

28 August 2020

Update of the current situation in Luxembourg

Scientists from the COVID-19 Task Force of Research Luxembourg regularly analyse the current situation in Luxembourg and work on mathematical simulations of what could happen over the next week or month. This document provides an updated lay summary with their main observations.

Overall analysis of the current situation

In the past week, the situation has stabilised, but some indicators show that there could be a rebound of the epidemics when summer holidays come to an end.

Main points for this week (28 August 2020)

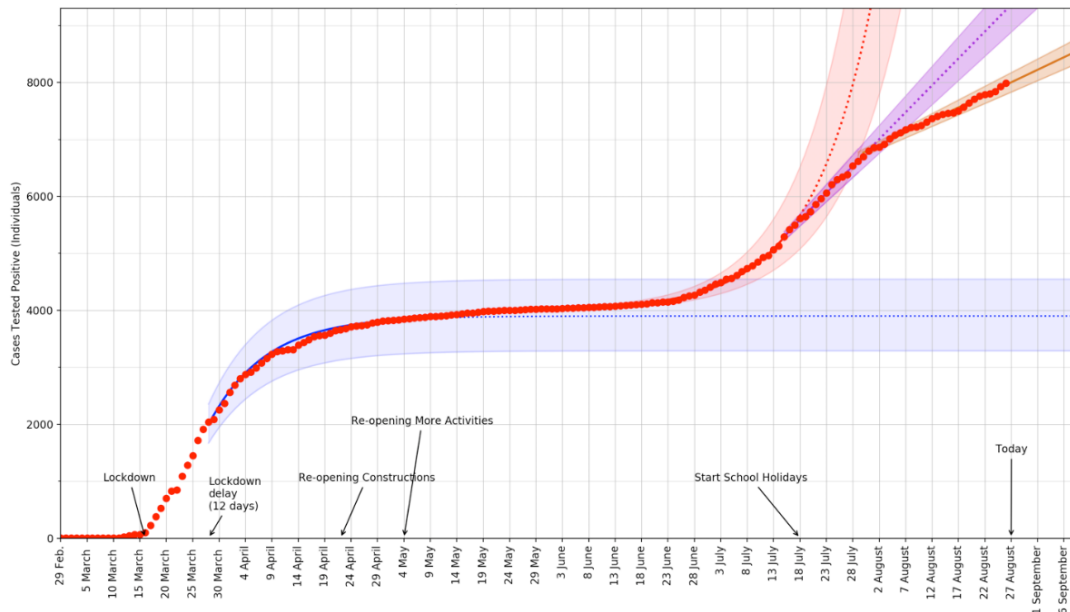
- The curve of daily new confirmed cases now follows a linear growth, with an average of 44 daily cases over the last 3 weeks (Figure 1). The effective reproduction number increased during the last week and stabilised around 1. Despite the decreasing number of tests performed daily, the proportion of positive tests stays stable at around 1%. This trend indicates that the situation is currently stable but could again quickly evolve.
- The midterm projection using an epidemiological model shows a slower fading out of the second wave than anticipated during the first weeks of August. It means that the recently observed linear increase in the daily cases (3rd week in August) actually indicates the potential for an epidemic rebound. The model does not take into account the impact of the summer holidays explicitly but estimates a reduced number of social interactions. These are likely to increase again from the beginning of September onwards due to the end of the vacation period and may lead to a substantial increase in daily infection numbers (Figure 2).
- To estimate the potential effect of increased social interactions after the vacation time, the model assumes an increase between 30% to 70% from mid-September on, which corresponds to the social activity during June and July, respectively. With this assumption, the model exhibits a likely linear increase in daily cases or even to a third wave from mid of September onwards (Figure 2). This indicates a fragile situation and strict monitoring of case numbers and corresponding updates of the projections are needed to evaluate the epidemic development.

Take home message

Despite the vacation period, the current trend is not following a relaxation but corresponds to a continuous spreading, although with a smaller number of daily cases compared to July. It is likely that this reduction is only based on a vacation effect and that numbers will further increase from beginning of September onwards. Changes in behaviour and social interactions in the population, could again quickly lead to an exponential growth. It is therefore important to always, even while abroad on a holiday trip, keep observing safety measures (distancing, facial mask, handwashing etc.) and participating in testing and contact tracing.

Key Figures

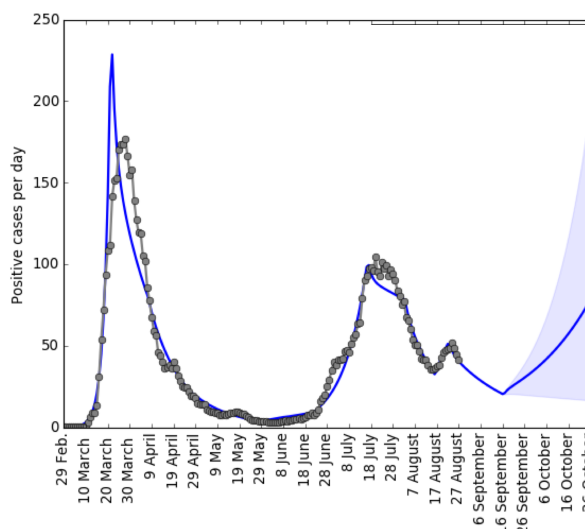
Figure 1: Evolution of the total number of positive cases over time in Luxembourg



Cumulative positive Covid-19 cases.

- Data
- Asymptotic behavior of first wave
- Exponential second wave - valid until 16 July
- Linear increase (average of 94 cases/day) - valid until 1st August
- Linear increase (average of 44 cases/day) - valid for the last weeks

Figure 2: Midterm projections of daily cases based on an epidemiological model



Daily positive Covid-19 cases.

- 7-day Average Data
- Model Projections

The model shows a likely projection for increasing social interactions after the vacation period from September 16 on. The projection shows that a linear increase in daily cases is likely to occur but a further increase of social interactions also bears the potential of another exponential behavior (shaded area).