1.1. Average duration between sampling of a COVID-19 test and test result (R-8)

1.1.1. Documentation sheet

Description	**Primary indicator** 1. Average duration between sampling of a COVID-19 test and test result **Secondary indicators** 2. Average duration between onset of symptoms and COVID-19 test prescription 3. Average duration between prescription and sampling of a COVID-19 test 4. Proportion of COVID-19 tests with result communicated within 24 hours after sampling
Calculation	**Primary indicator** 1. Average duration between sampling of a COVID-19 test and test result: numerator = sum of durations (in days) between sampling and communication of test result; denominator = number of tests reported by laboratories during the considered week. **Secondary indicators** 2. Average duration between onset of symptoms and COVID-19 test prescription: numerator = sum of durations (in days) between onset of symptoms (self-reported) and test prescription; denominator = number of tests prescribed by a physician during the considered week for which symptom information is available. 3. Average duration between prescription and sampling of a COVID-19 test: numerator = sum of durations (in days) between test prescription and sampling; denominator = number of tests reported by laboratories during the considered week that were prescribed by a physician. 4. Proportion of COVID-19 tests with result communicated within 24 hours after sampling: numerator = number of tests for which result was communicated within 24 hours after sampling; denominator = number of tests reported by laboratories during the considered week.
Rationale	Large-scale population testing is one of the essential means to control COVID-19 outbreaks.[1] At the start of the COVID-19 pandemic in Belgium, diagnostic testing was exclusively performed by one reference centre.[2] From March 2020, clinical microbiology laboratories also started to implement routine COVID-19 diagnostic testing and a certification process was implemented (73 laboratories were certified between 1 March and 1 May 2020). In April 2020, a federal testing platform (consortium of university hospitals, biotechnology and pharmaceutical companies) was set-up to increase the test capacity and to partially compensate the overflow encountered by clinical microbiology laboratories. In November 2020, this platform evolved to a new one composed of eight university laboratories linked to clinical microbiology laboratories.[2] The federal platform was responsible for supplying test equipment, collecting and transporting the tests to the laboratories and forwarding the test results.[3] Around half of the testing centres used this platform. Other testing centres worked with a hospital laboratory or a private laboratory, which were themselves responsible for supplying test equipment, transporting the tests performed and forwarding the results. A testing centre could switch to the federal platform if the laboratory's capacity was exceeded.

	The testing Turn-Around-Time (TAT) plays an important role to ensure efficient isolation and proper contact tracing. The EU health preparedness plan recommends that countries aim to have a TAT of 24 hours (from request to be tested to communication of the test result) as a target.[4] TAT can be split up in two different phases: the time required from the prescription of a test to taking the sample, and the time between the sampling and the communication of the test result. However, all tests are not prescribed by a physician as some of them are voluntary. Therefore, the second phase of TAT (average duration between sampling and test result) is more representative of testing capacity in Belgium and is used as primary indicator. The other phase (average duration between prescription and sampling) is an indicator of sampling capacity and is presented as secondary indicator. The delay between symptoms onset and test prescription is equivalent to the delay between symptoms onset and the consultation with a physician. This is dependent on population behaviour as well as on efficient public health communication and information. Although the definition of symptoms onset depends on patients and physicians' interpretation, the duration between onset of symptoms and test prescription is also presented as a secondary indicator.
Data source	Sciensano (test database)
Technical definitions	In Belgium, test results are reported daily to Sciensano.[2] The test database includes test prescriptions and results reported by laboratories (molecular or antigen tests), physicians (molecular or antigen tests), and pharmacies (antigen tests).[5] Data are reported weekly, from week 36 of 2020 (week of 31 August 2020) to week 8 of 2022 (week of 21 February 2022).
International comparability	Belgian results are compared to answers submitted to a questionnaire circulated among the Health Security Committee (HSC) members on testing strategies and capacities in early September 2020.[4] The questionnaire was completed by 21 EU countries (AT, BE, CY, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, NL, PT, SE, SK) as well as by Norway, Switzerland, the UK, Bosnia and Herzegovina and Ukraine.
Limitations	Rapid diagnostic tools such as antigenic tests were inexistent at the beginning of the pandemic but have been increasingly used later on. As this mode of sampling was characterised by an almost immediate communication of the result, their use decreased the average duration between sampling and result. Nevertheless, these tools did not represent a large proportion of the samplings performed. Data are only available from September 2020 onwards. Therefore, the indicators cannot be measured during the first wave of the COVID-19 pandemic in Belgium. International comparison is limited to September 2020 and is not performed for the entire study period (week 36 of 2020 to week 8 of 2022).
Dimension	Resilience
Related indicators	R-9 Average duration between positive COVID-19 test result and contact tracing initiation
Reviewers	Dieter Van Cauteren (Sciensano)

1.1.2. Results

Duration between sampling and result

In September 2020 (no data available before), the average duration between sampling and result was between one and two days in all the regions of the country (see Figure 1). This average duration reached a peak of 1.5 days in October 2020 (1.7 days in Wallonia and Brussels and 1.5 days in Flanders). This peak roughly corresponds to the peak in the number of person tested, because of the second COVID-19 wave.

At the time, eight European countries (EE, FR, HU, HR, NL, ES, UK, NO) reported that the time required between the sampling and test result was less than 24 hours and seven countries (BE, BG, CZ, LV, MT, RO, SK) reported that the test result after sampling was available between 24-28 hours.[4]

Following this peak, the average duration between sampling and result decreased and remained shorter than one day in the three regions after November 2020. Even when a very large number of tests was performed (at the end of the study period), the average duration between sampling and test result remained below one day.

Figure 2 shows the proportion of tests with result communicated within 24 hours after sampling. In September-October 2020, this proportion dropped in all three regions to around 50-60% because of the second COVID-19 wave. After that, the proportion of tests with result communicated within 24 hours after sampling increased and stayed close to 100% during the entire study period (with exceptions in Brussels at the beginning of 2021 and in Flanders at the end of 2021).

Figure 1 – Average duration between sampling and test result (in days)

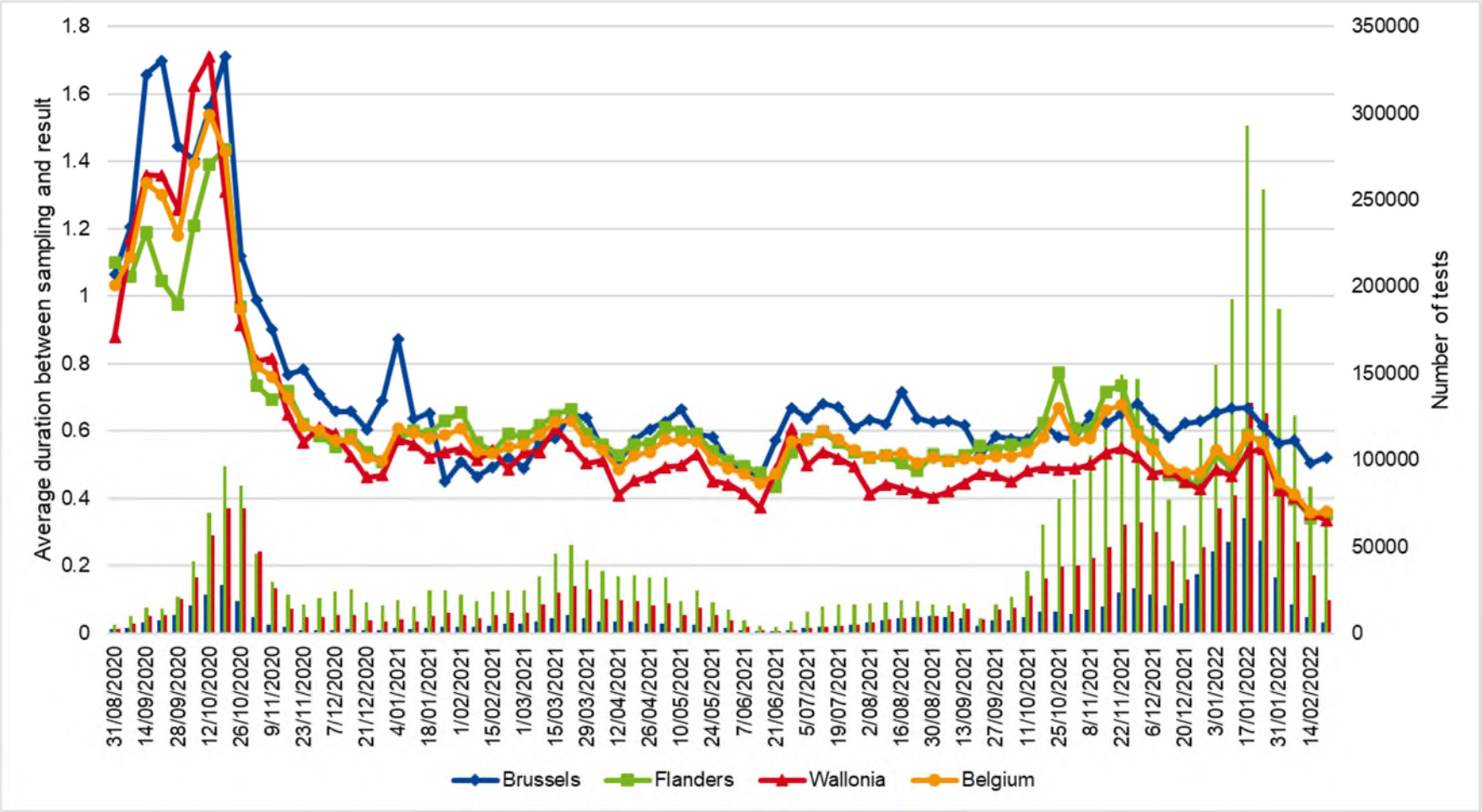
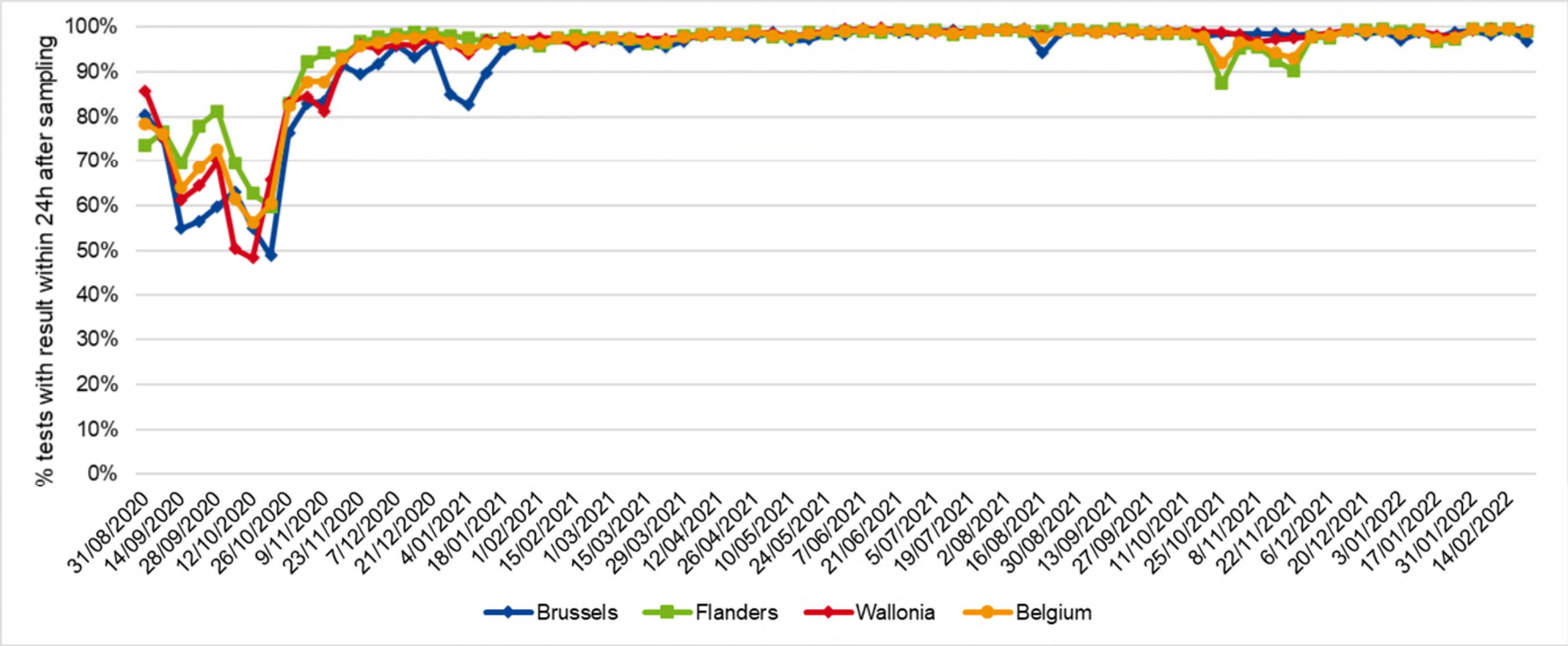


Figure 2 – Proportion of tests with result within 24 hours after sampling



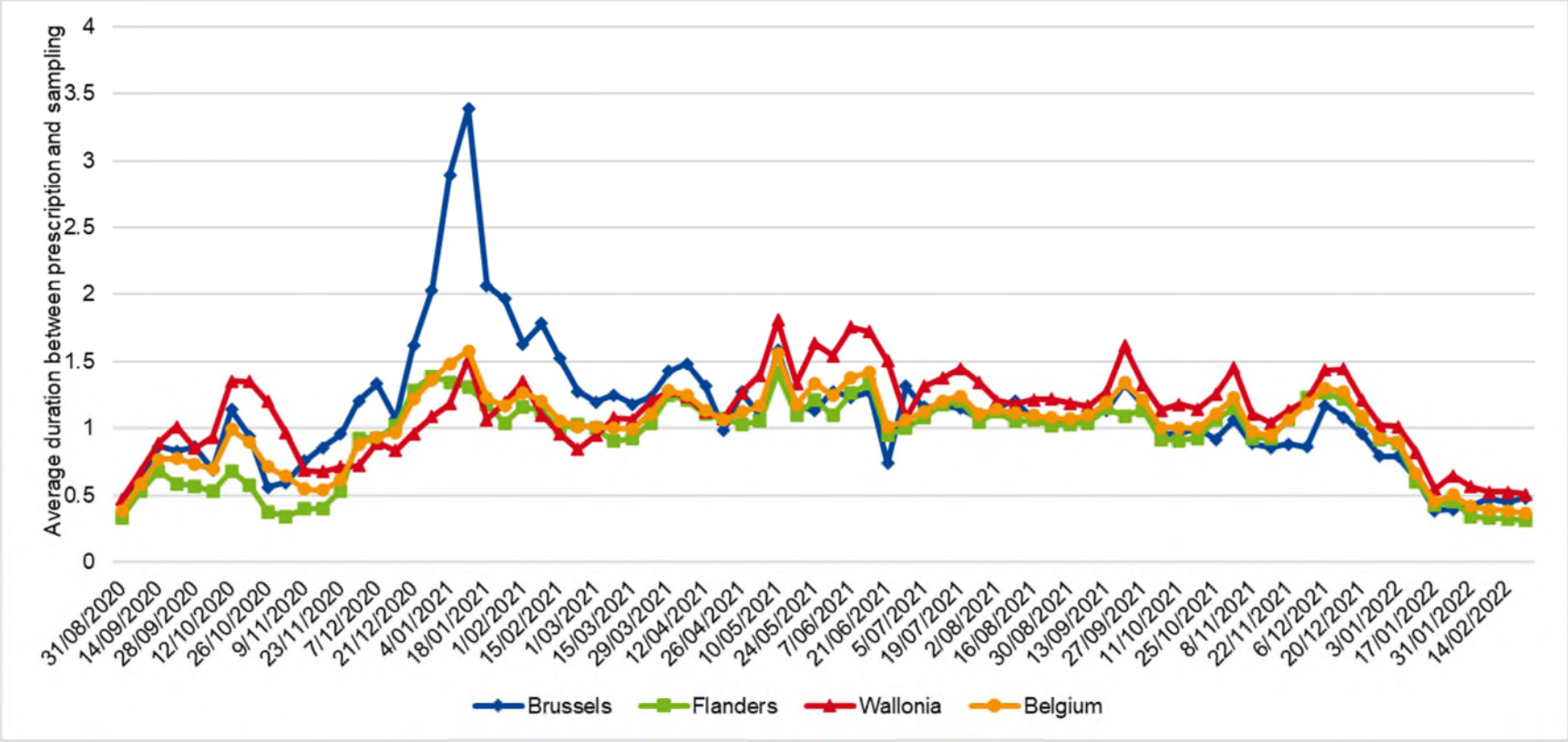
Duration between prescription and sampling of a COVID-19 test

The average duration between prescription and sampling of a COVID-19 test remained below two days during the entire study period (Figure 3), except in Brussels around the turn of the year 2020-2021 when the average duration between prescription and sampling reached 3.5 days.

Overall, we observe an increase in the average duration between prescription and sampling of test between the end of 2020 and 2021. From the end of 2021, this average duration sharply decreased and was overall close to half a day in the eighth week of 2022. Also, the difference between regions decreased over time.

In September 2020, seven European countries (CY, DK, EE, LU, LT, PL, SE) reported a full testing turn-around-time (from the prescription to the result) of up to two days.[4]

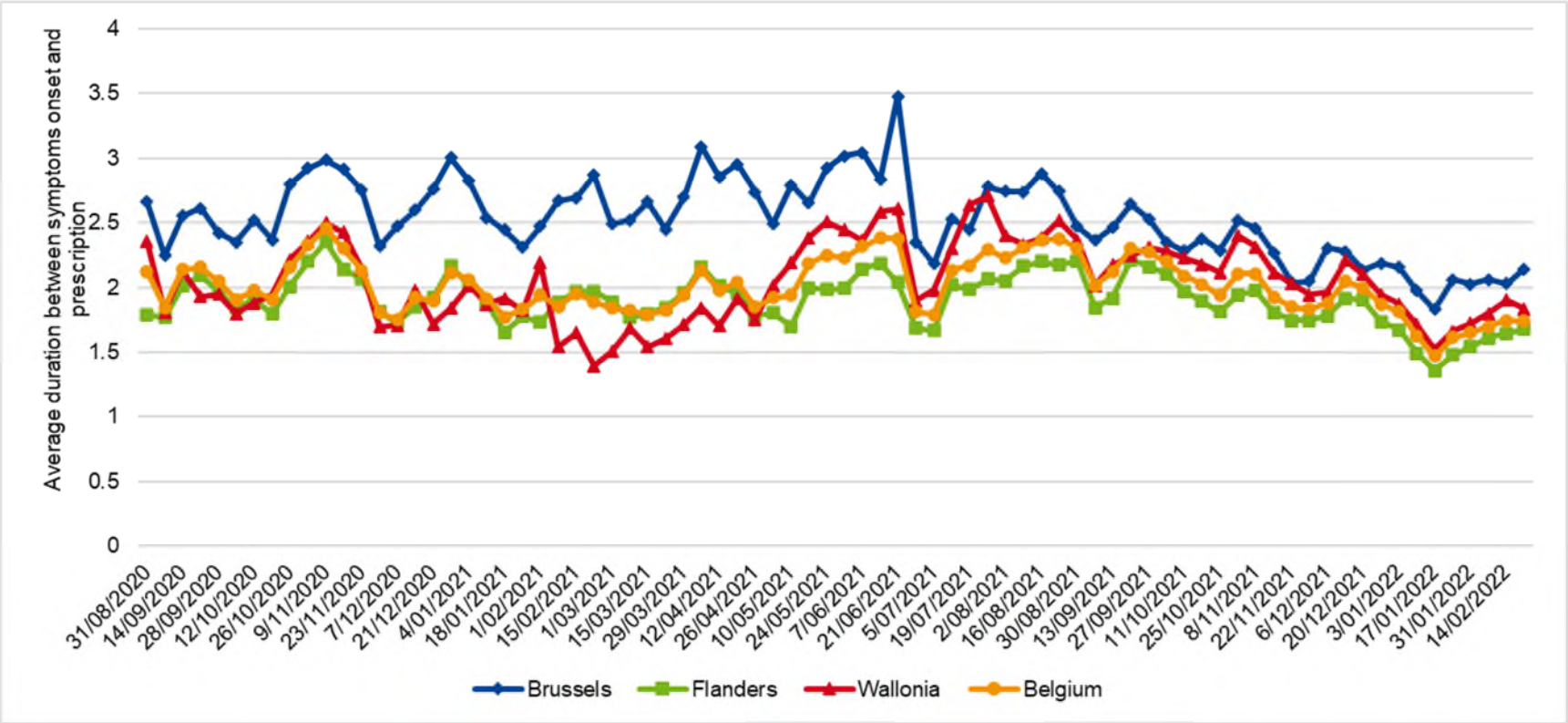
Figure 3 – Average duration between prescription and sampling (in days)



Duration between symptoms onset and prescription (= consultation)

The average duration between symptoms onset and test prescription (or consultation with a physician) (Figure 4) remained stable over the entire study period with a slightly higher duration in Brussels (weekly average = 2.5 days) than in Wallonia (2.0 days) and Flanders (1.9 days). Overall, there was little evolution over time, except for a slowly decreasing duration starting in September 2021. In addition, differences between regions decreased over time.

Figure 4 – Average duration between symptoms onset and prescription (in days)



Key points

- **Average duration between sampling and test result was highest in September-October 2020, reaching 1.5 days (1.7 in Brussels and Wallonia). This resulted in a drop in the proportion of persons receiving their test result within 24 hours after sampling. No data are available before September 2020.**
- **From November 2020 onwards, the average duration between sampling and test result remained below one day in all three regions, even when a very large number of tests was performed. With only few exceptions, the proportion of persons receiving their test result with 24 hours remained therefore close to 100%.**
- **The average duration between prescription and sampling of a COVID-19 test remained below two days during the entire study period, except in Brussels around the turn of the year 2020-2021. This duration further decreased to 0.5 days from 2022 onwards.**
- **The duration from onset of illness to consultation with a healthcare provider was the longest delay over the entire study period and remained stable around 2 days.**

References

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2. Meurisse M, Lajot A, Dupont Y, Lesenfants M, Klamer S, Rebolledo J, et al. One year of laboratory-based COVID-19 surveillance system in Belgium: main indicators and performance of the laboratories (March 2020–21). Archives of Public Health. 2021;79:1-9.
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