



Luxembourg again
EU-wide Corona hot
spot?

5 possible actions to
stop the outbreak
now!

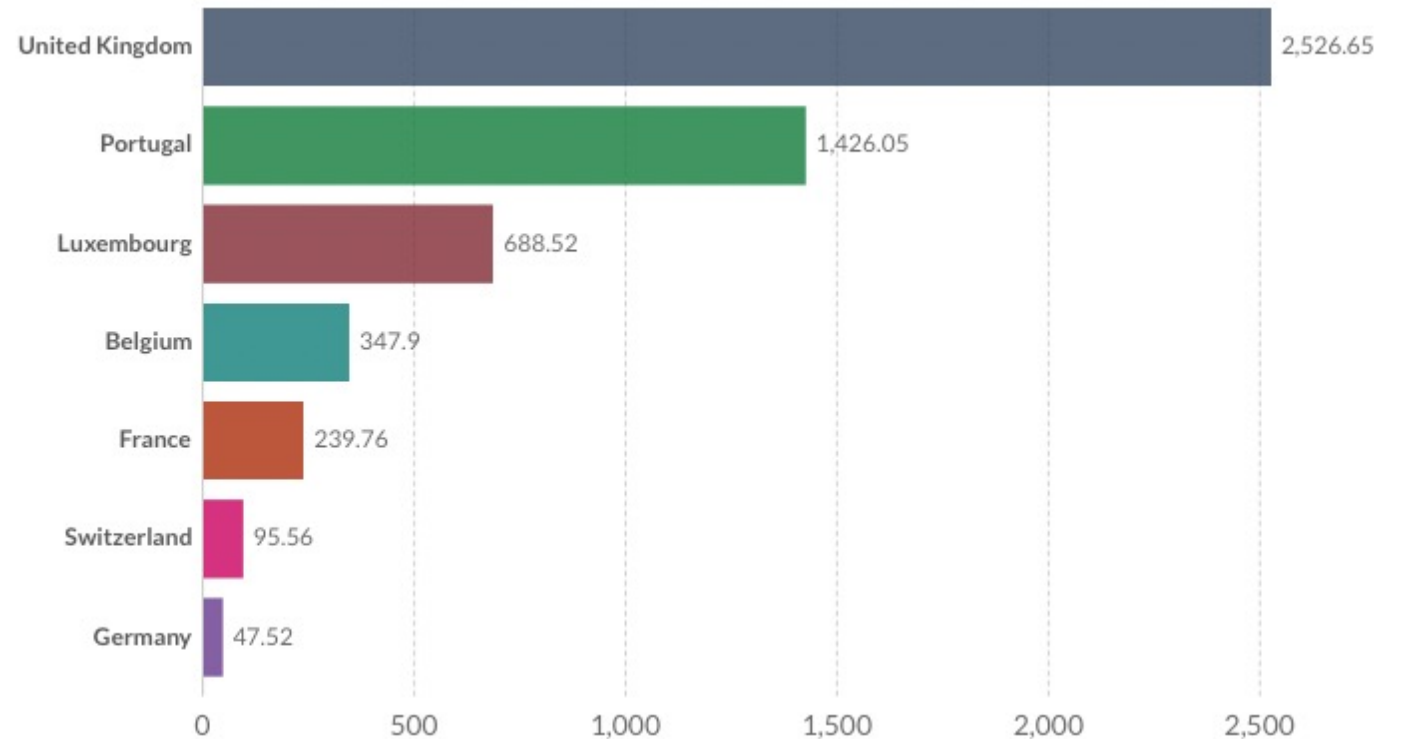
COMMUNICATION OF
STATISTICS IN PANDEMIC
TIMES – 05.07.2021

Resurgence of Covid-19 due to insufficient mobility restrictions

10 days following the eve of its national day, Luxembourg shows a strong resurgence of new Covid-19 cases mainly due to :

- ✓ the mass gatherings at the eve of National Day, 22.06
- ✓ the absence of quarantine for travelers from Delta VOC regions
- ✓ the return of high school leavers importing Delta from holiday islands

Weekly confirmed COVID-19 cases per million people, July 4 2021



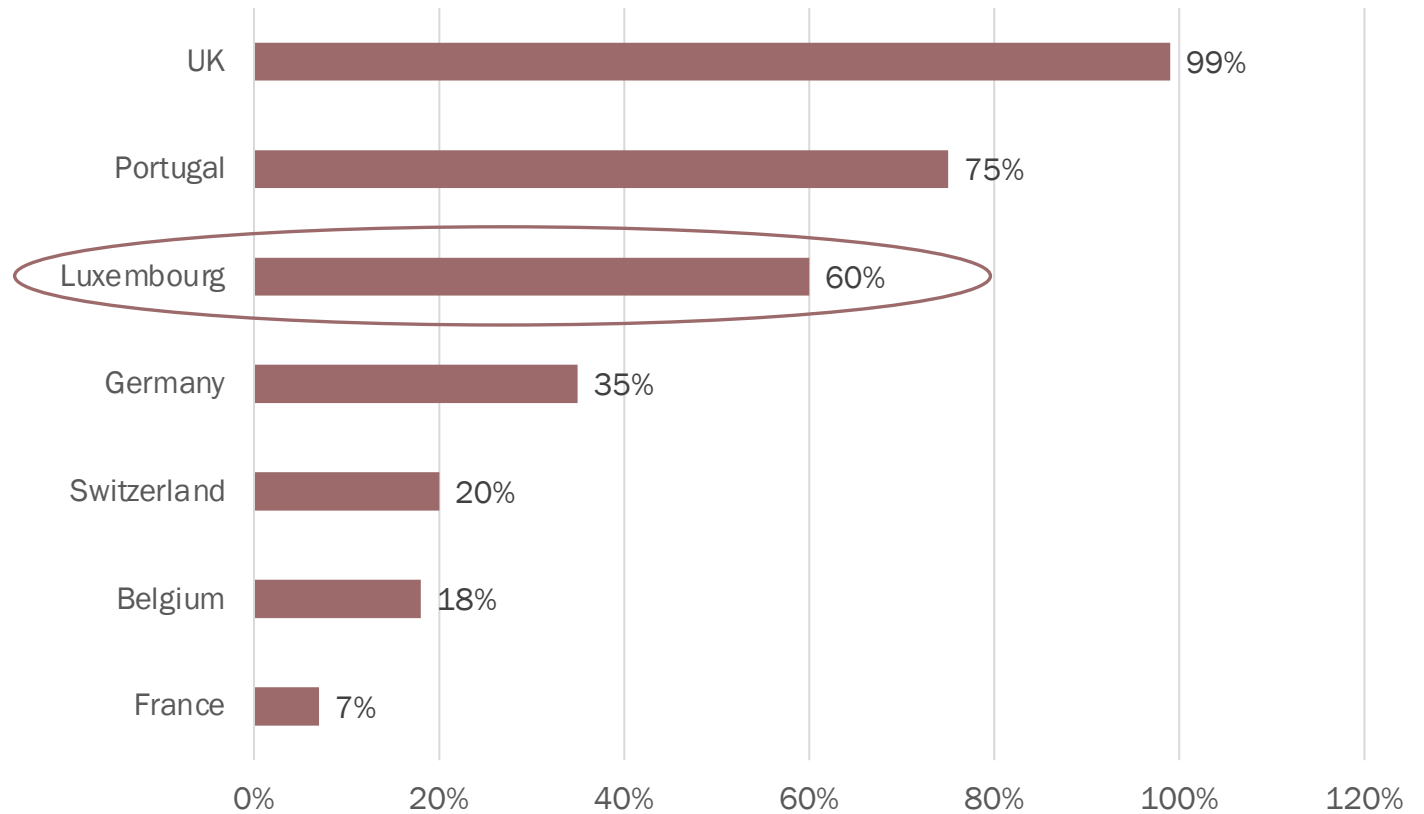
Sources: Ourworldindata, Johns Hopkins University, ECDC, 4th of July 2021

The new outbreak of the pandemic is dominated by the Delta VOC

The Delta VOC is mainly characterised by:

- ✓ It is estimated that R is [40-80%](#) higher for delta than for alpha (observed also with secondary attack rates)
- ✓ [delta-infected people more likely to be hospitalised](#) within 14 days of testing positive than alpha-infected people
- ✓ The vaccine efficacy after one dose, measured as protection against symptomatic infection, [only about 30% for AstraZeneca and BioNTech](#) – (vs. 50 % with alpha)
- ✓ After the second vaccination, there is still very high protection against severe covid 19 courses ([AstraZeneca: 75 - 97 %](#), ; [BioNTech 86 – 99%](#))

Share of COVID sequences that are the delta variant, June 30 2021



Sources: Ourworldindata, Johns Hopkins University, 30th of June 2021

Note: The percentage does not necessarily reflect its share of total confirmed cases because not all samples receive DNA sequencing.

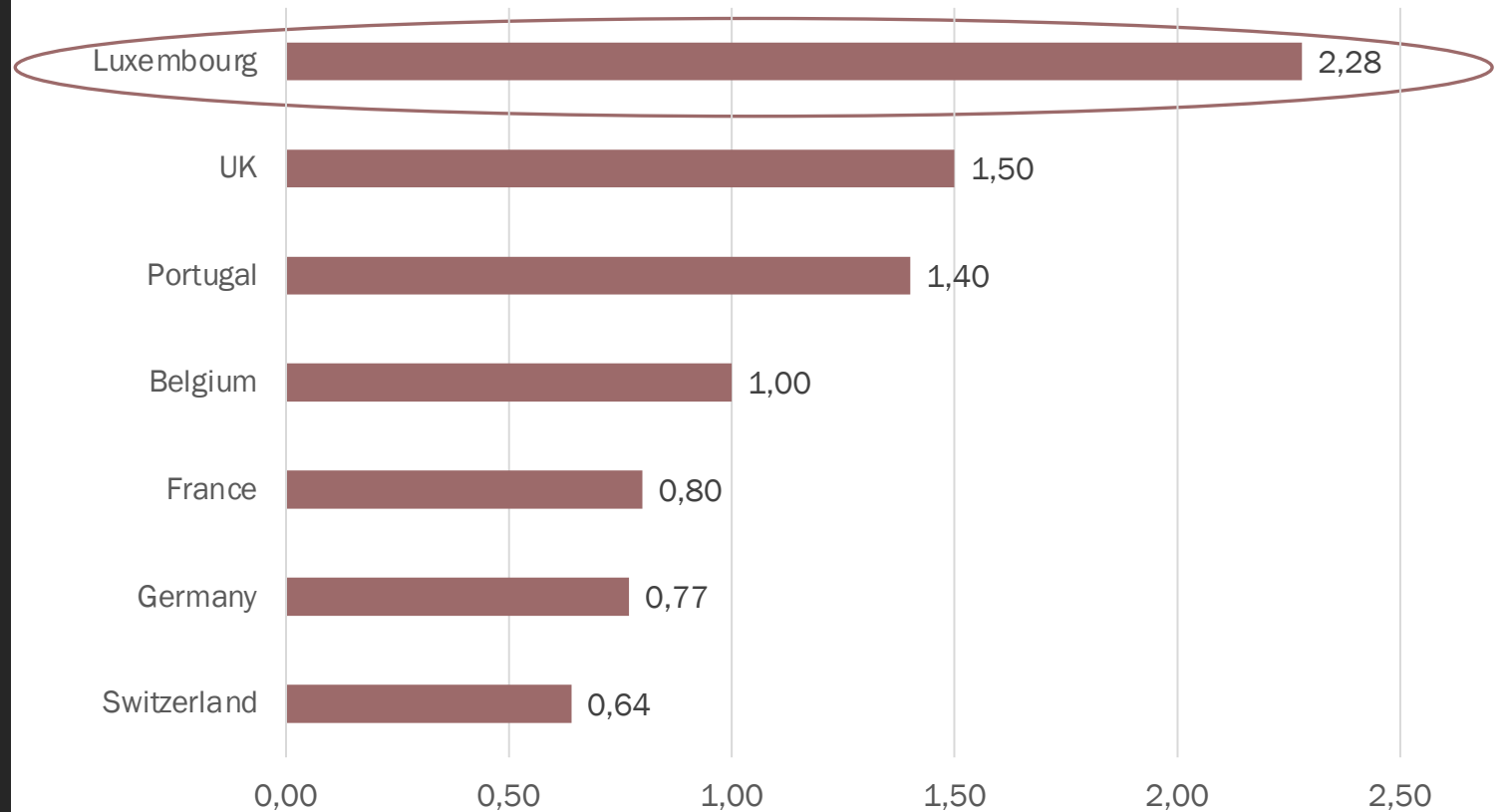
Positive for Luxembourg is the massive testing (50 times per case) by LIH and the high regular DNA sequencing by LNS

Luxembourg seems to be a new EU-wide Corona hot spot with $R > 2$

The strong reproduction rate R is favoured by :

- ✓ An insufficient protection rate of the population, of which only 35% are completely and 55% partly vaccinated
- ✓ Relaxed opening measures supported by a false sense of security through CovidCheck regime
- ✓ Decreasing vaccination coverage in the oldest population cohorts (75+)

Estimate of the effective reproduction rate (R) of COVID-19, July 4 2021

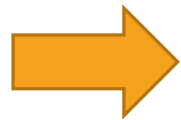


Sources: Ourworldindata, Arroyo-Marioli F, Bullano F, Kucinskis S, Rondón-Moreno C (2021) Tracking R of COVID-19: A new real-time estimation using the Kalman filter. [PLoS ONE 16\(1\): e0244474](https://doi.org/10.1371/journal.pone.0244474).

Note: The reproduction rate R represents the average number of new infections caused by a single infected individual. If the rate is greater than 1, the infection is able to spread in the population. If R is below 1, the number of cases occurring in the population will gradually decrease to zero.

How many people have to be vaccinated to reach herd immunity against COVID-19? And how does the delta variant factor in?

VIRUS TYPE	REPRODUCTION RATE R	FULL VACCINATION COVERAGE F	VACCINATION RATE V
Initial Sars-Cov 2 virus	~3	~95% <i>AstraZeneca/BioNTech</i>	70%
Delta VOC	~6	~90% <i>AstraZeneca/BioNTech</i>	93%



The outbreak is stopped if 93% of the population (till 12 years included) is completed vaccinated

Source: MANGHINI Research, $V = (1 - 1/R) * (1/F)$

Action plan to stop the outbreak now

1. Accelerate vaccination campaign to reach herd immunity (93% of population including 12y)
2. Enforce PCR testing for all travelers followed by 10 days quarantine
3. Travel ban to destinations with Delta VOC and high incidence (>100) regions
4. Replace CovidCheck regime with mandatory rapid testing procedure for all event participants to identify potential super spreaders
5. Advance the summer holidays by one week to avoid further school infections



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