

Genomic surveillance of SARS-CoV-2 in Belgium

Report of the National Reference Laboratory (UZ Leuven & KU Leuven)

**Situation update – 5 of October 2021
(report 2021_48)**

Executive summary

48,897 Belgian sequences of SARS-CoV-2 are now publicly available on GISAID.

624 sequences of positive SARS-CoV-2 samples collected between 20/09/2021 and 03/10/2021 have at this stage been analysed in the context of baseline surveillance. Among these, B.1.617.2 and its sublineages (*Delta*) represented 100% of the circulating strains.

The genomic diversity of SARS-CoV-2 in Belgium is comparable with the situation described over the last 9 weeks.

Authors (National Reference Laboratory – UZ Leuven and KU Leuven):

Lize Cuypers, Joren Raymenants, Piet Maes, Els Keyaerts, Guy Baele, Simon Dellicour, Tom Wenseleers, Barney Potter, Sunita Janssenswillen, Elke Wollants, Marc Van Ranst, Emmanuel André.

With the collaboration of the laboratories of UCL, ULB, UMons, UNamur, ULiège, UGent, UZA/UAntwerpen, Jessa ZH, AZ Delta, AZ Klina, IPG, AZ St Lucas Gent, OLVZ Aalst, Briant network, ZNA, AZ St Jan Brugge, UZ Brussel, LHUB-ULB, and UZ Leuven/KU Leuven; and Sciensano HealthData.

Previous reports can be downloaded using the following link:

<https://www.uzleuven.be/nl/laboratoriumgeneeskunde/genomic-surveillance-sars-cov-2-belgium>

Table of contents

1. Monitoring of VOCs in Belgium
2. Rise in SARS-CoV-2 infections: observations from the KU Leuven testing center

1. Monitoring of VOCs in Belgium

While first identified on 6 April 2021 in Belgium, the B.1.617.2 Variant of Concern (Delta) is now the dominant lineage in the country, representing 100% of the surveillance samples sequenced.

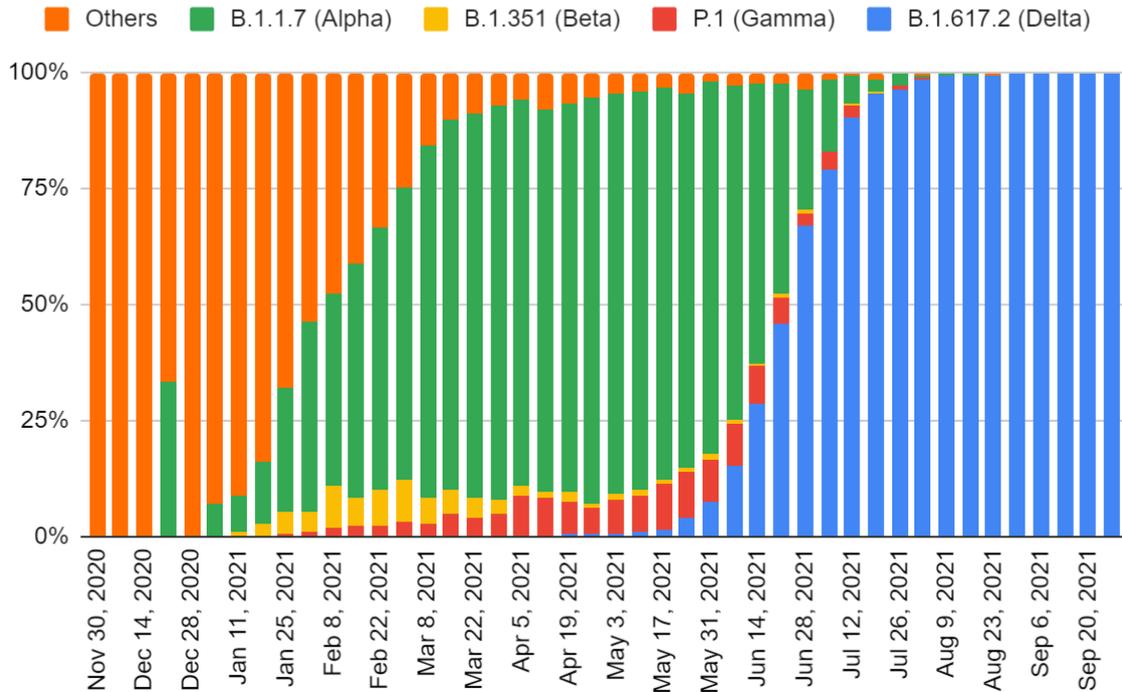


Figure 1: Weekly evolution of the frequency of variants of concern reported by the baseline surveillance network using a whole genome sequencing (WGS) approach.

SARS-CoV-2 variants of concern as defined by the ECDC

As of 30 September 2021, the European Centre for Disease Prevention and Control (ECDC), in consultation with the WHO Regional Office for Europe's joint virus characterisation working group, revised the list of variants of concern, based on new evidence (for more information please see <https://www.ecdc.europa.eu/en/covid-19/variants-concern>).

For variants of concern (VOC), evidence is available indicating a significant impact on transmissibility, severity and/or immunity, likely to have an impact on the epidemiological situation in Europe and hence Belgium, currently limited to three variants being Beta, Gamma and Delta. For variants of interest (VOI), evidence is available on genomic properties, epidemiological evidence or *in vitro* evidence that could imply a significant impact on the epidemiological situation. Three VOIs are currently defined, being Mu, Lambda and the lineage B.1.620 without WHO nomenclature. Furthermore, a wide set of variants under monitoring are defined, all detected as signals through epidemic intelligence, rules-based genomic variant screening or preliminary scientific evidence. To some extent there is an indication that they could have properties similar to those of a VOC (for example the combination of Delta with the mutation of concern E484Q which characterizes Kappa). A new category of de-escalated variants has been added to the list of ECDC, which are all variants that are either no longer circulating (i.e. Eta), or are circulating for a long time without showing any impact on the current epidemiological situation (i.e. Alpha), or scientific evidence has shown, that the variant is not associated with any concerning properties (i.e. Epsilon).

2. Rise in SARS-CoV-2 infections: observations from the KU Leuven testing center

KU Leuven has a highly granular picture of the COVID-19 transmission patterns within the tertiary education student population. Two weeks into the academic year and 1 week into the university academic year, we observe a worrisome combination of an explosive rise of both the number of tests and COVID-19 cases amongst our student population and an increase in positivity rate (Figure 2), this despite high vaccination rates amongst the students.

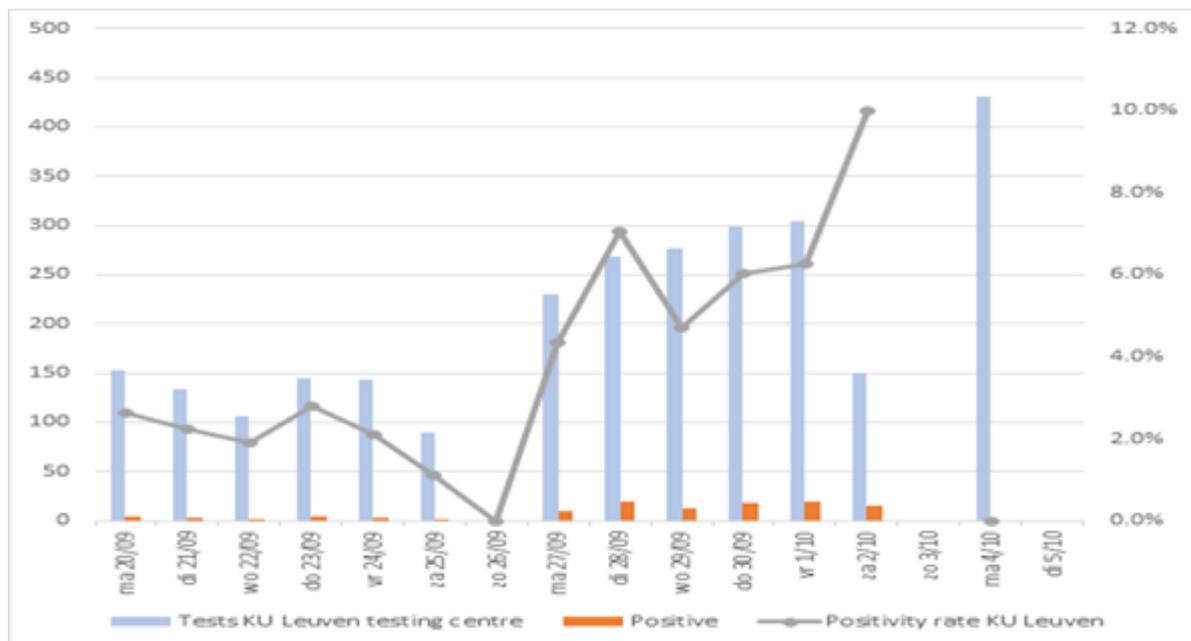


Figure 2: Significant increase in COVID-19 incidence in the student population tested at KU Leuven. While the incidence is likely underestimated before the 26th of September due to the absence of students in Leuven, the explosive rise cannot be explained by an increase in the denominator only. The evolution is similar to the one observed in teenagers on a national level (data from Sciensano), though not in general for Flanders across all age groups.

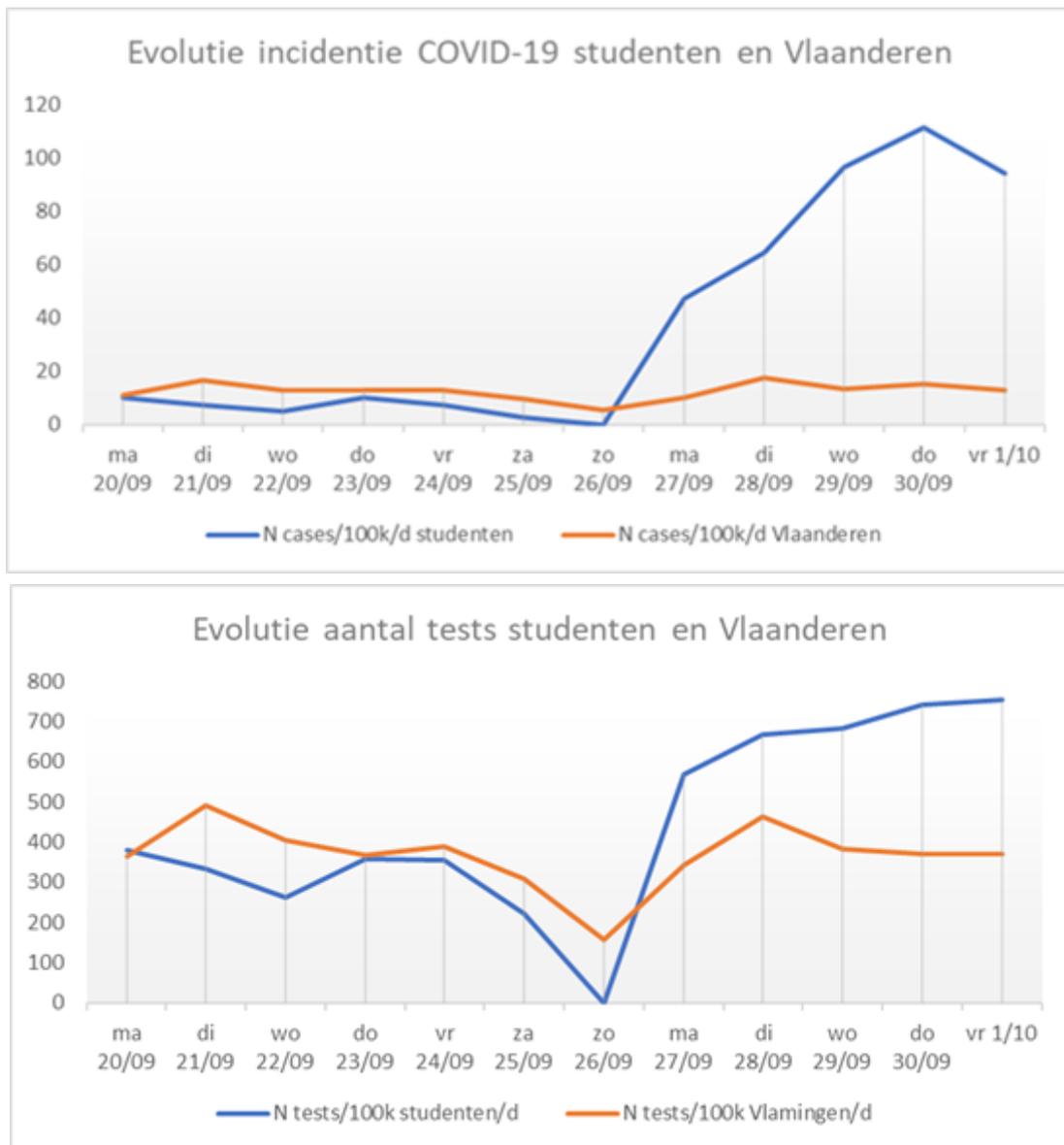


Figure 3: Incidence of COVID-19 among the student population vs all persons living in Flanders (upper panel). Both the incidence as well as the number of tests conducted (lower panel) show much higher rates in the student population (in blue) compared to the general population in Flanders (in orange).

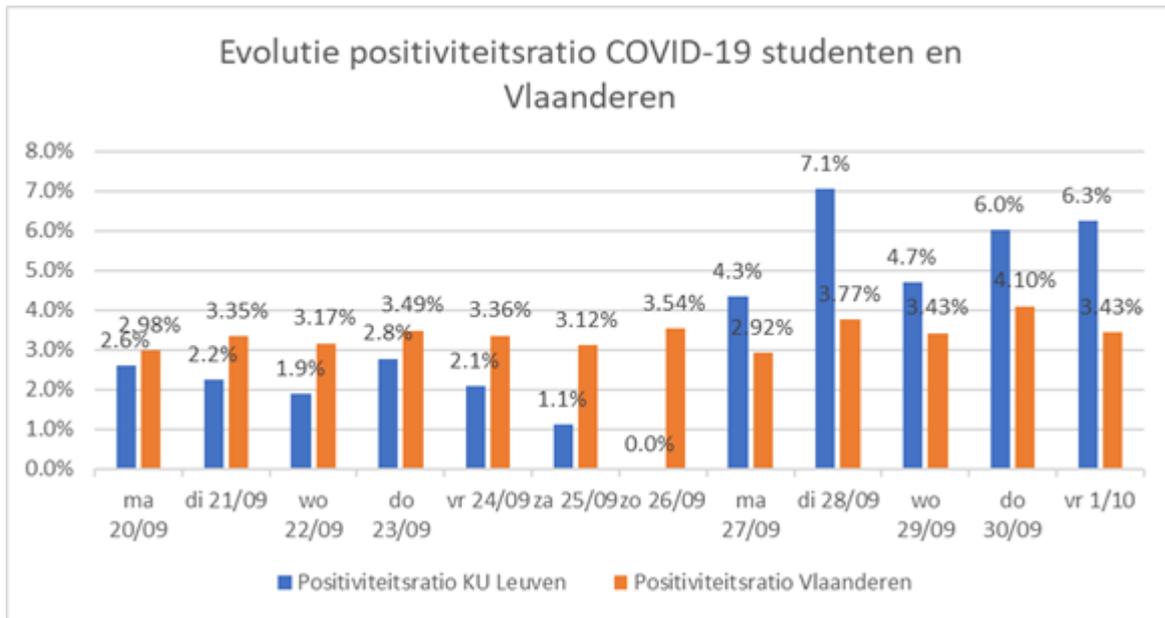


Figure 4: The increase of positivity ratio in the student population of KU Leuven (in blue) is not reflected at the Flemish level (in orange). We note that a similar fraction of the student population and the Flemish population has undergone at least one diagnostic SARS-CoV-2 test between the 20th of September and the 3rd of October: respectively 5.7% versus 4.9%.

Anecdotal evidence from our contact tracing team – data which is still being analyzed – traces the large majority of these recent infections among the student population in Leuven to high risk events in the nightlife sphere. These early signals remind the fact that high vaccination coverage, which only partially prevents transmission in low-risk environments, cannot prevent transmission of COVID-19 in a context with frequent high-risk events and contacts. In order to prevent a rapid and uncontrolled rise in virus circulation associated with the reopening of the night life, we recommend continued attention towards efficient testing & contact tracing strategies. In this context, we recently published (not yet peer-reviewed) the impact of lowering barriers for testing and extending tracing criteria : <https://www.researchsquare.com/article/rs-952839/v1> .