

## 1.1. Asthma hospital admissions in adults (QE-1), COPD admissions in adults (QE-10), and Complication of diabetes hospital admissions in adults (QE-2)

### 1.1.1. Documentation sheet

<b>Description</b>	A. Number of hospital admissions for asthma in people aged 15 years and over, per 100 000 population B. Number of hospital admissions for chronic obstructive pulmonary disease (COPD) in people aged 15 years and over, per 100 000 population C. Number of hospital admissions for uncontrolled (or complication of) diabetes in people aged 15 years and over, per 100 000 population
<b>Calculation</b>	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.
<b>Rationale</b>	Asthma, COPD, and diabetes are three widely prevalent long-term conditions: approximately 6% of the EU population have asthma and 7% has diabetes, while between 5 and 10% of adults over age 40 have COPD. <sup>1</sup> Common to both asthma and diabetes 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 therefore, to a significant extent, avoid acute deterioration in people living with asthma, or diabetes and prevent their admission to hospital. <sup>2</sup> 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 coordination or continuity of care. Hospital admissions for COPD is also usually used as an indicator to measure the performance of primary care. <sup>2</sup> For COPD nevertheless, patients are extremely fragile and the pathology is very serious. A large number of hospitalisations is therefore less a reflection of poor primary care. For this indicators, the evolution is therefore more meaningful than the absolute numbers.
<b>Data source</b>	RHM – MZG (hospital administrative discharge data), FPS Public Health OECD health data for international comparison
<b>Technical definitions</b>	From OECD website: Definitions for Health Care Quality and Outcome Indicators 2022-2023 HCQO data collection. <sup>3</sup> All ICD-9 CM and ICD-10 CM codes can be found on the OECD Quality indicator website. <b>Indicator A: Hospital admission for asthma</b> Coverage: Population aged 15 and older. All acute care hospitals (public and private) that provide inpatient care. Numerator: All non-maternal/non-neonatal hospital admissions with principal diagnosis code of asthma in a specified year (See asthma diagnosis codes in OECD 2022-2023 <sup>3</sup> , page 9) Denominator: Population count 15+ (mean January t - January t+1) Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; with cystic fibrosis and anomalies of the respiratory system diagnosis

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code in any field (see diagnosis codes in OECD 2022\_2023<sup>3</sup>, page 10); or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded.

**Indicator B: Hospital admission for chronic obstructive pulmonary disease (COPD)**

Coverage: Population aged 15 and older. All acute care hospitals (public and private) that provide inpatient care.

Numerator: All non-maternal/non-neonatal hospital admissions with principal diagnosis code of COPD in a specified year (See COPD diagnosis codes in OECD 2022-2023<sup>3</sup>, page 11)

Denominator: Population count 15+ (mean January t - January t+1).

Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded.

For the regional comparison, the region and district are those from the patient residence (not the hospital).

**Indicator C: Admission of uncontrolled diabetes or complication of diabetes**

Coverage: Population aged 15 and older. All acute care hospitals (public and private) that provide inpatient care.

Numerator: All non-maternal/non-neonatal hospital admissions with principal diagnosis code (see diagnosis codes in OECD 2022-2023<sup>3</sup>, pages 14 and 15) 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 15+ (mean January t - January t+1).

Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded.

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**International comparability**

Rates are age-sex standardised to the 2010 OECD population aged 15 and over.

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.<sup>4</sup>

It is also important to note that Belgium changed its coding system to ICD-10 in 2015 but not necessarily other countries. Some may not have changed their system yet while others may have changed long before. Because when moving from ICD-9 to ICD-10 coding, there is a shift from asthma to COPD for some mixed conditions, comparison must be used with cautions.

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**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).

Belgian data from RHM – MZG are not adjusted, explaining the differences with Belgian results presented in the international comparison.

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**Dimension**

Effectiveness + Continuity (Management)

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**Related indicators**

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## 1.1.2. Results

### 1.1.2.1. Asthma hospital admissions in adults

#### **Belgium**

Hospital admission rate has decreased over the period (from 32.4 admissions/100 000 pop. in 2010 to 13.7 in 2021, Figure 1), especially from 2019 to 2020, which might be linked to COVID-19 pandemic, although the rate in 2021 is almost the same as in 2020 (13.5).

#### **Regional comparison**

Brussels has seen its rate decrease a lot over the period (see Figure 1, left); while it was almost twice as high than other regions in 2010, it is almost the same as in Flanders (13.6 admissions/100 000 pop.) with 13.7, Wallonia having a slightly lower rate (13.2) in 2021.

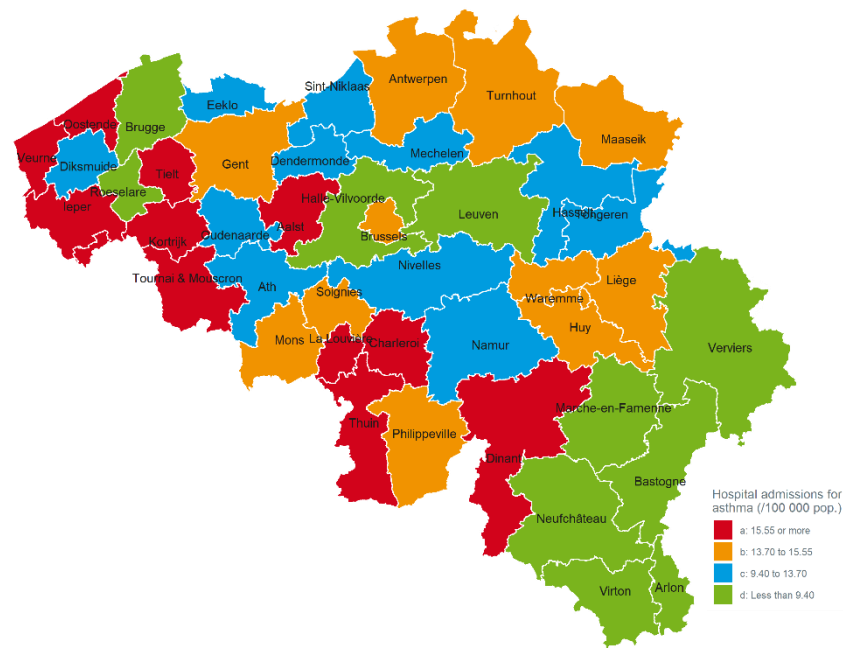
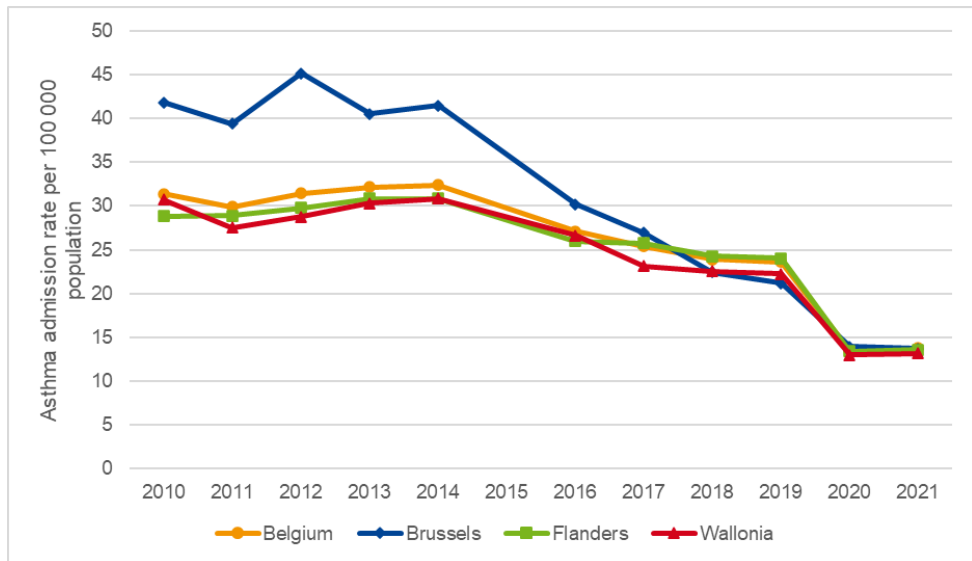
#### **International comparison**

Figure 2 shows that rates have declined over time across Europe (left) and that there are big differences between European countries (right); Belgium has a rate close to EU-14 countries.

#### **Impact of COVID-19 pandemic**

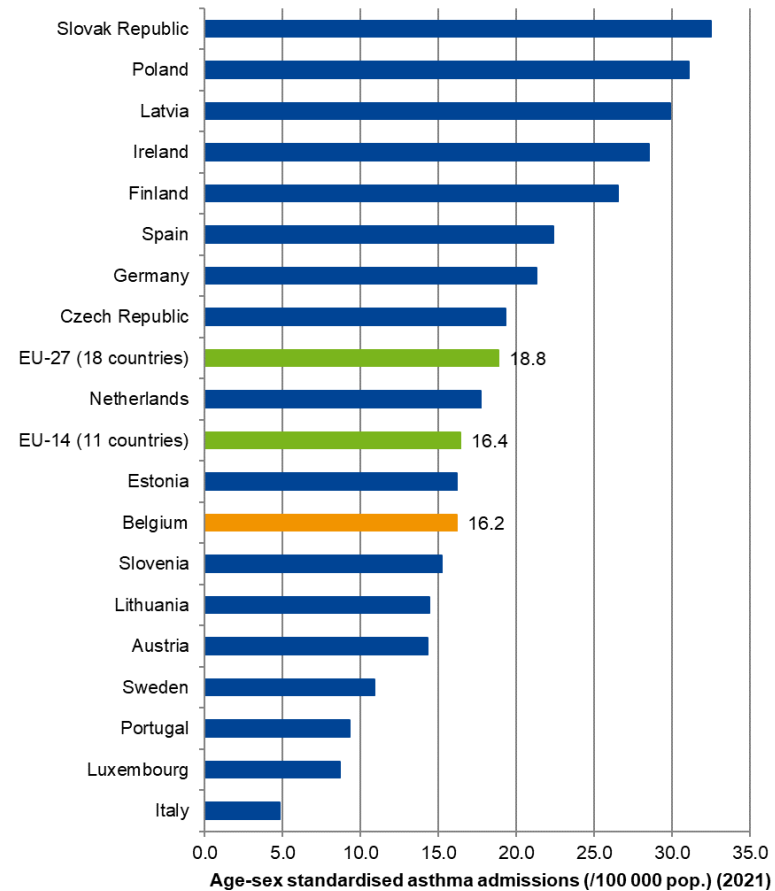
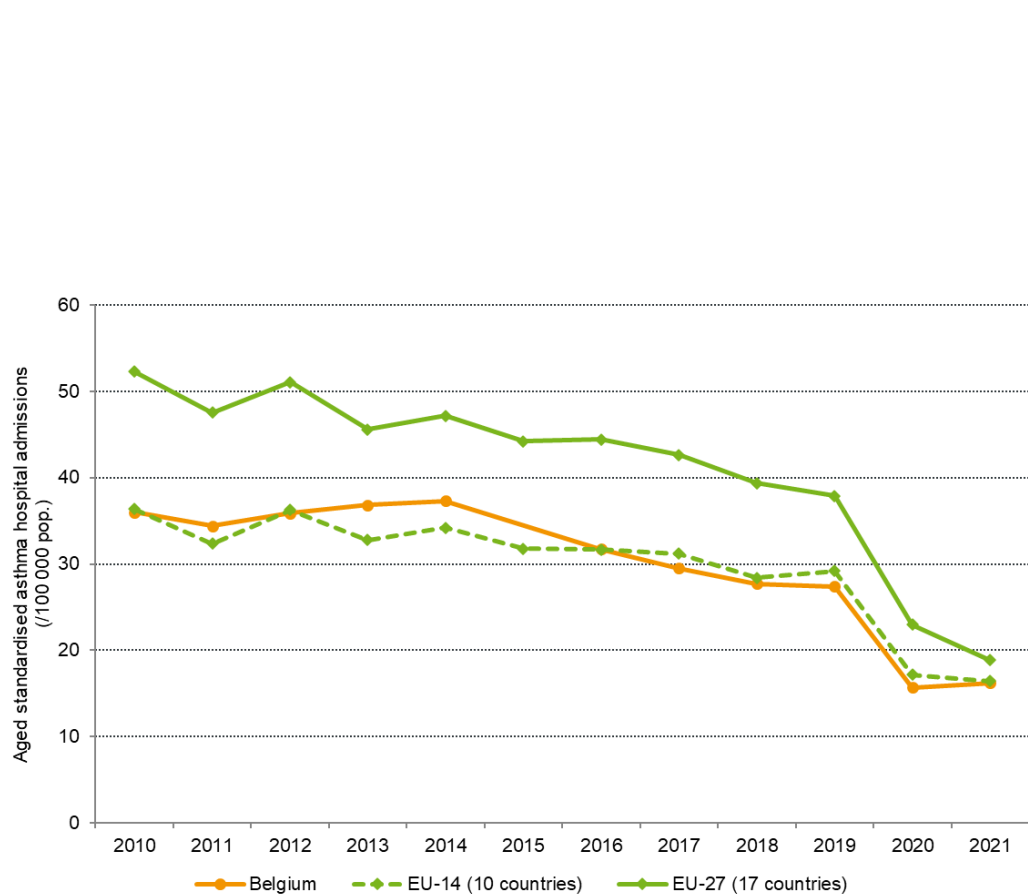
The sharp decrease from 2019 to 2020 might be linked to the pandemic. It is observed in all 3 regions as well as in other European countries.

Figure 1 - Hospital admissions for asthma rate by patient's region per 100 000 population aged 15 years and older (2010-2021) and per district (2021)



Source: FPS Public Health, hospital administrative discharge data

Figure 2 - Age-sex standardized hospital admissions for asthma (for population aged 15 years and older): international comparison (2010-2021)



Source: OECD health statistics 2023

### 1.1.2.2. Hospital admissions for COPD for people aged 15 years old and over

#### **Belgium**

Data on COPD admissions are quite stable over the 2010-2014 period: with 145.2 and 132.6 admissions per 100 000 population aged 15 years old and over in Belgium in 2010 and 2014 respectively (see Figure 3). A break in data series can be observed in 2016, due to the passage from ICD-9 to ICD-10 and an increase compared to 2014 can be observed, in part due to the fact that the change of coding led to a shift from asthma admission to COPD admission for some mixed conditions. Comparison between the two periods must therefore be used with caution. After a mild increase of the rate from 2016 to 2019, there is a sharp decrease in 2020, which might be linked to the COVID-19 pandemic. The rate decreased further in 2021, but slowly.

#### **Regional comparison**

Brussels has lower rates (106.9 admissions/100 000 pop. in 2021), Wallonia has higher rates (204.9 in 2021), and Flanders is in between (160.0 in 2021).

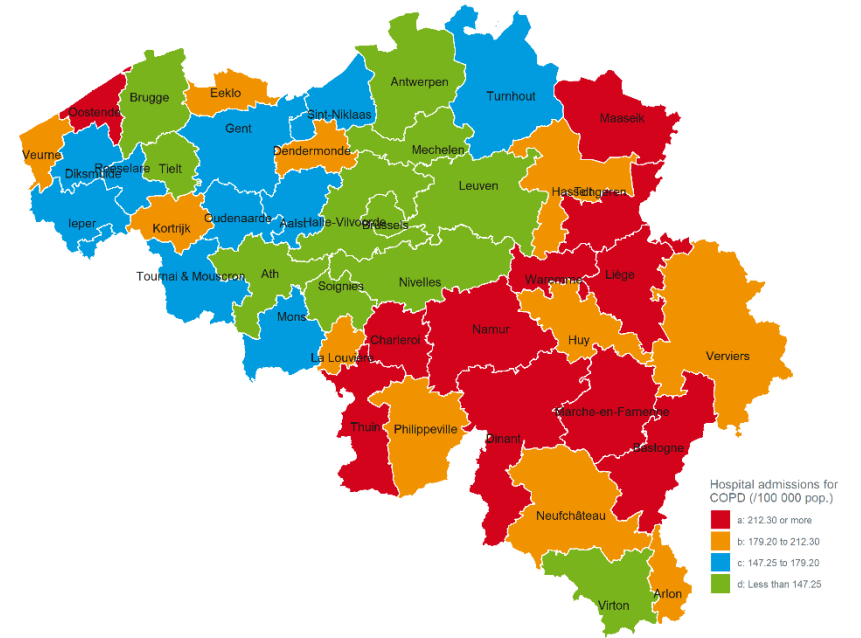
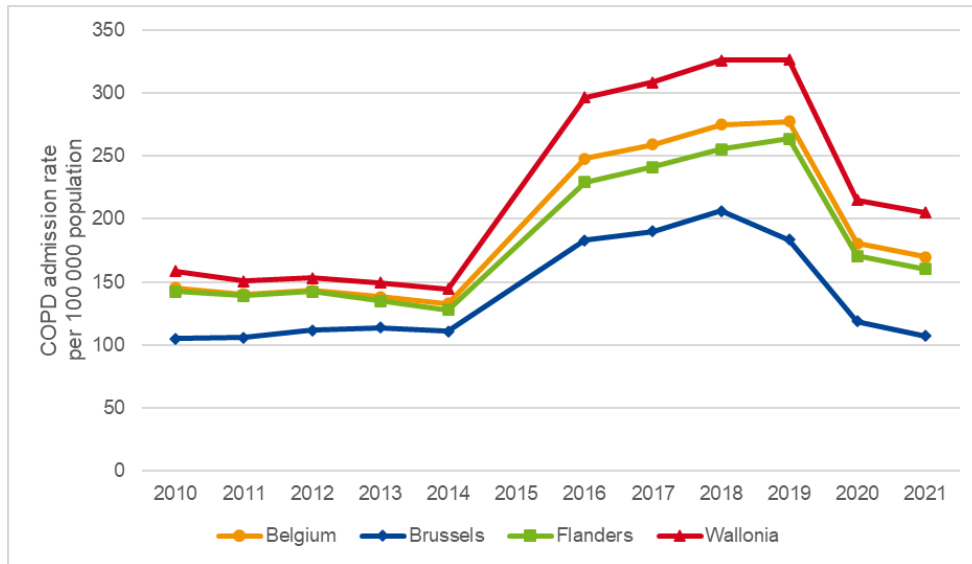
#### **International comparison**

While Belgium had better results than other European countries with ICD-9 encoding (up to 2014), the rate calculated with ICD-10 encoding is higher than most other countries (Figure 4, left); in 2021, only the Netherlands have a higher rate (Figure 4, right).

#### **Impact of COVID-19 pandemic**

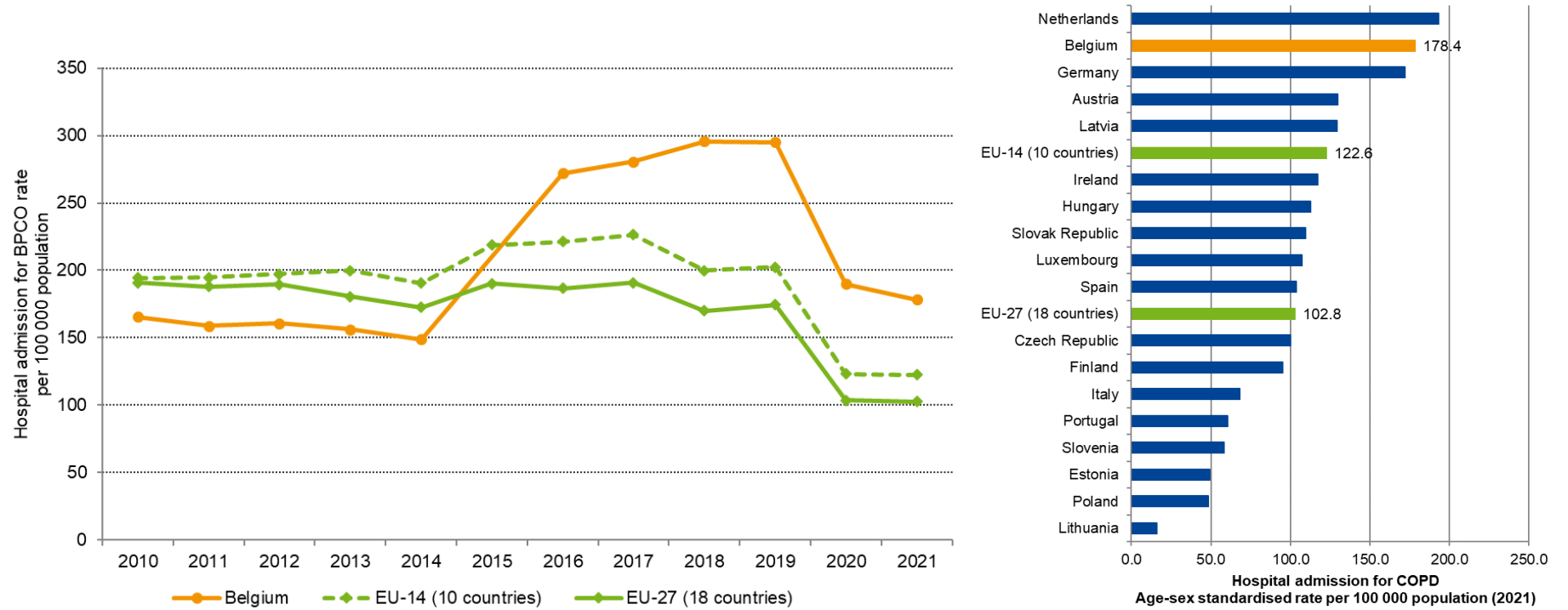
In 2020, the hospital admission rate for COPD has decreased strongly, as opposed to a slow growth in the 2016-2019 period. The decreased continued in 2021, but was much milder. The same drop in 2020 was observed in other European countries, but the mean rate stabilised in 2021.

Figure 3 – Hospital admissions for COPD per 100 000 population aged ≥ 15 years, per region (2010-2021) and per district (2021)



Source: FPS Public Health, hospital administrative discharge data

Figure 4 – Age-sex standardised hospital admissions for COPD per 100 000 population aged ≥ 15 years: international comparison (2010-2021)



Source: OECD health statistics 2023



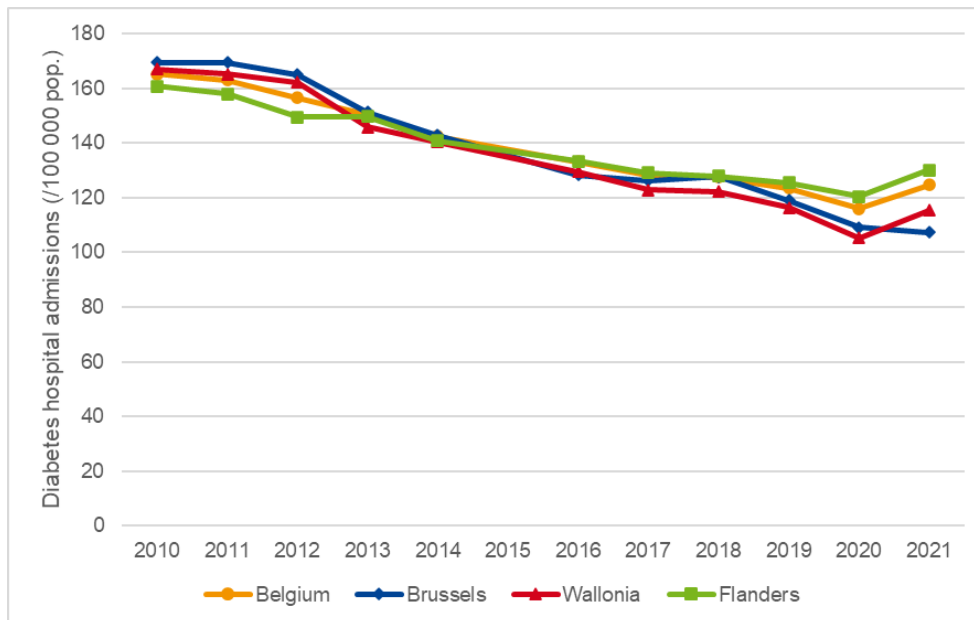
1.1.2.3. *Complication of diabetes hospital admissions in adults*

**Belgium**

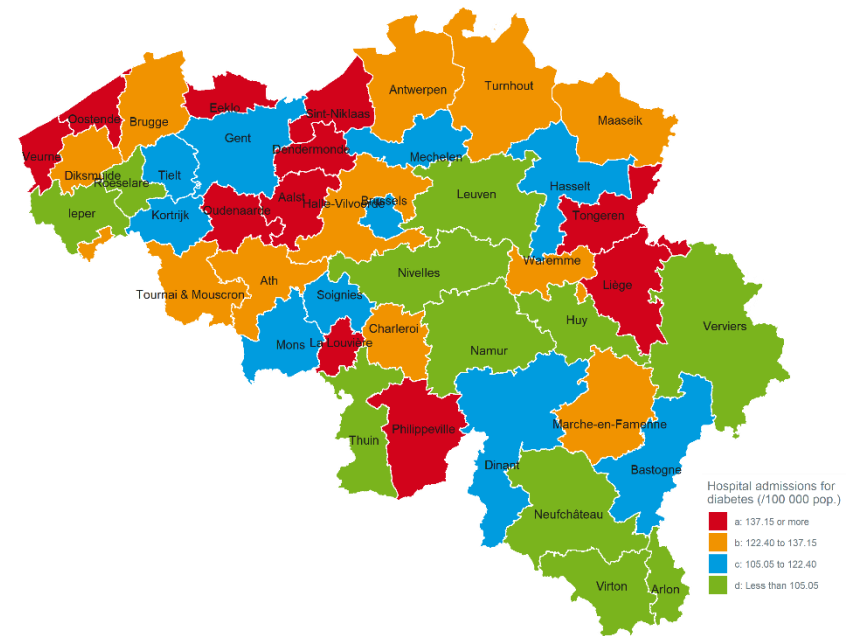
Data on diabetes admission (for uncontrolled diabetes or for complication of diabetes) exhibit a slow decrease at the national level in the last decade

(2010-2021, Figure 5) except for the last available year (2021, at 124.6 admissions/100 000 pop.).

**Figure 5 – Hospital admissions for (complications of) diabetes rate by patient’s region (per 100 000 population aged 15 years and older) (2010-2021) and per district (2021)**



Source: FPS Public Health, hospital administrative discharge data



### Regional comparison

Brussels rate of admission (107.4 admissions/100 000 pop.) for (complications of) diabetes is lower than in Wallonia (115.4) and Flanders (130.1) in 2021

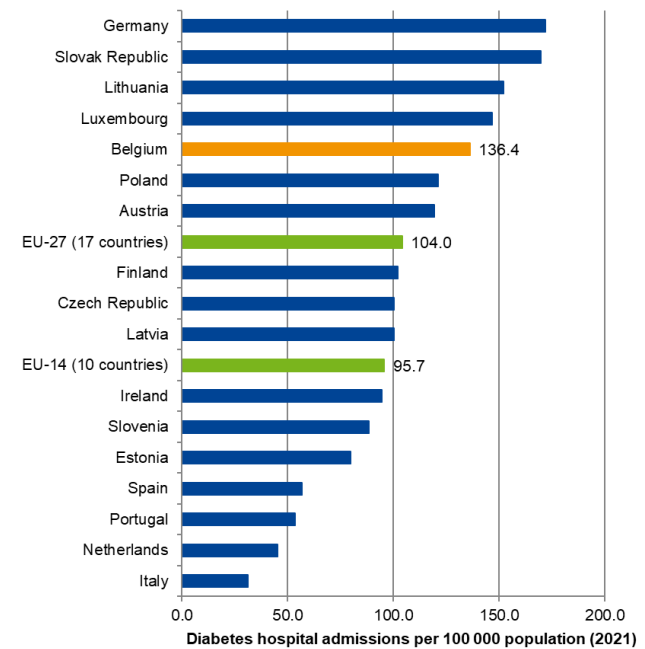
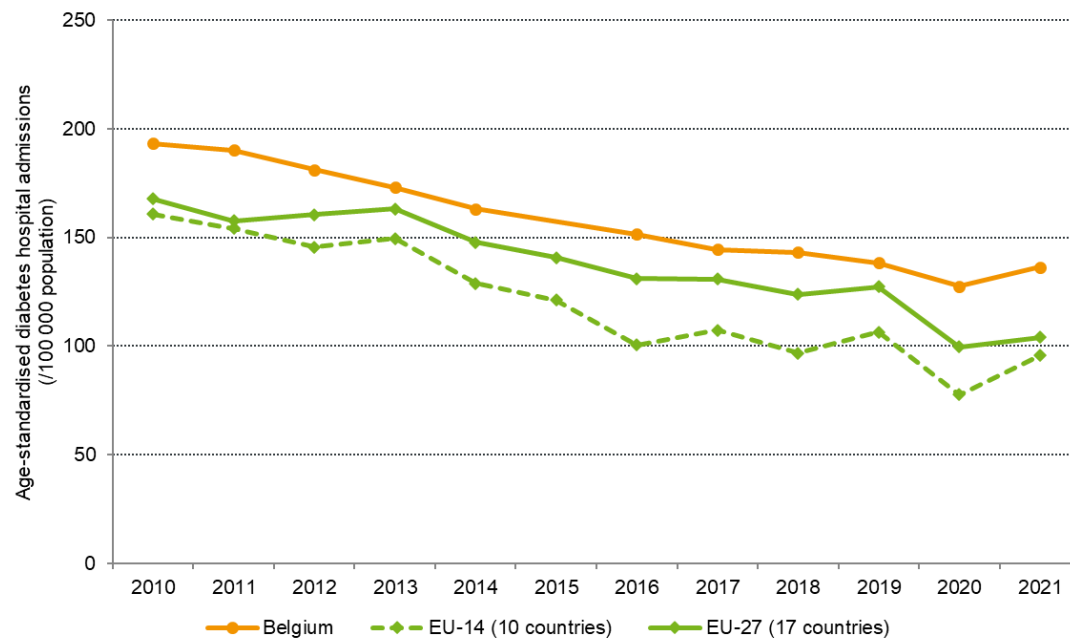
### International comparison

When comparing with other European countries, Belgium has a significantly higher rate of (complications of) diabetes admission than other countries (EU-14 and EU-27).

### Impact of COVID-19 pandemic

There is a small decrease from 2019 to 2020 (in all Belgian regions, and even more pronounced in other European countries), followed by an increase in 2021.

**Figure 6 – Age-sex standardised hospital admissions for diabetes (for population aged 15 years and older): international comparison (2010-2021)**



Source: OECD health statistics 2023

## Key points

- The relative rates of hospital admission for asthma and diabetes are among the indicators 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 asthma and diabetes rate, 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.
- COPD admission rate had a broken series in 2015 when calculations were made on ICD-10 rather than ICD-9; since then, the rate has slowly increased until 2019, and was followed by an important decrease in 2020.
- Belgium is situated around the EU-14 average for asthma admission rate but is does less well than European countries (both EU-14 and EU-27) for diabetes and COPD admission rates, 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.

## References

1. OECD/European Union (2022), Health at a Glance: Europe 2022: State of Health in the EU Cycle, OECD Publishing, Paris, <https://doi.org/10.1787/507433b0-en>
2. OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.
3. OECD. Healthcare Quality and Outcomes (HCQO) indicators – 2022-23 Definitions. <https://www.oecd.org/els/health-systems/Definitions-of-Health-Care-Quality-Outcomes.pdf>
4. Kossarova L, Blunt I, Bardsley M. Quality Watch: Focus on international comparisons of healthcare quality, What can the UK learn? The Health Foundation and the Nuffield Trust; 2015.