics (>0 DDD), by age group (2016)



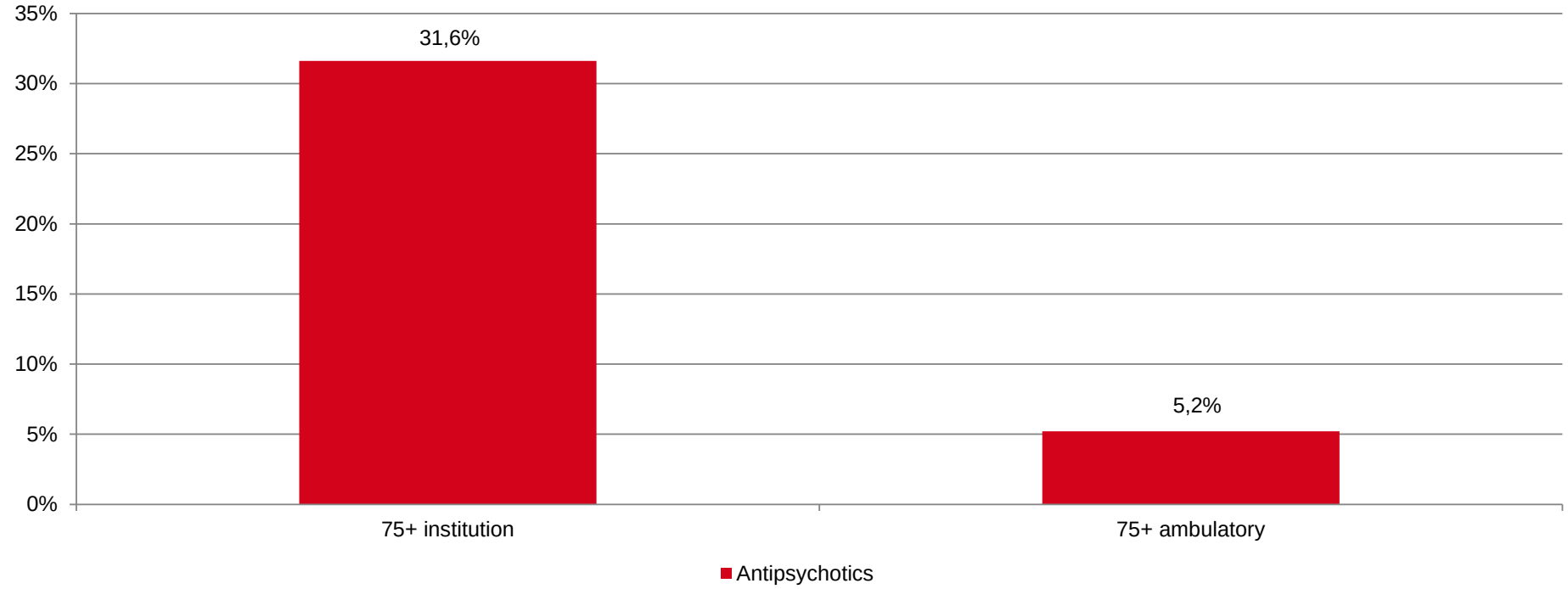
Source: RIZIV – INAMI (data EPS)

Figure 190 – Percentage of the Belgian population aged ≥*65* years prescribed antipsychotics (>0 DDD), by region and province (2016)



Source: RIZIV – INAMI (data EPS)

Figure 191 – Percentage of the Belgian population aged ≥75 years prescribed antipsychotics (>0 DDD), institution versus ambulatory (2016)

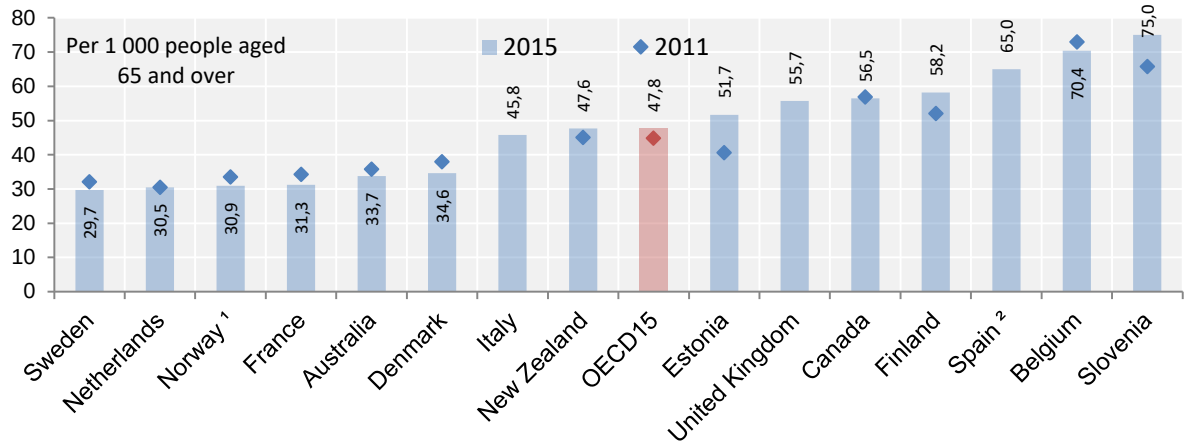


Source: RIZIV – INAMI (data EPS)

International comparison

Data collected by the OECD show that the prescription of antipsychotics to older people varies by more than a factor of two across OECD countries (Figure 192). In 2015, Sweden and the Netherlands prescribed antipsychotics to fewer than 31 in every thousand people aged over 65, with rates either falling or constant. At the other extreme are Belgium and Slovenia with more than 70 in every thousand people aged over 65 being prescribed antipsychotics.

Figure 192 – People with a prescription of antipsychotics per 1 000 people aged ≥65 years, 2015 (or nearest year) (>0 DDD): OECD data



1. Data for Norway do not include people in institutional care, so underestimate the use of antipsychotics. 2. Data for Spain refer to 2014
Source: OECD Health Statistics 2017. *DOI:https://dx.doi.org/10.1787/health_glance-2017-graph198-en*

Key points

- **Antipsychotics are often prescribed in people with dementia presenting behavioral and psychological symptoms in order to reduce these symptoms. However, given the associated risks, antipsychotics should be avoided as much as possible in this population. Non-pharmacologic interventions are the recommended first step for problem behaviour in dementia.**
- **In 2016, 6% of the population over 65 years was prescribed antipsychotic drugs (>0 DDD). Woman are more likely to be prescribed antipsychotics than men. There is also some regional variation: prescriptions are lowest in the province of Antwerp (4% of population over 65 years) and highest in the province of Limburg (8%). The problem is particularly severe in institutions, where 32% of residents over 75+ are prescribed antipsychotics.**
- **OECD data show that Belgium is a high-prescriber of antipsychotics in elderly. Prescriptions in Sweden and Netherlands are less than half as frequent compared to Belgium. There has been a modest decrease in Belgium since 2011.**

References

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13. CARE AT THE END OF LIFE

13.1. Patients with terminal cancer who received palliative care (EOL-1)

13.1.1. Documentation sheet

Description	Terminal cancer patients who received palliative care at the end of their life
Calculation	Numerator: Number of patients who received palliative care (in usual place of residence or in hospital) (regardless of time period) Denominator: Number of patients diagnosed with a cancer with poor prognosis and that died within the studied time period
Rationale	The 2002 WHO definition states that “palliative care is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual”. Belgium has developed many structures and services for palliative patients. Palliative networks were created in 1997, to develop palliative care culture, to organize trainings for caregivers, to coordinate actions between organisations and services, to evaluate the palliative services. In home settings, palliative home care teams support caregivers and facilitate the care for the palliative patient who wishes to stay at home by additional measures. Firstly, a “palliative lump sum” (so called “forfait”) covers the additional costs created by palliative care during two months. Furthermore, the palliative patient at home does not have to pay any personal contribution when treated by nurses, physiotherapists and general practitioners. Finally, through palliative day centres the supporting families can be offered some respite. Two types of palliative care structures were set up in the hospitals. First, approximately 400 specialised (SP)-palliative beds are clustered in small Palliative Care Units (PCU). Secondly, the palliative function has been developed in all hospitals in order to provide specific tailored care for palliative patients not staying in a PCU. A similar palliative function has been created in nursing homes.[1]
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is currently not possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. <u>Inclusion Criteria</u> Incidence years: 2006-2015 Tumour selection based on the Pallcare project [2] : combination of topography and morphology according to Eurocare-4 [3] [4], and Eurocare-5 [5] • Chronic tumours (5-yr RS <50%) o Head and neck o Nasal cavities and sinuses o Small intestine o Multiple myeloma o Ovary and uterine adnexa o Chronic myeloid leukaemia o Acute lymphatic leukaemia

	• Acute tumours (1-yr RS <50%) o Long, bronchus and trachea o Pleura o Oesophagus o Stomach o Gallbladder and biliary tract o Liver, primary o Pancreas o Acute myeloid leukaemia o Brain Patients deceased before January 1st 2017 Age at diagnosis >=18 years Exclusion Criteria Patients with more than one invasive tumour (until 2015) Patients without a Belgian residence Patients without national social security number Patients for whom no IMA data of the year of death were available (=3.9%) Patients with an uncertain date of diagnosis Maximum 3 years of follow-up Analyses were limited to patients who died before January 1st of the third year following the year of incidence. For example: patients diagnosed in 2006 were included in case they died in 2006, 2007 or 2008; patients diagnosed in 2007 were included in case they died in 2007, 2008 or 2009, etc. These cohorts were defined in order to assure that for every diagnosis, the same follow-up period could be taken into account. By applying this definition, a bias induced by varying length of the follow-up period could be avoided. Palliative care Palliative care as identified in billing data includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patients may receive palliative care without nomenclature codes being registered. Cause of death is unknown: it is assumed that the patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (e.g. patients dying from other causes, patients requesting euthanasia). No information on terminal patients apart from the oncology setting.
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Accessibility

13.1.2. Results

Analysis of national data in cancer patients revealed that in 2015 on average more than half (53.4%) of the terminal cancer patients received palliative care. A slight increase in the use of palliative care services was seen compared to 2008 (48.0%) (see Table 119). A subanalysis by tumour type showed a higher proportion of acute tumour cancer patients receiving palliative care compared to cancer patients with chronic tumours (54.7% vs 44.0% respectively, see Table 119). Similar to the overall results, an increase over time was seen in both the groups (i.e. acute and chronic tumour type) cancer patients.

Detailed results by tumour type showed substantial differences in the use of palliative care within each broad category. For example, within the group of patients with acute tumours, the proportion of patients receiving palliative care ranged from 29.8% for acute myeloid leukaemia to 65.8% for brain cancer (see Table 120). Also, the proportion of patients receiving palliative care is generally lower in haematological tumours, both in acute and chronic types.

A higher proportion of cancer patients receiving palliative care was seen in the Flemish Region (59.8%) compared to the two other regions (43.7% in Brussels-Capital Region and 46.1% in the Walloon Region) (see Table 121)

Table 119 – Proportion of patients who received palliative care, by year of death (2008-2015) (maximum 3 years of follow-up)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	Receiving palliative care		Total	Receiving palliative care		Total	Receiving palliative care	
	N	n	%	N	n	%	N	n	%
2008	9 585	4 603	48,0	8 360	4 093	49,0	1 225	510	41,6
2009	9 462	4 543	48,0	8 233	4 024	48,9	1 229	519	42,2
2010	9 871	4 810	48,7	8 598	4 321	50,3	1 273	489	38,4
2011	9 936	4 982	50,1	8 745	4 500	51,5	1 191	482	40,5
2012	10 040	5 129	51,1	8 781	4 608	52,5	1 259	521	41,4
2013	10 087	5 176	51,3	8 864	4 658	52,5	1 223	518	42,4
2014	10 003	5 436	54,3	8 835	4 930	55,8	1 168	506	43,3
2015	9 838	5 257	53,4	8 634	4 727	54,7	1 204	530	44,0
Total	78 822	39 936	50,7	69 050	35 861	51,9	9 772	4 075	41,7

Note: To assure a same follow-up period for every patient included, deaths occurring in 2006 and 2007 were excluded. Deaths occurring in 2016 were also excluded, as no incidences were studied for that year.
Source: BCR linked to IMA data

Table 120 – Proportion of patients receiving palliative care by tumour type (all patients, maximum 3 years of follow-up) (2006-2015)

	Total	Receiving palliative care	
	N	n	%
Acute	84 602	43 493	51,4
• Oesophagus	4 967	2 326	46,8
• Stomach	7 014	3 440	49,0
• Liver, primary	3 995	1 992	49,9
• Gallbladder and biliary Tract	2 357	1 214	51,5
• Pancreas	10 298	6 149	59,7
• Lung, bronchus and trachea	47 365	23 628	49,9
• Pleura	1 703	1 073	63,0
• Brain	4 479	2 948	65,8
• Acute myeloid leukaemia	2 424	723	29,8
Chronic	11 890	4 892	41,1
• Head and Neck	5 034	2 114	42,0
• Small Intestine	655	304	46,4
• Nasal cavities and sinuses	363	192	52,9
• Ovary and uterine adnexa	3 068	1 544	50,3
• Multiple Myeloma	1 983	554	27,9
• Acute lymphatic leukaemia	238	65	27,3
• Chronic myeloid leukaemia	549	119	21,7
Total	96 492	48 385	50,1

Source: BCR linked to IMA data

Table 121 – Proportion of patients who received palliative care, by region (year of death=2015, incidence year 2006-2009 excluded)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	Receiving palliative care		Total	Receiving palliative care		Total	Receiving palliative care	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	903	395	43,7	761	336	44,2	142	59	41,5
Flemish Region	6426	3840	59,8	5505	3375	61,3	921	465	50,5
Walloon Region	3996	1842	46,1	3328	1572	47,2	668	270	40,4
Total	11325	6077	53,7	9594	5283	55,1	1731	794	45,9

Source: BCR linked to IMA data

Note that as in the past patients were often recognized too late as palliative patient - often only a week before death – new criteria have been adopted which are no longer based on life expectancy but based on fragility. Previously the legally defined condition to be eligible for palliative care was a life expectancy of maximum three months. The new criteria are based on the first Palliative Care Indicator Tool (PICT) scale, in which the first question is "Would you be surprised if your patient would decease in the coming 6 to 12 months?".[6] With this new definition, patients can be detected earlier on.

Note furthermore that the project on quality indicators for palliative care in Flanders developed 31 quality indicators on palliative care. As the implementation of the indicator set is limited to 29% of palliative care services in Flanders (37 teams), the data from this source have not been included in this report.[7]

Key points

- **Analysis of national data (2015) showed that more than half of the terminal cancer patients received palliative care. This percentage has slightly increased over time.**
- **Variation in palliative care measures exists among different tumour types. Hematological tumours appear to receive less palliative care compared to other tumour types.**
- **A higher proportion of cancer patients received palliative care in the Flemish Region (60%) compared to the Walloon (46%) and Brussels-Capital Region (44%).**
- **Data from abroad is lacking for international comparability.**

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13.2. Cancer patients who died within one week after start of palliative care (EOL-2)

13.2.1. Documentation sheet

Description	Cancer patients who started receiving palliative care and died within one week after start of palliative care
Calculation	Numerator: Number of patients who started palliative care and died within one week after start of palliative care Denominator: Total number of patients diagnosed with cancer that died in the studied time period and who received palliative care services
Rationale	The start of palliative care is sometimes postponed until patients are in a terminal phase of the disease. This can denote either problems of accessibility of end of life care, or that the decision on the start of palliative care was made too late.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is currently not possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. Inclusion Criteria Incidence years: 2006-2015 Tumour selection based on the Pallcare project [1] : combination of topography and morphology according to Eurocare-4 [2] [3], and Eurocare-5 [4]: see EOL-1 Patients deceased before January 1st 2017 Age at diagnosis >=18 years Exclusion Criteria Patients with more than one invasive tumour (until 2015) Patients without a Belgian residence Patients without national social security number Patients for whom no IMA data of the year of death were available (=3.9%) Patients with an uncertain date of diagnosis

	Maximum 3 years of follow-up Analyses were limited to patients who died before January 1st of the third year following the year of incidence. For example: patients diagnosed in 2006 were included in case they died in 2006, 2007 or 2008; patients diagnosed in 2007 were included in case they died in 2007, 2008 or 2009, etc. These cohorts were defined in order to assure that for every diagnosis, the same follow-up period could be taken into account. By applying this definition, a bias induced by varying length of the follow-up period could be avoided. Palliative care Palliative care as identified in billing data includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patient may receive palliative care without nomenclature codes being registered. Cause of death is unknown: it is assumed that patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (e.g. patients dying from other causes, patients requesting euthanasia). No information on terminal patients apart from the oncology setting.
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Accessibility
Key-words	End-of-life; palliative care service; timeliness

13.2.2. Results

Analysis by the Belgian Cancer Registry shows that over the period 2008-2015 19.2% of the cancer patients who received palliative care services, died within one week after the start of palliative care (see Table 122). Analysis showed a discrete downward evolution between 2008 and 2015 (20.8% versus 18.9%) (Table 122).

The BCR also performed a sub analysis, differentiating between acute and chronic tumour types (see Table 123). The proportion of patients who died within one week after start of palliative care differed substantially among the different tumour types, ranging from 11.6% in patients with brain cancer to 35.4% in patients with acute lymphatic leukaemia. On average no differences were found between the combined acute and chronic tumour types (19.1% versus 19.3% respectively). However, the proportion of patients dying within one week after start of palliative care was consistently higher in haematological tumours in comparison to other tumour types (26.8% in acute myeloid leukaemia, 27.3% in multiple myeloma, 35.4% in acute lymphatic leukaemia, 29.4% in chronic myeloid leukaemia).

Evolution over time per tumour type (i.e. acute versus chronic type) showed a more or less stable trend for both categories between 2008 and 2015 (see Table 122).

Some differences were observed between the Regions (see Table 124) in that a lower proportion of patients who died within one week after start of palliative care was noted in the Flemish Region (16.3%) compared to the Brussels-Capital Region (23.0%) and Walloon Region (21.7%).

Table 122 – Proportion of patients who died within one week after start of palliative care, by year of death (2008-2015) (deaths in 2006, 2007 and 2016 excluded, maximum 3 years of follow-up)

	All Tumours			Acute Tumours			Chronic Tumours		
	Patients with palliative care	Died within one week		Patients with palliative care	Died within one week		Patients with palliative care	Died within one week	
	N	n	%	N	n	%	N	n	%
2008	4 603	956	20,8	4 093	837	20,4	510	119	23,3
2009	4 543	889	19,6	4 024	795	19,8	519	94	18,1
2010	4 810	969	20,1	4 321	870	20,1	489	99	20,2
2011	4 982	948	19,0	4 500	863	19,2	482	85	17,6
2012	5 129	1 003	19,6	4 608	889	19,3	521	114	21,9
2013	5 176	973	18,8	4 658	886	19,0	518	87	16,8
2014	5 436	955	17,6	4 930	853	17,3	506	102	20,2
2015	5 257	993	18,9	4 727	891	18,8	530	102	19,2
Total	39 936	7 686	19,2	35 861	6 884	19,2	4 075	802	19,7

Source: BCR linked to IMA data

Table 123 – Proportion of patients who died within one week after start palliative care by tumour type (all patients 2006-2015, maximum 3 years of follow-up)

	Patients with palliative care	Died within one week	
	N	n	%
Acute	43 493	8 324	19,1
• **Oesophagus**	2 326	450	19,4
• **Stomach**	3 440	677	19,7
• **Liver, primary**	1 992	477	24,0
• **Gallbladder and biliary Tract**	1 214	238	19,6
• **Pancreas**	6 149	1 179	19,2
• **Lung, bronchus and trachea**	23 628	4 599	19,5

• **Pleura**	1 073	168	15,7
• **Brain**	2 948	342	11,6
• **Acute myeloid leukaemia**	723	194	26,8
Chronic	4 892	944	19,3
• **Head and Neck**	2 114	384	18,2
• **Small Intestine**	304	64	21,1
• **Nasal cavities and sinuses**	192	36	18,8
• **Ovary and uterine adnexa**	1 544	251	16,3
• **Multiple Myeloma**	554	151	27,3
• **Acute lymphatic leukaemia**	65	23	35,4
• **Chronic myeloid leukaemia**	119	35	29,4
Total	48 385	9 268	19,2

Source: BCR linked to IMA data

Table 124 – Proportion of patients who died within one week after start of palliative care, by region (year of death=2015, incidence year 2006-2009 excluded)

	All Tumours			Acute Tumours			Chronic Tumours		
	Patients with palliative care	Died within one week		Patients with palliative care	Died within one week		Patients with palliative care	Died within one week	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	395	91	23,0	336	81	24,1	59	10	16,9
Flemish Region	3 840	626	16,3	3 375	536	15,9	465	90	19,4
Walloon Region	1 842	400	21,7	1 572	348	22,1	270	52	19,3
Total	6 077	1 117	18,4	5 283	965	18,3	794	152	19,1

Source: BCR linked to IMA data

Key points

- **The start of palliative care very close to the time of death is an indicator of both the accessibility of palliative care services and of the appropriateness of timing of palliative care.**
- **In one out of five patients with cancer with poor prognosis who received palliative care, palliative care started in a very late phase (i.e. one week or less before death) (19%). The majority of patients received palliative care for more than one week.**
- **Substantial variation between different tumour types regarding start of palliative care in a very late phase was observed, with brain tumours (11.6%) and acute lymphatic leukaemia (35.4%) as the extremes. A generally higher percentage of start of palliative care very close to the time of death was observed in haematological tumours.**
- **A lower proportion of patients who started palliative care in a very late stadium was found in Flanders (16.3%) compared to the Brussels-Capital (23.0%) and Walloon Region (21.7%).**

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13.3. Cancer patients who received chemotherapy in the last 14 days of life (EOL-3)

13.3.1. Documentation sheet

Description	Patients with cancer receiving chemotherapy in the last 14 days of life
Calculation	Numerator: number of patients receiving chemotherapy in the last 14 days of life Denominator: number of patients diagnosed with cancer that died within the studied time period
Rationale	The main goal of palliative care is to improve or at least maintain quality of life in patients near death. In this way curative treatments, such as active cancer treatment in case of oncological patients, are stopped and the main focus of therapy becomes pain and symptom control. This indicator serves as a measure of the aggressiveness of care in the last days of life of cancer patients.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is currently not possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. <u>Inclusion Criteria</u> Incidence years: 2006-2015 Tumour selection based on the Pallcare project [1] : combination of topography and morphology according to Eurocare-4 [2 3], and Eurocare-5 [4]: see EOL-1 Patients deceased before January 1st 2017 Age at diagnosis >=18 years <u>Exclusion Criteria</u> Patients with more than one invasive tumour (until 2015) Patients without a Belgian residence Patients without national social security number Patients for whom no IMA data of the year of death were available (=3.9%) Patients with an uncertain date of diagnosis <u>Maximum 3 years of follow-up</u> Analyses were limited to patients who died before January 1st of the third year following the year of incidence. For example: patients diagnosed in 2006 were included in case they died in 2006, 2007 or 2008; patients diagnosed in 2007 were included in case they died in 2007, 2008 or 2009, etc. These cohorts were defined in order to assure that for every diagnosis, the same follow-up period could be taken into account. By applying this definition, a bias induced by varying length of the follow-up period could be avoided. <u>Chemotherapy</u> Drug (ATC) selection: ATC category L01, minus some products that are (also) used in non-oncological settings (e.g. Ledertrexate, Celecoxib). More precisely, L01 covers systemic therapy with exclusion of hormonal therapy. L01 not only covers chemotherapy but also PKI and monoclonal Ab.

Limitation	The real proportion is probably higher than the presented results, as patients may receive chemotherapy within sponsored clinical trials. In this case, the product may be provided by the sponsoring company and therefore it will not be detected within reimbursed data. No information on aggressiveness of care in terminal patients without the diagnosis of cancer. A variety of agents (i.e. ATC L01 all together) are included in the analyses, as far as toxicity-profile, way of administration (orally versus IV).
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimension	Quality (appropriateness)
Key words	End of life care; aggressiveness of care

13.3.2. Results

An average of 10.7% of the cancer patients who died in the period between 2008 and 2015, received chemotherapy in the last 14 days of their life (see Table 125). Over the last four studied years there was a downward evolution from 11.2% in 2012 to 9.2% in 2015 (see). A slightly higher proportion of patients with chronic tumour types received chemotherapy in the last 14 days of life, compared to patients with acute tumour types (13.6% versus 10.3%). Within both categories (i.e. acute and chronic tumour type) more variation is noted between individual tumour types: the proportion of patients who received chemotherapy in the last 14 days of life ranged from 3.5% for brain cancer to 37.0% for chronic myeloid leukaemia (see Table 126). Also, generally higher percentages are observed in haematological tumours, e.g. 32.3% for acute myeloid leukaemia, 35.7% for acute lymphatic leukaemia and 37.0% for chronic myeloid leukaemia.

A slightly higher proportion of patients received chemotherapy just before death in the Walloon Region compared to the Brussels-Capital and Flanders Region (10.9% vs 9.7% and 7.5%, respectively).

Table 125 – Proportion of patients who received chemotherapy in the last 14 days of life, by year of death (deaths in 2006, 2007 and 2016 excluded, maximum 3 years of follow-up)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	N with chemotherapy in the last 14 days of life		Total	N with chemotherapy in the last 14 days of life		Total	N with chemotherapy in the last 14 days of life	
	N	n		N	n	%	N	n	%
2008	9 585	1 046	10,9	8 360	896	10,7	1 225	150	12,2
2009	9 462	1 034	10,9	8 233	874	10,6	1 229	160	13,0
2010	9 871	1 169	11,8	8 598	989	11,5	1 273	180	14,1
2011	9 936	1 114	11,2	8 745	957	10,9	1 191	157	13,2

	All Tumours			Acute Tumours			Chronic Tumours		
2012	10 040	1 123	11,2	8 781	923	10,5	1 259	200	15,9
2013	10 087	1 060	10,5	8 864	868	9,8	1 223	192	15,7
2014	10 003	1 003	10,0	8 835	854	9,7	1 168	149	12,8
2015	9 838	905	9,2	8 634	763	8,8	1 204	142	11,8
Total	78 822	8 454	10,7	69 050	7 124	10,3	9 772	1 330	13,6

Table 126 – Proportion of patients receiving chemotherapy in the last 14 days of life by tumour type (all patients, maximum 3 years of follow-up)

	Total	n with chemotherapy	
	N	**n**	**%**
Acute	84 602	8 688	10,3
• Oesophagus	4 967	354	7,1
• Stomach	7 014	367	5,2
• Liver, primary	3 995	213	5,3
• Gallbladder and biliary Tract	2 357	106	4,5
• Pancreas	10 298	1 008	9,8
• Lung, bronchus and trachea	47 365	5 625	11,9
• Pleura	1 703	76	4,5
• Brain	4 479	155	3,5
• Acute myeloid leukaemia	2 424	784	32,3
Chronic	11 890	1 605	13,5
• Head and Neck	5 034	557	11,1
• Small Intestine	655	27	4,1
• Nasal cavities and sinuses	363	19	5,2
• Ovary and uterine adnexa	3 068	361	11,8
• Multiple Myeloma	1 983	353	17,8
• Acute lymphatic leukaemia	238	85	35,7

• Chronic myeloid leukaemia	549	203	37,0
Total	96 492	10 293	10,7

Source: BCR linked to IMA data

Table 127 – Proportion of patients who received chemotherapy in the last 14 days of life, by region (year of death=2015, incidence year 2006-2009 excluded)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	N with chemotherapy in the last 14 days of life		Total	N with chemotherapy in the last 14 days of life		Total	N with chemotherapy in the last 14 days of life	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	903	88	9,7	761	73	9,6	142	15	10,6
Flemish Region	6426	483	7,5	5505	396	7,2	921	87	9,4
Walloon Region	3996	435	10,9	3328	349	10,5	668	86	12,9
Total	11325	1006	8,9	9594	818	8,5	1731	188	10,9

Source: BCR linked to IMA data

Key points

- **The administration of chemotherapy during the last days of life of patients dying from cancer is an indicator of the aggressiveness of care.**
- **Belgian data demonstrate that at least one out of ten cancer patients received chemotherapy in the last 14 days of life (average of 10.7% of the cancer patients who died in the period between 2008 and 2015).**
- **Substantial variation in the administration of chemotherapy in the last 14 days of life is observed between different tumour types, with generally high percentages in haematological tumour types in comparison to other tumour types.**

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13.4. Death at usual place of residence (at home or in residential care) (EOL-4)

13.4.1. Documentation sheet

Description	Percentage of cancer patients dying in their usual place of residence (at home or in residential care)
Calculation	Numerator: number of patients who died at home or in residential care Denominator: number of patients diagnosed with cancer that died within the studied time period
Rationale	Studies show that most people prefer to die at home.[1] In order to meet patients' preferences, palliative care services in Belgium are being oriented towards a more home-based approach with a maximum of support for patients and relatives to stay at home, or in a home-replacing environment, like a home for the elderly.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is currently not possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. <u>Inclusion Criteria</u> Incidence years: 2006-2015 Tumour selection based on the Pallcare project [2] : combination of topography and morphology according to Eurocare-4 [3] [4], and Eurocare-5 [5]: see EOL-1 Patients deceased before January 1st 2017 Age at diagnosis >=18 years <u>Exclusion Criteria</u> Patients with more than one invasive tumour (until 2015) Patients without a Belgian residence Patients without national social security number Patients for whom no IMA data of the year of death were available (=3.9%) Patients with an uncertain date of diagnosis <u>Maximum 3 years of follow-up</u> Analyses were limited to patients who died before January 1st of the third year following the year of incidence. For example: patients diagnosed in 2006 were included in case they died in 2006, 2007 or 2008; patients diagnosed in 2007 were included in case they died in 2007, 2008 or 2009, etc. These cohorts were defined in order to assure that for every diagnosis, the same follow-up period could be taken into account. By applying this definition, a bias induced by varying length of the follow-up period could be avoided. <u>Place of death</u> • Dying at home and in residential care: derived from the reimbursement of nomenclature codes.

	• Dying in the hospital: derived from the hospitalisation information as obtained from the IMA hosp database. Of note, this database as such also describes hospitalisations based on administrative reimbursement data through an internally validated algorithm.[6] Hospitalisations for one day only were not taken into account as hospitalisations. To determine the place where the patient died, the algorithm of the Pallcare project was used. The following order was used to determine the place of death: • Date of death = end date/date of medical act [ppp] o End date in hospital on day of death o End date in residential care on day of death o Home nursing at day of death • Date of death – 1 = end date/date of medical act o End date in residential care one day before day of death o Home nursing one day before day of death o End date in hospital one day before death • Date of death – 2 or 3 = end date/date medical act o End date in residential care two or three days before death o Home nursing two or three days before death • Home nursing during last week before death
Limitation	No information on terminal patients without the diagnosis of cancer
International comparability	This is not an internationally reported indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Quality (patient centeredness); Quality (Effectiveness)
Keywords	End of life care, home setting, care environment

[ppp] End dates of hospital or residential care and home nursing acts until a week after death (due to administrative errors) are considered as on the date of death.

13.4.2. Results

In 2015 the majority of cancer patients died in the hospital (63.3%), 23.1% died at home and 6.8% died in residential care (see Table 128). Over the period 2008-2015, there was a discrete decrease in hospital deaths and a small increase in patients who died in residential care, the proportion of cancer patients who died at home was stable over time.

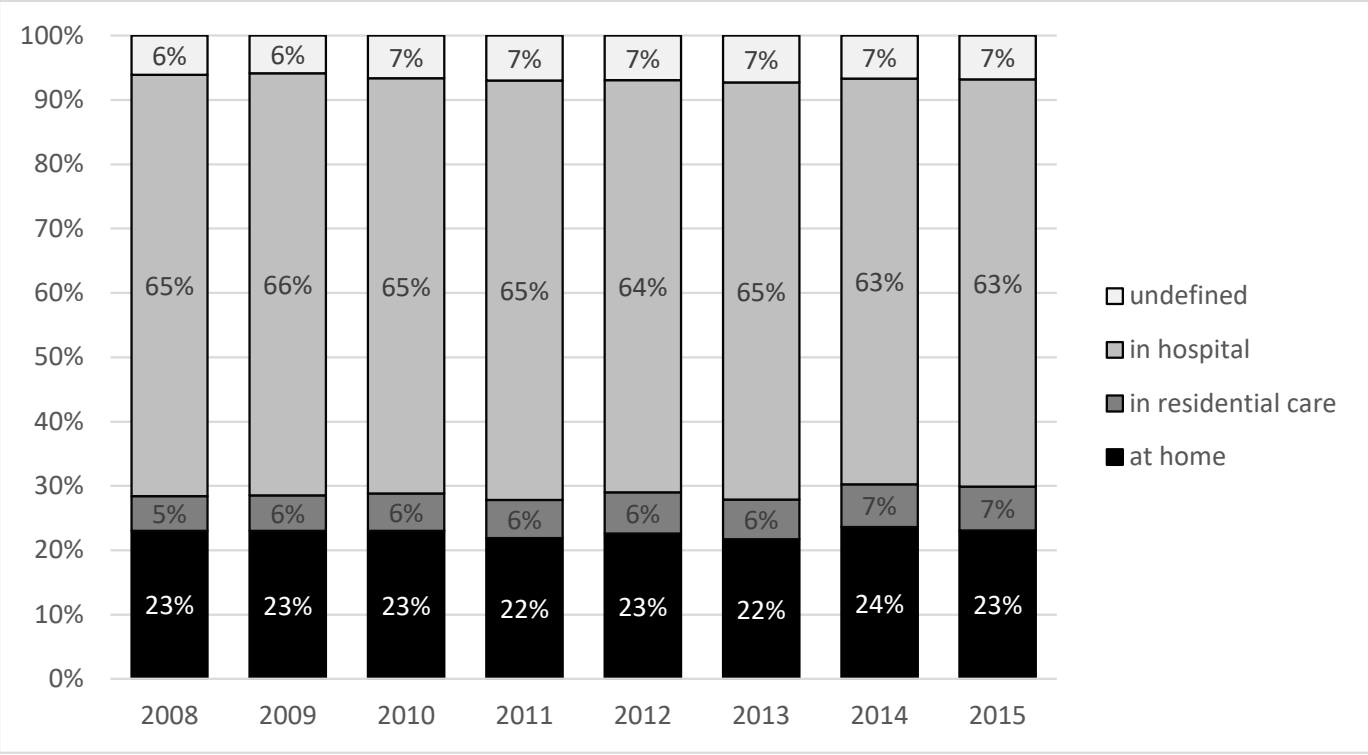
The proportion of patients who died at home was lower in patients with chronic tumour types (15.8%) compared to acute tumour types (23.6%) (see Figure 193). Analysis of place of death per Region in 2015 showed a discrepancy between Brussels-Capital Region and the two other Regions: in Brussels-Capital Region, fewer people died at home (13.6% vs 24.9% in Flanders and 22.2% in the Walloon Region) and more people were admitted in a hospital at time of death (69.8% vs 62.5% and 63.1% respectively) (see Figure 194).

Table 128 – Place of death in cancer patients (2008-2015) by year of death, all tumours (deaths in 2006, 2007 and 2016 excluded, maximum 3 years of follow-up)

	Total	Died at home		Died in residential care		Died in hospital		Place of death undefined	
	N	n	%	n	%	n	%	n	%
2008	9 585	2 207	23,0	518	5,4	6 277	65,5	583	6,1
2009	9 462	2 175	23,0	522	5,5	6 214	65,7	551	5,8
2010	9 871	2 270	23,0	573	5,8	6 377	64,6	651	6,6
2011	9 936	2 177	21,9	587	5,9	6 480	65,2	692	7,0
2012	10 040	2 270	22,6	640	6,4	6 436	64,1	694	6,9
2013	10 087	2 193	21,7	617	6,1	6 547	64,9	730	7,2
2014	10 003	2 362	23,6	663	6,6	6 312	63,1	666	6,7
2015	9 838	2 268	23,1	671	6,8	6 229	63,3	670	6,8
Total	78 822	17 922	22,7	4 791	6,1	50 872	64,5	5 237	6,6

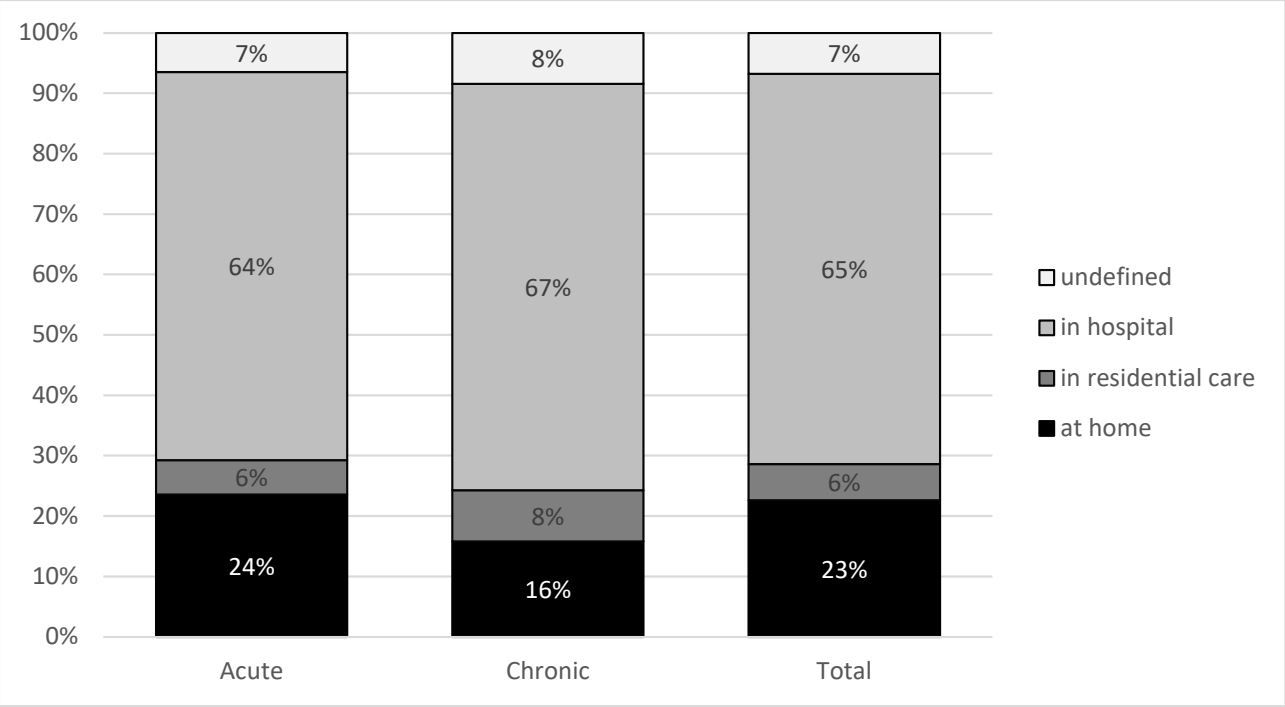
Source: BCR linked to IMA data

Figure 193 – Place of death in cancer patients (2008-2015) by year of death, all tumours (deaths in 2006, 2007 and 2016 excluded, maximum 3 years of follow-up)



Source: BCR linked to IMA data

Figure 194 – Place of death in acute versus chronic tumour type (2015)

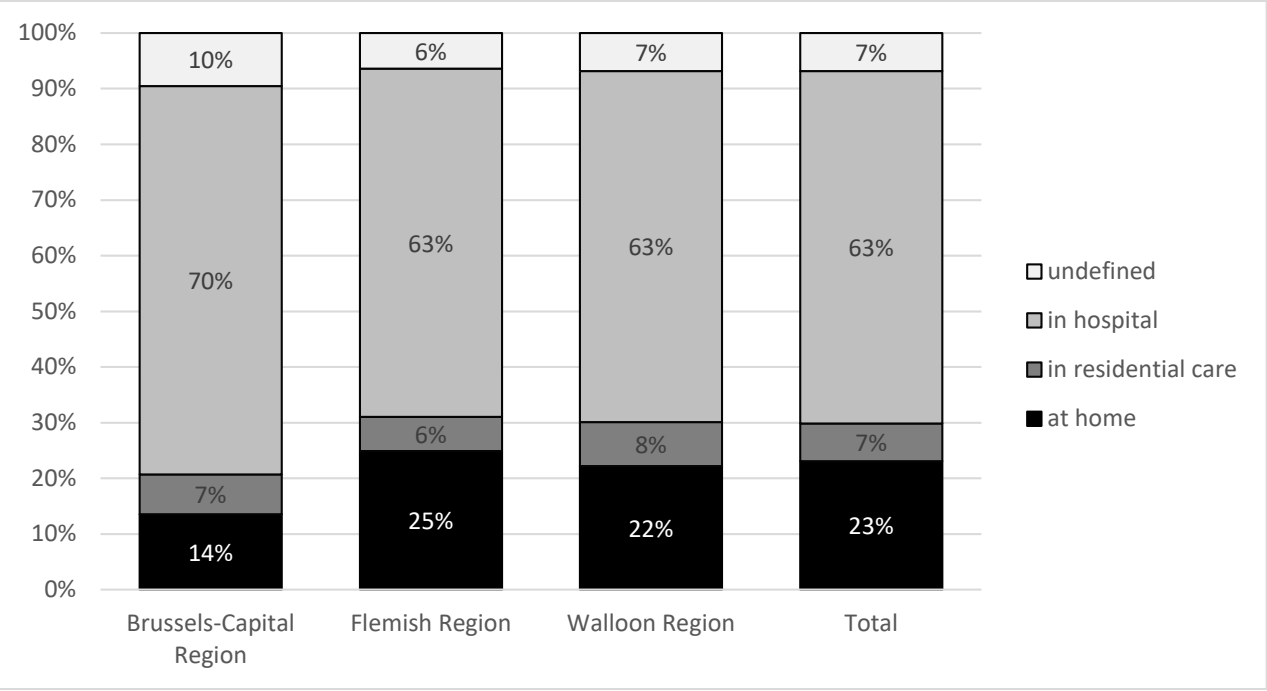


Source: BCR linked to IMA data

Table 129 – End of life: Place of death, by region, all tumours (year of death=2015, incidence year 2006-2009 excluded)

	Total	Died at home		Died in residential care		Died in hospital		Place of death undefined	
	N	N	%	N	%	N	%	N	%
Brussels-Capital Region	788	107	13,6	56	7,1	550	69,8	75	9,5
Flemish Region	5 603	1 395	24,9	344	6,1	3 504	62,5	360	6,4
Walloon Region	3 447	766	22,2	271	7,9	2 175	63,1	235	6,8
Total	9 838	2 268	23,1	671	6,8	6 229	63,3	670	6,8

Figure 195 – Place of death, by region, all tumours (year of death=2015, incidence year 2006-2009 excluded)



Source: BCR linked to IMA data

Key points

- **The majority of cancer patients, about two out of every three, dies in hospital. Around 23% of patients die at home. Around 7% of the patients die in residential care.**
- **Over the period 2008-2015, there is a very slight decrease in hospital deaths and a very slight increase in deaths in residential care, whereas the proportion of patients that dies at home stayed stable over time.**
- **In patients with chronic tumour types the proportion of patients who died at home was lower compared to acute tumour types (15.8% versus 23.6%).**
- **There is some regional variation in the place of death. In the Flemish Region more people die at home (25%) compared to the Walloon (22%) and Brussels-Capital Region (14%).**

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14. MOTHER AND NEWBORN

14.1. Neonatal mortality (MN-1)

14.1.1. Documentation sheet

Description	The number of neonatal deaths (day 0-27) after live birth in a specific year, expressed by per 1 000 live births occurring in the same year.
Calculation	Number of neonatal deaths (day 0-27) after live birth (x1000), divided by all live births. Results are presented per region.
Rationale	The neonatal mortality rate is a key measure of health and care during pregnancy and delivery. The principal causes of neonatal death in high-income countries are congenital anomalies and complications related to very preterm birth. Babies from multiple pregnancies have higher neonatal mortality rates than singletons.[1,2] Suboptimal care is also associated with neonatal deaths at term, and these factors contribute to an explanation of the variation in mortality rates between European countries.[3] Healthcare and health-system factors also play a role.[4]
Data source	Statbel (Direction générale Statistique - Statistics Belgium). Live births statistics are derived from two sources: the first includes all live birth of children whose parents are registered in the National Register, the second is derived from birth bulletins that includes live births from mother usually living in Belgium and whose gestational age is at least 22 weeks. Before 2010, no linkage was made between National Register and birth bulletins. From 2010, the two series are harmonized (based on the legal residence of the mother) and only gestational age explains small difference between the series, as it is not recorded in the National Register data. OECD for international comparison.
Technical definitions	The annual neonatal mortality rate is defined as the number of deaths during the neonatal period (up to 28 completed days after birth), expressed per 1 000 live births that year. Sub-indicator: Perinatal mortality: the number of fetal deaths (birth weight of 500 g or more, or, if birth weight is missing, if gestational age is 22 completed weeks of gestation or more) and the number of infant deaths period (up to 7 completed days after birth) expressed per 1 000 births that year.
Limitations	Some clinicians report possible defective recording, as sometimes when a newborn dies quickly after births it is counted as stillborn.[5]
International comparability	Some of the international variation in infant and neonatal mortality rates may be due to variations among countries in registering practices of premature infants. Most countries have no gestational age or weight limits for mortality registration. However, some countries specify limits based on some combination of gestational age, birth weight or survival.[6]
Performance Dimension	Quality (effectiveness).

14.1.2. Results

Neonatal mortality

In Belgium, the neonatal mortality rate decreased from 3.39 neonatal deaths per 1 000 live births in 1998 to 2.16 neonatal deaths per 1 000 live births in 2015 which corresponds to a 36% decrease of the neonatal mortality rate and an average annual decrease of 0.07 neonatal deaths per 1 000 live births. (Table 130, Figure 196).

A decrease of the neonatal mortality rate is observed in every Belgian regions between 1998 and 2015 but the decrease is stronger in Wallonia (average annual reduction of 0.10 neonatal death per 1 000 live births) and Brussels (0.14) than in Flanders (0.04). (Table 130, Figure 196).

Variation in the neonatal mortality rate is more important in Brussels than in the other regions. These important variations are translated by a sawtooth curve in Figure 196.

No difference in the conclusion regarding neonatal mortality rate in Belgium was observed when analysis were performed using live births data from birth bulletins rather than live birth data from the National Register.

In 2015, Belgium had a lower neonatal mortality rate (2.2 neonatal deaths per 1 000 live births) than the average EU-15 country (Denmark, Greece, UK, Ireland, France, Netherlands, Austria, Germany, Belgium, Portugal, Luxembourg, Italy, Spain, Sweden and Finland: 2.3 neonatal deaths per 1 000 live births) and was classified seventh country with the lowest neonatal mortality rate, i.e. between Portugal (2.0 neonatal deaths per 1 000 live births) and Germany (2.3 neonatal deaths per 1 000 live births). (Figure 197).

From 2000 to 2015, neonatal mortality rate in Belgium followed the EU-15 trends, i.e. an important decrease of the neonatal mortality rate until 2010 and a stabilisation of the indicator after 2010 (Figure 198).

Perinatal mortality

The perinatal mortality rate is defined as the number of fetal deaths and the number of infant deaths in the first week of life per 1 000 births of the same year. In Belgium, fetal deaths are included if they have a birth weight of 500 g or more, or, if birth weight is missing, if gestational age is 22 completed weeks of gestation or more.[7] However, Euro-Peristat recommends that fetal deaths be included at or after 22 completed weeks of gestation or, when gestational age is missing, if they have a birth weight of 500 g or more, but not if both gestational age and birth weight are missing. [1] The choice of the definition can have an important impact on fetal mortality rate as it has been shown in Brussels.[8] In addition, in Belgium, it is not possible to distinguish spontaneous stillborn, from voluntary (medical or therapeutic) termination of pregnancy, which can explain a higher fetal mortality rate.[5]

In Belgium, the perinatal mortality rate decreased from 6.97 perinatal deaths per 1 000 births in 1998 to 6.01 perinatal deaths per 1 000 births in 2015 which corresponds to a 16% decrease of the perinatal mortality rate and an average annual decrease of 0.06 perinatal deaths per 1 000 births. Nevertheless, a period of increase was observed between 2005 and 2009. (Table 131, Figure 199).

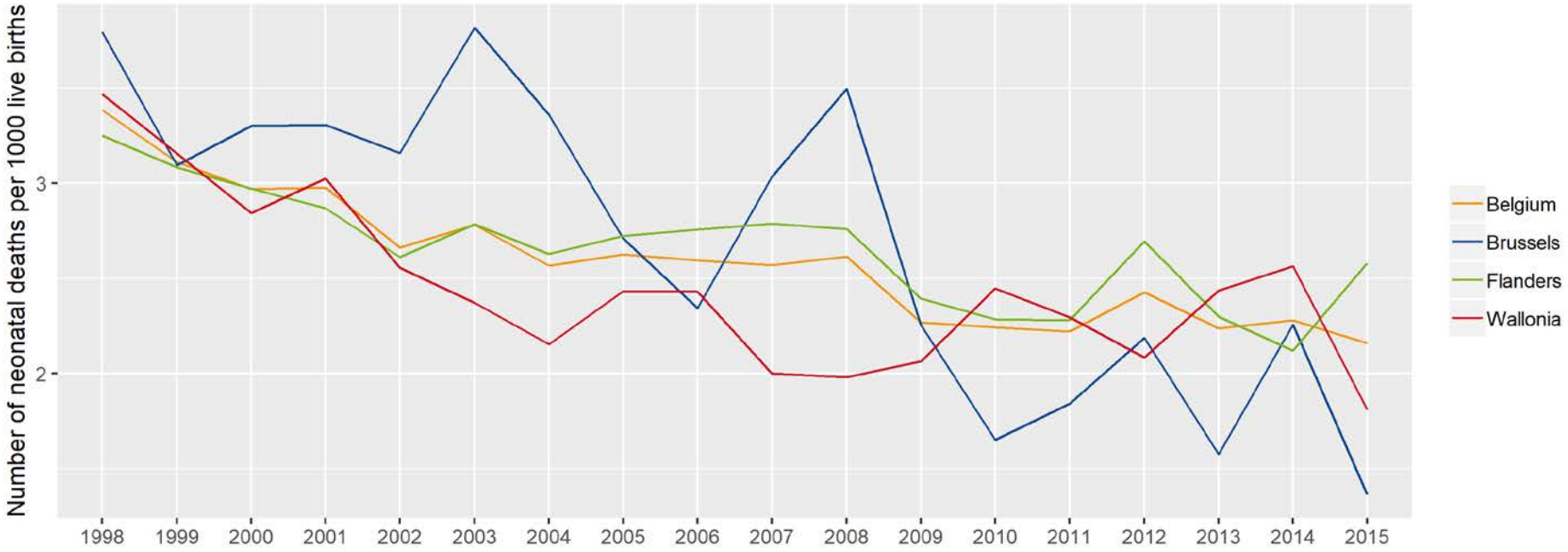
There was a decrease of the perinatal mortality in every Belgian regions between 1998 and 2015, with an average annual reduction of 0.04 perinatal deaths per 1 000 births in Flanders, 0.07 in Brussels and 0.08 in Wallonia. Regional perinatal morality rates in 2015 are 5.63 perinatal deaths per 1 000 births in Flanders, 6.84 in Brussels and 6.27 in Wallonia. As for neonatal mortality rate, variation in the perinatal mortality rate is more important in Brussels than in the other regions. Nevertheless, these results are difficult to interpret because of a change in in the reporting practices of births before 28 weeks of gestation: stillbirths calculated on all births increased abruptly in 2008 in Brussels.[9] (Table 131, Figure 199).

No difference in the conclusion regarding perinatal mortality rate in Belgium was observed when analysis were performed with live births data from birth bulletins rather than live birth data from the National Register.

In 2015, Belgium had a higher perinatal mortality rate (6.0 perinatal deaths per 1 000 births) than the average EU-13 country (Finland, Portugal, Spain, Netherlands, Denmark, Greece, Sweden, Austria, Germany, Belgium, UK, Luxembourg, France: 5.7 perinatal deaths per 1 000 births) and was classified fourth country with the highest perinatal mortality rate, i.e. between Germany (5.6 perinatal deaths per 1 000 births) and UK (7.0 perinatal deaths per 1 000 births) (Figure 200).

Until 2005, perinatal mortality rate in Belgium followed the EU-13 trends, i.e. a decrease of the perinatal mortality rate. However after 2005, perinatal mortality rate increased in Belgium and became higher than the average EU-13 perinatal mortality (Figure 201).

Figure 196 – Neonatal mortality rate (per 1 000 live births), by region, 1998-2015



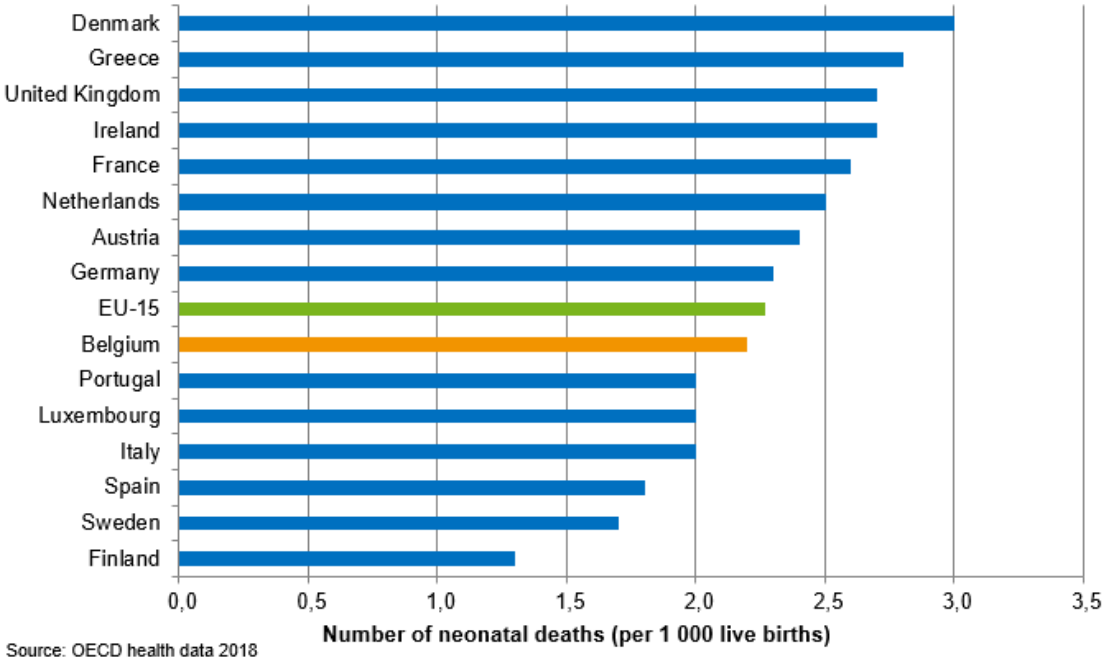
Data source: Statbel, National Register; Calculation: KCE

Table 130 – Number of neonatal deaths per 1000 live births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
Belgium	3.39	3.11	2.97	2.98	2.66	2.78	2.57	2.63	2.60	2.57	2.62	2.27	2.24	2.22	2.43	2.24	2.28	2.16	-0.07
Brussels	3.80	3.10	3.30	3.31	3.16	3.82	3.36	2.71	2.34	3.03	3.50	2.26	1.65	1.84	2.19	1.58	2.26	1.37	-0.14
Flanders	3.25	3.09	2.97	2.87	2.61	2.79	2.63	2.72	2.76	2.79	2.76	2.39	2.28	2.28	2.70	2.30	2.12	2.58	-0.04
Wallonia	3.47	3.16	2.84	3.02	2.56	2.37	2.15	2.43	2.43	2.00	1.98	2.06	2.45	2.30	2.08	2.44	2.57	1.81	-0.10

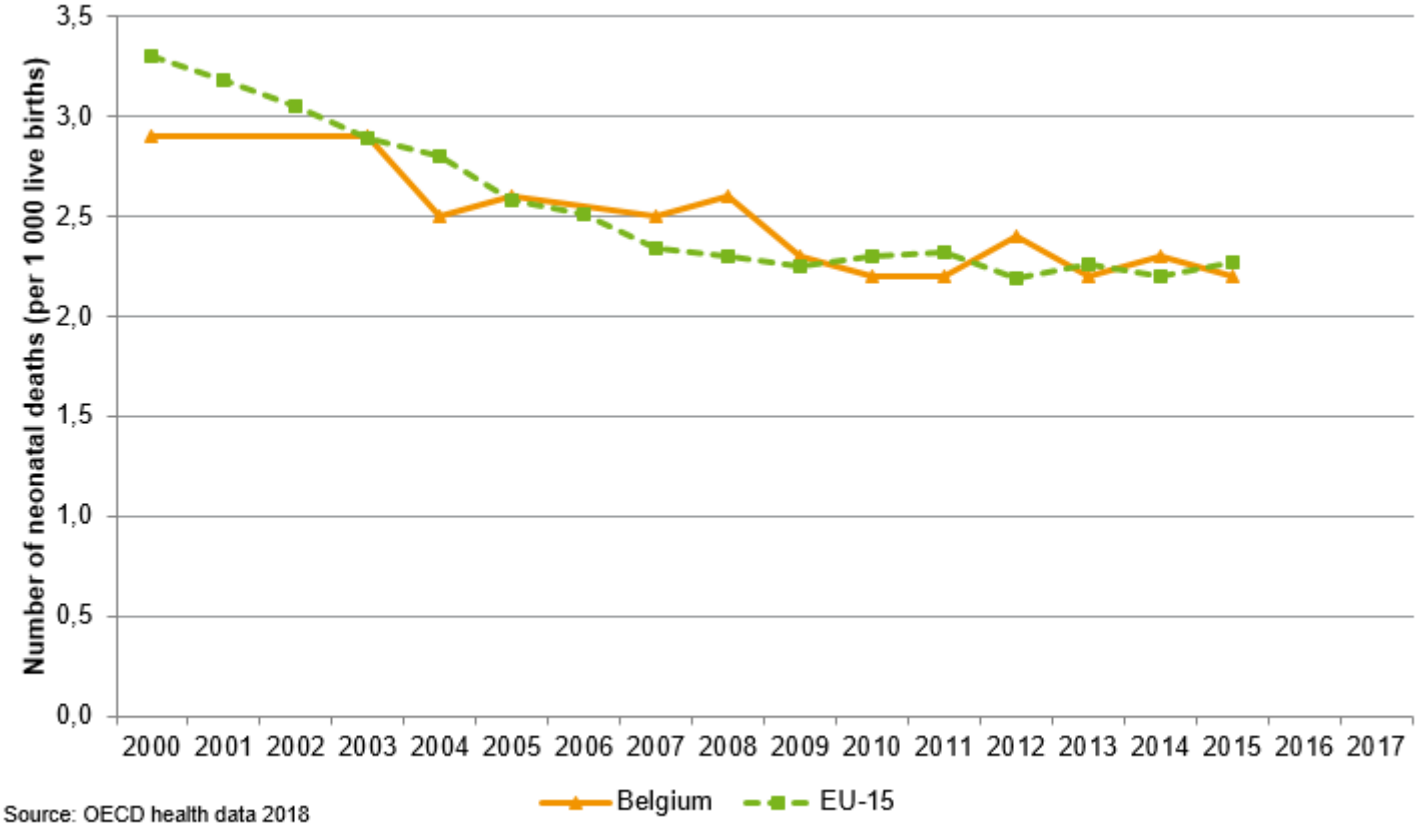
(Data source: Statbel, national register; Calculation: KCE)

Figure 197 – Neonatal mortality (per 1 000 live births), by EU-15 country, 2015



Source: OECD health data 2018

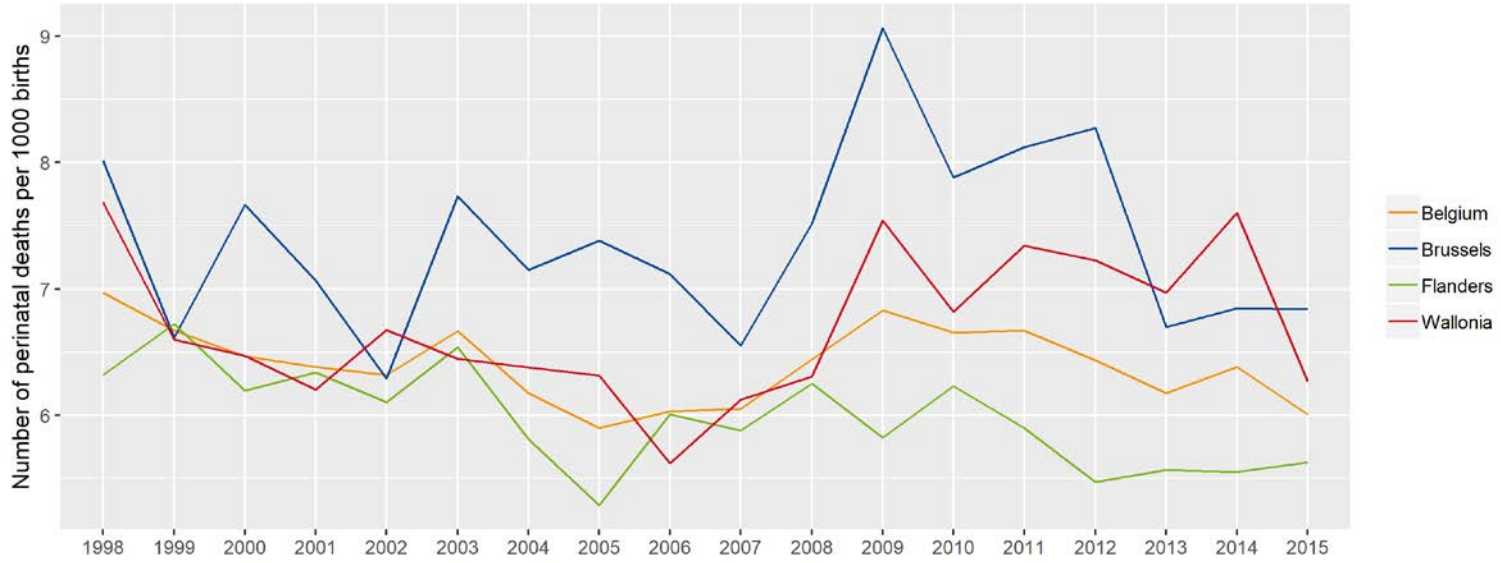
Figure 198 – Neonatal mortality (per 1 000 live births), by EU-15* country, 2000-2015



Source: OECD health data 2018

*Denmark, Greece, UK, Ireland, France, Netherlands, Austria, Germany, Belgium, Portugal, Luxembourg, Italy, Spain, Sweden, Finland

Figure 199 – Perinatal mortality rate (per 1 000 births), by region, 1998-2015



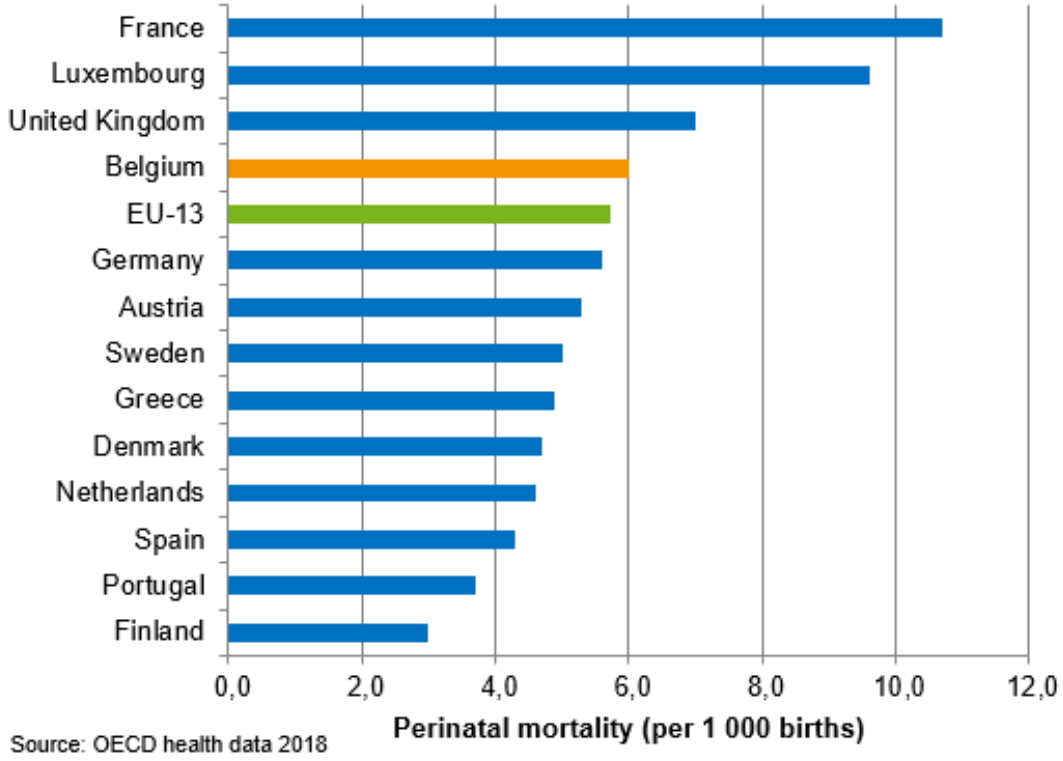
(Data source: Statbel, national register; Calculation: KCE)

Table 131 – Number of perinatal deaths per 1000 births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
Belgium	6.97	6.67	6.47	6.38	6.32	6.67	6.18	5.90	6.03	6.05	6.45	6.83	6.65	6.67	6.44	6.17	6.38	6.01	-0.06
Brussels	8.02	6.62	7.67	7.06	6.29	7.73	7.15	7.38	7.12	6.55	7.52	9.06	7.88	8.12	8.27	6.70	6.85	6.84	-0.07
Flanders	6.32	6.72	6.20	6.34	6.10	6.54	5.81	5.29	6.01	5.88	6.25	5.82	6.23	5.90	5.47	5.57	5.55	5.63	-0.04
Wallonia	7.68	6.60	6.47	6.20	6.68	6.45	6.38	6.32	5.62	6.12	6.31	7.54	6.82	7.34	7.23	6.97	7.60	6.27	-0.08

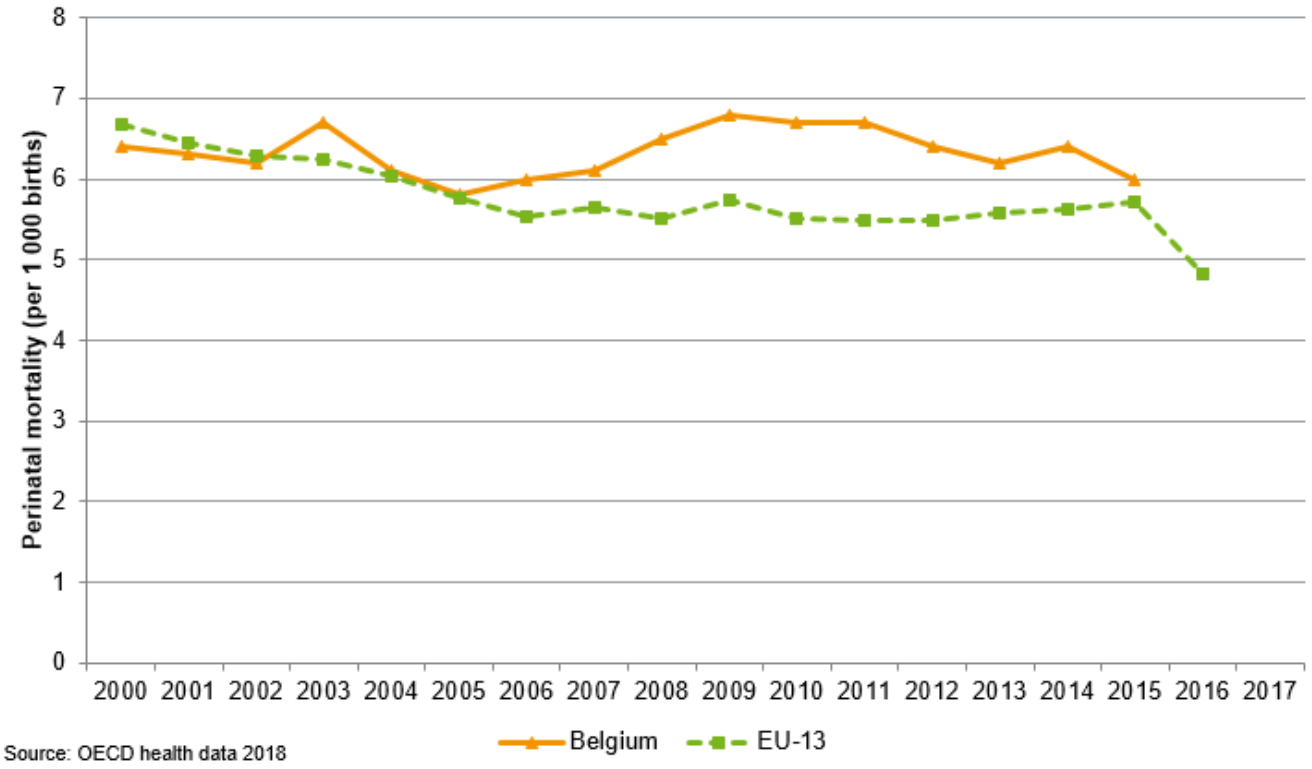
(Data source: Statbel, national register; Calculation: KCE)

Figure 200 – Perinatal mortality (per 1 000 births), by EU-13* country, 2015



** France, Luxembourg, UK, Belgium, Germany, Austria, Sweden, Greece, Denmark, Netherlands, Spain, Portugal, Finland*

Figure 201 – Perinatal mortality (per 1 000 births), by EU-13* country, 2000-2015



Source: OECD health data 2018

** France, Luxembourg, UK, Belgium, Germany, Austria, Sweden, Greece, Denmark, Netherlands, Spain, Portugal, Finland*

Key points

- **The neonatal mortality rate decreased in every Belgian regions between 1998 and 2015.**
- **In 2015, Belgium had a lower neonatal mortality rate (2.2 neonatal deaths per 1 000 live births) than the average EU-15 country (2.3 neonatal deaths per 1 000 live births) and was classified seventh country with the lowest neonatal mortality rate.**
- **The perinatal mortality rate decreased in every Belgian regions between 1998 and 2015.**
- **In 2015, Belgium had a higher perinatal mortality rate (6.0 perinatal deaths per 1 000 births) than the average EU-13 country (5.7 perinatal deaths per 1 000 births) and was classified fourth country with the highest perinatal mortality rate.**
- **Fetal mortality and therefore perinatal mortality is difficult to interpret in Belgium, due, among others, to the absence of distinction between medical termination of pregnancy and stillbirth.**

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14.2. Apgar score at 5 minutes (MN-2)

14.2.1. Documentation sheet

Description	Number of newborns with low (below 7) Apgar score at 5 minutes (per 1 000 live births)
Calculation	Numerator: number of newborns with low (below 7) Apgar score at 5 minutes. Denominator: all live births. Distribution of the Apgar score at 5 minutes is presented for the same population. An additional cut-off point often encountered in the literature (below 4) is also presented.
Rationale	The value of the Apgar score at 5 minutes is highly correlated with neonatal mortality and provides the best predictive value for subsequent mortality.[1] The Apgar score provides good information about the infant's activity and responsiveness, but should not be used alone to predict survival without brain injury or disability, especially in preterm babies.[1]
Data source	Statbel (Direction générale Statistique - Statistics Belgium)
Technical definitions	The Apgar score is a standardised assessment of newborns that comprises five items: heart rate, respiratory effort, muscle tone, reflex irritability, and colour, each of which is given a score of 0, 1, or 2.[2] Therefore, the total Apgar score ranges from 0 to 10. It is usually assessed at 1 minute, at 5 minutes, and at 10 minutes after birth.
International comparability	Although the Apgar score is supposed to be a standardised measure, there can be some subjectivity and differences between countries in the value recorded for each element of the Apgar score.[1] The counting of missing values may also raise issues, as they should not be coded as 0.[1]
Performance Dimension	Quality (effectiveness)

14.2.2. Results

APGAR5 < 7, per 1 000 live births

Overall, the number of newborns with APGAR5 <7 per 1 000 live births decreased in Belgium from 1998 to 2015 (19.10 newborns with APGAR5 <7 per 1 000 live births in 1998; 17.52 newborns with APGAR5 <7 per 1 000 live births in 2015, average annual decrease 0.09 newborns with APGAR5 <7 per 1 000 live births) (Figure 202, Table 132).

The proportion of live births with APGAR score below 7 at 5 minutes is quite similar in the three regions of Belgium, although Wallonia presents a lower rate in the recent years (in 2015, 15.06 per 1 000 live births, compared to 18.40 in Brussels and 18.70 in Flanders).

In Brussels, the proportion of live births with APGAR5 <7 increased between 1998 and 2015 (average annual increase of 0.18 newborns with APGAR5 <7 per 1 000 live births) whereas it decreased in Wallonia (average annual decrease of 0.12 newborns with APGAR5 <7 per 1 000 live births) and in Flanders (average annual decrease of 0.14 newborns with APGAR5 <7 per 1 000 live births) (Figure 202, Table 132).

APGAR5 <4, per 1 000 live births

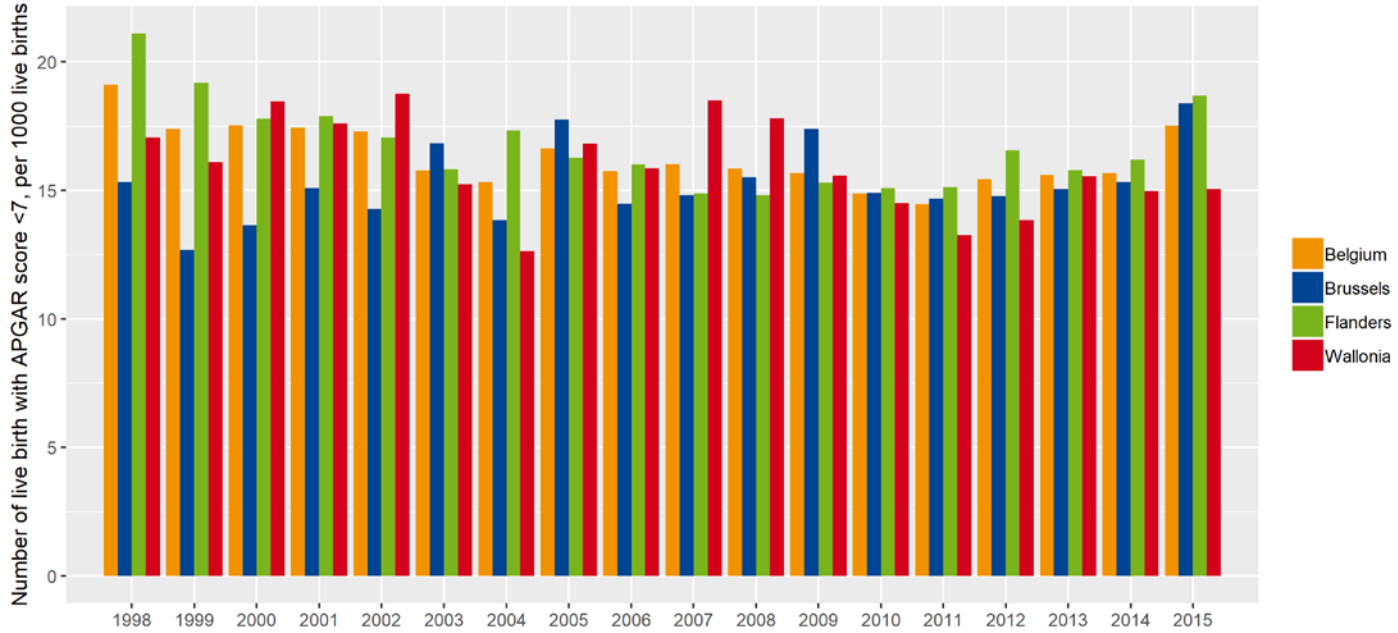
Overall, 2.75 newborns per 1 000 live birth had an APGAR score at 5 minutes below 4 in 2015. This rate decreased in every Belgians region between 1998 and 2015 (Table 133).

Over the recent years, lower proportion of live births with APGAR5<4 are observed in Brussels than in the other regions (in 2015, the rate was 2.29 per 1 000 live births in Brussels, compared to 2.41 in Wallonia and 3.07 in Flanders). This proportion has decreased in all three regions between 1998 and 2015 (average annual decrease of 0.14 newborns with APGAR5 <4 per 1 000 live births in Brussels, 0.04 in Wallonia and 0.02 in Flanders) (Table 133, Figure 203).

APGAR5 distribution by region

Negative skewness of the APGAR5 distribution appears in every Belgian regions because most of the newborns have and APGAR score at 5 minutes above 7. The analysis also shows a higher proportion of APGAR5 equals to 9 in Flanders than in the other regions, probably reflecting variation in coding practice between score 9 and 10 (Figure 204).

Figure 202 – Rate APGAR5 score <7, per 1 000 live births, by region, 1998-2015



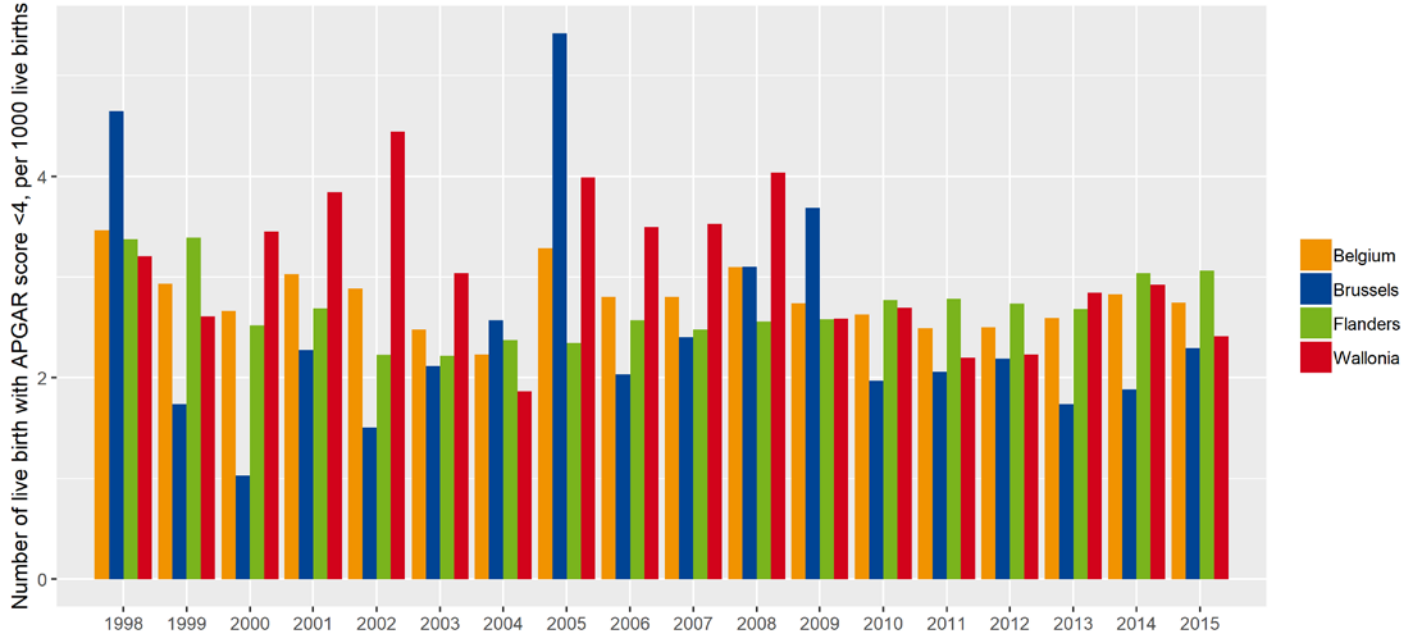
Data source: Statbel, national register; Calculation: KCE

Table 132 – Number of APGAR 5 score <7, per 1 000 live births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
Belgium	19.10	17.38	17.53	17.44	17.29	15.76	15.33	16.64	15.76	16.03	15.85	15.68	14.88	14.47	15.45	15.61	15.69	17.52	-0.09
Brussels	15.34	12.69	13.65	15.09	14.29	16.84	13.84	17.75	14.49	14.82	15.51	17.39	14.91	14.67	14.79	15.05	15.33	18.40	0.18
Flanders	21.11	19.17	17.79	17.89	17.06	15.83	17.33	16.26	16.01	14.87	14.82	15.29	15.09	15.13	16.56	15.80	16.19	18.70	-0.14
Wallonia	17.06	16.10	18.46	17.61	18.76	15.25	12.63	16.81	15.87	18.51	17.80	15.57	14.51	13.26	13.84	15.56	14.98	15.06	-0.12

Data source: Statbel; Calculation: KCE

Figure 203 – Rate APGAR5 score <4, per 1000 live births, by region, 1998-2015



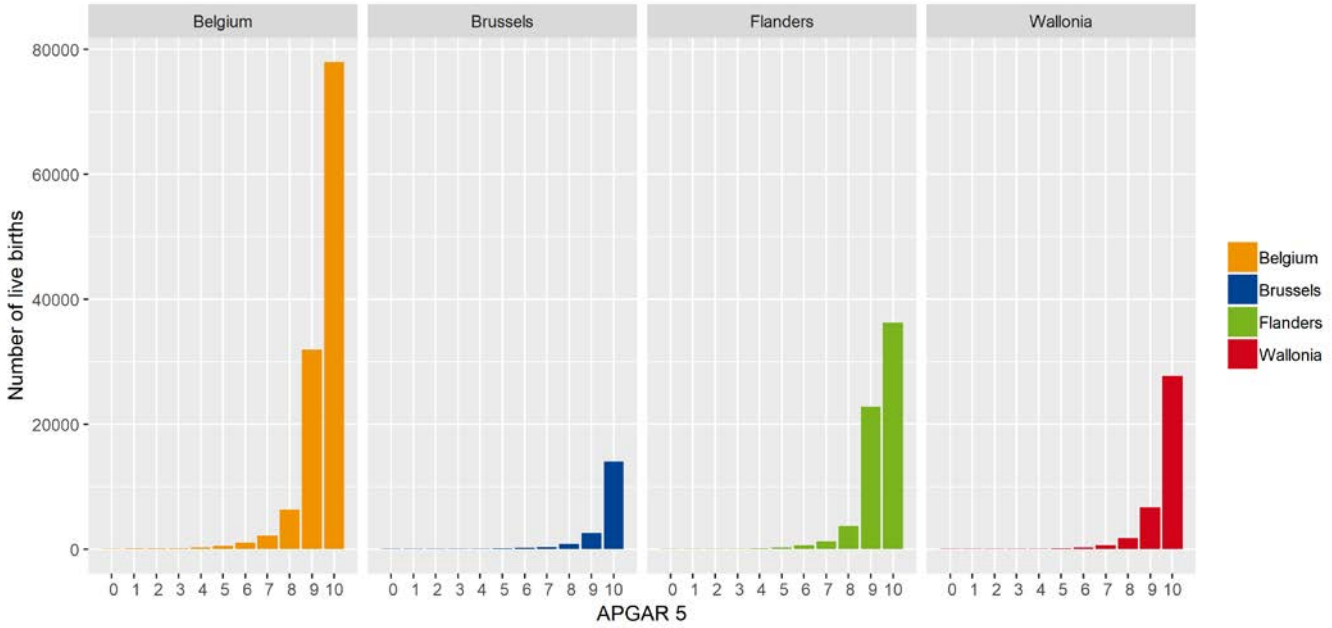
Data source: Statbel, national register; Calculation: KCE

Table 133 – Number of APGAR 5 score <4, per 1 000 live births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
Belgium	3.47	2.93	2.66	3.03	2.89	2.48	2.23	3.29	2.80	2.80	3.10	2.74	2.63	2.49	2.50	2.60	2.83	2.75	-0.04
Brussels	4.65	1.74	1.03	2.27	1.51	2.11	2.57	5.42	2.04	2.40	3.10	3.69	1.97	2.06	2.19	1.74	1.88	2.29	-0.14
Flanders	3.38	3.39	2.52	2.69	2.23	2.22	2.37	2.35	2.57	2.48	2.56	2.58	2.77	2.78	2.74	2.68	3.04	3.07	-0.02
Wallonia	3.21	2.61	3.45	3.84	4.44	3.04	1.86	3.99	3.49	3.53	4.04	2.59	2.69	2.20	2.23	2.84	2.92	2.41	-0.05

Data source: Statbel; Calculation: KCE

Figure 204 – Distribution of the APGAR 5, by region, 2015



Data source: Statbel, national register; Calculation: KCE

Key points

- **In 2015, around 18 newborns per 1 000 live births had an APGAR score at five minutes below 7 and around 3 had an APGAR score at five minutes below 4 in Belgium.**
- **<7 APGAR5 and APGAR5 <4 rate decreased in Belgium from 1998 to 2015.**
- **<7 APGAR5 and APGAR5 <4 rate are quite similar in the three regions of the country.**
- **Differences in coding practices seem to appear among regions, particularly for high scores.**

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14.3. Caesarean sections (MN-3)

14.3.1. Documentation sheet

Description	Number of caesarean sections per 1000 live births
Calculation	Number of caesarean sections (x1000), divided by all live births. Variability is calculated per hospital. Distribution of caesareans by categories, using Robson classification, is also presented. Analysis by Robson categories is done for caesarean rate per 1 000 deliveries.
Rationale	Since 1985 and up to 2015, WHO and international healthcare community have considered that C-sections rate should not be higher than 10-15%.[1] Since then, rates of caesarean delivery have increased in the majority of European countries. Reasons for the increase include scheduling convenience for both physicians and patients, evolution of the expectations and perceptions of the patients, increase of the maternal age, obesity, among others. While caesarean delivery is required in some circumstances, the benefits of caesarean versus vaginal delivery for normal uncomplicated deliveries continue to be debated. There is some evidence from observational studies of increased maternal mortality, maternal and infant morbidity, and increased complications for subsequent deliveries. Nevertheless, the Cochrane Collaboration review on caesarean section for non-medical reasons at term could not reach strong conclusions on the best medical indications due to a lack of trials on the topic.[2] These concerns, combined with the greater financial cost (the average cost associated with a caesarean section is at least two times greater than a normal delivery in many OECD countries), raise questions about the appropriateness of some caesarean delivery that may not be medically required.[3] These concerns are translated into professional guidelines. Professional associations of obstetricians and gynaecologists in countries such as Canada now encourage the promotion of normal childbirth without intervention such as caesarean sections.[4] Recent guidelines from the French Health Authority recommend informing the patient on the increased risk of

	complications for future pregnancy after a caesarean section.[5] In Belgium, KCE recommends to raise awareness of gynaecologists and obstetricians regarding the consequences of caesarean section without medical indication, especially for nulliparous with single cephalic pregnancy beyond 37 weeks.[6] WHO recommendation has been revised in 2015, stating that "*every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate*".[1] Trends and variability of caesarean rates inform on the appropriateness of care. The analysis of geographic variation can also provide a powerful screening tool to identify areas with inappropriate practice of C-sections.[7,8] Categorisation of caesarean sections has often been done using its indications (why the C-section was being performed). However, the lack of uniform definitions for most common indications has resulted in poor reproducibility and difficult national and international comparison.[9,10] In its last statement, the World Health Organization (WHO) recommends to use Robson classification.[1] This system classifies women admitted for delivery according to obstetric characteristics that are generally routinely collected in most maternities.[11]
Data source	SPF Public health (Hospital administrative discharge data (RHM-MZG)) and OECD Health Statistics for international comparison. Caesarean section is one of the five surgical interventions studied by OECD to estimate practice variability between countries.[12] Additional sources: CEpiP and SPE.
Technical definitions	Numerator : ICD9-CM codes: 74.0 Classical caesarean section; 74.1 Low cervical caesarean section; 74.2 Extraperitoneal caesarean section; 74.4 Caesarean section of other specified type; 74.99 Other caesarean section of unspecified type. Robson classification is detailed in Table 138.
Limitations	Change from ICD-9 to ICD-10 classification has resulted in a break in the series of RHM – MZG data from 2016 on (and no 2015 data available). Since Robson categories 2 and 4 may represent a large proportion of the obstetric population, WHO suggests that these categories could be subdivided between induced labor (categories 2a and 4a) and previous labor caesarean (categories 4a and 4b). These subcategories can be important to understand how differences in clinical practice (rates of induced labor or pre-labor caesarean) contribute to the overall rates of caesarean.[13] However, these subcategories are not routinely recorded in Belgium.
International comparability	Same definition of ICD9 codes, but not all countries use the same definition of live births.
Performance Dimension	Quality (appropriateness); variability of care.

14.3.2. Results

Rate of caesarean sections

In Belgium in 2016, the rate of caesarean section is 216 per 1 000 live births which corresponds to an increase of 38% with respect to the rate of 2000 (156 per 1 000 live births) (Figure 205, Table 134).

Regional differences exist for this indicator: the rate of caesarean section is 223 (per 1 000 live births) in Wallonia, 216 (per 1 000 live births) in Flanders and 206 (per 1 000 live births) in Brussels in 2016 (Figure 205, Table 134).

There are also differences within the districts, the rate of caesarean section per district ranging from 88 (Mons) to 222 (Liège) per 1 000 live births in 2000 and from 117 (Eeklo) to 303 (Arlon) per 1 000 live births in 2016 (Figure 206).

The number of caesarean sections (per 1 000 live births) increased in every Belgian regions from 2000 to 2016 (average annual increase of 5.00 caesarean sections per 1 000 live births in Wallonia, 3.60 in Flanders and 3.33 in Brussels). Nevertheless, after a first period of increase, the caesarean rate started to decrease from 2013 in Brussels and 2014 in Wallonia. The caesarean sections rate is increasing in Flanders (Figure 205, Table 134).

Calculating the rate of caesarean sections per 1 000 births as well as per 1 000 deliveries, does not affect the conclusions: an increase of the caesarean sections rate in every Belgian regions between 2000 and 2016 but a decrease in the recent years in Brussels and Wallonia.

Variation of caesarean sections rate among hospitals

In 2016, it existed differences of caesarean practices between Belgian hospitals: caesarean rate varied from 155 to 352 per 1 000 live births. Although we noted that the variation among hospitals decreased over time (2001 range: 247; 2016 range: 197 caesarean sections per 1 000 live births), the rate of caesarean increases from 2001 to 2016 (Figure 207, Figure 208). However, case-mix was not taken into account and could have an impact on the observed variations of practices. More severe cases could influence caesarean section rate.

Caesarean sections by Robson classification

Definition of the Robson classification is available in Table 138.

In 2016, in all Belgian regions, higher proportions of caesarean sections were attributed to Robson 9 (Brussels: 989 per 1 000 deliveries; Wallonia: 965 per 1 000 deliveries, Flanders: 986 per 1 000 deliveries), Robson 6 (Brussels: 875 per 1 000 deliveries; Wallonia: 915 per 1 000 deliveries, Flanders: 953 per 1 000 deliveries) and Robson 7 (Brussels: 771 per 1 000 deliveries; Wallonia: 837 per 1 000 deliveries, Flanders: 875 per 1 000 deliveries) classes. In other words, it means that women with a single pregnancy and a transverse or oblique lie (including women with previous scars) (Robson 9), nulliparous women with a single breech pregnancy (Robson 6) and multiparous women with a single breech pregnancy (including women with previous scars) (Robson 7) got proportionally more caesarean sections than the women classified in the other Robson classes. (Figure 209, Figure 210). Although Robson categories 9, 7 and 6 show higher caesarean rates, they represent a small part of the population, therefore not contributing much to the total caesarean rates (Figure 212, Table 135 - Table 137).

In 2016, in all Belgian regions, lower proportions of caesarean sections were attributed to Robson 3 (Brussels: 19 per 1 000 deliveries; Wallonia: 21 per 1 000 deliveries, Flanders: 19 per 1 000 deliveries), Robson 4 (Brussels: 74 per 1 000 deliveries; Wallonia: 62 per 1 000 deliveries, Flanders: 74 per 1 000 deliveries) and Robson 1 (Brussels: 103 per 1 000 deliveries; Wallonia: 100 per 1 000 deliveries, Flanders: 100 per 1 000 deliveries) classes. It means that multiparous women without a previous uterine scar with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour (Robson 3); multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour (Robson 4); or nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour (Robson 1) had proportionally less caesarean sections than the women in the other Robson classes (Figure 210, Figure

211). On the other hand, Robson classes 1, 3 and 4 are the most frequent in the Belgian population and also those with the lowest caesarean rates, therefore not contributing much to the total caesarean rates (Figure 212, Table 135 - Table 137).

In 2016, most women with a caesarean section were classified in Robson 5 (Wallonia: 28.77%; Brussels: 30.98%; Flanders: 26.79%), 2 (Wallonia: 19.94%; Brussels: 18.12%; Flanders: 17.38%) (Figure 212).

C-section rate among women in Robson category 5 (multiparous women with at least one previous uterine scar, with single cephalic pregnancy, ≥37 weeks gestation) is at or above the upper bound of the expected range (in 2016, 63.9% in Wallonia, 59.7% in Brussels, and 66.5% in Flanders while the expected range is 50-60% according to WHO[13]). This category (Robson 5) also contributed the most to the total C-section rate. Hence, repeated C-sections contribute largely to the overall rate of C-section (Table 135 – Table 137).

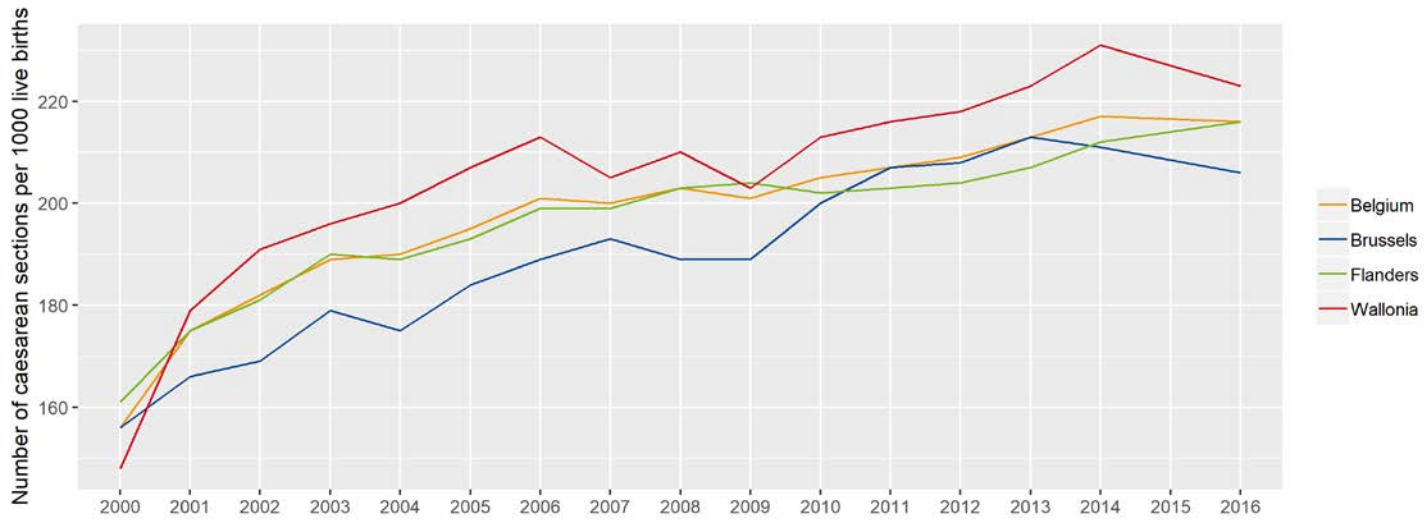
No major changes in the proportions of caesarean sections by Robson classification were observed from 2009 to 2016 in Brussels and Wallonia (Figure 209, Figure 210).

International comparison

In 2016, Belgium had a lower caesarean section rate (210 caesarean section rate per 1 000 live births) than the average EU-13 (Italy, Portugal, Ireland, Luxembourg, Germany, Austria, UK, Spain, Belgium, France, Denmark, Sweden, Finland: 259 caesarean section rate per 1 000 live births) and was classified fifth in terms of caesarean section rate, i.e. between France (208 caesarean section rate per 1 000 live births) and Spain (246 caesarean sections per 1 000 live births) (Figure 213).

Despite a regular increase of the caesarean section rate over the years, Belgium always performed better than the average EU-13 from 2005 to 2016 for this indicator (Figure 214).

Figure 205 – Number of caesarean sections per 1 000 live births, per region of the hospital, 2000-2016



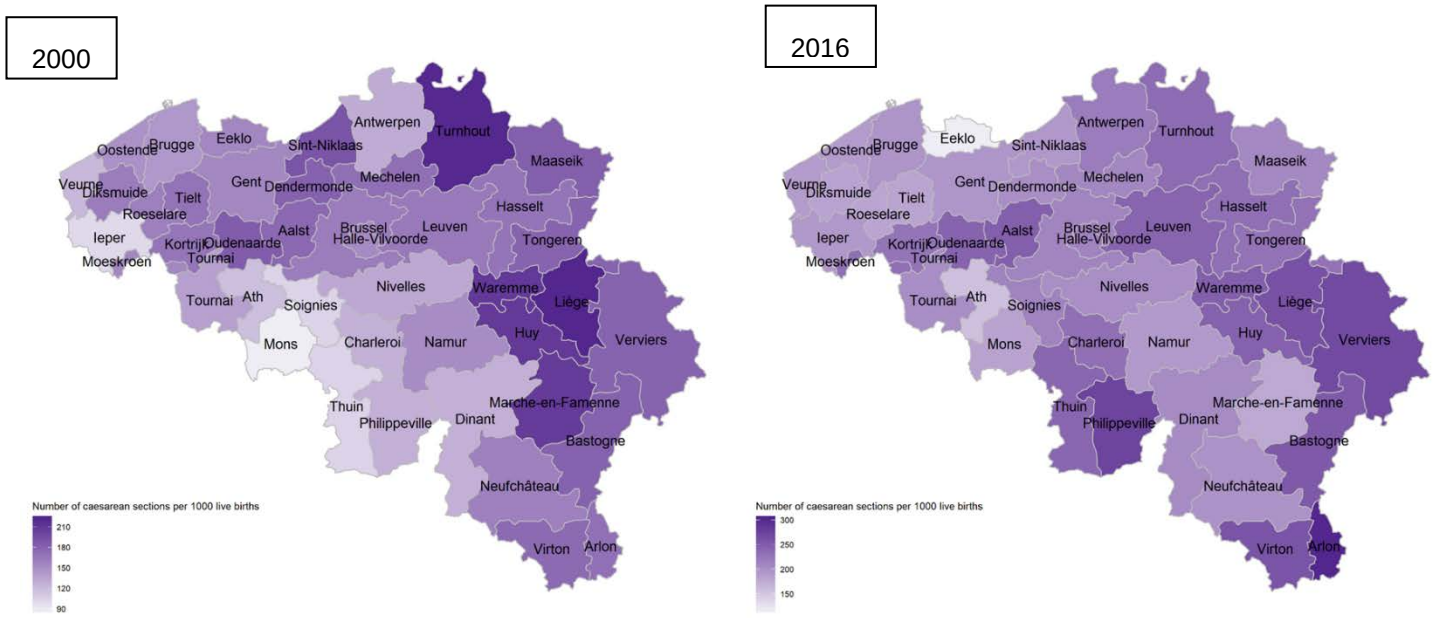
Data source: SPF-FOD; Figure: KCE

Table 134 – Number of caesarean sections per 1 000 live births, per region of the hospital, 2009-2016

Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2000-2016
Belgium	156	175	182	189	190	195	201	200	203	201	205	207	209	213	217	NA*	216	4.00
Brussels	156	166	169	179	175	184	189	193	189	189	200	207	208	213	211	NA	206	3.33
Flanders	162	175	181	190	189	193	199	199	203	204	202	203	204	207	212	NA	216	3.60
Wallonia	148	179	191	196	200	207	213	205	210	204	213	216	218	223	231	NA	223	5.00

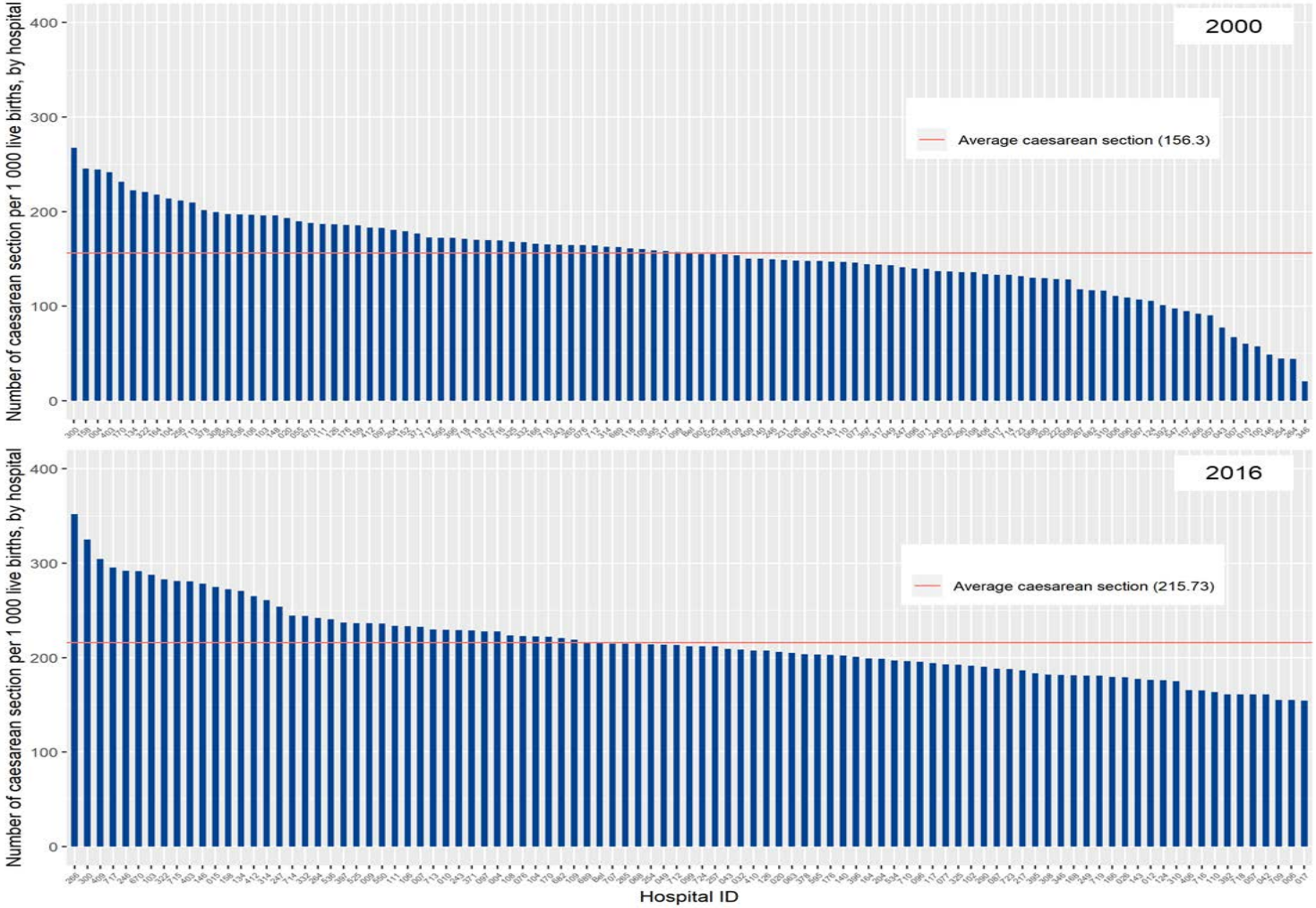
**NA: Not available. Data source: SPF-FOD*

Figure 206 – Number of caesarean sections per 1 000 live births, by district of the mother, 2000 & 2016



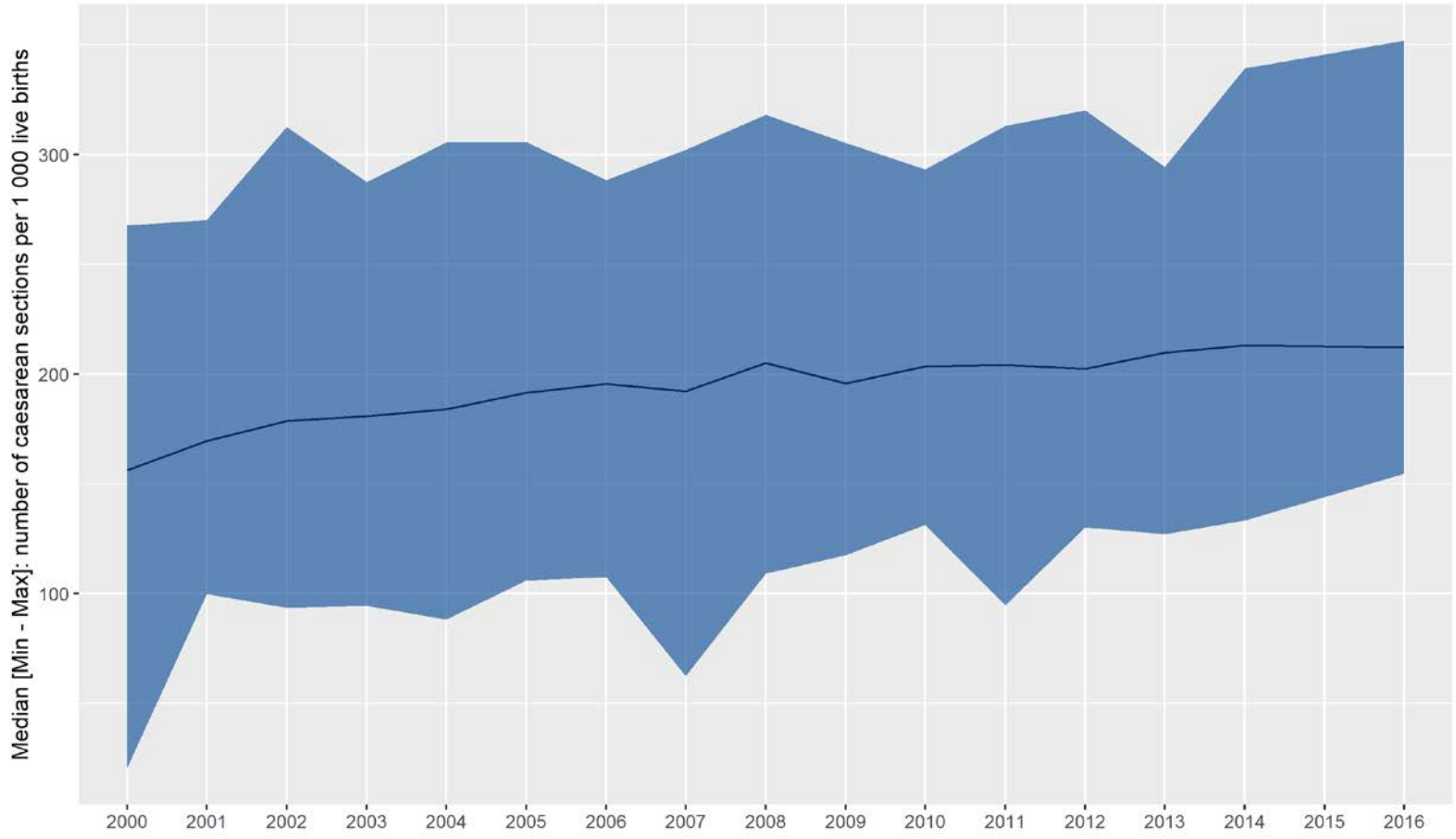
Data source: SPF-FOD; Figure: KCE

Figure 207 – Variation of caesarean section rate, by hospital, 2000 and 2016



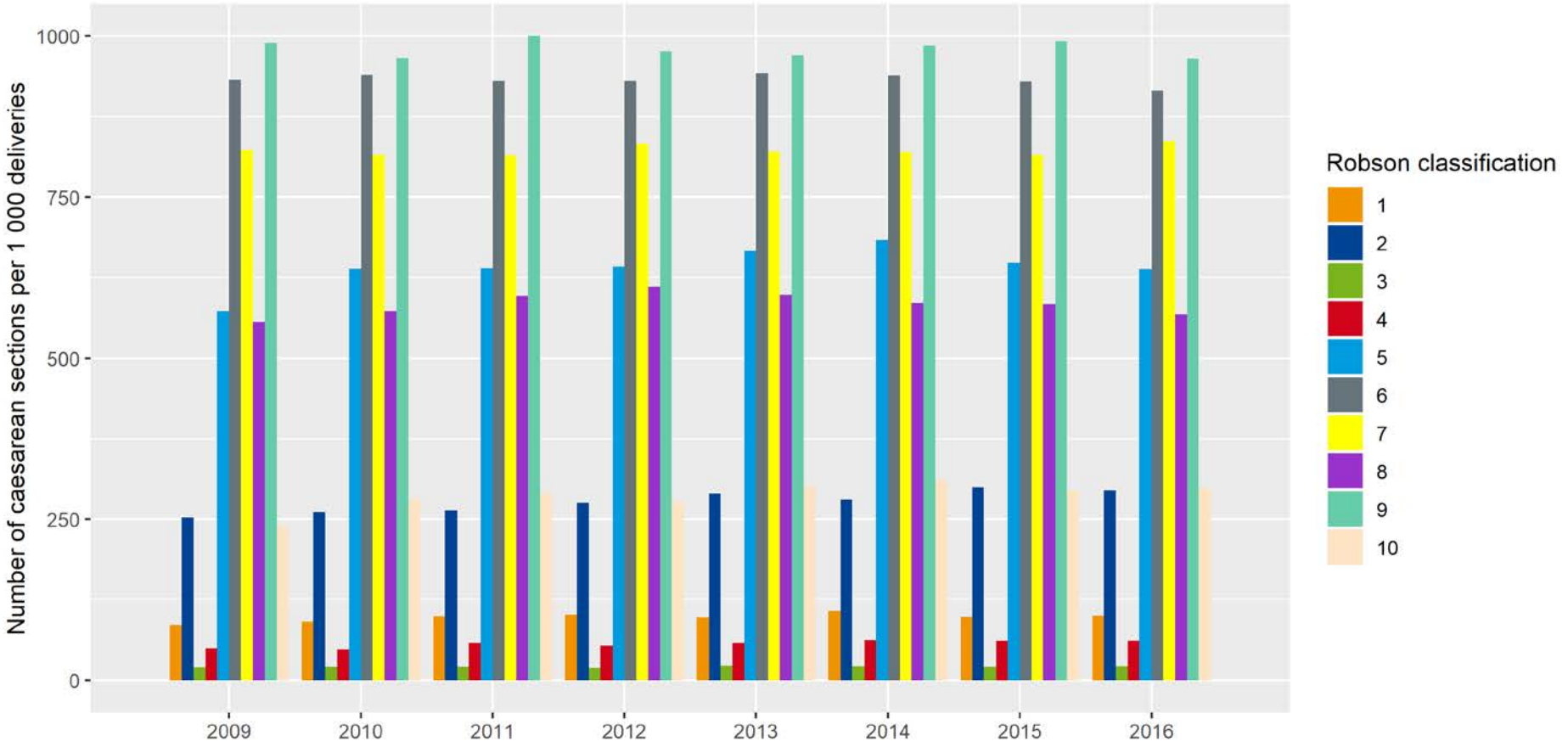
Data source: SPF-FOD; Figure: KCE

Figure 208 – Variation of caesarean section rate among hospitals, 2000 to 2016



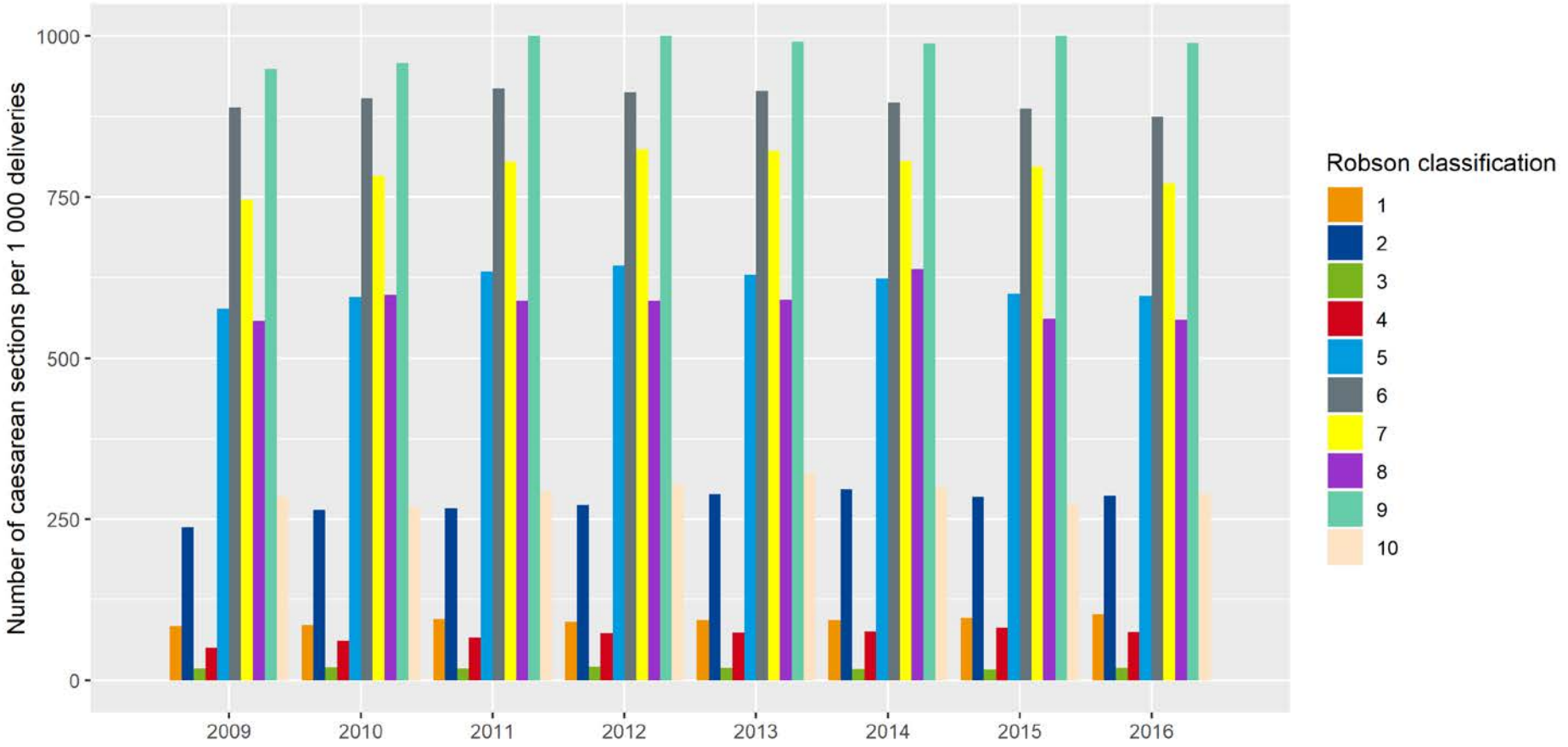
Data source: SPF-FOD; Figure: KCE

Figure 209 – Number of caesarean sections per 1 000 deliveries, by Robson classification*, Wallonia, 2009-2016



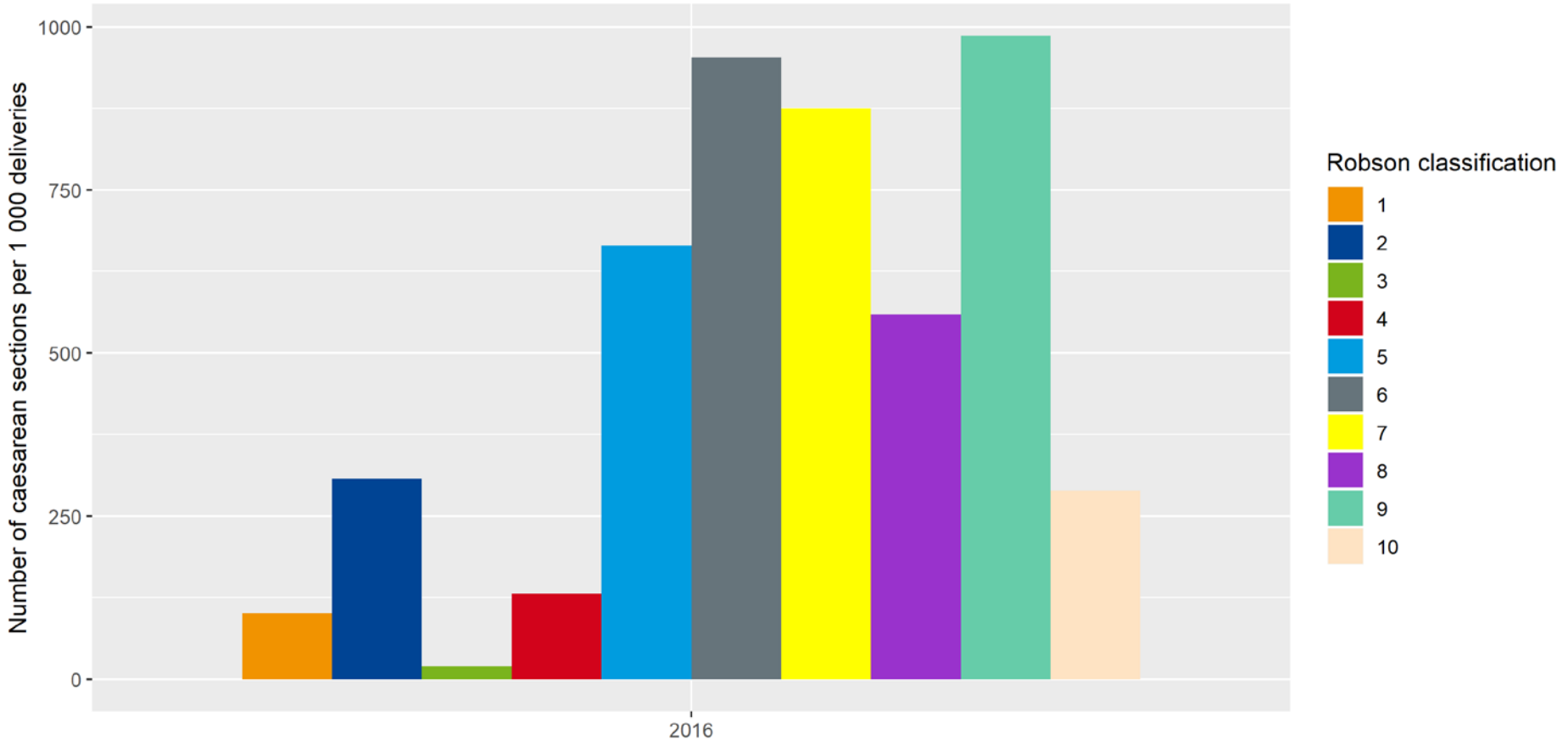
**Definition of the Robson classification is available in Table 138*
Data source: CEpiP; Calculation: KCE

Figure 210 – Number of caesarean sections per 1 000 deliveries, by Robson classification*, Brussels, 2009-2016



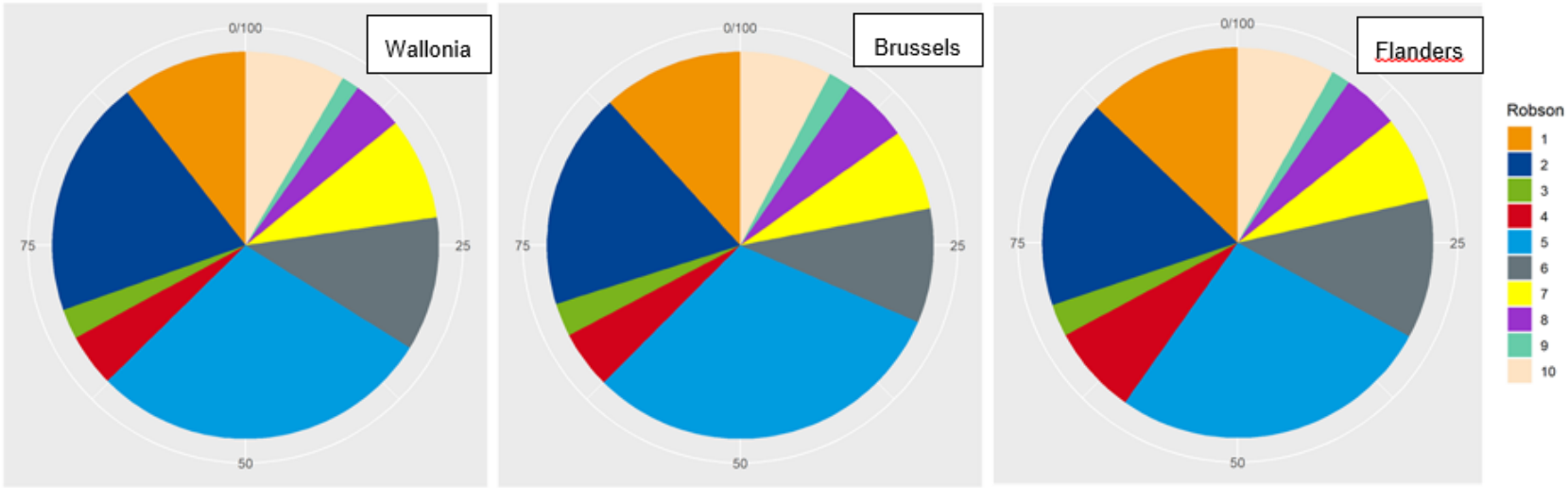
*Definition of the Robson classification is available in Table 138.
Data source: CEpiP; Calculation: KCE

Figure 211 – Number of caesarean sections per 1 000 deliveries, by Robson classification*, Flanders, 2016



**Definition of the Robson classification is available in Table 138.*
Data source: SPE; Calculation: KCE

Figure 212 – Distribution of the Robson categories* among caesarean sections, by region, 2016



Definition of the Robson classification is available in Table 138
Data source: CEpiP (BRU&WAL) & SPE (FL); Calculation: KCE

Table 135 – Caesarean section, by Robson classification, Brussels, 2016, N = 23 792

Robson		Number of caesarean sections /Total number of deliveries	Relative size on total deliveries	Proportion of caesarean section	Contribution to the overall proportion
1	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	561/5 472	23.00%	10.25%	2.36%
2	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	862/3 015	12.67%	28.59%	3.62%
3	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	132/6 963	29.27%	1.90%	0.55%
4	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	231/3 109	13.07%	7.43%	0.97%
5	All multiparous women with a least one previous uterine scar, with a single cephalic pregnancy ≥37 weeks gestation	1 474/2 471	10.39%	59.65%	6.20%
6	All nulliparous women with a single breech pregnancy	454/519	2.18%	87.48%	1.91%
7	All multiparous with a single breech pregnancy, including women with previous uterine scars	323/419	1.76%	77.09%	1.36%
8	All women with multiple pregnancies, including women with previous uterine scars	262/468	1.97%	55.98%	1.10%
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars	94/95	0.40%	98.95%	0.40%
10	All women with a single cephalic pregnancy <37 weeks gestation, including women with previous scars	365/1 261	5.30%	28.95%	1.53%
TOTAL*		4 758/23 792	100.00%		20.00%

** Unknown for 90 deliveries (0.4% of the total number of deliveries).* Data source: CEpiP; Calculation: KCE

Table 136 – Caesarean section, by Robson classification, Wallonia, 2016, N = 35 288

Robson		Number of caesarean sections /Total number of deliveries	Relative size on total deliveries	Proportion of caesarean section	Contribution to the overall proportion
1	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	791/7 900	22.39%	10.01%	2.24%
2	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	1 504/5 106	14.47%	29.46%	4.26%
3	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	188/8 952	25.37%	2.10%	0.53%
4	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	335/5 430	15.39%	6.17%	0.95%
5	All multiparous women with a least one previous uterine scar, with a single cephalic pregnancy ≥37 weeks gestation	2 170/3 398	9.63%	63.86%	6.15%
6	All nulliparous women with a single breech pregnancy	845/923	2.62%	91.55%	2.39%
7	All multiparous with a single breech pregnancy, including women with previous uterine scars	646/772	2.19%	83.68%	1.83%
8	All women with multiple pregnancies, including women with previous uterine scars	320/564	1.60%	56.74%	0.91%
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars	111/115	0.33%	96.52%	0.31%
10	All women with a single cephalic pregnancy <37 weeks gestation, including women with previous scars	633/2 128	6.03%	29.75%	1.79%
TOTAL*		7 543/35 288	100.00%		21.38%

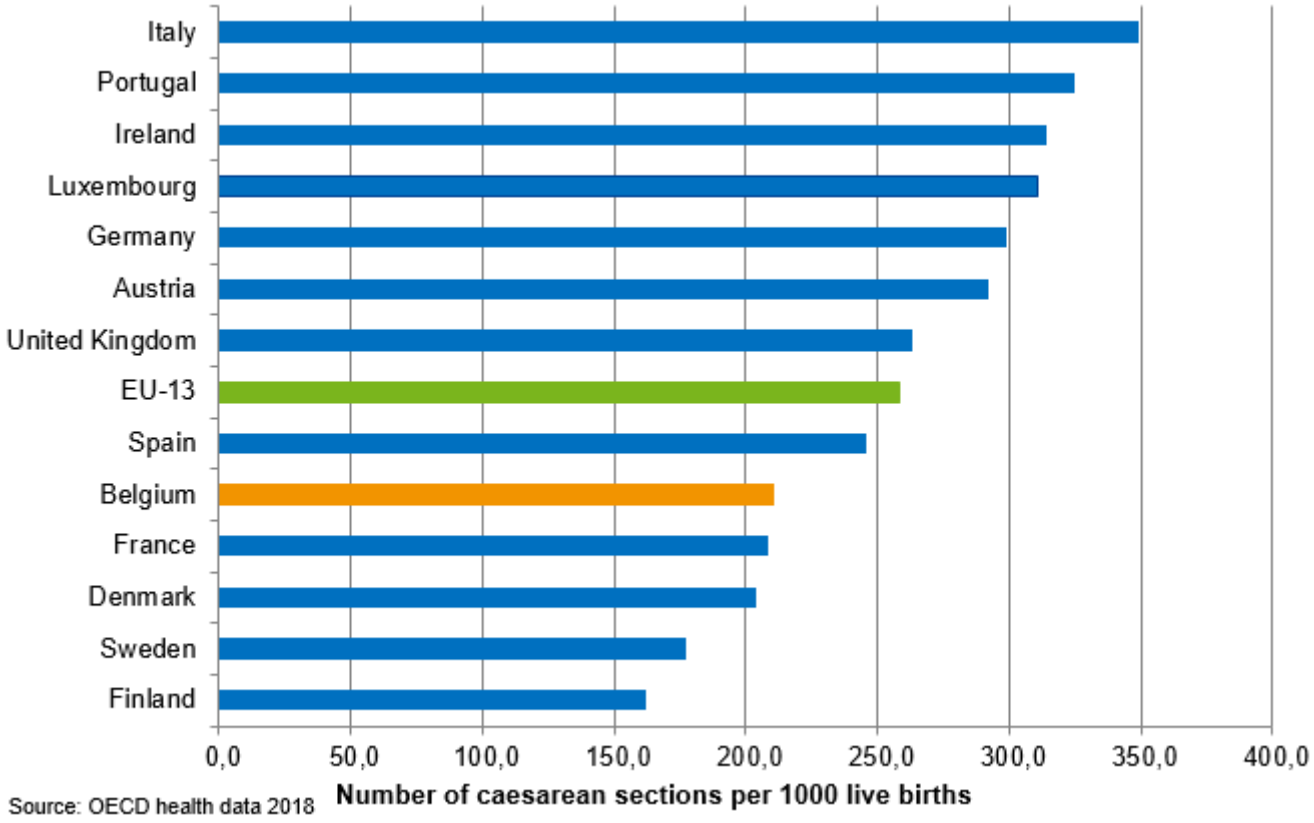
** Unknown for 84 deliveries (0.2% of the total number of deliveries).* Data source: CEpiP; Calculation: KCE

Table 137 – Caesarean section, by Robson classification, Flanders, 2016, N = 63 431

Robson		Number of caesarean sections /Total number of deliveries	Relative size on total deliveries	Proportion of caesarean section	Contribution to the overall proportion
1	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	1 699/16 893	26.63%	10.06%	2.68%
2	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	2 306/7 497	11.82%	17.38%	3.64%
3	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour	3 54/18 507	29.18%	1.91%	0.56%
4	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour	979/7 472	11.78%	7.38%	1.54%
5	All multiparous women with a least one previous uterine scar, with a single cephalic pregnancy ≥37 weeks gestation	3 555/5 346	8.43%	66.50%	5.60%
6	All nulliparous women with a single breech pregnancy	1 537/1 613	2.54%	95.29%	2.42%
7	All multiparous with a single breech pregnancy, including women with previous uterine scars	940/1 074	1.69%	87.52%	1.48%
8	All women with multiple pregnancies, including women with previous uterine scars	621/1 112	1.75%	55.85%	0.98%
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars	208/211	0.33%	98.58%	0.33%
10	All women with a single cephalic pregnancy <37 weeks gestation, including women with previous scars	1 069/3 706	5.84%	28.85%	1.69%
TOTAL		13 268/63 431	100.00%		20.91%

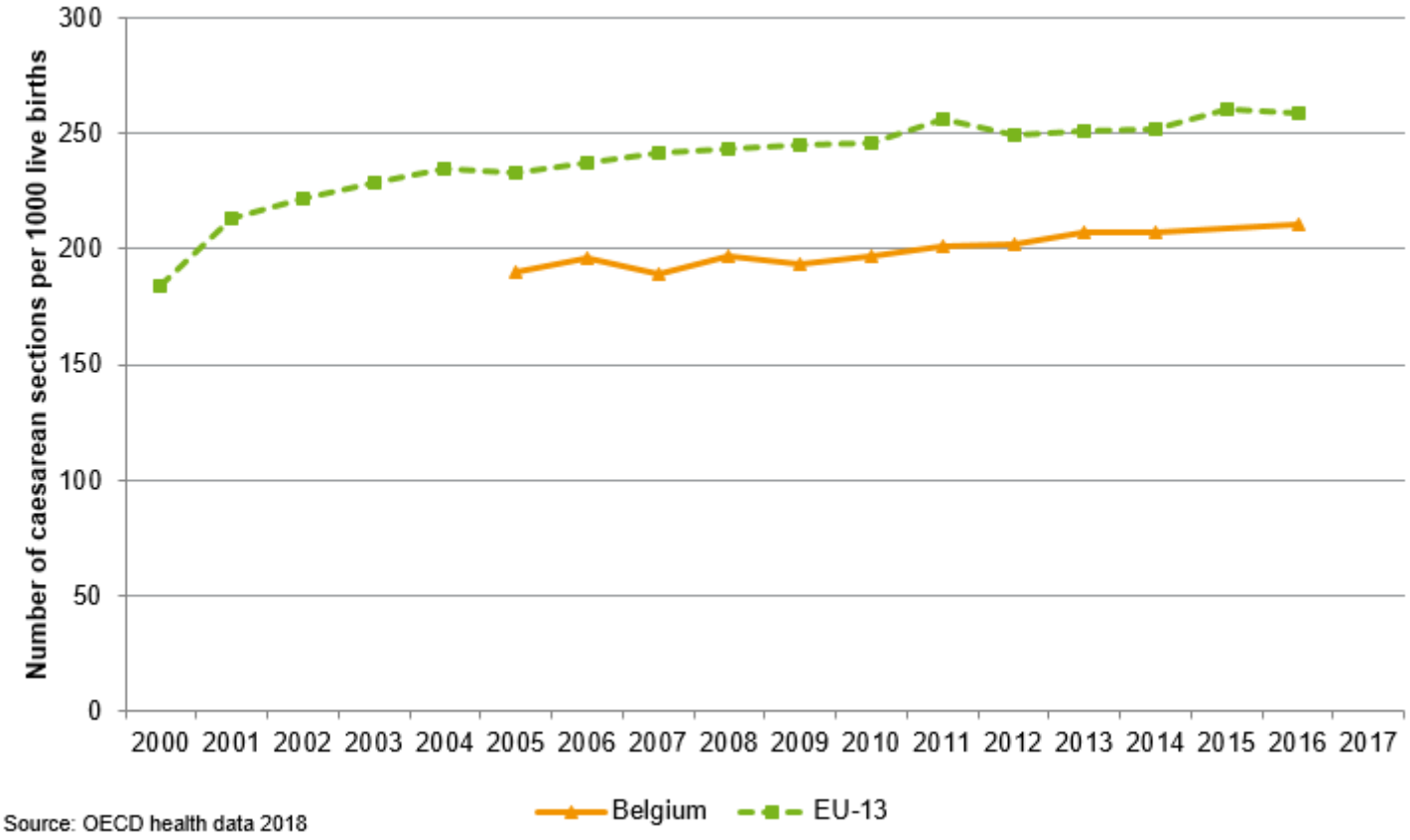
* Data source & calculation: SPE

Figure 213 – Number of caesarean sections per 1 000 live births, by EU-13 country, 2016



Source: OECD health data 2018

Figure 214 – Number of caesarean sections per 1 000 live births, by EU-13* country, 2000-2016



Source: OECD health data 2018

** Italy, Portugal, Ireland, Luxembourg, Germany, Austria, UK, Spain, Belgium, France, Denmark, Sweden, Finland*

Table 138 – Robson classification

Robson classification	
1	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour
2	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour
3	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour
4	Multiparous women without a previous uterine scar, with a single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour
5	All multiparous women with a least one previous uterine scar, with a single cephalic pregnancy ≥37 weeks gestation
6	All nulliparous women with a single breech pregnancy
7	All multiparous with a single breech pregnancy, including women with previous uterine scars
8	All women with multiple pregnancies, including women with previous uterine scars
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars
10	All women with a single cephalic pregnancy <37 weeks gestation, including women with previous scars

Key points

- **In 2016, the caesarean sections rate is 216 per 1 000 live births which corresponds to an increase of 38% with respect to the rate of 2000 (156 per 1 000 live births).**
- **Globally, the caesarean sections rate increased in every Belgian regions from 2000 to 2016. Nevertheless, a decrease is observed in Brussels since 2013 and in Wallonia since 2014.**
- **An important heterogeneity in the practices exists at the district level, the caesarean rate ranging from 117 to 303 per 1 000 live births in 2016.**
- **Important variability is observed across hospitals, the caesarean rate ranging from 155 to 352 per 1 000 live births in 2016.**
- **Repeated C-sections (Robson 5: multiparous women with a least one previous uterine scar, with a single cephalic pregnancy ≥37 weeks gestation) contribute the most to the total caesarean rate.**
- **Despite an increase of the caesarean rate over the years, Belgium performed better than the average EU-13 from 2005 to 2016 for this indicator.**

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14.4. Induction of labour (MN-4)

14.4.1. Documentation sheet

Description	The numbers of newborns (per 1000 live births and stillbirths) born after induced labour
Calculation	Number of inductions divided by the total number of births * 1 000. Results are presented by region. Variability between hospitals (per 1 000 live births) is also shown.
Rationale	There is widespread concern about the high rates of obstetric intervention, including inductions, during labour and delivery.[1,2] There is also growing pressure by women to avoid their unnecessary use.[3] KCE guideline states that induction should only be performed in a limited number of cases: in case of major risk for the foetus or the mother, or in case of water bag spontaneous rupture, if labour does not start spontaneously within 24 hours, or in case of exceeded term (after 41 weeks of gestation). Use outside these limits may be considered as inadequate.[4]
Data source	Statbel (Direction générale Statistique - Statistics Belgium), CEpiP, SPE
Technical definitions	Any induction by medication or artificial rupture of the membranes. The induction of contractions in case of premature rupture of the membranes in a patient who has no other sign of labour is also classified in inductions.[5]
International comparability	The definition of induction may vary between countries or even between maternity units within the same country, according to the use and timing of the procedures. In some places, induction includes the use of drugs for cervical ripening and oxytocin for induction. In other places, artificial rupture of membranes is also included. There is also some uncertainty about whether data include other uses of oxytocics, including for augmentation of labour. This misclassification can occur if augmentation is not recorded separately.[3]
Performance Dimension	Quality (appropriateness); Variability of care

14.4.2. Results

Induction rate: number of inductions per 1 000 births (live and stillbirth)

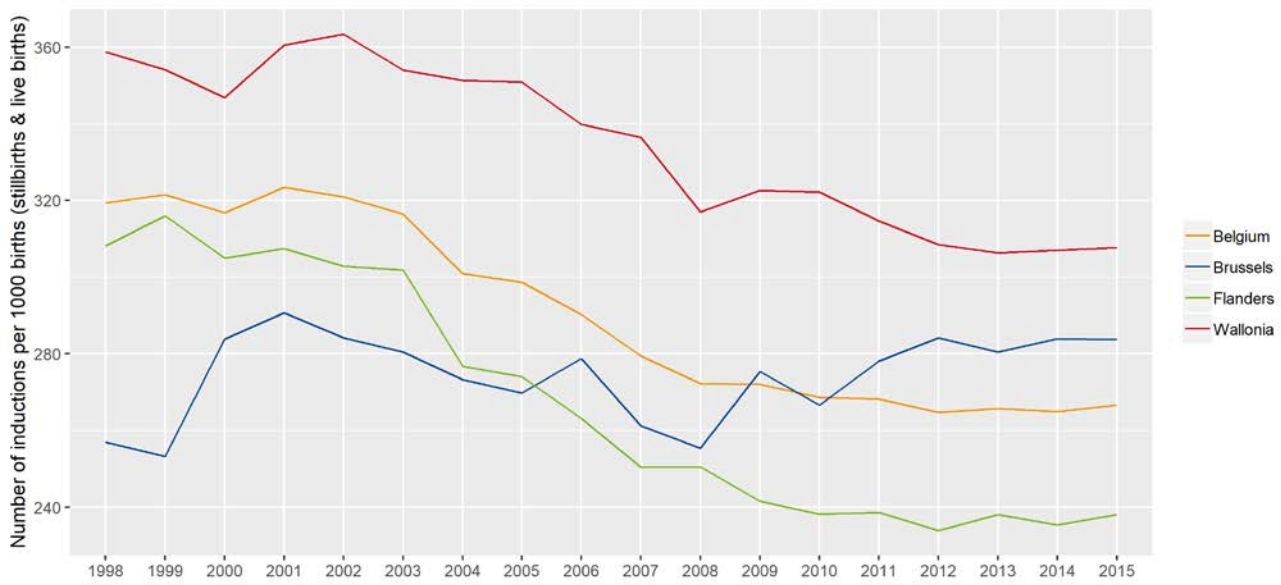
Overall, induction rate decreased by 16.3 % in Belgium between 1998 and 2015 (319 inductions per 1 000 births in 1998; 267 inductions per 1 000 births in 2015).
However, important differences exist between regions. In 2015, Wallonia was still the region with the highest induction rate (308 inductions per 1 000 births in 2015) and showed an induction rate equals to that of Flanders in 1998. Although Brussels had the lowest induction rate among Belgian regions in 1998 (257 inductions per 1 000 births), the number of inductions increased by 11% between 2008 and 2014 and by 10.5% between 1998 and 2015 (average annual increasing of 1.59 inductions per 1 000 births) (Figure 215, Table 139).
Using CEpiP data (de facto data) instead of Statbel data (law data) confirmed that the rate of induction (per 1 000 births) increased in Brussels. The rate is higher for women delivering in Brussels (de facto data) than for women living in Brussels (law data). This could be linked to the fact that several pregnant women who live in Flanders or Wallonia come to Brussels for delivering and that these mothers may have more complicated pregnancy. But this could also be related to a difference in practice between hospitals in Brussels and elsewhere. SPE data (de facto data) showed an

increase of the induction rate in 2016 in Flanders which could not be confirmed by Statbel because data were not yet available that year (Table 140, Figure 216).
Restricting the analysis to induction in live births (i.e. excluding stillbirths) brings the same conclusions: an overall decrease of the induction rate in Belgium, an increase in Brussels and a gap between Flanders and the other regions.

Variation of induction practice among maternity units

In 2015, it existed considerable differences of induction practices between Belgian hospitals: induction rate varied from 103 to 493 inductions per 1 000 live births. (Figure 217) However, case-mix was not taken into account and could have an impact on the observed variations of practices. More severe cases could influence induction rate. In the same way, geographical remoteness (distance for the mothers to the maternity unit) was not taken into account and could also influence induction rate.
No significant linear correlation was observed between the number of live births and the rate of induction (r=-0.05, p=0.57) (Figure 218).

Figure 215 – Induction rate, per 1 000 births, per region, 1998-2015



Data source: Statbel; Calculation: KCE

Table 139 – Number of induction per 1 000 births, by region, 1998-2015

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual difference 1998-2015
Belgium	319	322	317	323	321	316	301	299	290	279	272	272	269	268	265	266	265	267	-3.06
Brussels	257	253	284	291	284	280	273	270	279	261	255	275	267	278	284	280	284	284	1.59
Flanders	308	316	305	307	303	302	277	274	263	250	251	242	238	239	234	238	235	238	-4.12
Wallonia	359	354	347	361	363	354	351	351	340	336	317	323	322	315	308	306	307	308	-3.00

Data source: Statbel; Calculation: KCE

Table 140 – Number induction per 1 000 births, by region, 2009-2016

	2009	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2009-2016
Brussels*	270	272	281	284	282	286	285	281	1.57
Flanders*	241	238	238	234	239	234	239	250	1.30
Wallonia	330	324	319	314	309	314	311	309	-3.04

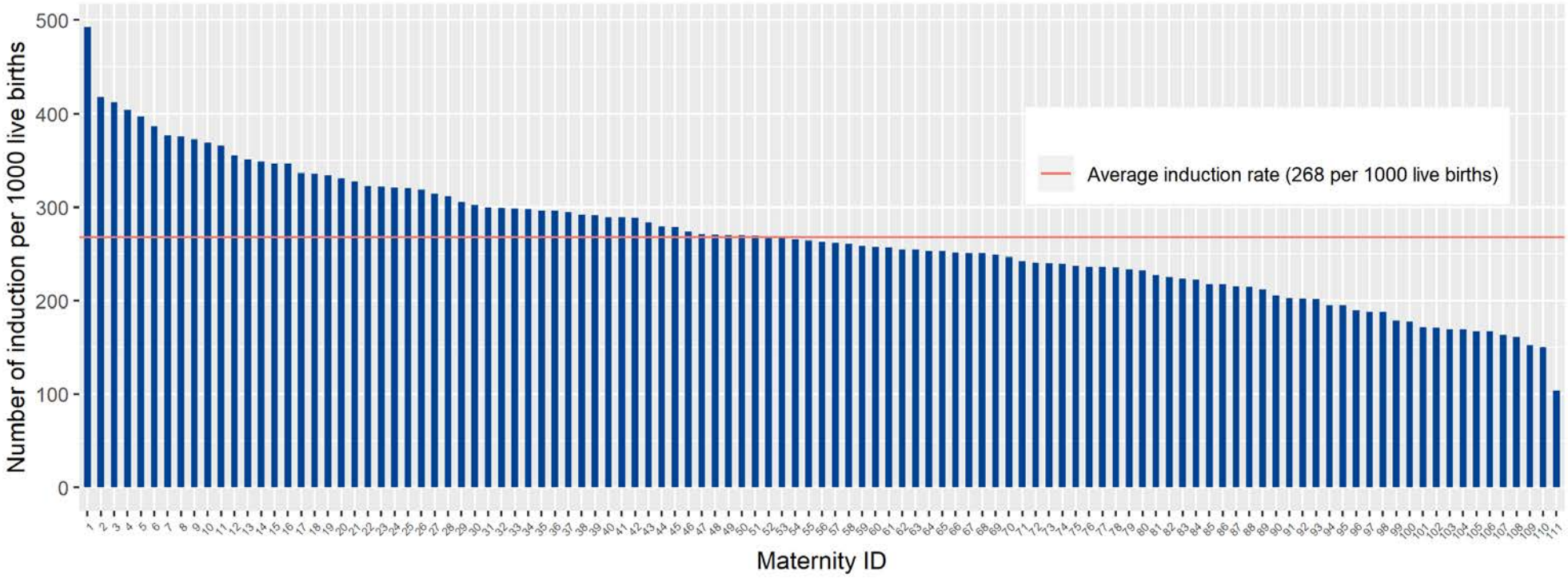
**UZ Brussels is double counted, i.e. in Brussels & Flanders regions. Data source: CEpiP (BRU-WAL) & SPE (FLA); Calculation: KCE*

Figure 216 – Induction rate, per 1 000 births, by data source, Brussels, 2009-2015



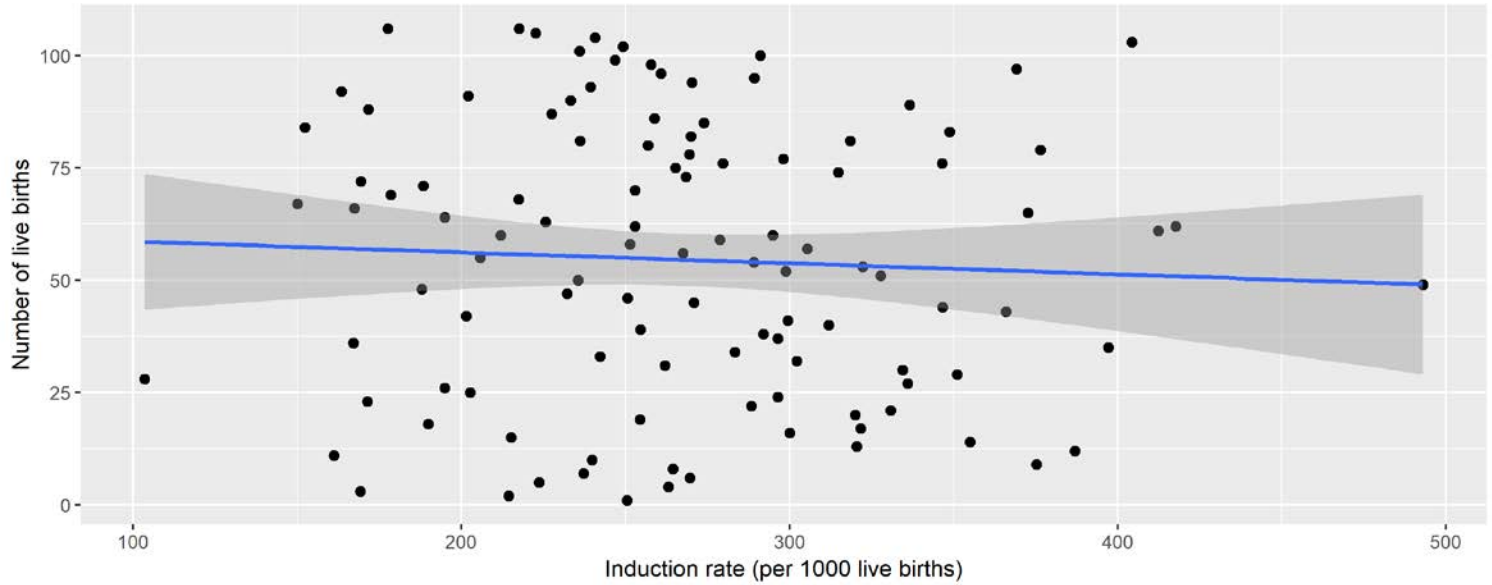
Data sources: Statbel & CEpiP; Calculation: KCE

Figure 217 – Induction rate (per 1 000 live births), by maternity, 2015



Data source: Statbel; Calculation: KCE

Figure 218 – Linear correlation between the number of live births and the induction rate, 2015



Data source: Statbel; Calculation: KCE

Key points

- **Induction rate decreased in Belgium from 1998 to 2015.**
- **Induction rate decreased in every regions, except in Brussels where it increased from 1998 to 2015.**
- **In 2015, Wallonia had the highest rate of induction.**
- **It existed considerable differences of induction practices between Belgian hospitals: induction rate varied from 103 to 493 per 1 000 live births in 2015.**

References

[1] Seijmonsbergen-Schermers A, de Jonge A, van den Akker T, Beeckman K, Bogaerts A, Barros M, *et al.* Variations in childbirth interventions in high-income countries: protocol for a multinational cross-sectional study. BMJ open. 2018;8(1):e017993.

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[4] Mambourg F, Gailly J, Zhang WH. Recommandation de bonne pratique pour l'accouchement à bas risque. 2010. KCE report

[5] Van Leeuw V, Debauche C, Daelemans C, Debiève F, Leroy C. Santé périnatale en région bruxelloise - Année 2016. Centre d'épidémiologie périnatale. 2018.

14.5. Episiotomy (MN-5)

14.5.1. Documentation sheet

Description	Percentage of women who delivered vaginally and had an episiotomy.
Calculation	Numerator: number of live newborns of a given year for whom episiotomy during delivery has been recorded. Denominator: all vaginal live births of the considered year. Results are presented by region. Variability among hospitals is also presented.
Rationale	The aim of an episiotomy is to prevent severe perineal tears. Its use became more common in the first half of the 20th century, with the move from home to hospital births and the greater involvement of obstetricians in maternity care. Policies of routine episiotomy were instituted in some settings, particularly in the United States and Latin America, but also in Europe.[1] The increasing use of interventions during labour and delivery, including episiotomy, has caused worldwide concern in the recent years.[2,3] The routine use of episiotomies has been questioned by trial studies and by women who want a more "normal" birth.[1] A Cochrane review to assess the effects of restrictive compared with routine use of this procedure during vaginal birth concluded that restrictive episiotomy policies appeared to have a number of benefits compared to its routine use.[4]
Data source	Statbel (Direction générale Statistique - Statistics Belgium), CEpiP, SPE
International comparability	Euro-Peristat (not available)
Related indicator	Proportion of women with (third- and fourth-degree) tears to the perineum (data not available).
Performance Dimension	Quality (appropriateness); Variability of care

14.5.2. Results

In 2015, 40.8% of the women who delivered vaginally in Belgium had an episiotomy. This proportion decreased by 7.1 points of percentage between 2010 and 2015. Flanders has the highest proportion of episiotomy (46.6% in 2015) whereas Brussels has the lowest proportion of episiotomy (30.1%) and Wallonia had a proportion of 35.9% in 2015 (Table 141, Figure 219).

During the last few years, the rate of episiotomy is constantly decreasing in the three regions of the country (Table 141, Figure 219).

Using CEpiP and SPE data (de facto data) instead of Statbel data (law data) to estimate episiotomy rate, we observed that the rate of episiotomy is higher for women delivering in Brussels than for women living in Brussels but the trend is still the same than using Statbel data, i.e. a decrease of the episiotomy rate in Brussels in the last years (Table 142).

Variation of episiotomy practice among Belgian maternity units

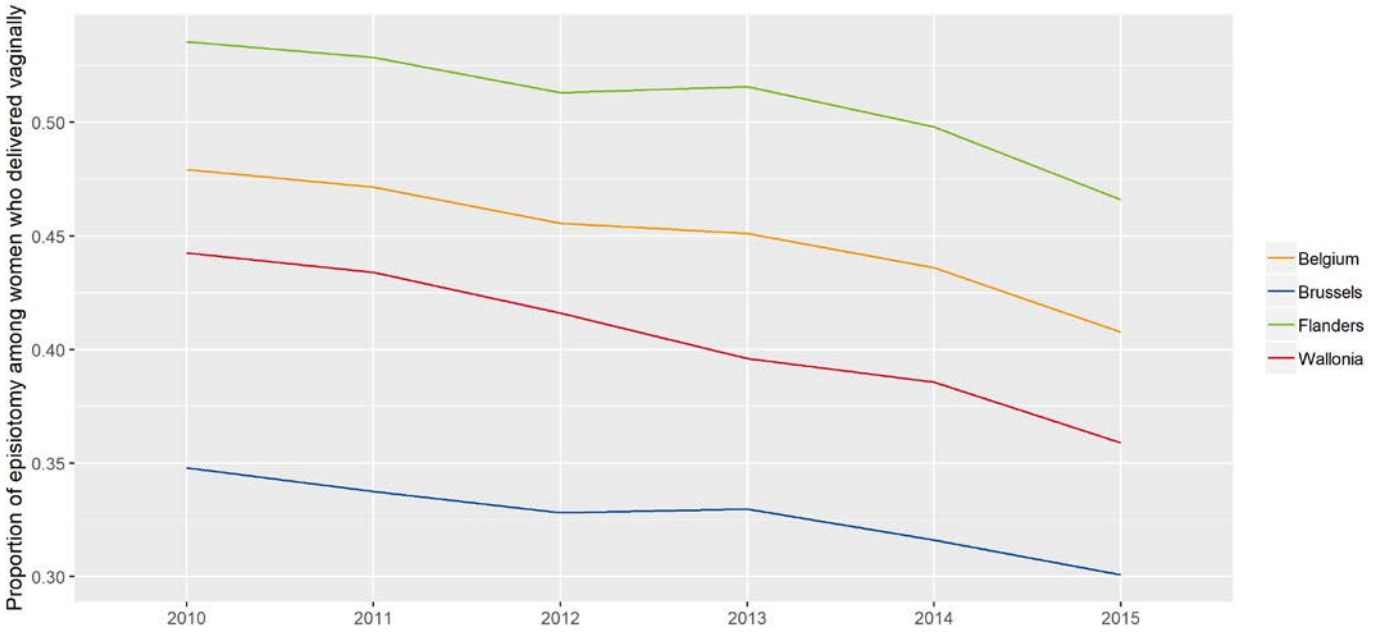
Very important variation of episiotomy practice exists among Belgian hospital as the episiotomy rate ranged from 8 to 84% in 2015. Average episiotomy rate was 44.7% in 2015. Note that this analysis does not control for the case-mix, which can partially explain differences in episiotomy rates among hospitals (Figure 220).

Table 141 – Percentage of women who delivered vaginally (live birth) and had an episiotomy, by region, 2010-2015

	2010	2011	2012	2013	2014	2015	Average annual difference 2010-2015
Belgium	47.9%	47.2%	45.6%	45.1%	43.6%	40.8%	-1.43%
Brussels	34.8%	33.8%	32.8%	33.0%	31.6%	30.1%	-0.94%
Flanders	53.6%	52.9%	51.3%	51.6%	49.8%	46.6%	-1.39%
Wallonia	44.3%	43.4%	41.6%	39.6%	38.6%	35.9%	-1.67%

Data source: Statbel; Calculation: KCE

Figure 219 – Proportion of women who delivered vaginally and had an episiotomy, by region, 2010-2015



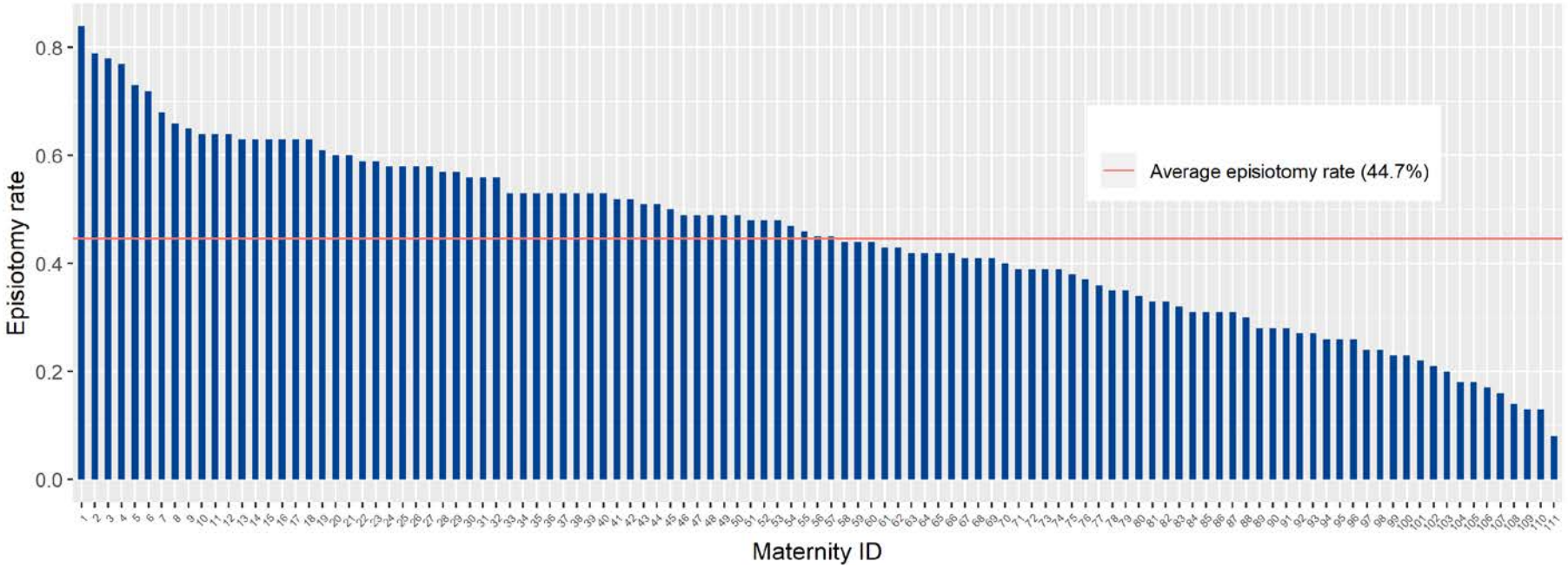
Data source: Statbel; Calculation: KCE

Table 142 – Percentage of women who delivered vaginally and had an episiotomy, by region, 2009-2016

	2009	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2009-2016
Brussels*	38.11%	36.29%	34.65%	33.74%	34.05%	32.22%	31.06%	28.56%	-1.36%
Flanders*	55.30%	54.24%	53.58%	52.20%	52.18%	49.77%	47.37%	44.71%	-1.51%
Wallonia	46.09%	45.62%	44.82%	42.61%	40.66%	39.61%	36.73%	35.83%	-1.47%

** UZ Brussels is double counted, i.e. in Brussels & Flanders regions; Data source: CEpiP (BRU-WAL) & SPE (FLA); Calculation: KCE*

Figure 220 Number of episiotomy per 1 000 vaginal delivery, by maternity, 2015



Data source: Statbel; Calculation: KCE

Key points

- **In Belgium, the proportion of women who delivered vaginally and had an episiotomy is 40.8% in 2015 and decreased by 7.1 points of percentage between 2010 and 2015.**
- **The episiotomy rate is decreasing in every Belgian region between 2010 and 2015, but is still the highest in Flanders and the lowest in Brussels.**
- **Important variation of episiotomy practice exists among Belgian hospital as the episiotomy rate ranged from 8 to 84% in 2015.**

References

[1] Zeitlin J, Mohangoo A, Delnorn M, Alexander S, Blondel B, Bouvier-Colle M*, et al.* European Perinatal Health Report. The health and care of pregnant women and babies in Europe in 2010. 2013.

[2] Seijmonsbergen-Schermers A, de Jonge A, van den Akker T, Beeckman K, Bogaerts A, Barros M*, et al.* Variations in childbirth interventions in high-income countries: protocol for a multinational cross-sectional study. BMJ open. 2018;8(1):e017993.

[3] The Royal College of Midwives. Interventions in Normal Labour and Birth. 2016.

[4] Jiang H, Qian X, Carroli G, Garner P. Selective versus routine use of episiotomy for vaginal birth. The Cochrane Library. 2017.

14.6. Vaginal Birth Following a previous Caesarean section (VBAC) (MN-6)

14.6.1. Documentation sheet

Description	Proportion of vaginal births following a previous caesarean section.
Calculation	Number of vaginal deliveries among women with prior caesarean (x100), divided by all women who delivered and had a prior caesarean delivery. Results are presented by region. Variability between hospitals is also shown.
Rationale	Vaginal birth after a previous caesarean section (VBAC) not only satisfies patient's preference for vaginal delivery, but is also associated with decreased maternal morbidity and a decreased risk of complications in future pregnancies. [1] Repeated C-sections (following the dictum "once a caesarean always a caesarean") partly contributed to the increase in the rate of caesarean deliveries. However trial of labour after a prior C-section (TOLAC) is now considered as a reasonable approach in select pregnancies. [1] Recommendations in favour of TOLAC translated into increased VBAC rates and decreased caesarean rate. However, it also resulted in an increase in the number of reports of uterine rupture and other complications related to TOLAC. These reports, associated with professional liability pressures, contributed in part to a reversal of the VBAC and caesarean trend. Nevertheless, in 2010, the American National Institutes of Health recognised that TOLAC was a reasonable option for many women with a prior caesarean and encourage organisations to facilitate access to TOLAC. [1] However, to reduce the risk of uterine rupture, it is recommended to avoid any form of inducement, especially by using prostaglandins.[2]
Data source	Statbel (Direction générale Statistique - Statistics Belgium), CEpiP, SPE and Euro-Peristat[3] for international comparison
Related indicator	Caesarean sections rate
Performance Dimension	Quality (appropriateness); Variability of care

14.6.2. Results

Proportion of VBAC

Overall, proportion of VBAC decreased by 2.42 points of percentage in Belgium from 2010 to 2015 (Table 143).

Proportion of VBAC decreased in every Belgian regions, excepting in Brussels where an average annual increase of 0.29 point of percentage was observed between 2010 and 2015.

In 2015, Brussels had the highest VBAC proportion (38.68%), whereas Flanders had the lowest VBAC proportion (30.14%), (Table 143).

Using CEpiP and SPE data (de facto data) instead of Statbel data (law data), the proportion of VBAC became lower in Brussels but the observed trend remains the same, i.e. an impressive decrease from 2010 to 2012 and an impressive increase since 2012. (Table 144, Figure 222)

Variation of VBAC practice among the Belgian maternity units

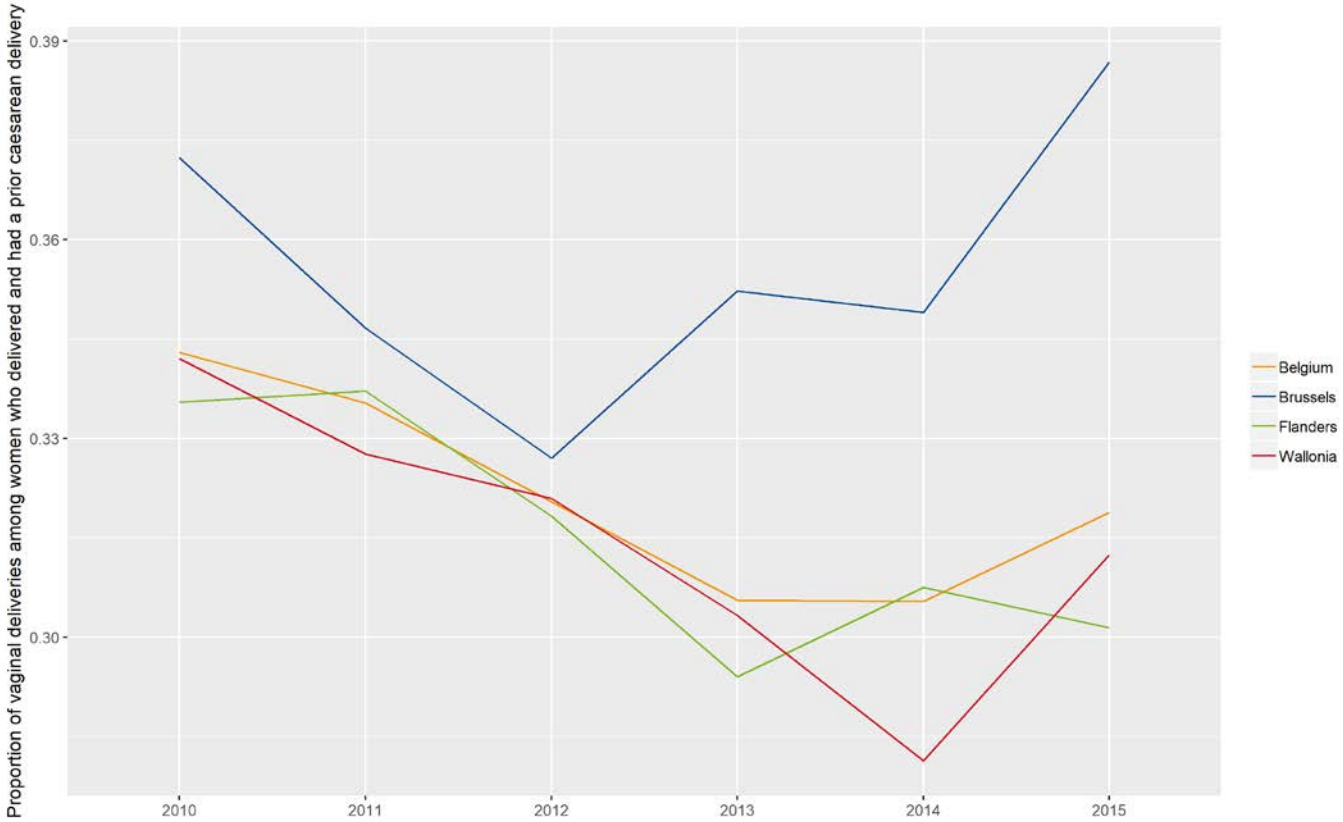
In 2015, it existed differences of VBAC practices among Belgian hospitals. Indeed, VBAC proportions ranged from 12 to 61%. Case-mix was not taken into account and could have an impact on the observed variations of practices. (Figure 223)

No significant linear correlation was observed between the number of deliveries and the rate of VBAC (r= 0.109, p= 0.256). (Figure 224)

International comparison

In the last Euro-Peristat report[3], median EU-26 (Belgium, Czech Republic, Denmark, Germany, Estonia, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Slovakia, Finland, Sweden, England, Wales, Scotland, Northern Ireland, Iceland, Norway, Switzerland) VBAC was estimated to be 26.1% [Inter-Quartile Range: 21.3-33.2] in 2015, i.e. lower than in Belgium (31.88%) in the same year.

Figure 221 – VBAC, by region, 2010-2015



Data source: Statbel; Calculation: KCE

Table 143 – Proportion of VBAC, by region, 2010-2015

	2010	2011	2012	2013	2014	2015	Average annual difference 2010-2015
Belgium	34.30%	33.54%	32.04%	30.55%	30.54%	31.88%	-0.48%
Brussels	37.24%	34.67%	32.70%	35.22%	34.90%	38.68%	0.29%
Flanders	33.55%	33.71%	31.82%	29.40%	30.75%	30.14%	-0.68%
Wallonia	34.21%	32.76%	32.09%	30.33%	28.13%	31.24%	-0.59%

Data source: Statbel; Calculation: KCE

Table 144 – Proportion of VBAC, by region, 2009-2016

	2009	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2009-2016
Brussels*	38.44%	36.65%	33.58%	31.62%	33.66%	33.86%	36.85%	36.67%	-0.25%
Flanders*	34.91%	34.25%	34.43%	32.56%	30.07%	30.91%	30.79%	30.93%	-0.57%
Wallonia	35.47%	31.87%	32.73%	32.58%	30.43%	28.31%	31.73%	32.47%	-0.43%

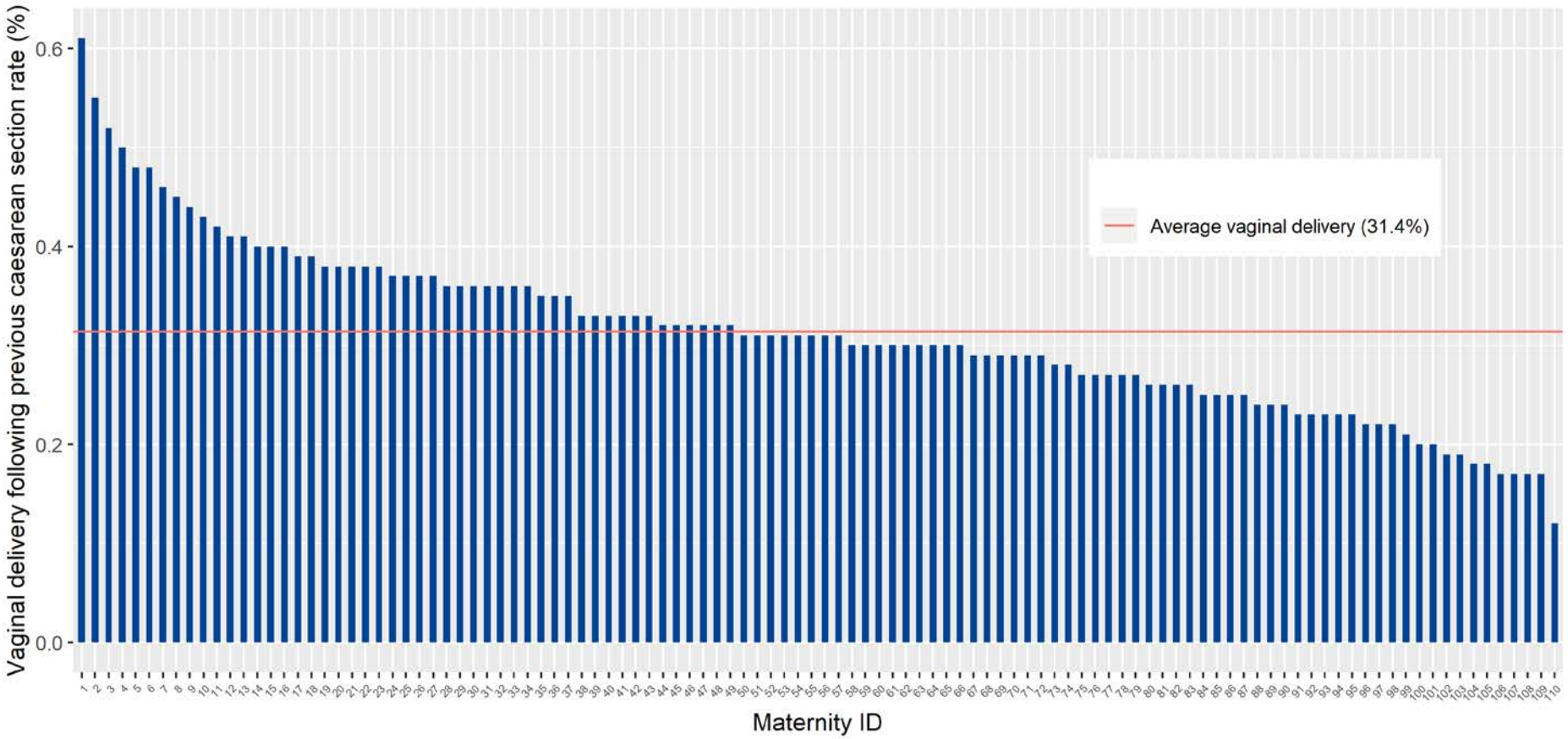
** UZ Brussels is double counted, i.e. in Brussels & Flanders regions; Data source: CEpiP (BRU-WAL) & SPE (FLA); Calculation: KCE*

Figure 222 – VBAC, by data source, Brussels, 2010-2015



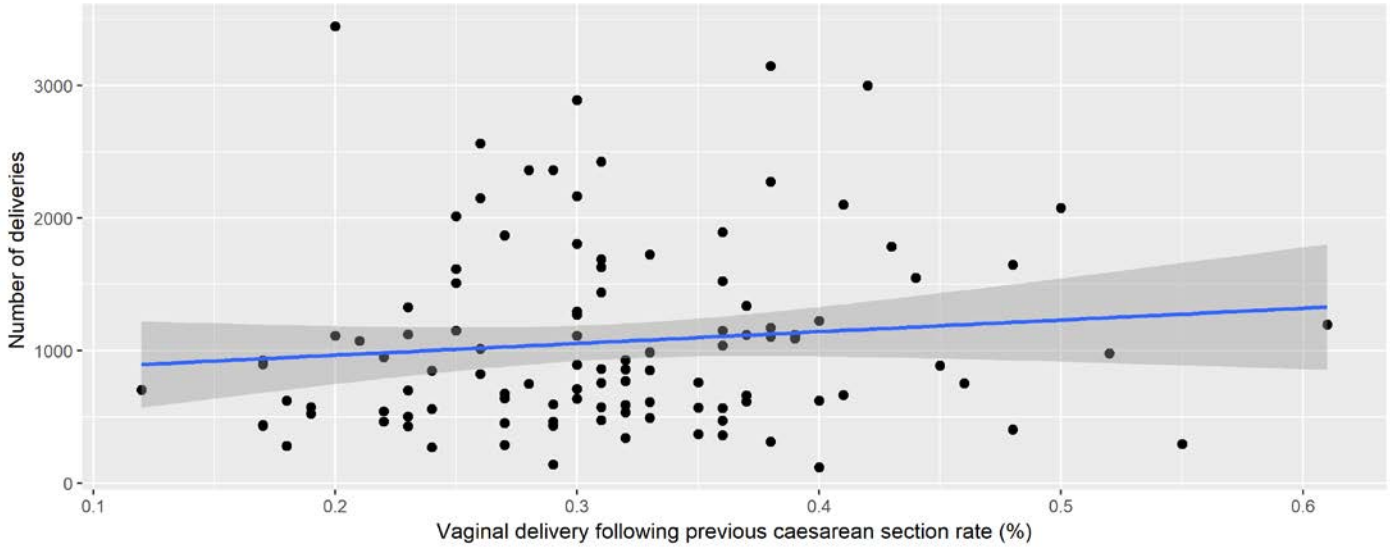
Data sources: Statbel & CEpiP; Calculation: KCE

Figure 223 – VBAC rate (%), by maternity, 2015



Data source: Statbel; Calculation: KCE

Figure 224 – Linear correlation between the number of delivery and VBAC rate, 2015



Data source: Statbel; Calculation: KCE

Key points

- **In 2015, in Belgium, the VBAC proportion was 31.88%, with a proportion of 38.68% in Brussels, 31.24% in Wallonia and 30.14% in Flanders.**
- **Proportion of VBAC decreased in every Belgian regions, except in Brussels where an average annual increase of 0.29 point of percentage was observed between 2010 and 2015. Nevertheless, in each region, and important decrease at the beginning of the period is followed by an increase in the recent years.**
- **It exists differences of VBAC proportion among Belgian hospitals which ranged from 12 to 61% in 2015.**

References

[1] American College of Obstetricians Gynecologists. ACOG Practice bulletin no. 184: Vaginal birth after previous cesarean delivery. Obstetrics and gynecology. 2017;130(5).

[2] Stordeur S, Jonckheer P, Fairon N, De Laet C. Elective caesarean section in low-risk women at term: consequences for mother and offspring.Health technology assessment. 2016. KCE Report 275

[3] Euro-Peristat Project. European perinatal health report. Core indicators of the health and care of pregnant women and babies in Europe in 2015. 2018.

14.7. Very preterm births in hospital without NICU (MN-7)

14.7.1. Documentation sheet

Description	Percentage of very preterm babies delivered in units without a neonatal intensive care unit (NICU)
Calculation	Proportion of all births (live born and stillborn) between 22 and 31 weeks of gestation delivered in units without an on-site NICU.
Rationale	About 1 to 1.5% of all births are very preterm, but they account for one third to one half of all neonatal deaths.[1] The delivery of these infants in maternity units with on-site neonatal intensive care unit is associated with lower mortality.[1-3]
Data source	CEpiP, SPE
Technical definitions	Hospital sites with NICU are defined as hospital sites with licesed NIC beds. However, deliveries taking place in CHU Brugman are considered as taking place in an hospital site with NICU although the NICU is technically on another hospital site (HUDERF). This assumption has as important impact on the results for Brussels: the percentage of very preterm babies delivered in units without NICU would be considerably higher if CHU Brugman was considered as having no on-site NICU.
Limitations	UZ Brussels is double counted, i.e. in Brussels (CEpiP data) & Flanders (SPE data) regions.
International comparability	The absence of a common definition of levels of neonatal care makes international comparison difficult.[1]
Performance Dimension	Quality (appropriateness)

14.7.2. Results

Percentage of very preterm babies delivered in units without a NICU decreased in every Belgian region between 2011 and 2015. (Table 145, Figure 225).

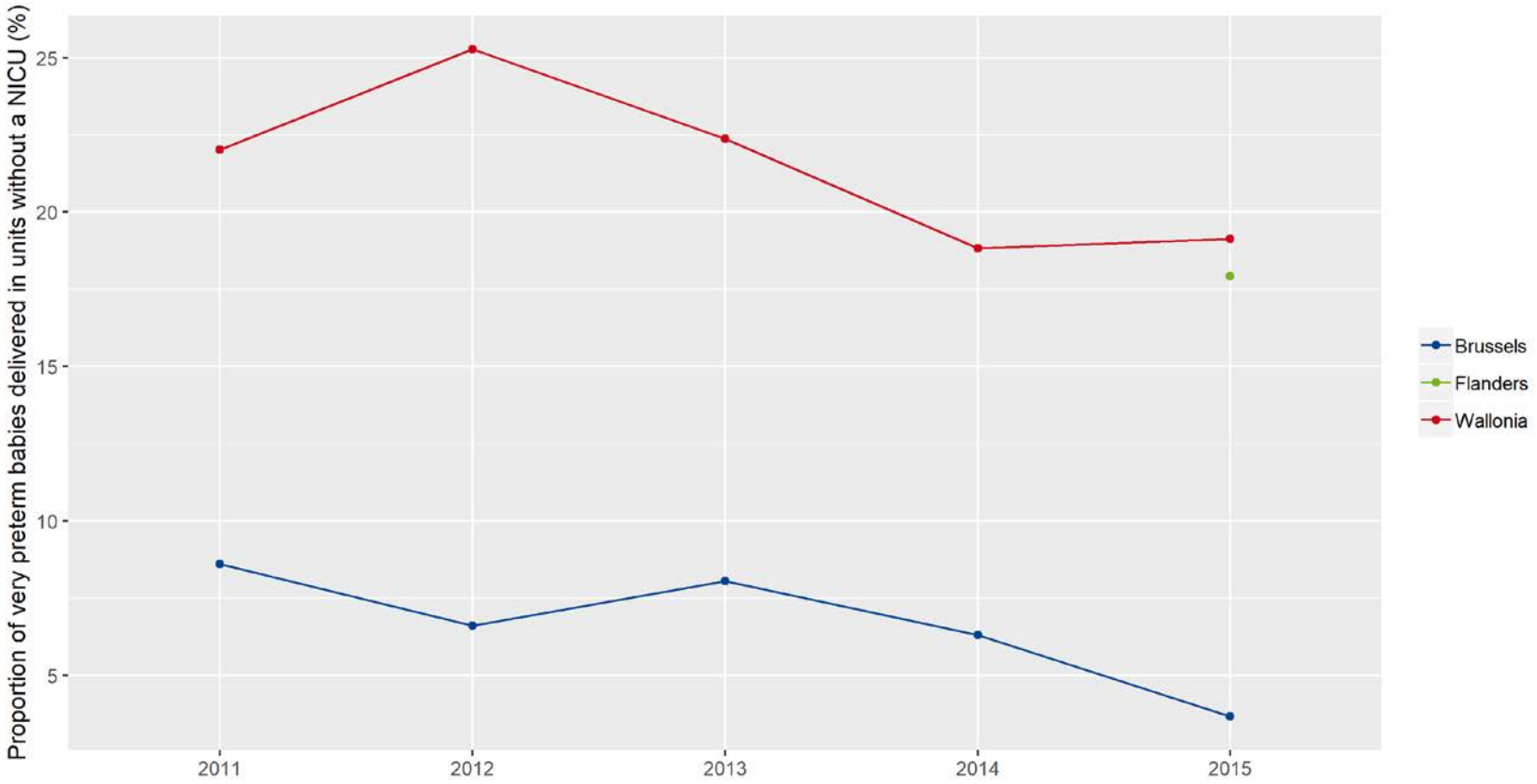
In 2015, Wallonia had the highest proportion of very preterm babies delivered in units without a NICU (19.14%) and Brussels the lowest proportion (3.66%) (Table 145, Figure 225).

Table 145 – Percentage of very preterm births delivered in units without a NICU, by regions, 2010-2015

	2010	2011	2012	2013	2014	2015	Average annual difference 2011-2015
Brussels*	NA	8.60%	6.60%	8.05%	6.31%	3.66%	-1.24%
Flanders*	21.75%	NA	NA	NA	NA	17.92%	NA
Wallonia	NA	22.02%	25.29%	22.38%	18.84%	19.14%	-0.72%

** UZ Brussels is double counted, i.e. in Brussels & Flanders regions; Data source: CepiP (BRU & WAL) & SPE (FLA); Calculation: KCE; NA: Not Available*

Figure 225 – Proportion of very preterm babies delivered in units without a NICU, by regions, 2011-2015



Data source: CepiP (BRU & WAL) & SPE (FLA)

Key points

- **Percentage of very preterm babies delivered in units without a NICU decreased in every Belgian region between 2011 and 2015.**
- **Brussels has the lowest proportion of very preterm babies delivered in units without a NICU (3.66% in 2015).**

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[1] Zeitlin J, Mohangoo A, Delnorn M, Alexander S, Blondel B, Bouvier-Colle M, *et al.* European Perinatal Health Report. The health and care of pregnant women and babies in Europe in 2010. 2013.

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14.8. Screening during pregnancy (MN-8)

14.8.1. Documentation sheet

Description	Proportion of women screened for hepatitis C during pregnancy. Proportion of women screened more than once for cytomegalovirus during pregnancy. Proportion of women screened more than once for toxoplasmosis during pregnancy.
Calculation	Numerator: number of women who have delivered in a given year, having had a Hepatitis C screening test within the 280 days before delivery; number of women who have delivered in a given year, having more than one cytomegalovirus screening test within the 280 days before delivery; number of women who have delivered in a given year, having more than one toxoplasmosis screening test within the 280 days before delivery. Denominator: total number of women who have delivered affiliated to a sickness fund. Distributions of the number of tests are also presented. Results are presented by region.
Rationale	For low-risk pregnancies, the KCE guideline[1] does not recommend to routinely offer to each pregnant woman hepatitis C testing; does not recommended routine screening in all pregnant women for toxoplasmosis infection, repeated at different periods of pregnancy, although a single serological test prior to or at the beginning of pregnancy can be useful; and does not recommend routine screening in all pregnant women for cytomegalovirus infection, although a single serological test preferably prior to pregnancy can be useful. In June 2017, the RIZIV – INAMI nomenclature has been updated in that direction: new nomenclature codes for toxoplasmosis test cannot be billed more than twice during pregnancy and new nomenclature codes for cytomegalovirus test can only be billed during pregnancy in case of clinical presumption of an acute infection with the cytomegalovirus.
Data source	IMA-AIM

Technical definitions	Selection of women who delivered in a given year based on nomenclature codes for delivery: 422225,423500,422656,422671,423651,423673,423010,423021,424012,424023, 424093, 424104 Identification of hepatitis C test: nomenclature code 551154-551165. When these nomenclature codes are recorded several times the same day, this is counted as a unique test. Identification of cytomegalovirus test: nomenclature code 551316-551320 and 551331-551342. When these nomenclature codes are recorded several times the same day, this is counted as a unique test. Identification of toxoplasmosis test: nomenclature code 551751-551762 and 551773-551784. When these nomenclature codes are recorded several times the same day, this is counted as a unique test. A distinction can be made between all deliveries and low-risk deliveries. Low risk deliveries are selected by excluding women younger than 18 or older than 40, women presenting pre-existing co-morbidities (diabetes, hypertension, thrombosis, coagulation disorders, asthma, rheumatoid arthritis, Crohn's disease, ulcerative colitis, HIV, chronic hepatitis B and C, multiple sclerosis, epilepsy, thyroid diseases, immunosuppression after organ transplantation, respiratory disorders, and neurological disorders) defined by the consumption within the 21 months before delivery of the following drugs (ATC codes A10A A10B (Defined daily dose or DDD>30), C02-C03-C04-C07-C08-C09 (DDD>180), B01A (DDD>90), B02BD, N06A, R03AA-R03AB- R03AC-R03AH-R03AK-R03BA-R03DC01-R03DC03 (DDD>80), L04AA11, L04AA12, L04AA13, L04AA17, A07EC01, A07EC02, J05AE, J05AF, J05AG, J05AX, L03AB04, L03AB05, L03AB10, J05AB04, L03AB07, L03AB08, L03AX13, N03, H03 (DDD>90), L04AA01, L04AA05, L04AA06, L04AA1, R03 (DDD>80), N03, N04, N05, N06-N07 (DDD>90)), women with diabetes (presence of diabetes passport/convention within the 21 months before delivery, nomenclature codes 102852, 109594, 107015, 107052, 107030, 107074)), women having had at least one individual midwifery session dedicated to high-risk pregnancy within 280 days before delivery (nomenclature codes 422870, 428175, 428190, 422892, 428212, 428234, 422074) and women for who the presence of a paediatrician was necessary at the delivery due to the high-risk pregnancy (nomenclature codes 474515-474526)
Limitations	Deliveries: Deliveries are identifies based on delivery nomenclature codes recorded in the IMA-AIM database including only persons covered by a Belgian sickness fund. Several reasons explain the non-coverage by a Belgian sickness fund: socio-economical vulnerability leading to a OCMW-CPAS coverage, the coverage of healthcare costs by international agreements for foreign patients, the absence of any coverage (uninsured patients), or the coverage of healthcare costs by other institutions such as FEDASIL for undocumented women, Ministry of Justice for women in prison, etc. According the 2016 MZG-RHM data, 2.2% of women who delivered in Flanders, 2.4% in Wallonia and 9.2% in Brussels were not covered by a Belgian sickness fund. Nomenclature: The currently available data (up to 2016) do not allow us to analyses the impact of the recent nomenclature changes (June 2017)
International comparability	No
Performance Dimension	Quality (appropriateness)

14.8.2. Results

Screening for cytomegalovirus (CMV)

In 2016, 48.62% of the pregnant women were screened more than once for CMV in Belgium, it corresponds to an increase of 3.62 points of percentage with respect to 2010 (45%) or an average annual increase of 0.60 point of percentage between 2010 and 2016 (Table 146).

In 2016, Wallonia had the highest proportion of repeated CMV screening (56.25%), followed by Flanders (49.21%) and Brussels (29.52%) (Table 146). Median number of tests for CMV per pregnancy is also the highest in Wallonia (P50: 2 [P25-P75: 1-5]) in 2016 (Table 147).

Proportion of pregnant women screened more than once for CMV increased in Flanders (average annual of 1.47 point of percentage) and decreased in Brussels (-0.57 point of percentage) and Wallonia (-0.34 point of percentage) between 2010 and 2016. (Table 146, Figure 227)

Distribution of the number of CMV tests varies between Belgian regions. For instance, a higher proportion of pregnant women was screened between 3 and 7 times for CMV in Wallonia in 2016. Positive skewness of the distribution of the number of CMV tests is more pronounced in Brussels and Flanders than in Wallonia, also reflecting screening practice heterogeneity between regions Figure 127).

By stratifying the analysis by low risk deliveries versus all risk deliveries, no difference in the above conclusions was observed.

Screening for toxoplasmosis

In 2016, 74.16% of the women were screened more than once for toxoplasmosis in Belgium, it corresponds to an increase of 4.9 points of percentage from 2010 (69.29%) or an average annual increase of 0.82 point of percentage between 2010 and 2016 (Table 148). Wallonia had the highest proportion of pregnant women screened more than once for toxoplasmosis (77.70%), followed by Flanders (73.73%) and Brussels (68.55%) (Table 148).

In 2016, the median number of tests for toxoplasmosis per pregnancy equals to 2 [P25-P75: 1-3] in Flanders, 4 [P25-P75: 1-6] in Brussels and 5 [P25-P75: 2-7] in Wallonia (Table 149).

Overall, proportions of repeated screening for toxoplasmosis increased in every Belgian regions between 2010 and 2016. (Table 148, Figure 229).

Distribution of the number of toxoplasmosis tests varies widely between Belgian regions. In 2016 in Wallonia, pregnant women were screened most frequently 7 times for toxoplasmosis (15.19%), although in Flanders, pregnant women were screened most frequently 2 times (29.65%) and in Brussels 1 time (19.05%) (Figure 229).

By stratifying the analysis by low risk deliveries versus all risk deliveries, no difference in the above conclusions was observed.

Screening for hepatitis C

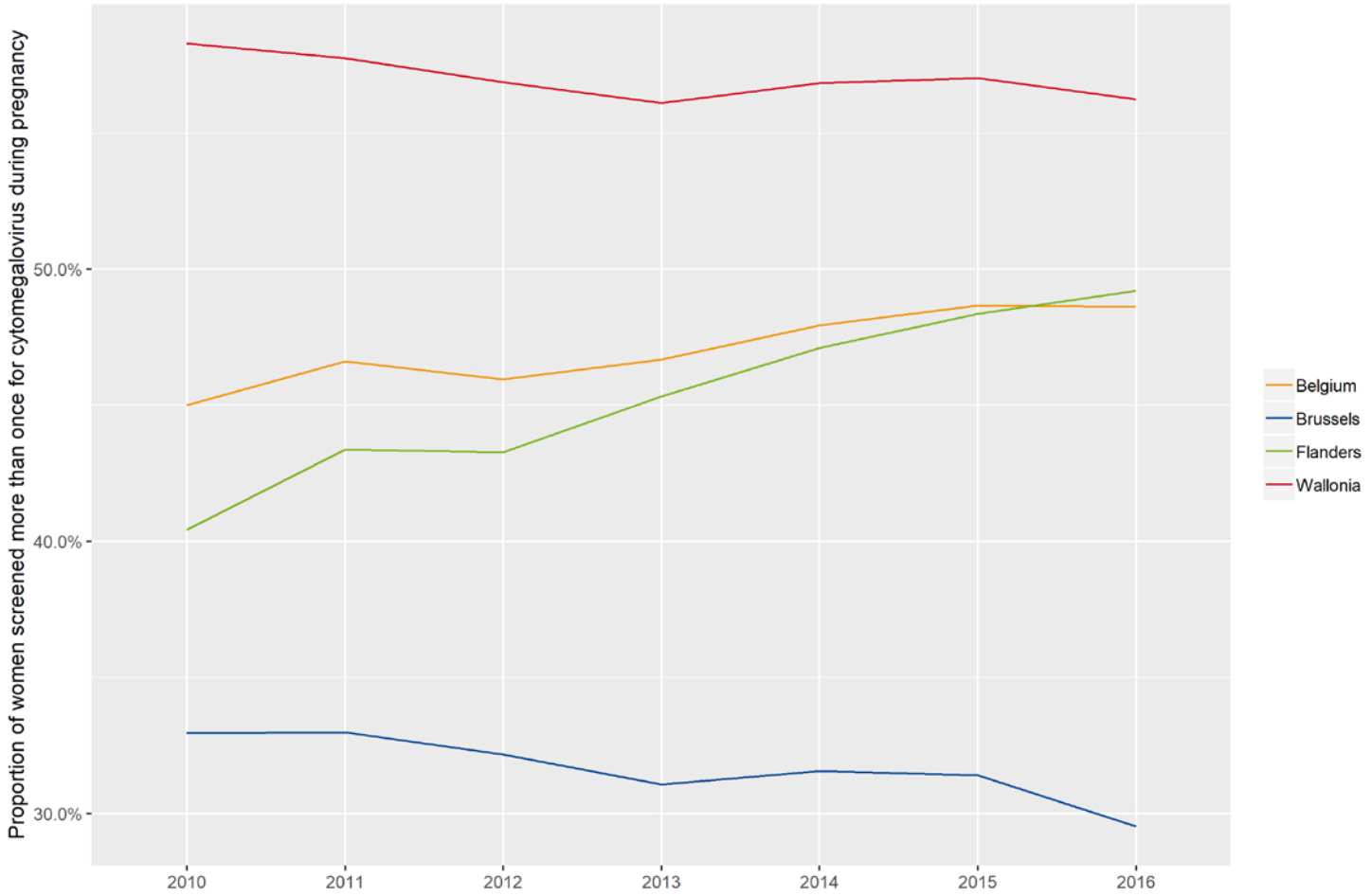
In 2016, 70.83% of the pregnant women were screened for hepatitis C in Belgium, it corresponds to an increase of 8.05 points of percentage from 2010 (62.78%) or an average annual increase of 1.34 point of percentage between 2010 and 2016. Brussels had the highest proportion of screened pregnant women for hepatitis C (82.34%), followed by Wallonia (79.82%) and Flanders (63.11%) in 2016. (Table 150)

Overall, the proportion of pregnant women screened for hepatitis C increased in every Belgian regions between 2010 and 2016 (Figure 230).

The median number of tests for hepatitis C per pregnancy is the same across the regions and did not change between 2010 and 2016 (P50: 1 [P25-P75: 0-1]). Distribution of the number of hepatitis tests per pregnant woman varies between Belgian regions: not only Flanders has a lower proportion of women screened, at least once, for hepatitis C, but this region also had a lower proportion of repeated tests (Figure 231).

By stratifying the analysis by low risk deliveries versus all risk deliveries, no difference in the above conclusions was observed.

Figure 226 – Proportion of women screened more than once for cytomegalovirus during pregnancy, by region, 2010-2016



Data source: IMA-AIM; calculation: KCE

Table 146 – Proportion of women screened more than once for cytomegalovirus during pregnancy, by region, 2010-2016

	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2010-2016
Belgium	45.00%	46.62%	45.96%	46.68%	47.93%	48.67%	48.62%	0.60%
Brussels	32.95%	32.98%	32.16%	31.06%	31.56%	31.4%	29.52%	-0.57%
Flanders	40.42%	43.38%	43.27%	45.33%	47.1%	48.36%	49.21%	1.47%
Wallonia	58.30%	57.76%	56.88%	56.11%	56.84%	57.02%	56.25%	-0.34%

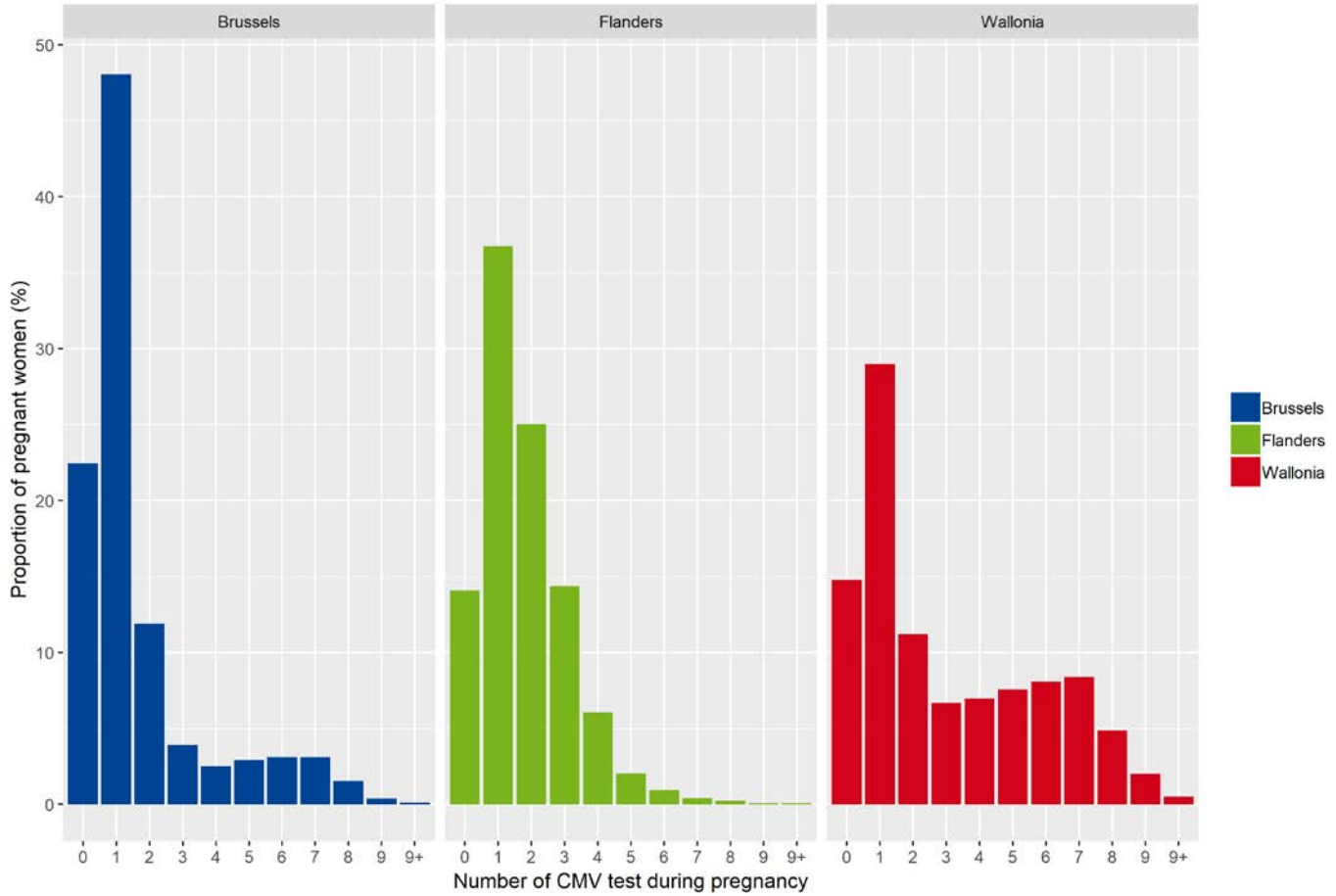
Data source: IMA-AIM; calculation: KCE

Table 147 – Median [P25-P75] of the number of tests for cytomegalovirus during pregnancy, by region, 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Belgium	1 [1-3]	1 [1-3]	1 [1-3]	1 [1-3]	1 [1-3]	1 [1-3]	1 [1-3]
Brussels	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]
Flanders	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]
Wallonia	2 [1-5]	2 [1-5]	2 [1-5]	2 [1-5]	2 [1-5]	2 [1-5]	2 [1-5]

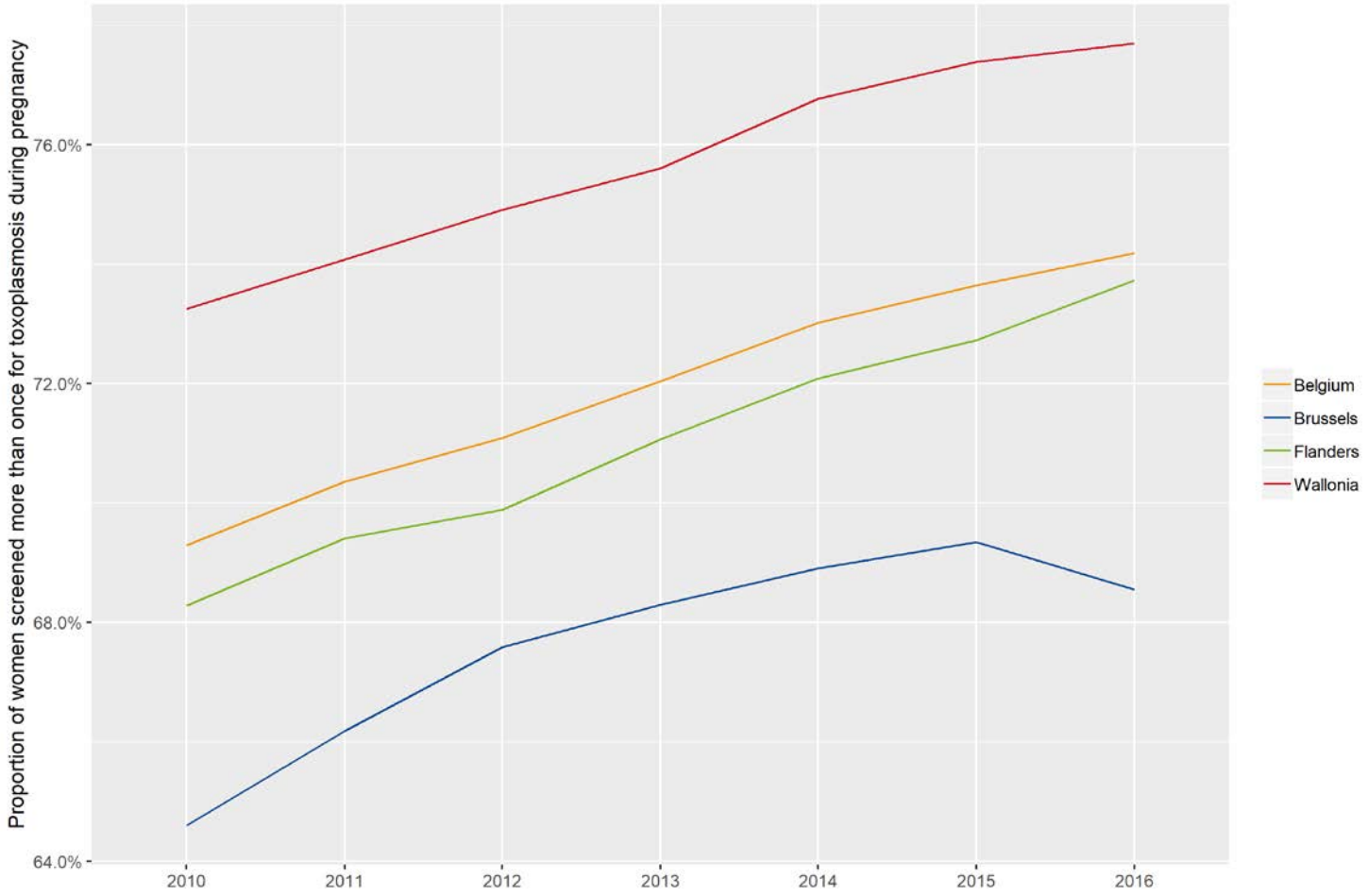
Data source: IMA-AIM; calculation: KCE

Figure 227 – Distribution of the number of cytomegalovirus screening during pregnancy, by region, 2016



Data source: IMA-AIM; calculation: KCE

Figure 228 – Proportion of women screened more than once for toxoplasmosis during pregnancy, by region, 2010-2016



Data source: IMA-AIM; calculation: KCE

Table 148 – Proportion of women screened more than once for toxoplasmosis during pregnancy, by region, 2010-2016

	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2010-2016
Belgium	69.29%	70.36%	71.09%	72.04%	73.02%	73.65%	74.19%	0.82%
Brussels	64.60%	66.18%	67.59%	68.30%	68.91%	69.35%	68.55%	0.66%
Flanders	68.28%	69.41%	69.89%	71.07%	72.09%	72.73%	73.73%	0.91%
Wallonia	73.25%	74.08%	74.91%	75.61%	76.77%	77.39%	77.70%	0.74%

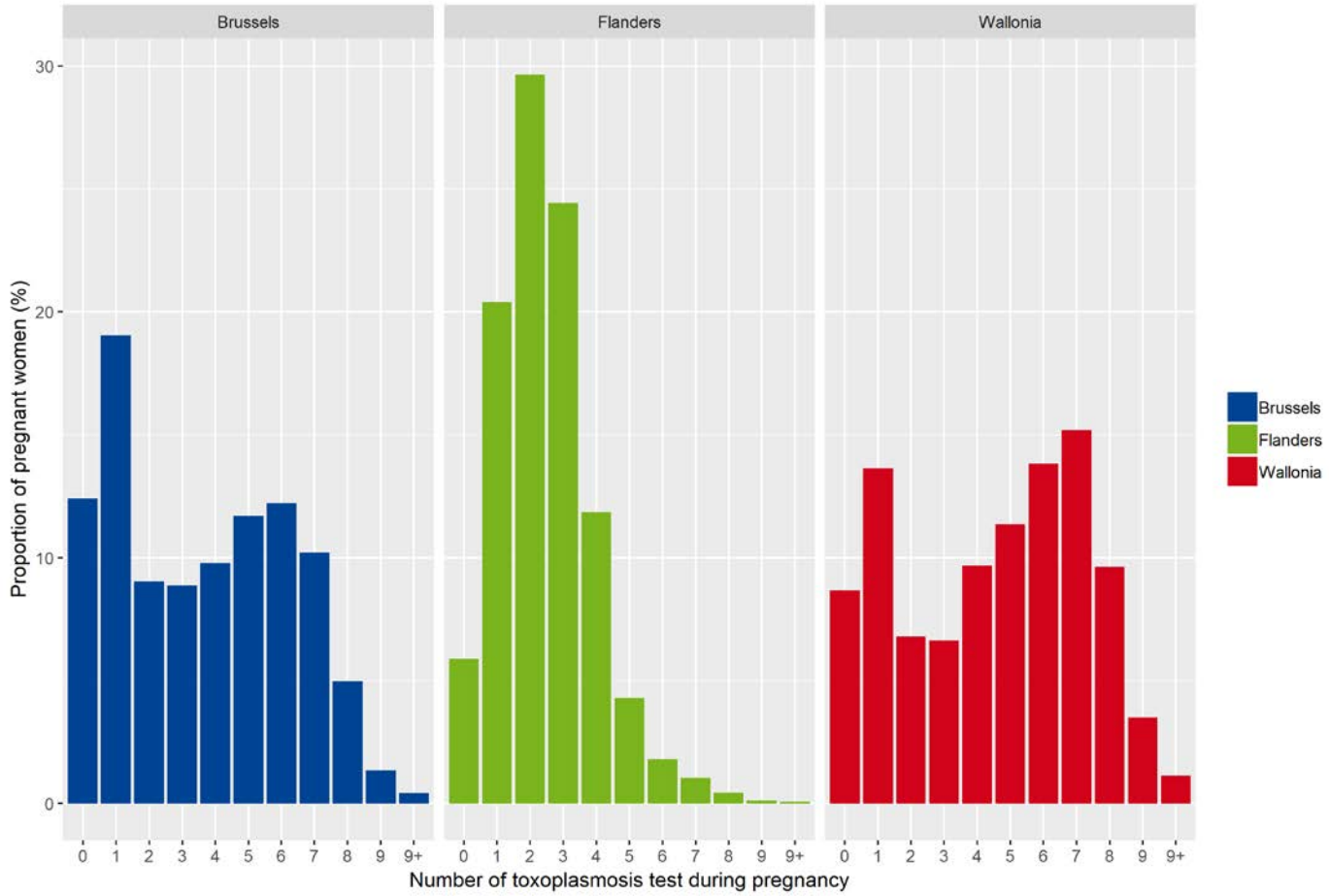
Data source: IMA-AIM; calculation: KCE

Table 149 – Median [P25-P75] of the number of tests for toxoplasmosis during pregnancy, by region, 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Belgium	3 [1-4]	3 [1-5]	3 [1-5]	3 [1-5]	3 [1-5]	3 [1-5]	3 [1-5]
Brussels	3 [1-6]	3 [1-6]	4 [1-6]	4 [1-6]	4 [1-6]	4 [1-6]	4 [1-6]
Flanders	2 [1-3]	2 [1-3]	2 [1-3]	2 [1-3]	2 [1-3]	2 [1-3]	2 [1-3]
Wallonia	5 [1-7]	5 [1-7]	5 [1-7]	5 [2-7]	5 [2-7]	5 [2-7]	5 [2-7]

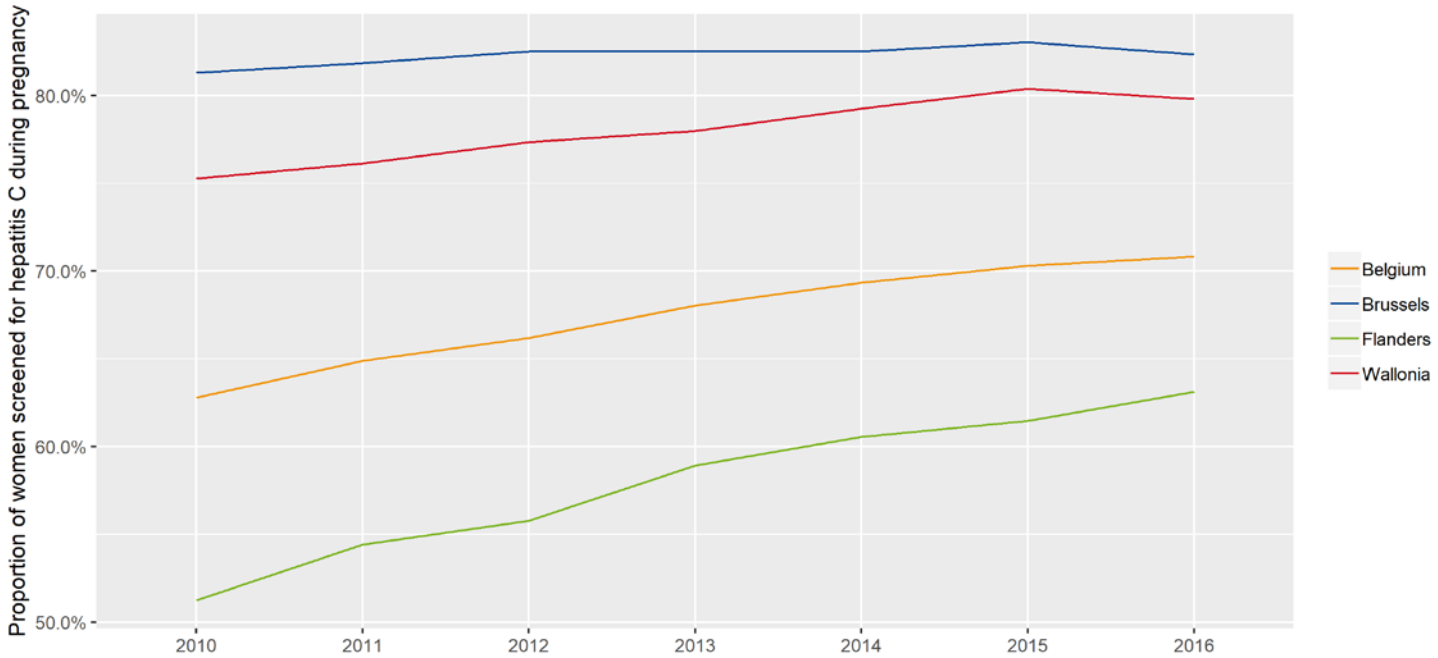
Data source: IMA-AIM; calculation: KCE

Figure 229 – Distribution of the number of toxoplasmosis screening during pregnancy, by region, 2016



Data source: IMA-AIM; calculation: KCE

Figure 230 – Proportion of women screened for hepatitis C during pregnancy, by region, 2010-2016



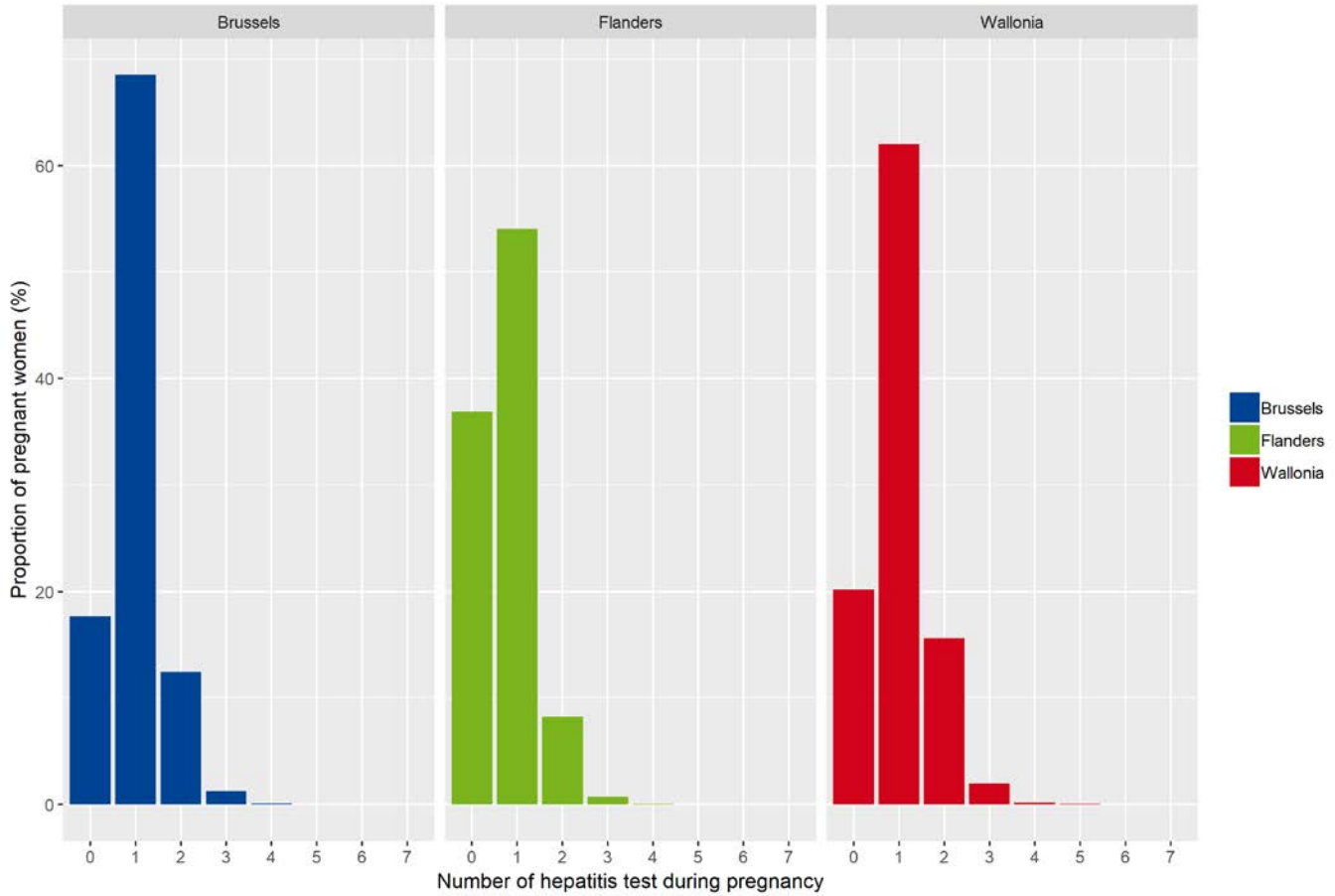
Data source: IMA-AIM; calculation: KCE

Table 150 – Proportion of women screened for hepatitis C during pregnancy, by region, 2010-2016

	2010	2011	2012	2013	2014	2015	2016	Average annual difference 2010-2016
Belgium	62.78%	64.90%	66.20%	68.05%	69.34%	70.30%	70.83%	1.34%
Brussels	81.31%	81.86%	82.53%	82.52%	82.53%	83.05%	82.34%	0.17%
Flanders	51.24%	54.41%	55.77%	58.92%	60.55%	61.46%	63.11%	1.98%
Wallonia	75.29%	76.13%	77.36%	77.99%	79.27%	80.38%	79.82%	0.75%

Data source: IMA-AIM; calculation: KCE

Figure 231 – Distribution of the number of hepatitis screening during pregnancy, by region, 2016



Data source: IMA-AIM; calculation: KCE

Key points

- **In 2016, 48.62% of the pregnant women were screened at least twice for cytomegalovirus (CMV) while guideline does not recommend more than one of these tests**
- **In 2016, 74.16% of the pregnant women were screened at least twice for toxoplasmosis while guideline does not recommend more than one of these tests**
- **In 2016, 70.83% of the pregnant women were screened for hepatitis C, while guideline does not recommend to routinely offer this test to each pregnant woman**
- **Overall, proportions of pregnant women screened for hepatitis C and pregnant women screened at least twice for toxoplasmosis increased in every Belgian regions between 2010 and 2016.**
- **Proportion of pregnant women screened at least twice for CMV increased in Flanders (average annual increase of 1.47 point of percentage) and decreased in Brussels (-0.57 point of percentage) and Wallonia (-0.34 point of percentage) between 2010 and 2016.**
- **It exists important variations of screening practices between regions but heterogeneity is particulary pronounced for toxoplasmosis screening.**

References

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14.9. Length of stay for a normal delivery (MN-9)

14.9.1. Documentation sheet

Description	Average length of stay for normal delivery (single spontaneous delivery)
Calculation	Numerator: total length of stay of all hospitalisations for single spontaneous delivery. Denominator: total number of discharges for single spontaneous delivery
Rationale	The length of stay after a normal delivery is determined in a large part by factors of organisation and care provider characteristics and in a lesser extent by clinical patient characteristics (because the large majority of the women have a low risk pregnancy, and hence variability in care is very low). A KCE report proposed a new model of integrated care for the mother and the newborn, in which the care would occur mostly at home, hereby reducing the length of hospitalisation.[1] An average length of stay trend analysis has been published in another KCE report: the LOS is expected to drop further.[2] Budgetary decisions have automatically shortened the LOS by half a day in 2015, while 7 pilot projects have been launched to test the feasibility of a different approach for strengthening home care.[3,4] Average length of stay after normal delivery is an indicator to benchmark efficiency of health care systems, and is reported by the OECD.[5]
Data source	RHM – MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Average length of stay (ALOS) is calculated by dividing the number of days stayed (from the date of admission in an in-patient institution) by the number of discharges. Diagnostic chapters (using principal diagnosis) have been defined according to the International Classification of Diseases, 9th revision and 10th revision. The OECD website offers a mapping list between both classifications. The OECD uses the ICD-9-CM code 650 'Normal Delivery' and ICD-10 code O80 'Single spontaneous delivery'.[6] Sub-indicators: - Proportion of late (more than 5 days after birth) neonatal screening tests for metabolic diseases; - Proportion of too early (less than 3 days after birth) neonatal screening tests for metabolic diseases; - Proportion of neonatal screening tests for metabolic diseases that are received at the lab after more than 4 days after testing (Numerator: number neonatal screening tests for metabolic diseases of a given year for which blood spots have been taken at an age superior to 5 days, have been taken at an age inferior to 3 days, have been received at the lab after more than 4 days after testing, respectively; denominator: number neonatal screening tests for metabolic diseases).
Limitations	Change from ICD-9 to ICD-10 classification has resulted in a break in the series of RHM – MZG data from 2016 on (and no 2015 data available).
International comparability	The OECD definition of single spontaneous delivery was adopted. Several countries included in the OECD comparison use different methodologies to calculate the average length of stay. Some countries may include same day separations (counted either as 0 or 1 day), thereby resulting in an under-estimation of average length of stay compared with countries that exclude them. Also, some countries may only include data related to general hospitals, while others might include data also for specialised hospitals (generally involving higher length of stays than in general hospitals). Caution should be exercised when making international comparisons due to the possibility that countries may provide data for different types of institutions.
Performance dimensions	Efficiency
Related indicators	Acute care bed days, number per capita.

14.9.2. Results

Average length of stay for normal delivery

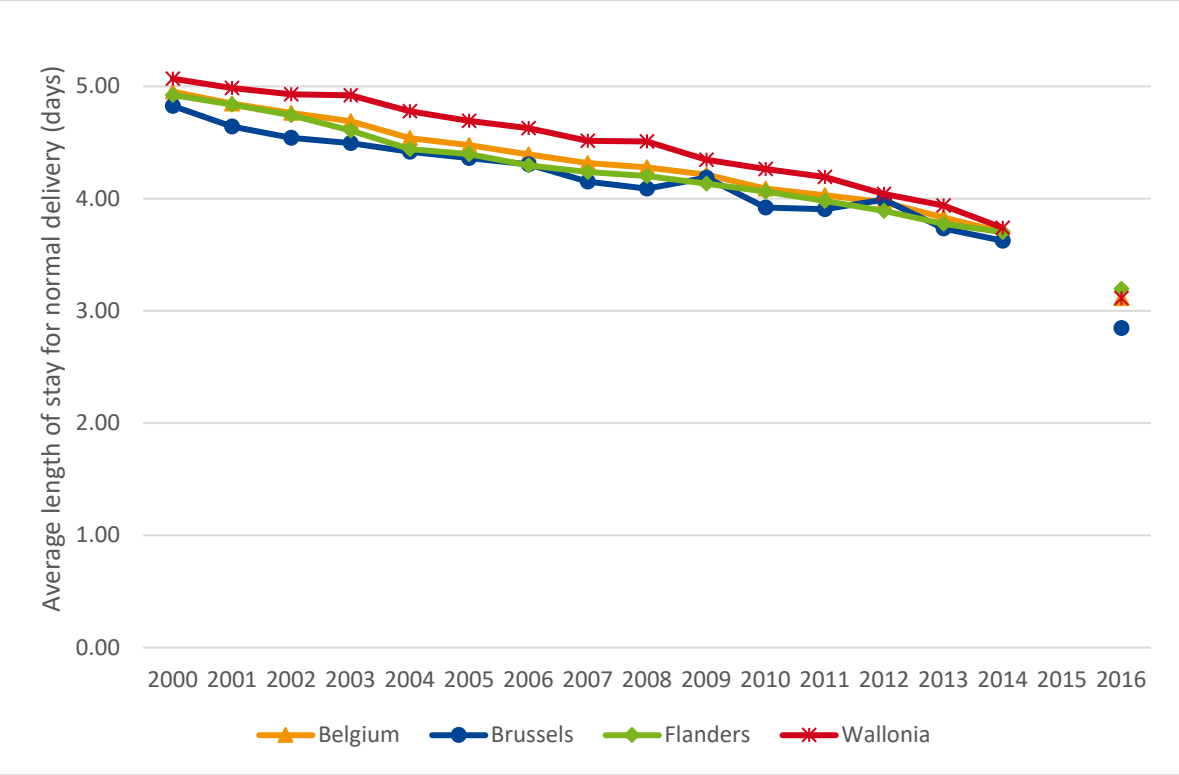
In Belgium, the duration of hospitalisation for a normal delivery decreased from 5 days in 2000 to 3 days in 2016, with small differences between regions (3.2 in Flanders, 3.1 in Wallonia and 2.8 in Brussels, Figure 232). The gap between the EU-15 average and Belgium is almost closed (Figure 233).

Table 151 – Average length of stay for a normal delivery, by year and hospital region (2016)

Variable	Category	Average length of stay (days)
Year	2000	4.96
	2001	4.85
	2002	4.77
	2003	4.69
	2004	4.54
	2005	4.48
	2006	4.39
	2007	4.32
	2008	4.28
	2009	4.21
	2010	4.09
	2011	4.03
	2012	3.97
	2013	3.83
	2014	3.70
	2015	
	2016	3.11
Data 2016 by region		
Region	Brussels	2.85
	Flanders	3.20
	Wallonia	3.11

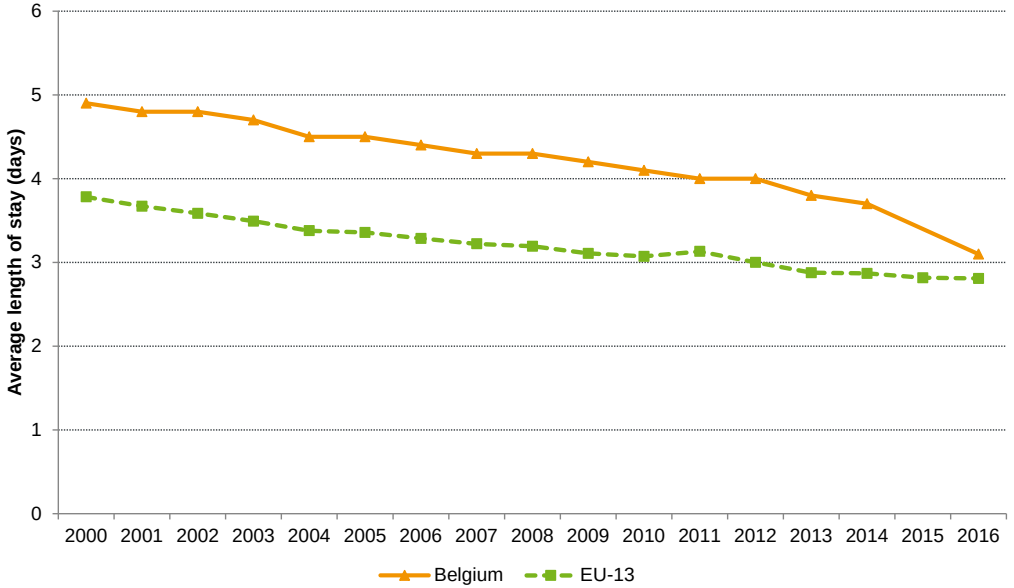
Source: RCM – MKG and RHM – MZG

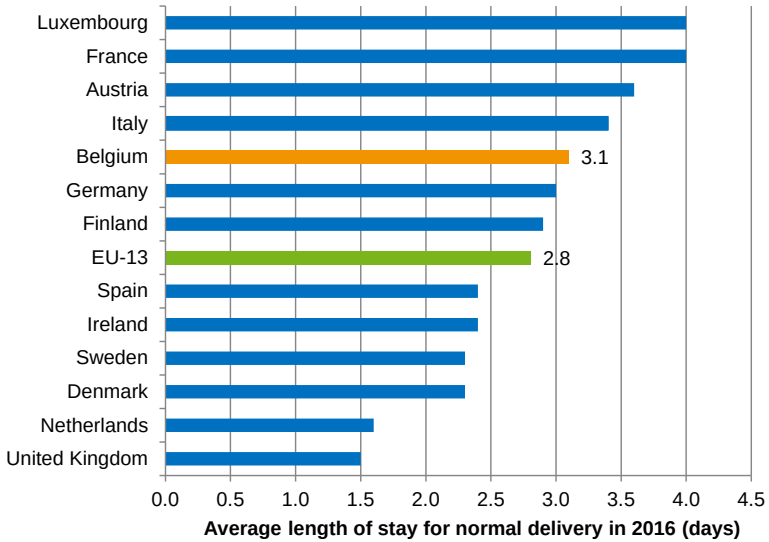
Figure 232 – Average length of stay for a normal delivery by hospital region (2000-2016)



Source: RCM – MKG and RHM – MZG

Figure 233 – Average length of stay for a normal delivery: international comparison (2000-2016)





Source: OECD Health statistics 2018

Neonatal screening tests for metabolic diseases

For full-term infant, blood spots for neonatal screening tests for metabolic diseases should be taken between the age of 3 and 5 days.[7,8] If there is more than 5 days between the date of birth and the date of blood collection there are consequences for the application of the cut-off values when analysing the blood sample.[9]

Although the neonatal screening tests for metabolic diseases is now done for almost all newborns in Belgium, there is still a number of tests that are taken at an age superior to 5 days. With the reduction of the hospital length of stay after a delivery, more tests have to be taken outside the maternity unit. In that context, a point of concern is the potential increase of the proportion of late blood collection.

In Wallonia-Brussels Federation, the neonatal screening program organised by the ONE that licensed 3 screening centres (Centre de dépistage néonatal de Liège, Centre de dépistage néonatal de l'ULB and Centre de dépistage néonatal des Cliniques Universitaires St Luc) to perform and interpret screening tests and transmit the results to the ONE. Data are centralised by ONE and available for the years 2013-2016. Some duplicates (some newborns are tested multiple times) can occur. Even if expected to be ~99%, the exact coverage of the screening stays impossible to calculate.

In 2016, 1.80% of the neonatal screening tests occurred after 5 days of life in the Wallonia-Brussels Federation. This represents a decrease of almost 40% in the proportion of late screening with respect to 2014. Indeed, in 2014 the proportion of late screening test increased with respect to 2013, probably due to the observed reduction in the average length of stay in a maternity unit after a delivery. As mothers are discharged earlier, more tests are taken at home by midwifes instead of in the hospital setting. This may have led to a temporary increase in the proportion of tests that are taken after 5 days of life. Despite this increase in 2014, the proportion of tests that are taken too late is now decreasing and is below its 2013 level (Table 152).

Too early screening, i.e. screening before 3 days of life remains rare but increased in 2014, certainly for the same reason, and also decreased thereafter. In 2016, 0.57% of the test were taken too early, which correspond to a decrease of 67% compared to its level in 2014 (1.73%) but is still above the level of 2013 (0.13%).

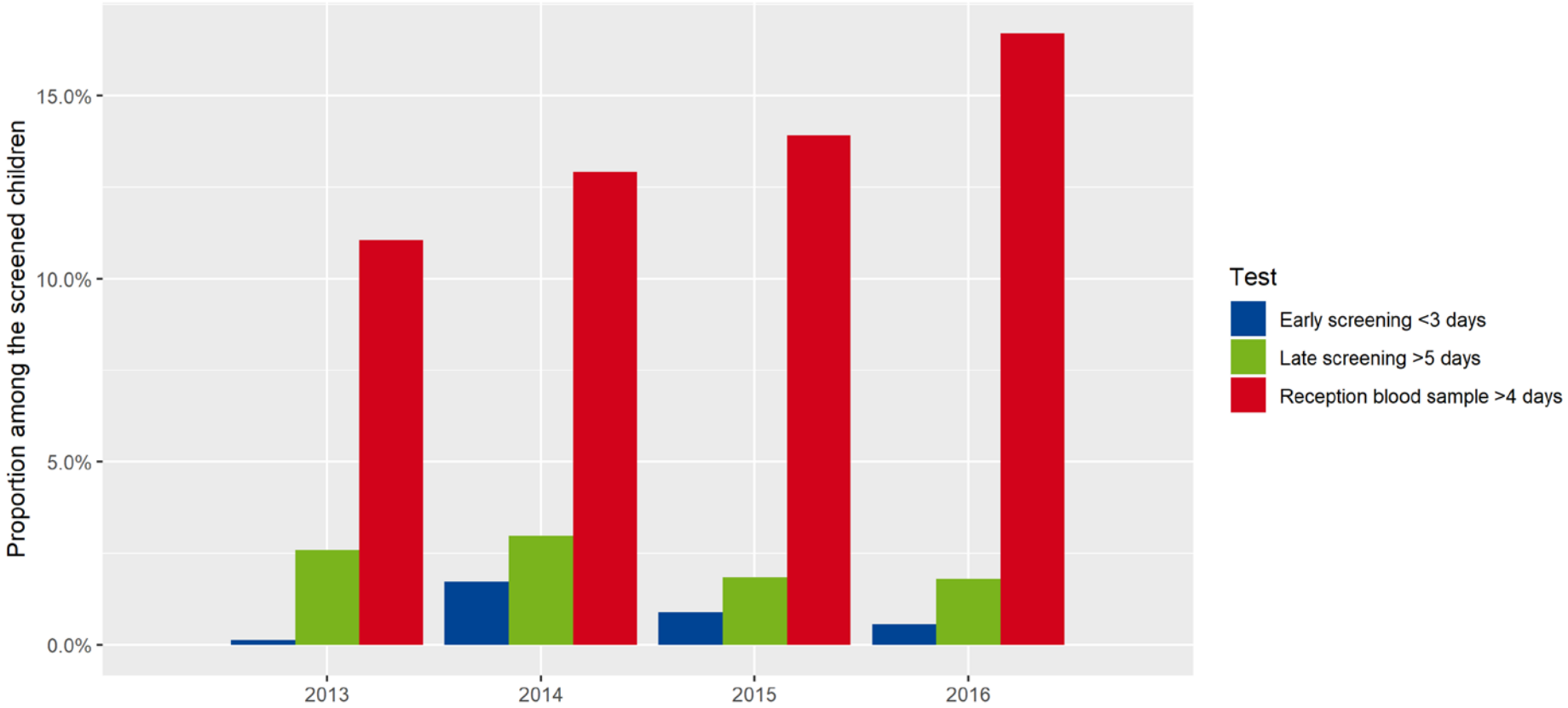
Proportion of blood sample received more than 4 days after the test had been taken increased continually between 2013 and 2016 (11.05% in 2013; 16.70% in 2016; average annual difference 1.88%, Figure 234, Table 152).

The Flemish government has concluded an agreement with two organisations for the implementation and support of the Flemish population screening for congenital disorders in newborns via a blood sample: Provinciaal Centrum voor opsporing van metabole aandoeningen (PCMA) and Vlaams Centrum Brussel voor opsporing van aangeboren metabole aandoeningen (VCBMA). These organisation report to Agentschap Zorg en Gezondheid which is the designated authority to manage the neonatal screening in the Dutch speaking community. Around 70 000 newborns are screened every year in the Dutch speaking community, through one of the two screening centers.[9] However data are not centralised and were not available for this report. We use partial data from several annual reports of the PCMA. This organisation is responsible for the analysis of tests from infants born (or from parents living in) regions of Gent, Aalst, Antwerpen, Mechelen, Turnhout and Genk.

Reports from the Provinciaal Centrum voor opsporing van metabole aandoeningen (PCMA) indicate that a shift of the testing date from 4 to 3 days of life has been observed from the beginning of 2015. The average age at the screening date was 4 days in 2012, 2013 and 2014 and decreased to 3 days in 2015 and 2016.[10-12]

In 2015 and 2016, the average transport time (time between the screening test and its reception at the lab) was 4 days for tests taken in the maternity unit and 2-4 days for tests taken outside a maternity unit. This is seen as an improvement compared to 2014, when the average transport time for tests taken outside the maternity units was at least 5 days.[10-12]

Figure 234 – Neonatal screening, Wallonia-Brussels Federation, 2013-2016



Data source: ONE; Calculation: KCE

Table 152 – Neonatal screening, Wallonia-Brussels Federation, 2013-2016

	2013	2014	2015	2016	Average annual difference 2013-2016
Early screening*	0.13%	1.73%	0.89%	0.57%	0.15%
Late screening^	2.59%	2.98%	1.84%	1.80%	-0.26%
Late reception°	11.05%	12.93%	13.91%	16.70%	1.88%

** Screening before 3 days of life (2 days for 2013)*
^ Screening after 5 days of life
° Reception of the blood sample more than 4 days after the test had been taken
Data source: ONE; Calculation: KCE

Key points

- **The duration of hospitalisation for a normal delivery decreased from 5 days in 2000 to 3 days in 2016, with small differences between regions: Brussels has the lowest average length of stay (2.8 days) compared to Wallonia (3.1 days) and Flanders (3.2 days).**
- **The average is almost the same as the EU-13 average in 2016 (2.8 days, vs 3.1 for Belgium), while it was 1 day longer than the EU average in 2012 (but caution is needed with this comparison, as the method to calculate length of stay may differ between countries).**
- **Pilot projects have been launched in Belgium in order to reduce this length of stay and to strengthen care at home.**
- **Early and late neonatal screening are low in Wallonia-Brussels Federation (no centralised data are available for Flanders) which means that most of the newborns are appropriately screened between 3 and 5 days of life.**
- **An increase in the proportion of early and late neonatal screening occur in 2014 but has been largely resorbed since then.**
- **The proportion of blood sample received more than 4 days after the test had been taken increased between 2013 and 2016.**

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[10] PCMA. Jaarverslag 2013 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2013.

[11] PCMA. Jaarverslag 2015 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2015.

[12] PCMA. Jaarverslag 2016 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2016.

14.10. Antenatal consultations (MN-10)

14.10.1. Documentation sheet

Description	Median number of antenatal consultations, distributed by type of provider (GP, midwife, gynaecologist) for low risk pregnancies.
Calculation	Median calculated on the number of reimbursed contacts with the given type of provider (GP, midwife, gynaecologist) within the 280 days before delivery for women who delivered on a given year. Results are presented by region. Distribution of the number of consultations is also presented.
Rationale	For low-risk pregnancies, 7 antenatal consultations are recommended for multiparous and 10 for nulliparous regardless of the healthcare practitioner (gynaecologist, midwife of GP). [1] To ensure efficiency, an increase in the consumption of antenatal care provided by one type of provider should be compensated by a decrease in the consumption of antenatal care provided by another type of provider. More detailed analysis will be available in Benahmed et al. (Forthcoming, 2019)[2]
Data source	IMA-AIM
Technical definitions	Selection of women who delivered in a given year based on nomenclature codes for delivery: 422225,423500,422656,422671,423651,423673,423010,423021,424012,424023, 424093, 424104. Antenatal contacts with a GP are identified by the nomenclature codes 101010, 101032, 101076, 103110, 103132, 104215, 104230, 104252, 104274, 104510, 104532, 104554, 104576 within the 280 days before delivery. Antenatal contacts with a gynaecologist are identified by the nomenclature codes 102012, 102034, 102071, 102093, 102115, 102130, 102152, 102174, 102196, 102211, 102535, 102550, 102572, 102594, 102616, 102631, 102653, 102675, 102690, 102712, 102734, 102756 within the 280 days before delivery. Antenatal contacts with a midwife are identified by the nomenclature codes 422030, 428072, 428094, 422052, 428131, 428153, 422870, 422074, 428116, 428175, 428190, 422892, 428212, 428234 within the 280 days before delivery.

	Low risk deliveries are selected by excluding women younger than 18 or older than 40, women presenting pre-existing co-morbidities (diabetes, hypertension, thrombosis, coagulation disorders, asthma, rheumatoid arthritis, Crohn's disease, ulcerative colitis, HIV, chronic hepatitis B and C, multiple sclerosis, epilepsy, thyroid diseases, immunosuppression after organ transplantation, respiratory disorders, and neurological disorders) defined by the consumption within the 21 months before delivery of the following drugs (ATC codes A10A A10B (Defined daily dose or DDD>30), C02-C03-C04-C07-C08-C09 (DDD>180), B01A (DDD>90), B02BD, N06A, R03AA-R03AB- R03AC-R03AH-R03AK-R03BA-R03DC01-R03DC03 (DDD>80), L04AA11, L04AA12, L04AA13, L04AA17, A07EC01, A07EC02, J05AE, J05AF, J05AG, J05AX, L03AB04, L03AB05, L03AB10, J05AB04, L03AB07, L03AB08, L03AX13, N03, H03 (DDD>90), L04AA01, L04AA05, L04AA06, L04AA1, R03 (DDD>80), N03, N04, N05, N06-N07 (DDD>90)), women with diabetes (presence of diabetes passport/convention within the 21 months before delivery, nomenclature codes 102852, 109594, 107015, 107052, 107030, 107074)), women having had at least one individual midwifery session dedicated to high-risk pregnancy within 280 days before delivery (nomenclature codes 422870, 428175, 428190, 422892, 428212, 428234, 422074) and women for who the presence of a paediatrician was necessary at the delivery due to the high-risk pregnancy (nomenclature codes 474515-474526). Using these exclusion criteria, over the period 2010-2016, 80.13% (660 631/824 405) are selected as low-risk pregnancies. Sub-indicators: - Proportion of pregnant women (low risk) having less than 7 antenatal consultations. - Proportion of pregnant women (low risk) having more than 10 antenatal consultations.
Limitations	Number of deliveries: Deliveries are identifies based on delivery nomenclature codes recorded in the IMA-AIM database including only persons covered by a Belgian sickness fund. Several reasons explain the non-coverage by a Belgian sickness fund: socio-economical vulnerability leading to a OCMW-CPAS coverage, the coverage of healthcare costs by international agreements for foreign patients, the absence any coverage (uninsured patients), or the coverage of healthcare costs by other institutions such as FEDASIL for undocumented women, Ministry of Justice for women in prison, etc. According the 2016 MZG-RHM data, 2.2% of women who delivered in Flanders, 2.4% in Wallonia and 9.2% in Brussels were not covered by a Belgian sickness fund. Definition of low-risk pregnancy: the distinction between high- and low-risk pregnancies is based on ad-hoc definitions using drug consumption for a set of conditions. The list of considered comorbidities is not exhaustive. Other risk factors such as medical history (e.g. previous caesarean section, previous miscarriage…) could not be included based on administrative data. It is thus possible that pregnancies that could be medically considered at high-risk have been defined as low-risk. In addition, we did not capture non-medical factors such as lack of social support, victims of violence or addictions to define high-risk pregnancies. Another criterion used to define high risk pregnancy is linked to the nomenclature codes for individual midwifery sessions dedicated to high-risk pregnancy. However, these codes were introduced in 2012 so that exclusion of high-risk pregnancies is more accurate from 2012.
International comparability	No
Performance Dimension	Efficiency

14.10.2. Results

Antenatal consultations

Low-risk pregnant women who gave birth in 2016 had a median number of 11 antenatal consultations with a gynaecologist (Interquartile range (IQR=5), 1 consultation for pregnancy follow-up with a midwife (IQR=2) and 2 consultations with a GP (IQR=4), within the 280 days before delivery, corresponding to a median number of 15 consultations with one of these practitioners (IQR=7). Excluding GPs consultations (as we cannot be sure that the reason for their consultation is related to their pregnancy), the median number of antenatal consultations is 12 (IQR=5) (Table 153, Figure 235).

Over time, the median number of consultations with a GP stays stable (in 2010, the median was 2 with IQR=3), while the median number of consultations with a gynaecologist, as well as with a midwife have increased: in 2010, they were 10 for gynaecologists (IQR=6) and zero for midwives (IQR=1). Globally, the median number of consultations (gynaecologist, midwife or GP) in 2010 was 14 (IQR=6). There has been a reduction in the percentage of women having 15 or less consultations (gynaecologist, midwife or GP) during pregnancy and a subsequent increase in the proportion of women having more than 15 consultations (Figure 236).

Consultations with midwifes

Over time, there has been a sliding from no antenatal midwifery consultation towards 1-2 consultations during the whole pregnancy (and to a smaller extent to 3-6 consultations) in both Flanders and Wallonia. In 2010, 26.69% of the pregnant women in Flanders and 32.81% in Wallonia had at least one pregnancy follow-up consultation with a midwife. In 2016, these proportions increased to 53.09% and 60.07% respectively. Already in 2010, the proportion of women with at least one pregnancy follow-up with a midwife was higher in Brussels (43.19%) and it increased since then, but not as much as in the other regions (54.96% in 2016). In 2010, only 17.07% of the pregnant women in Flanders and 21.84% in Wallonia had 1 or 2 consultations with a midwife. These proportions have almost doubled since then (in 2016, 30.28% in Flanders and 40.6% in Wallonia). In Brussels, although the median number of antenatal midwifery consultations was the same as in the rest of the country (1 consultation), a higher proportion of women used 3-6 consultations with midwives (22.55% in 2016, compared to 17.60% in Flanders and 15.10% in Wallonia) (Figure 237).

Consultations with gynaecologists

Although the number of antenatal midwifery consultations increased over time, this was not compensated by a decrease in the number of consultations with gynaecologists. On the contrary, the number of gynaecologist consultations tended to slightly increase. Most of the low-risk pregnancies (99.56%) had at least one consultation with a gynaecologist in 2010, and it was still the case in 2016 (99.48%), but the proportion of women with more less than 12 consultations with a gynaecologist decreased over time while the proportion of women having 14 or more consultations with a gynaecologist increased over time (Figure 238).

A negative linear correlation exists between the number of antenatal midwifery consultations and the number of antenatal gynaecologist consultations: women who used more midwifery consultations tend to use less gynaecologist consultations (β_1 = -0.15, $p<0.001$). Consuming one additional midwifery consultation is associated with a decrease of 0.15 consultations with a gynaecologist. This corresponds to 6.67 additional midwifery consultations associated with a decrease of one in the number of gynaecologist consultations. Although the linear association is significantly different from zero, it is still small. The analysis does not allow us to draw any conclusion regarding causality. In addition, this analysis does not adjust for potential confounding factors. Although these results must be interpreted with caution, it is interesting to note that a regional difference exists. While in Wallonia, the correlation is close to the Belgian level, no significant linear correlation between midwifery and gynaecologist consultations is found in Flanders. In Brussels, the (negative) correlation is much stronger as, in this region, an additional midwifery consultation is associated with a decrease of 0.53 consultations with a gynaecologist; that is 1.89 additional midwifery consultations for one gynaecologist consultation less. Over time, this effect tended to become stronger in Brussels (in 2010, the shapewas 0.42) but to weaken in Flanders and to a smaller extent in Wallonia (in 2010, a significant coefficient of 0.26 was found in Flanders and 0.22 in Wallonia) (Figure 239, Table 154).

Increasingly, pregnant women consult both a gynaecologist and a midwife. Indeed, the proportion of women who had at least one consultation with each of these providers was increasing over time. In Belgium in 2010, only 30.57% of the pregnant women had contacts with both types of professionals, while this proportion was 55.08% in 2016. Historically, Brussels had a higher proportion of "mixed follow-up" (43.04% in 2010) but Flanders caught up since then (in 2016, the proportions were 52.79% in Flanders and 54.40% in Brussels) while Wallonia had overstepped them (59.88% in 2016) (Figure 236).

Consultations with GPs

In the AIM-IMA database it is not possible to distinguish a consultation with a GP for pregnancy follow-up from a consultation for another reason during the pregnancy. Therefore, the reader must keep in mind that the consultations analysed here may have another purpose than clinical pregnancy follow-up. The pattern of use is completely different depending on the region. In Brussels and Wallonia, most low-risk women (in 2016, 76.12% and 65.44% respectively) consulted a GP less than three times during pregnancy. On the other hand, in Flanders most women (63.00% in 2016) consult a GP three times or more during pregnancy. Over time, an increase in the number of consultations with GP during pregnancy was observed in Flanders but not in the other regions (Figure 241).

Low and high use

The number of antenatal consultations recommended is 7 for multiparous and 10 for nulliparous women regardless of the healthcare practitioner. These recommendations were formulated in the KCE guideline [3] and reiterated in its update (KCE report 248, 2015).[1]

Although it is not possible to make a distinction between multiparous and nulliparous in the IMA-AIM database (for information, in 2016, the proportions of nulliparous women were 42.9%, 45.1% and 41.2% respectively in Wallonia [4], Flanders [5] and Brussels [4]), we observe that 3.67% of the low-risk pregnant women who gave birth in 2016 had less than 7 contacts with a gynaecologist, a midwife or a GP. Excluding GP consultations, this proportion is 6.29%. Therefore, although the number of antenatal consultations is increasing over time, some women still did not reach the threshold of 7 antenatal consultations. This is particularly true in Brussels, where, in 2016, 6% of the pregnant women did not reach this threshold. When excluding consultations with GPs, 7.84% of the women did not get at least 7 antenatal consultations in Brussels. Nevertheless, Brussels region experienced a significant decrease in the proportion of women with less than 7 antenatal consultations (from 7.82% in 2010 to 6.00% in 2016 when consultations with GPs were included, from 10.99% to 7.84% when consultations with GPs were excluded). In the other regions, a decrease was observed for the proportion of women with less than 7 consultations by a midwife or a gynaecologist (from 9.73% to 6.85% in Flanders and from 5.42% to 4.38% in Wallonia); when GP consultations were included, the evolution remained more stable over time (Table 155, Figure 242).

On the other hand, an important number of women have more than 10 antenatal consultations. In 2016, 85.08% of the low-risk pregnant women had more than 10 antenatal consultations with a gynaecologist, a midwife or a GP. When excluding GP consultations, the proportion was 66.78%.Globally the proportion of women using more than 10 antenatal consultations is slightly increasing over time, in the three regions of the country (Table 156, Figure 243).

Analysis by socio-economic position

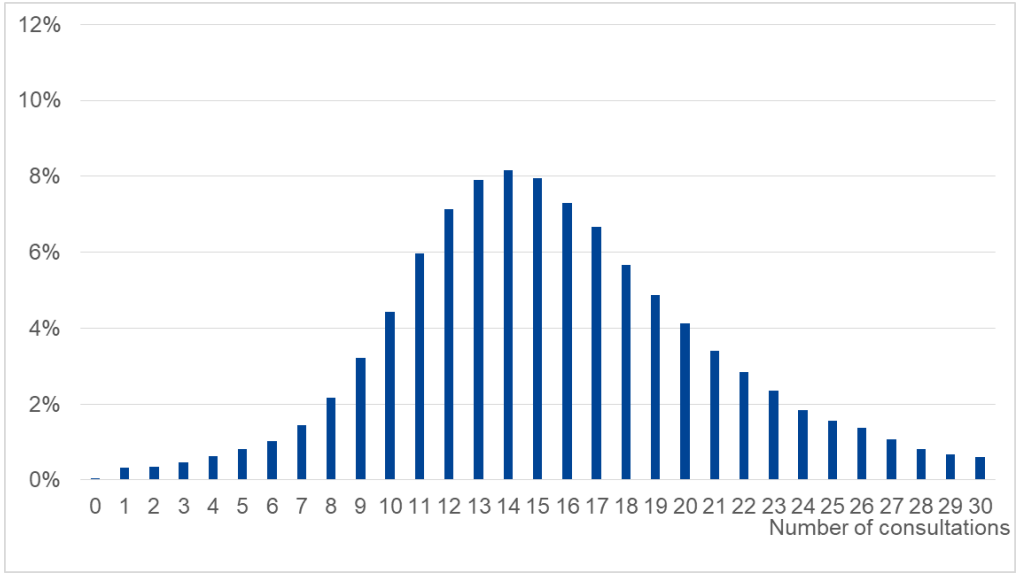
Disadvantaged women are identified through the status of increased reimbursement in the Belgian health care system (BIM status). This is an indicator of the socio-economic position as it is based on a mixture of income and other socio-economic and socio-demographic characteristics. Among the beneficiaries from this status, the proportion of women having less than 7 consultations during pregnancy is higher (11.49% compared to 5.54% for non-beneficiaries, when only gynecologists and midwives consultations are considered). On the other hand, the proportion of women having more than 10 consultations during pregnancy is lower among beneficiaries from this status (58.60% compared to 68.27% for non-beneficiaries, when only gynecologists and midwives consultations are considered (Table 157).

Table 153 – Median number of consultations during (low-risk) pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
Median number of consultations (gynaecologist, midwife or GP) during pregnancy [Q1;Q3]	14 [11;18]	15 [12;18]	16 [12;20]	15 [12;19]
Median number of consultations (gynaecologist or midwife) during pregnancy [Q1;Q3]	13 [10;15]	13 [11;15]	12 [9;15]	12 [10;15]
Median number of consultations (gynaecologist) during pregnancy [Q1;Q3]	11 [8;13]	11 [9; 14]	10 [8; 13]	10 [7; 13]
Median number of consultations (midwife) during pregnancy [Q1;Q3]	1 [0; 2]	1 [0; 2]	1 [0;2]	1 [0; 4]
Median number of consultations (GP) during pregnancy [Q1;Q3]	2 [1; 5]	2 [0; 3]	3 [2; 6]	1 [0; 2]

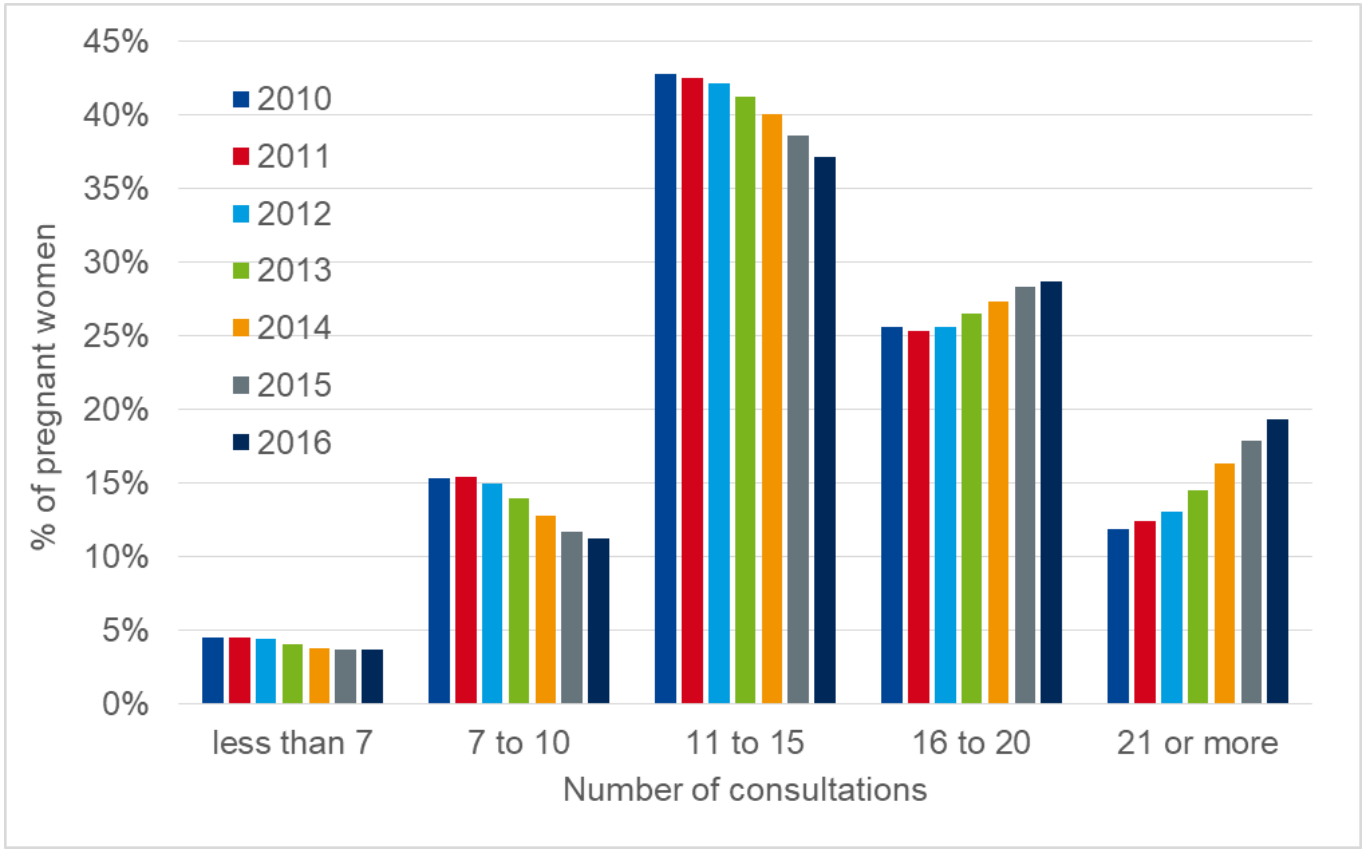
Data source: IMA-AIM; calculation: KCE

Figure 235 – Number of consultations (gynaecologist, midwife or GP) during (low-risk) pregnancy, 2016



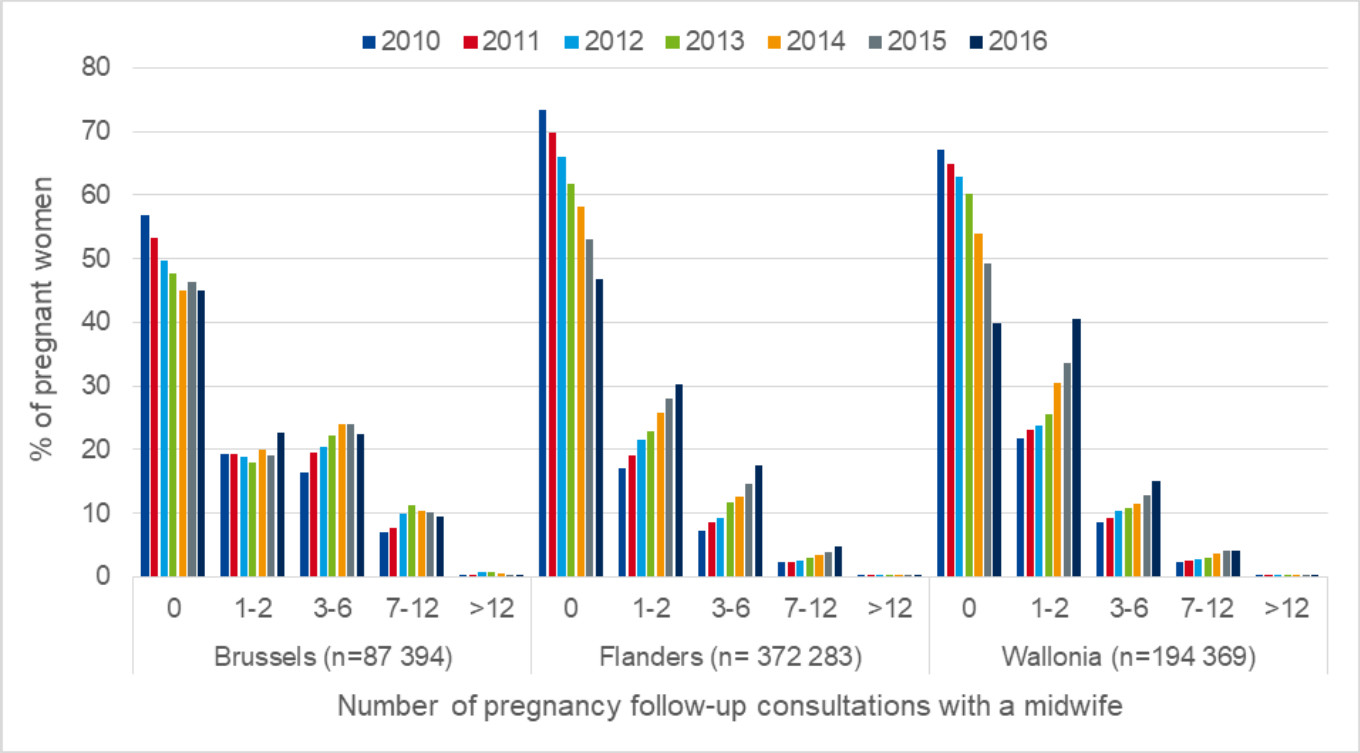
N= 87 161. Note: Women with more than 30 consultations (n=2 435; 2.79%) are not represented.
Data source: IMA-AIM; calculation: KCE

Figure 236 – Evolution of the number of antenatal consultations (gynaecologist, midwife or GP) during (low-risk) pregnancy, 2010-2016



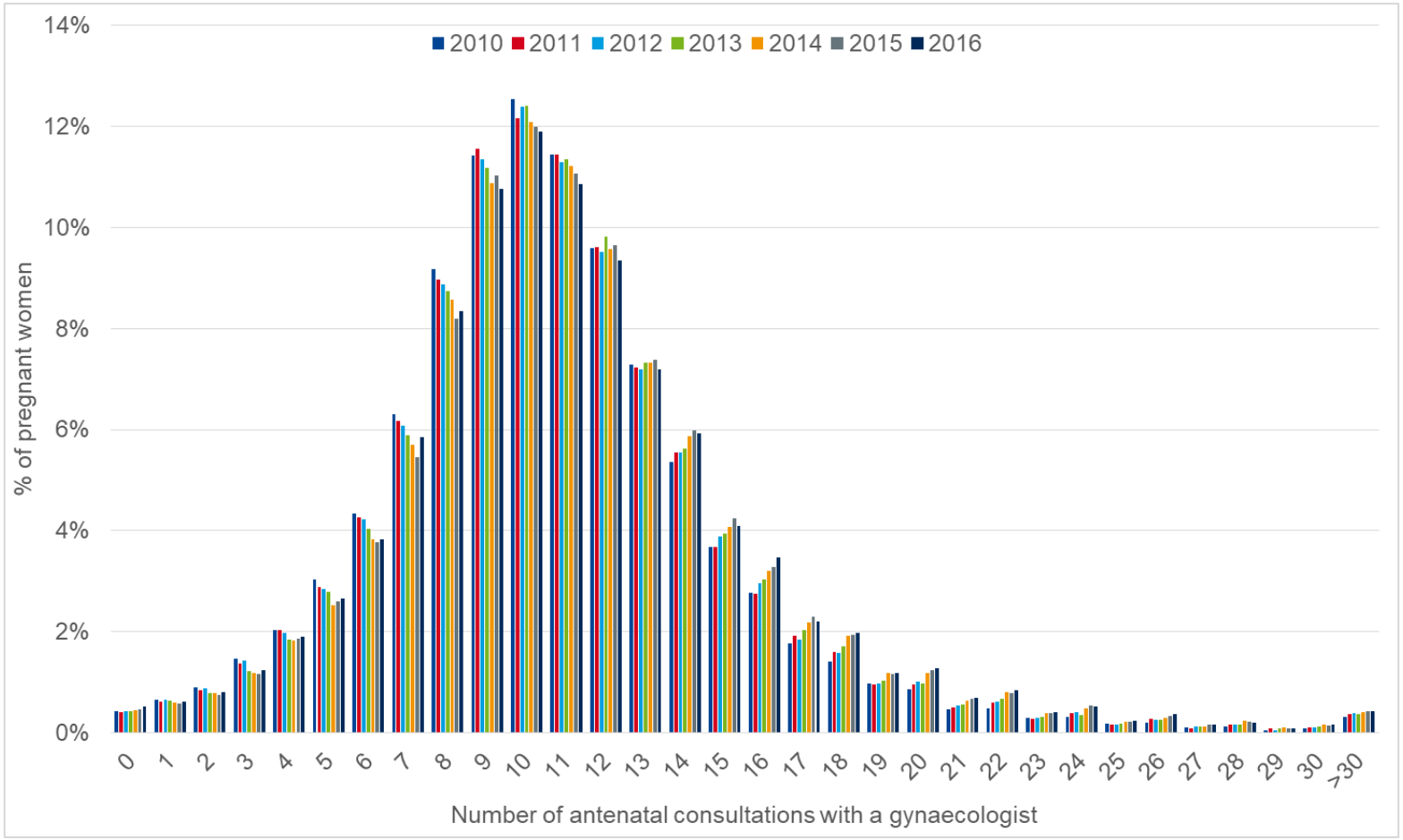
N= 657 005. Note: 2010: n=99 975; 2011: n=98 510; 2012: n=96 999; 2013: n= 93 452; 2014: n=92 080; 2015: n=88 828; 2016: n=87 161.
Data source: IMA-AIM; calculation: KCE

Figure 237 – Evolution of the number of antenatal midwifery consultations during (low-risk) pregnancy, by region, 2010-2016



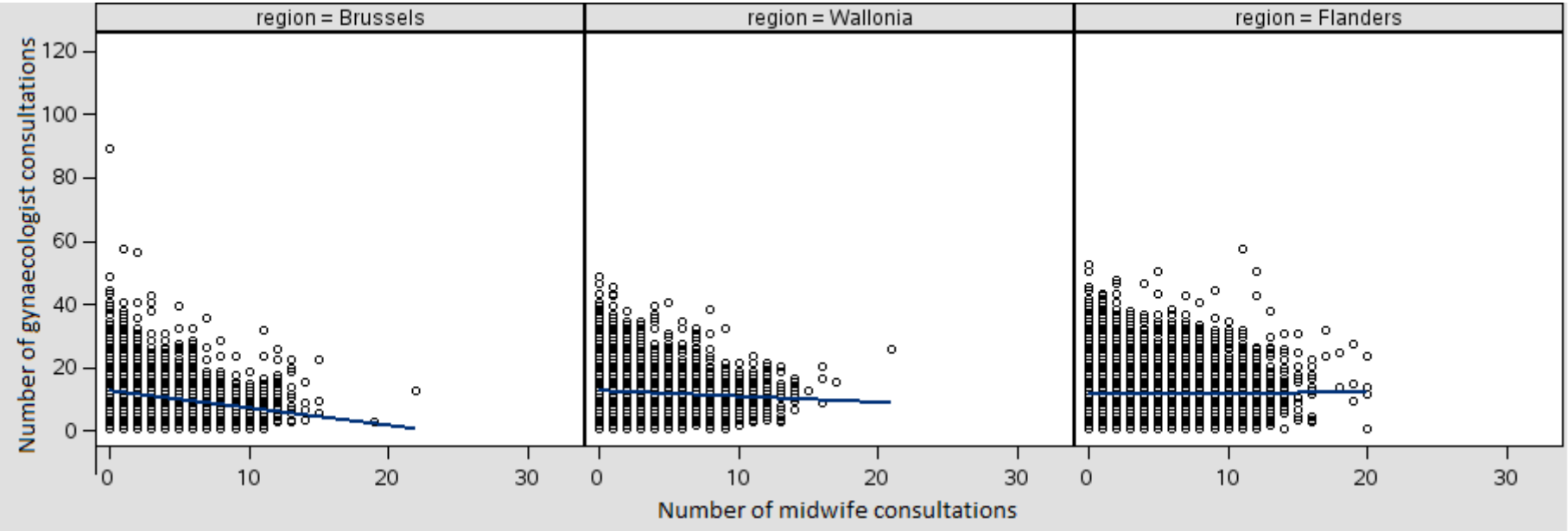
N= 654 046.
Data source: IMA-AIM; calculation: KCE

Figure 238 – Evolution of the number of antenatal gynaecologist consultations during (low-risk) pregnancy, Belgium, 2010-2016



Note: 2010: n=99 975; 2011: n=98 510; 2012: n=96 999; 2013: n= 93 452; 2014: n=92 080; 2015: n=88 828; 2016: n=87 161.
Data source: IMA-AIM; calculation: KCE

Figure 239 – Linear correlation between midwife and gynaecologist antenatal consultations, by region, 2016



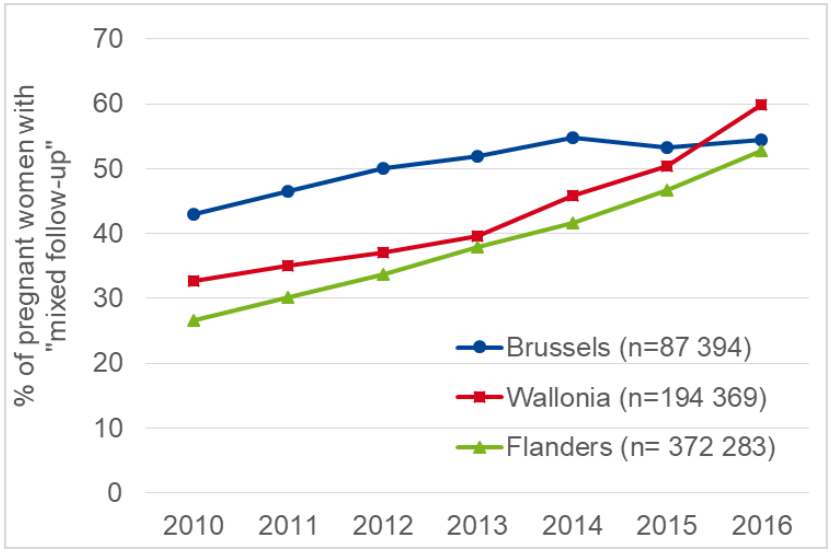
Brussels: n=11 319; Wallonia: n=25 582; Flanders: n=49 724.
Data source: IMA-AIM; calculation: KCE

Table 154 – Univariate linear regressions of the number of gynaecologist consultations depending on the number of midwife consultations, 2016

	β_1 *	p-value	R^2
Belgium (n=87 161)	-0.15	<0.001	0.005
Brussels (n=11 319)	-0.53	<0.001	0.086
Wallonia (n=25 582)	-0.19	<0.001	0.009
Flanders (n=49 724)	0.01	0.214	0.000

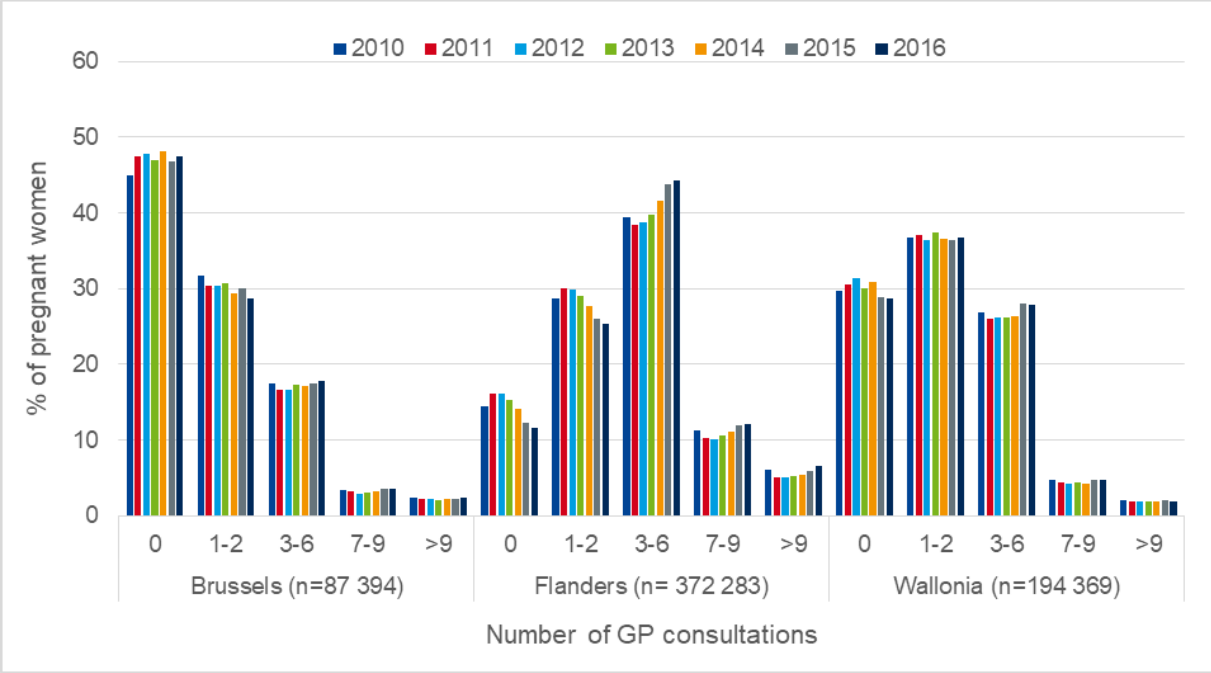
**Shape of the linear regression line. Coefficients are the estimated effect of the number midwife consultations on the number of gynaecologist consultations in a linear regression with an intercept.*
Data source: IMA-AIM; calculation: KCE

Figure 240 – Proportion of low risk pregnant women with “mixed pregnancy follow-up”, 2010-2016



N= 654 046. Note: Mixed pregnancy follow-up is defined has having at least one consultation with a gynaecologist during the 280 days before delivery and at least one consultation for pregnancy follow-up with a midwife on the same period. Information is missing for 259 pregnancies.
Data source: IMA-AIM; calculation: KCE

Figure 241 – Evolution of the number of GP consultations during (low-risk) pregnancy, by region, 2010-2016



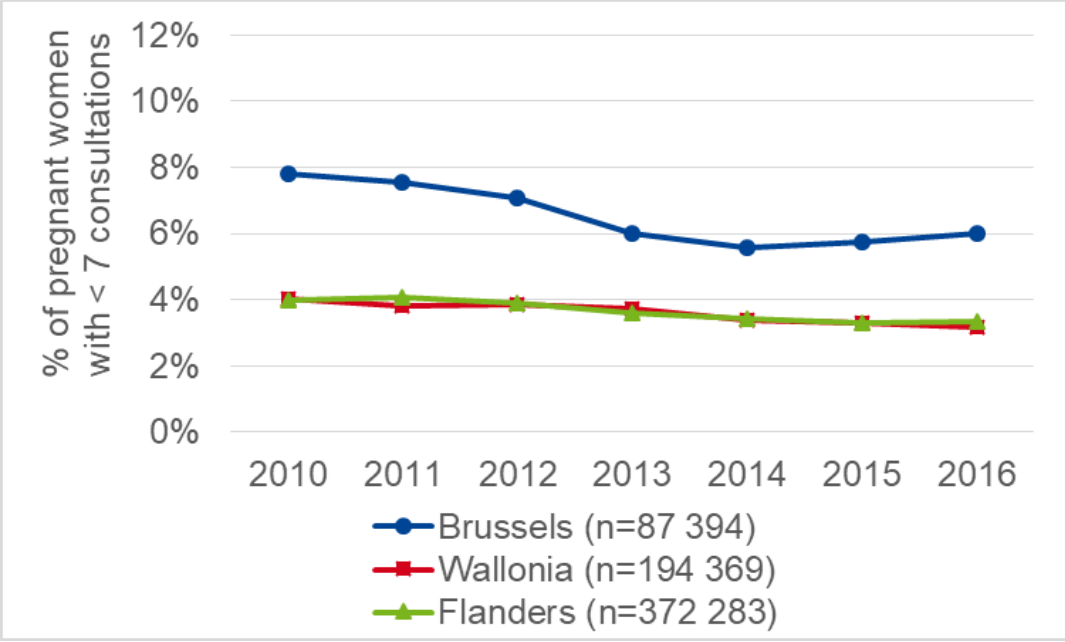
N= 654 046.
Data source: IMA-AIM; calculation: KCE

Table 155 – Proportion of women having less than 7 consultations during low-risk pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
% of women with less than 7 consultations (gynaecologist, midwife or GP) during pregnancy	6.00%	3.19%	3.32%	3.67%
% of women with less than 7 consultations (gynaecologist or midwife) during pregnancy	7.84%	4.36%	6.85%	6.29%

Data source: IMA-AIM; calculation: KCE

Figure 242 – Evolution of the proportion of women having less than 7 consultations (gynaecologist, midwife or GP) during low-risk pregnancy, by region, 2010-2016



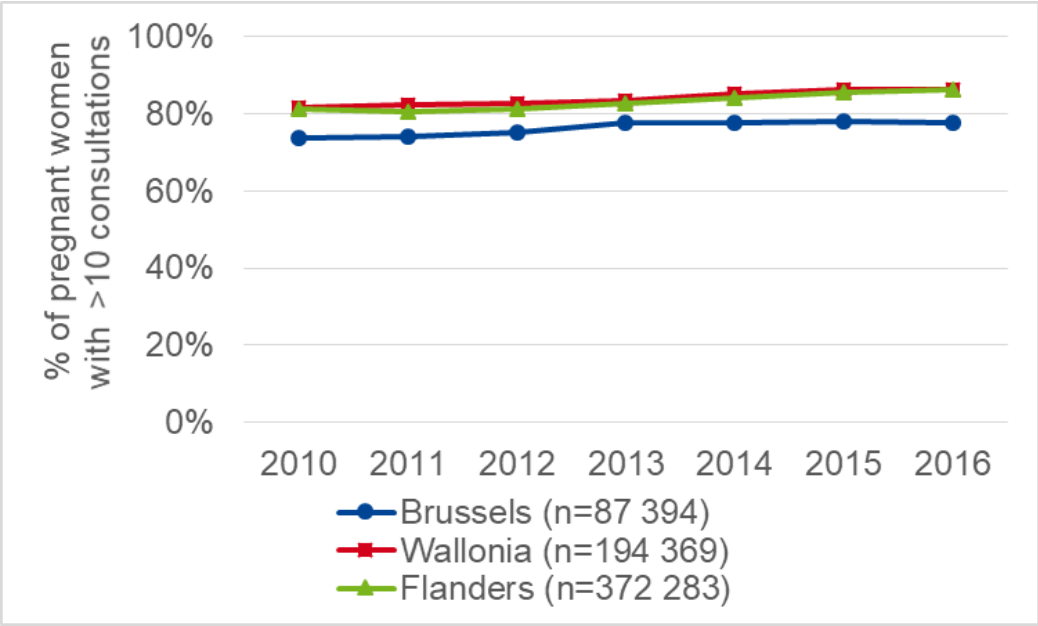
Data source: IMA-AIM; calculation: KCE

Table 156 – Proportion of women having more than 10 consultations during low-risk pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
% of women with more than 10 consultations (gynaecologist, midwife or GP) during pregnancy	77.78%	86.04%	86.31%	85.08%
% of women with more than 10 consultations (gynaecologist or midwife) during pregnancy	69.46%	75.78%	61.55%	66.78%

Data source: IMA-AIM; calculation: KCE

Figure 243 – Evolution of the proportion of women having more than 10 consultations (gynaecologist, midwife or GP) during low-risk pregnancy, by region, 2010-2016



Data source: IMA-AIM; calculation: KCE

Table 157 – Proportion of women having less than 7 consultations or more than 10 consultations during low-risk pregnancy, depending on the status of increased reimbursement (BIM), 2016

	BIM (n=15 208)	No-BIM (n=72 162)
% of women with less than 7 consultations (gynaecologist, midwife or GP) during pregnancy	7.37%	3.25%
% of women with less than 7 consultations (gynaecologist or midwife) during pregnancy	11.49%	5.54%
% of women with more than 10 consultations (gynaecologist, midwife or GP) during pregnancy	74.78%	86.94%
% of women with more than 10 consultations (gynaecologist or midwife) during pregnancy	58.60%	68.27%

Data source: IMA-AIM; calculation: KCE

Key points

- **Low-risk pregnant women who gave birth in 2016 had a median number of 15 antenatal consultations with a gynaecologist, a midwife or a GP.**
- **The median number of antenatal consultations is increasing over time.**
- **The increase in the number of midwife antenatal consultations is not compensated by a decrease in the number of gynaecologist antenatal consultations.**
- **In 2016, 3.67% of the women have less than 7 consultations with a gynaecologist, a midwife or a GP during their low-risk pregnancy. This proportion is higher (6.00%) in Brussels. This proportion is also higher (7.37%) among beneficiaries of the status of increased reimbursement.**
- **The proportion of women having less than 7 contacts with a gynaecologist, a midwife or a GP during their low-risk pregnancy is decreasing over time, especially in Brussels.**
- **Most of the women (85.08% in 2016) have more than 10 contacts with a gynaecologist, a midwife or a GP during their low-risk pregnancy. This proportion is slightly increasing over time.**

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[3] Lodewyckx K, Peeters G, Spitz B, Blot S. National recommandation for prenatal care. A base for a clinical pathway aimed at following pregnancy 2004.

[4] Leroy C, Debauche C, Daelemans C, Debième F, Van Leeuw V. Santé périnatale en Wallonie-Année 2016. Centre d'épidémiologie périnatale. 2018.

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