

Subject: [EXTERNAL] COVID State of Affairs: July 7
Date: Thursday, July 7, 2022 at 5:50:38 AM Alaska Daylight Time
From: Katelyn Jetelina from Your Local Epidemiologist
To: Phillip A. Zavadil

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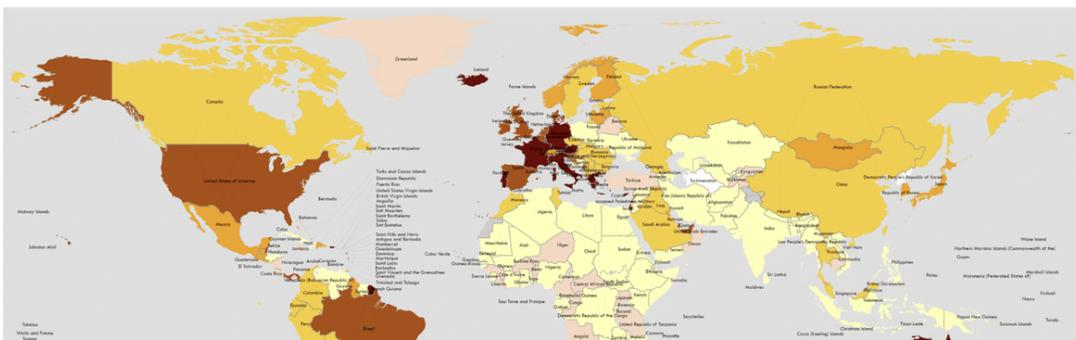
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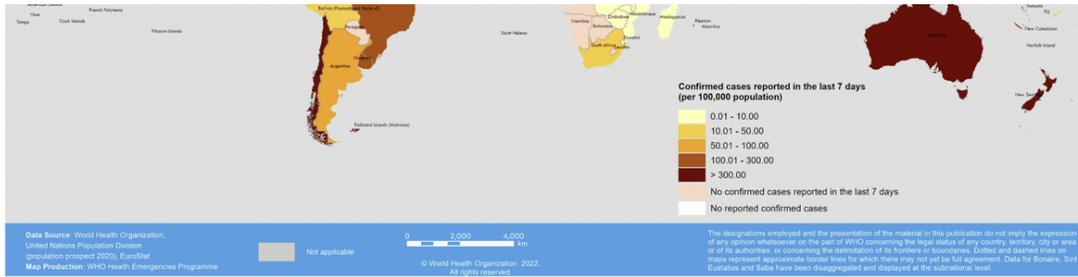
COVID State of Affairs: July 7

Jul 7

Driven by Omicron sub-variants, country-level hotspots are now peppered across the globe. Yesterday, the WHO [reported](#) cases are on the rise in 110 countries, causing overall global cases to increase by [30%](#) over the past two weeks. Of course, these numbers and country-level comparisons are only as accurate as testing and reporting.

Figure 2. COVID-19 cases per 100 000 population reported by countries, territories and areas, 20 – 26 June 2022*

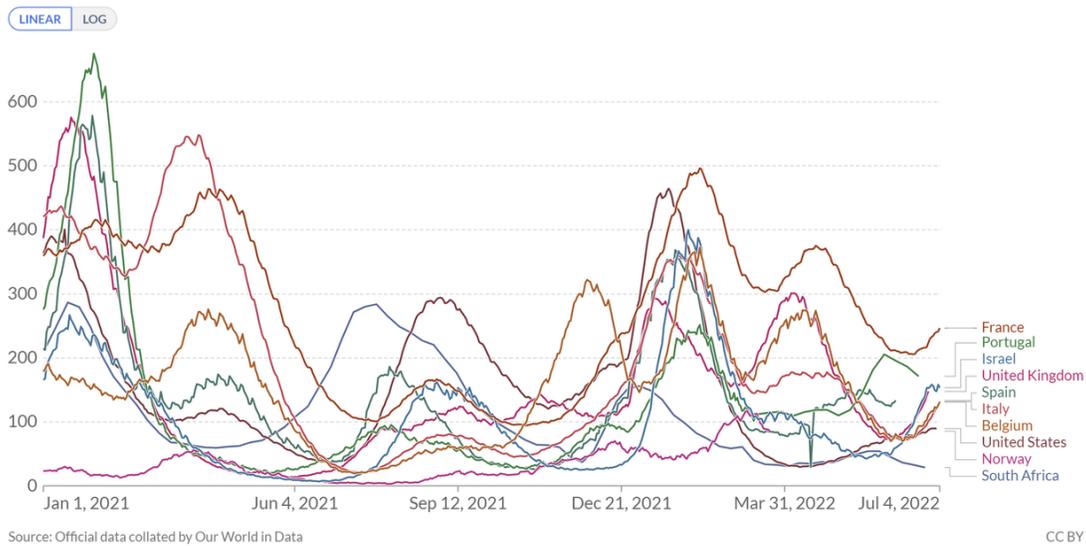




(WHO)

In Europe, BA.4/5 is driving a case surge. Hospitalizations in Portugal finally peaked and are well on their way down. Hospitalizations in other European countries continue to rise, though.

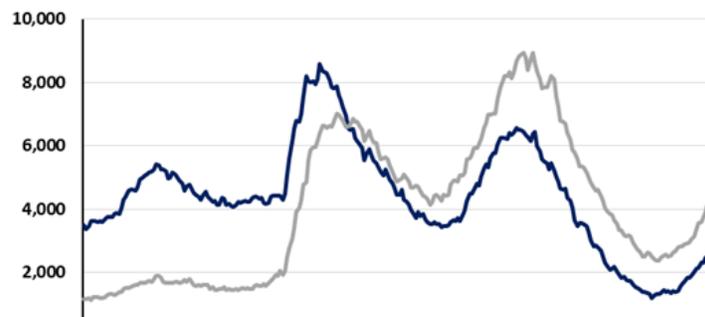
Number of COVID-19 patients in hospital per million people

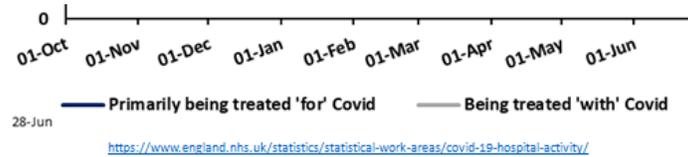


In the U.K., it's clear that hospitalizations rising are both *with* and *for* COVID19. The distribution seems to be stubbornly consistent since a switch during the first Omicron wave last winter, when hospitalizations *for* COVID19 took the lead.



Daily Occupied Beds by Primarily and Incidental Covid for England: Oct 1 2021 – Jun 28 2022
(Source: NHS COVID-19 Hospital Activity)





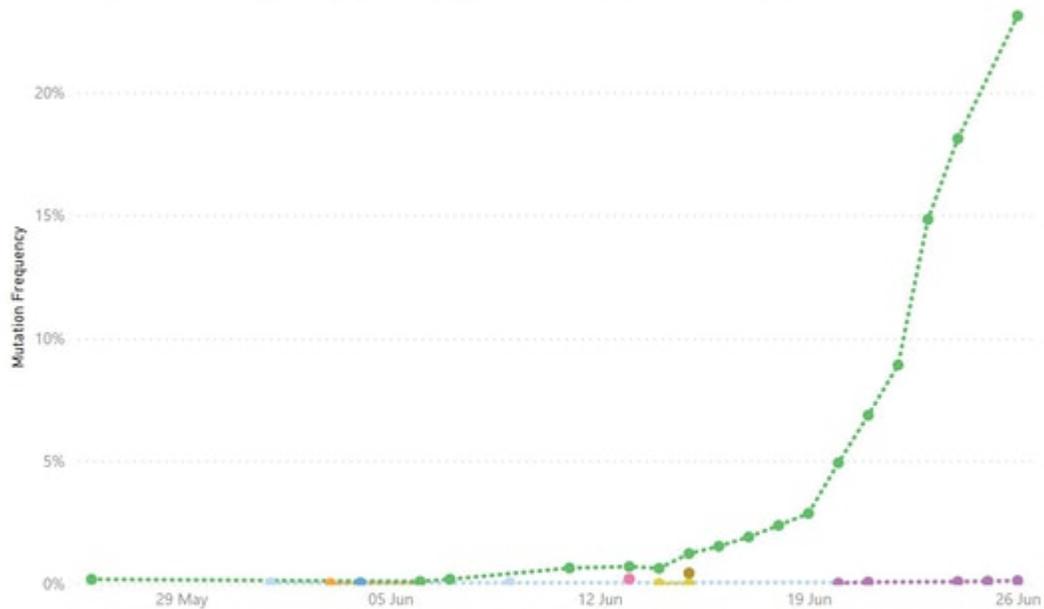
In India, all eyes are on a new variant: BA.2.75. After first being discovered at the end of May, it quickly took hold and now accounts for 25% of cases, with most samples reported from Maharashtra (Mumbai). There is sparse testing data in India (see the grey bar charts in the figure below), but BA.2.75 appears to be outcompeting BA.5 and BA.2 (with a growth advantage of 17% thus far). This means it has the potential to cause a wave and is important to follow. BA.2.75 cases have been identified in other countries, like Australia, New Zealand, U.K., and Germany, but remain low at this time.

SARS-CoV-2 Genomic Mutation Matching. Data from gisaid.org Source files and more info on [github](https://github.com).

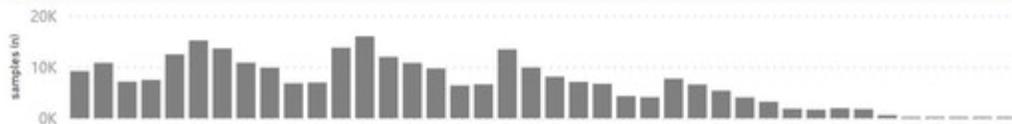
n=274,682 sequenced genomes, up to 4 July 2022

BA.2 (Omicron) with AA Substitution(s): Spike K147E, Spike W152R - % of all lineages

Country ● Australia ● Canada ● Germany ● India ● Japan ● New Zealand ● United Kingdom ● United States



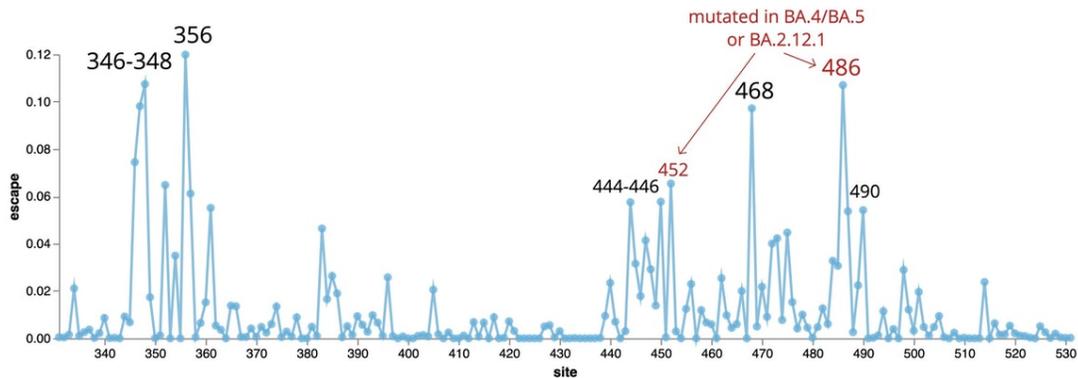
Global



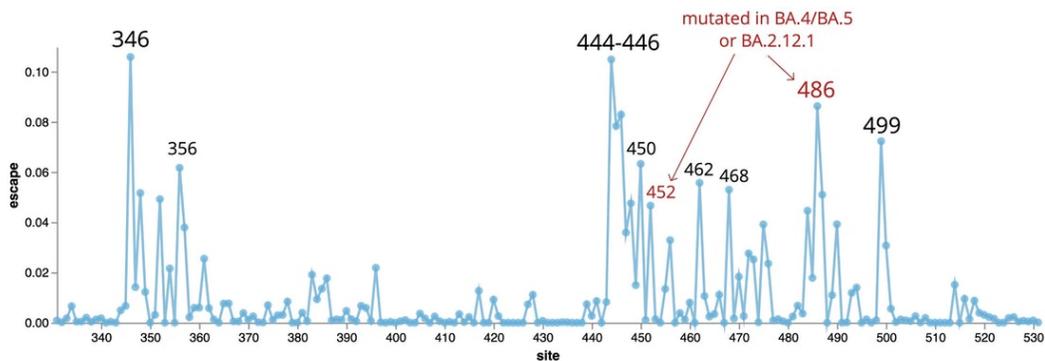
(Mike Honey Twitter)

BA.2.75 carries eight additional mutations on the spike protein compared to BA.2. There are two mutations in particular that are cause for concern: G446S and R493Q. G446S is at one of the most potent sites of escape from antibodies. As the [Bloom Lab](#) interestingly pointed out in the [figure](#) below, BA.2.75's impact will be dependent on infection history. Among those with a previous BA.1 infection, the probability of immune escape at spot 446 (and thus infection) is *lower* than those with a previous BA.2 infection.

Sites of escape are somewhat different for antibodies from people who had an Omicron BA.1 breakthrough infection



Sites of escape from antibodies elicited by early (pre-Omicron) infection/vaccination that still neutralize Omicron BA.2

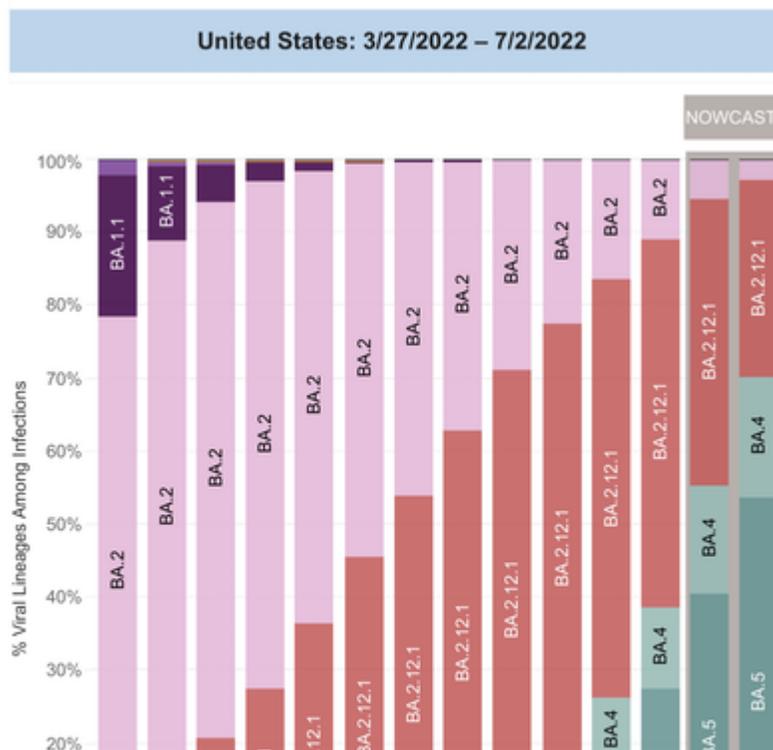


A few more thoughts on this sub-variant:

1. Let's be glad the mutation G446S isn't on BA.5. If it was, this subvariant could make an even bigger impact. If BA.2.75 does take off, it will be co-circulating with BA.5, so keeping a close eye on recombinants will be important.
2. This makes the fall booster conversation interesting. Last week, the FDA authorized a BA.4/5 vaccine formula. However, one could make the argument that the original BA.1 vaccine formula would be better with this BA.2.75 news. But, chasing variants is never going to work. Our goal should be broaden protection. An Omicron vaccine will do that, regardless of the sub-variant circulating.

United States

In four short months, four Omicron sub-lineages have come and gone in the U.S. Currently, BA.4/5 made a fast entrance and now accounts for more than 70% of tests. Interestingly, BA.4 stopped (or substantially slowed) growth, so this is really now a story about BA.5. It's not clear whether BA.5 will result in a wave in the U.S. given our BA.2.12.1 history that other countries did not experience. If we do get a BA.5 wave, it would start about now, so all eyes are on epidemiological trends.





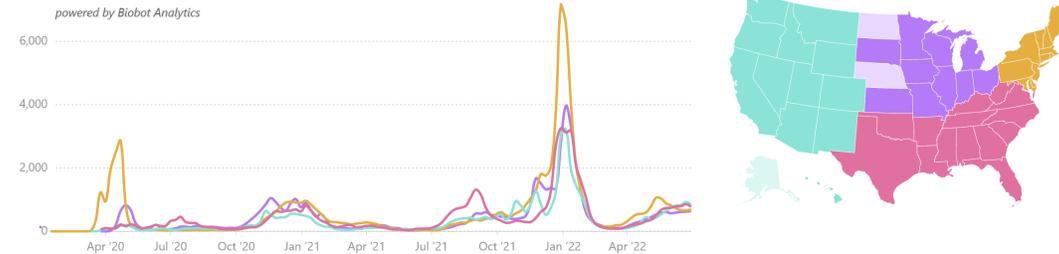
(CDC)

The U.S. holds a steady state of ~100,000 *reported* cases per day. This equates to about 1M “true” cases per day, using back of the napkin [math](#). (At the height of the first Omicron wave, we experienced ~3.9M true cases per day). The steady state is reflected in national wastewater with [plateauing trends](#) across every region.

Week of June 29, 2022

Wastewater: Effective SARS-CoV-2 virus concentration (copies / mL of sewage)

Total results Last 6 months Last 6 weeks

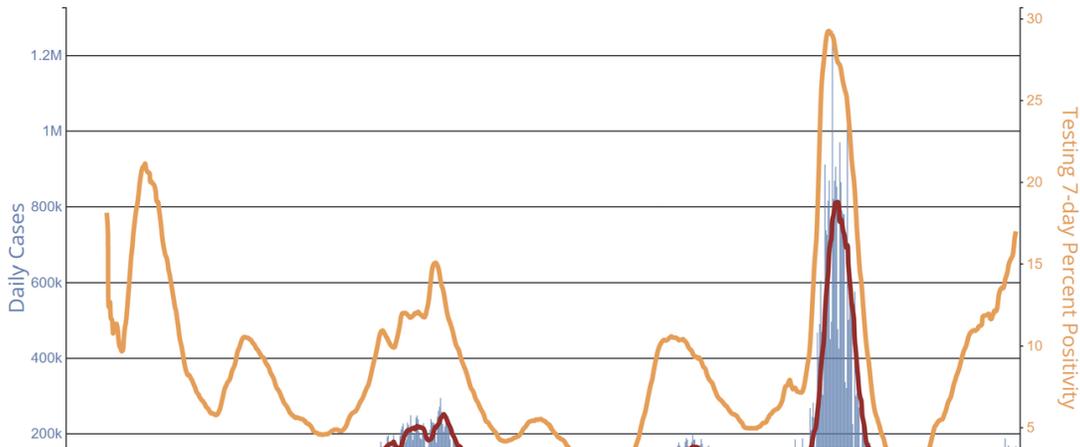


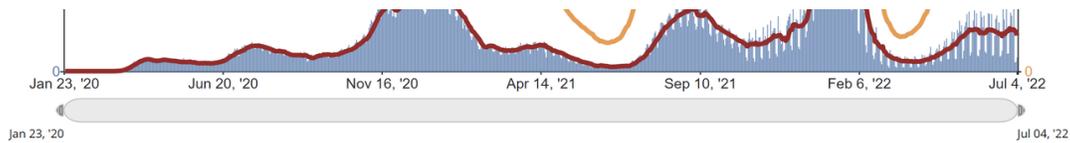
Sources: Wastewater data from Biobot Analytics, Inc.

Regional wastewater trends, past 6 weeks (panel 1) and entire pandemic (panel 2). Purple= Midwest; Orange= Northeast; Pink=South; Green=West. Source: [Biobot Analytics](#)

Interestingly, our national test positivity rate (TPR) continues to increase and is at a high rate of [17%](#). Anecdotally, it *feels* like more and more people are testing positive, too.

Daily Trends in Number of Cases and COVID-19 Nucleic Acid Amplification Tests (NAATs) 7-day Percent Positivity in The United States Reported to CDC

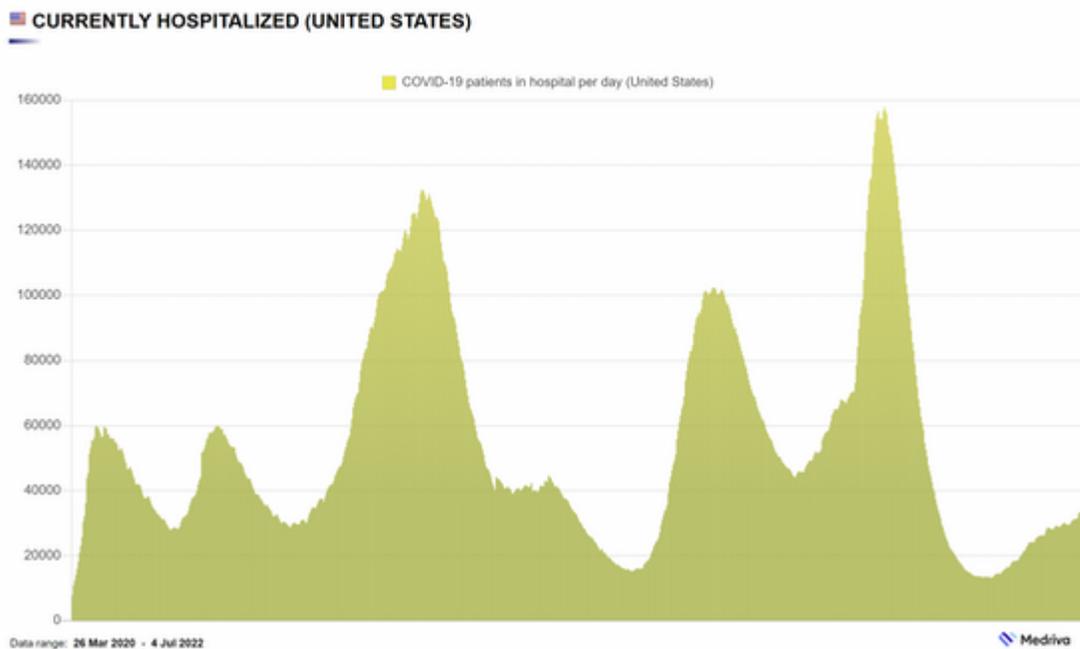




(CDC)

The disagreeing patterns between cases/wastewater and TPR could mean that a wave is about to come (historically, TPR trends upwards first). Or it's a reflection that cases are just a terrible measure of community transmission. Lack of testing, lack of reporting antigen tests, and biased testing (some groups are more likely to get tested than others) are creating really weird trends in metrics. This begs the question: *How do we detect a wave at this point in the pandemic?*

Hospitalizations continue to creep up and, on average, [389](#) Americans are dying each day. Severe disease will continue to occur. As the Kaiser Family Foundation [reported](#), in some states, 3 in 4 people are not up to date on their COVID-19 vaccines (this figure does *not* include the 4th dose). Also, as we just [saw in Portugal](#), vulnerable groups like the elderly are at risk from high transmission, even if vaccinated. While incredibly tragic, hospitalizations and deaths do remain below any previous peaks, which is progress.



(News nodes)

Bottom line

BA.5 is impacting countries across the globe. It's story in the U.S. is yet to be determined. It's important to note, though, that we already have a very high, steady level of transmission. In addition, SARS-CoV-2 continues to mutate so quickly that we start talking about the next variant (BA.2.75) before the current wave peaked.

Love, YLE

"Your Local Epidemiologist (YLE)" is written by Dr. Katelyn Jetelina, MPH PhD—an epidemiologist, biostatistician, wife, and mom of two little girls. During the day she works at a nonpartisan health policy think tank, and at night she writes this newsletter. Her main goal is to "translate" the ever-evolving public health science so that people will be well equipped to make evidence-based decisions. This newsletter is free thanks to the generous support of fellow YLE community members. To support the effort, please subscribe here:

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