



SARS-CoV-2 Variants Update 6 – Omicron BA.2

18 March 2022

Background

After the declaration of the coronavirus disease (COVID-19) pandemic on 11 March 2020 by the World Health Organization (WHO), many subtypes have been identified. Those with the highest impact on the epidemiological situation (in terms of transmissibility, severity, immune escape, etc.), were labelled Variants of Concern (VOCs). Alpha and Delta were the main variants to circulate in Europe, but at present, the Omicron variant is the dominant one both in the continent and worldwide.¹ In Europe, specifically, two main Omicron lineages are currently circulating: BA.1, the most frequent so far, and BA.2, which is taking over (see Figure 1).²

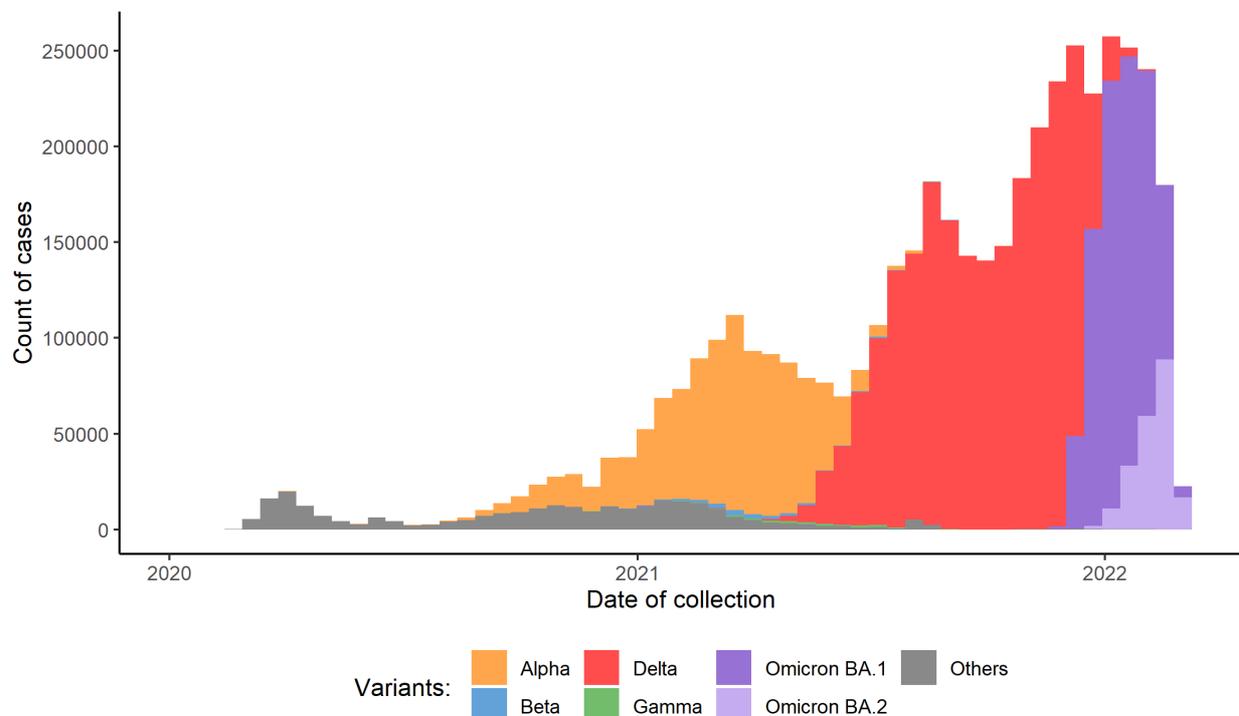


Figure 1. Distribution of COVID-19 variants detected in Europe since 2020. Source of the data: GISAID.

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What is the current epidemiological situation?

Since the first reported detection of Omicron in November 2021, this variant has spread at unprecedented speed across the world, given its higher transmissibility compared to previous VOCs. In January 2022 in the European Union and European Economic Area (EU/EEA), the incidence rate (weekly cases per 100 000 inhabitants) reached its maximum value since the beginning of the pandemic: 1931.8, more than five times the previous maximum (see Table 1).³ At the country level, the incidence rate registered was even higher, exceeding 5000 weekly cases per 100 000 inhabitants in Iceland and Denmark (see Figure 2).³

Table 1. Maximum case and death weekly rates registered since the identification of Omicron and previously.

Location	Event	Maximum weekly rate*		Ratio
		since Omicron	previously	
EU/EEA	Cases	1931.81	332.00	5.82
	Deaths	3.14	5.81	0.54
Luxembourg	Cases	2409.38	741.74	3.25
	Deaths	2.21	8.35	0.26

*Number of events reported weekly per 100 000 inhabitants.

Source of the data: ECDC, The Luxembourg Government.

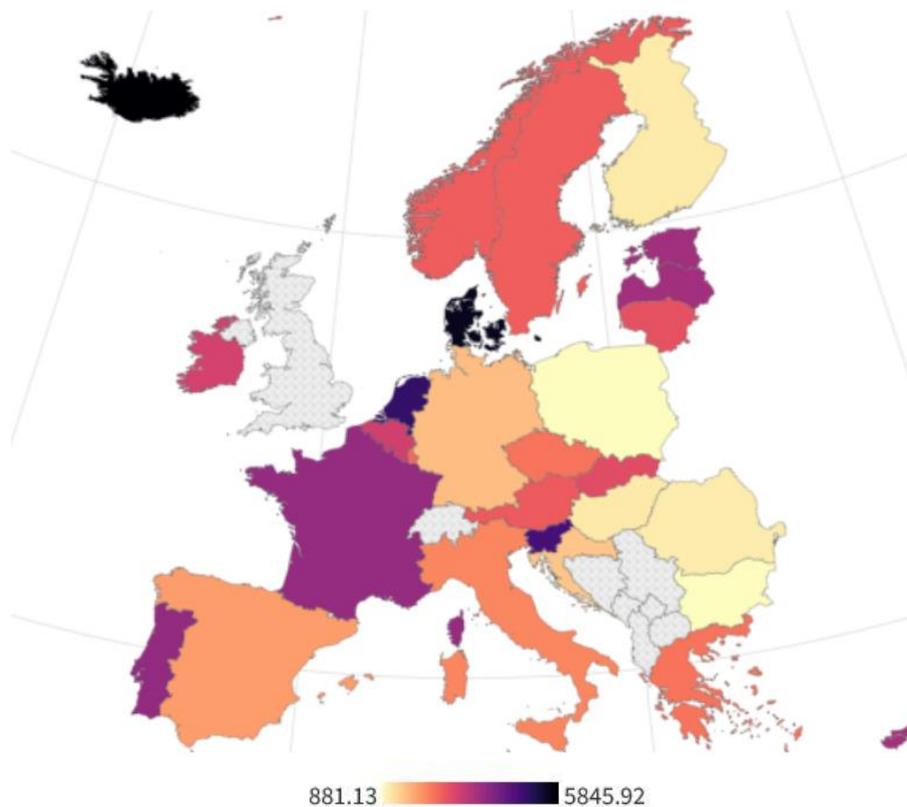


Figure 2. Maximum incidence rate (weekly cases per 100 000 inhabitants) for COVID-19 during the winter season 2021/2022 in the EU/EEA, as of 15 March 2022. Source of the data: ECDC. Map generated with Flourish Studio.

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However, unlike in previous COVID-19 waves, the hospital admission rate did not increase proportionately, while other indicators decreased, like ICU admission or death rates. The highest weekly death rate per 100 000 inhabitants registered after the identification of Omicron was about half the maximum rate previously registered (see Table 1).³

In Luxembourg, a similar trend has been observed, with weekly cases rates peaking at 2409.4 in week 3/2022, more than three times the previous highest rate registered, while the maximum death rate dropped by about a quarter (see Table 1).⁴ The hospitalisation rate was also lower than expected according to the previous waves. The maximum value registered after the identification of Omicron is less than half the maximum value since the beginning of the pandemic (80.3 weekly admissions per 100 000 inhabitants in week 5/2022 compared to 205.1 in week 47/2020).⁴ Figure 3 shows the hypothetical rise in hospital and intensive care admissions since September 2021, if the proportion of severe cases had been the same as the mean proportion observed during the same period one year earlier.

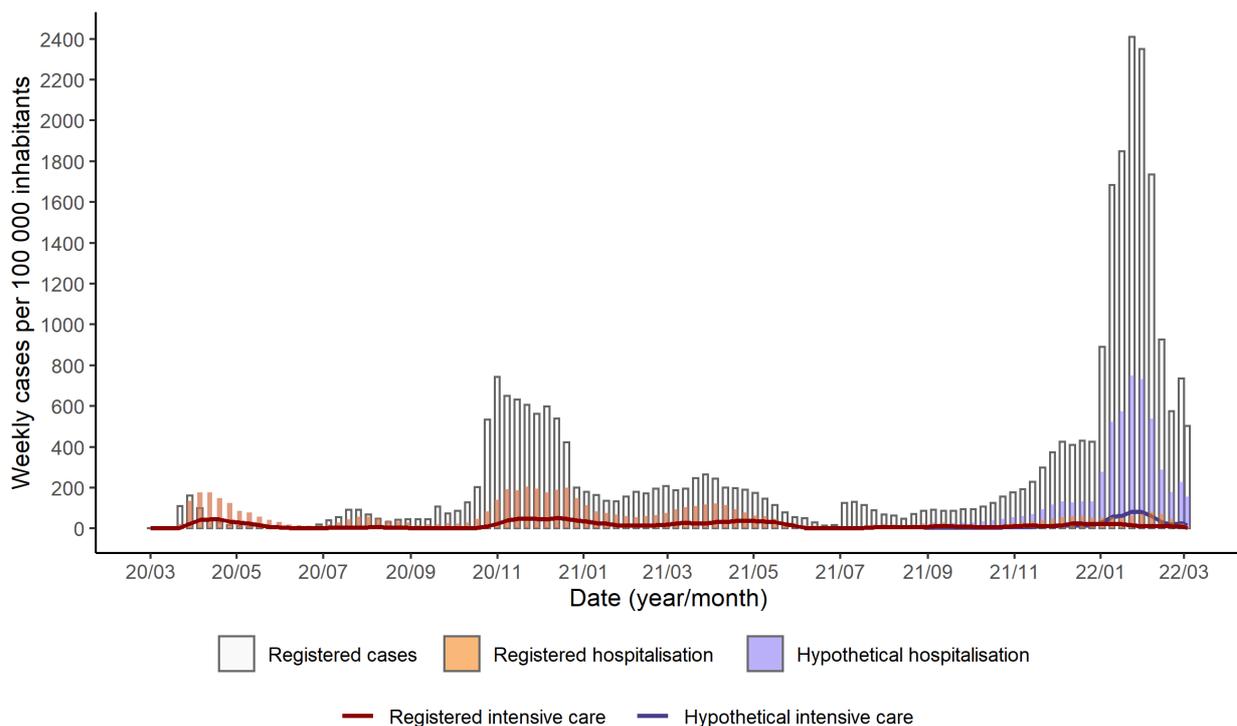


Figure 3. Weekly rates for COVID-19 cases, hospitalisation, and intensive care admission.
(Source: data.public.lu)

Two main factors could explain the reduced severity observed during the last months in Luxembourg. On one hand, a high proportion of the population is currently vaccinated, especially those above 60 years old (over 90%),⁵ and COVID-19 vaccines have proven to be strongly effective in preventing severe cases from all variants known.¹ On the other hand, the Omicron variant is characterised by higher transmissibility but lower severity compared to previous variants.¹

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What do we know about Omicron BA.2?

As mentioned before, the Omicron variant is mainly composed of two lineages: BA.1 (Nextstrain clade 21K) and BA.2 (clade 21L). The former has been the most frequent one in Luxembourg since the detection of the Omicron variant, but the latter has constantly been increasing since the beginning of 2022 and is now the most frequent one (see Figure 4).⁶

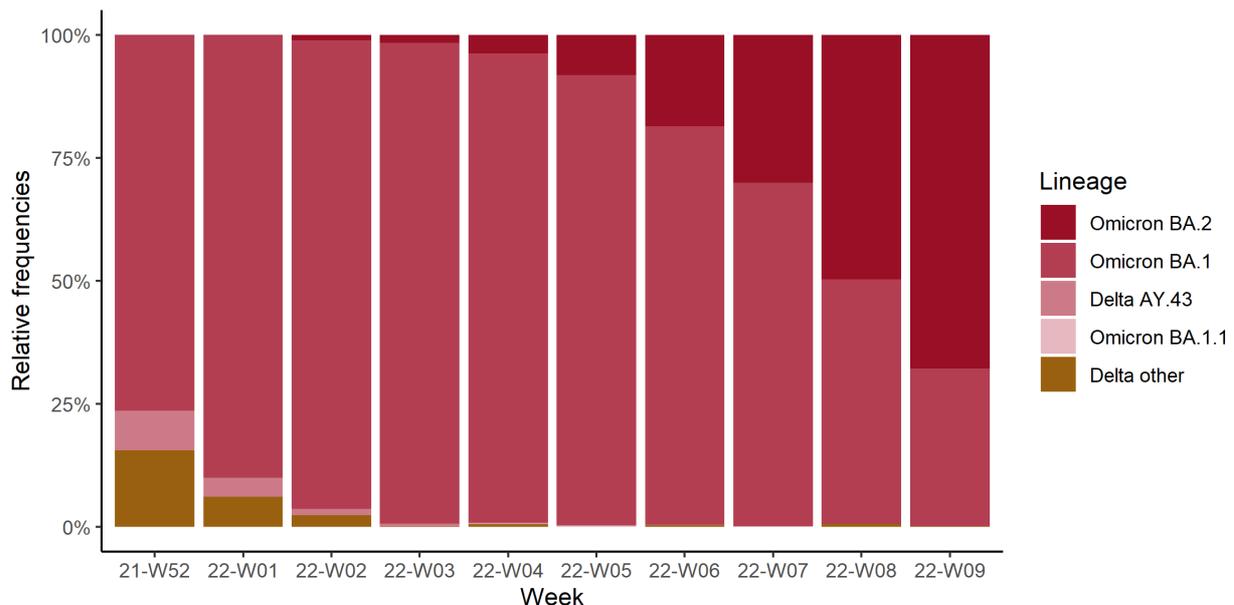


Figure 4. Distribution of SARS-CoV-2 lineages within the national representative sample by week.
(Source: LNS)

Omicron BA.2 is suggested to have transmission advantage over BA.1, but no differences have been detected concerning the risk of hospitalisation.¹ The same results have been observed in Luxembourgish data.⁶ Besides, according to the data available so far, the immune response to both subtypes is similar, which supports the findings of crossed protection against reinfection from one subtype after the other.¹ Finally, it is important to consider the generalised absence of the 69-70 deletion in the spike protein of BA.2, which invalidates its detection by PCR based on S-gene target failure. However, multiplex PCR tests are still able to detect it.

What is the LNS doing to face the Omicron BA.2 lineage?

Since the emergence of the Omicron variant, the LNS reinforced its sequencing programme to increase the testing capacity and introduced a screening campaign to enable the early detection of all Omicron cases.

Now that this variant is the dominant one, the screening tests remain an important first approach to distinguish BA.1 and BA.2 cases, which is key to contact tracing and the identification of chains



of infection. This is possible thanks to the usage of multiplex PCR tests, capable of detecting both the 69-70 deletion (mainly in BA.1) and N501Y mutation (in both BA.1 and BA.2). However, the final diagnosis is done through Whole Genome Sequencing.

The sequencing activity is essential to monitor the evolution of all circulating variants and their subtypes, like the increase of BA.2, which has been under a close follow-up since its first detection in the country. Additionally, the sequencing technique used allows monitoring any mutation of concern, so that any genetic change can be spotted at an early stage of spread.

Conclusions

- The Omicron variant is the dominant one worldwide, mainly represented by two lineages: BA.1, the most frequent one so far, and BA.2, which is now taking over.
- During the Omicron wave, the highest incidence rates since the beginning of the pandemic were registered, but severity rates (hospitalisation and internal care admission) and the decease rate remained lower than in previous waves.
- Current data suggest that BA.2 has transmission advantage over BA.1, but no difference is expected for severe clinical outcomes or immune protection.
- Vaccination remains an essential measure to prevent severe clinical outcomes and death.

Bibliographic references

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