There were less than 1,000 positive Covid-19 cases per day over the summer. In September this jumped to nearly 3,000 per day, it is now near 4,000 per day.

Similarly, tests processed have increased a lot since June - 86,000 at the start of June to around 220,000 now. Potential capacity has grown a bit over the period, although less than you might expect.

The current testing regime does not seek to find every single case of Covid-19 in the community but rather break enough of the transmission chains to keep Rt (the effective rate of transmission) below 1.

So you could conclude that the uptick in positive tests has been caused by an increase in the number of tests processed.

Equally, you could conclude that the current lack of tests has been caused by unexpected (?) coughs, colds, and people being precautionary on their return to school or work.

But the rate of positive Covid-19 cases per 1,000 tests has gone up despite the likely increase in non-Covid-19 demand.

Currently, there are around 18 positive cases per 1,000 tests, and it is rising. By contrast, this positive rate was 7 per 1,000 over July and August.

Similarly, Rt has increased in recent weeks as people have returned to school and work and whatever it is that causes the disease to spread.
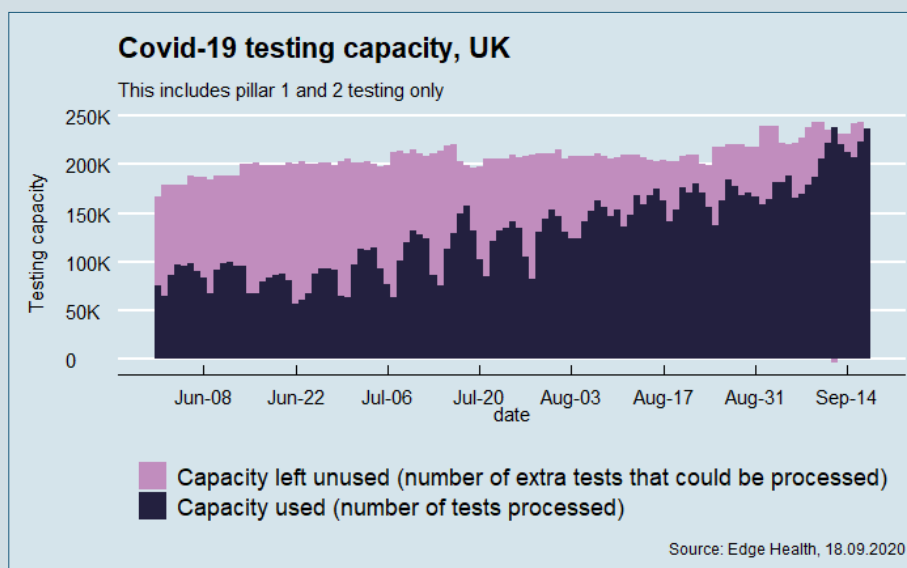
Current estimates of Rt are 1.2 - up from 0.8 over the summer (this is visible in the chart below from our survey last week).

This means for every 10 people infected, another 12 will become infected, and the virus will spread more and more.

Additional testing and tracing would help. If Test and Trace get an extra 50% of people to reduce their transmission by 40%, then the Rt of 1.2 can be reduced back below 1.

So how many tests are needed?

Ideally, the testing and tracing would be targeted, so that it breaks transmission chains and limits the need for costly additional capacity.

It is hard to tell the difference between a Covid-19-cough and a cough-cough, which means testing capacity needs to include demand from: people who might have Covid-19, people that have a cough or a cold and think they might have Covid-19, and perhaps a few others as well.

Covid-19 testing capacity, UK
This includes pillar 1 and 2 testing only

Legend:
- Capacity left unused (number of extra tests that could be processed)
- Capacity used (number of tests processed)

Source: Edge Health, 18.09.2020

Based on a rule-of-thumb calculation, we estimate that around 600,000 tests per day are currently needed.

The problem is that once-daily demand is consistently a bit

With potentially millions of tests in the backlog and no way to target Covid-19 people, there are inevitably missed Covid-19 cases and therefore unbroken transmission chains.

An opportunity, which we have advocated since March, is sharing anonymised data on confirmed cases…

… at an individual level: age, gender, occupation, Covid-19 illness status (home, hospital, recovered), location, believed source of infection (pub, school, work, household), date recovered, and the cluster-ID (if it is collected).

These data would allow many people to identify insights on patterns of transmission, which could be widely shared for targeted social distancing.

In the short term, testing is unlikely to help bring Rt below 1 - hence the suggestion that we are heading towards lockdown 2.0.
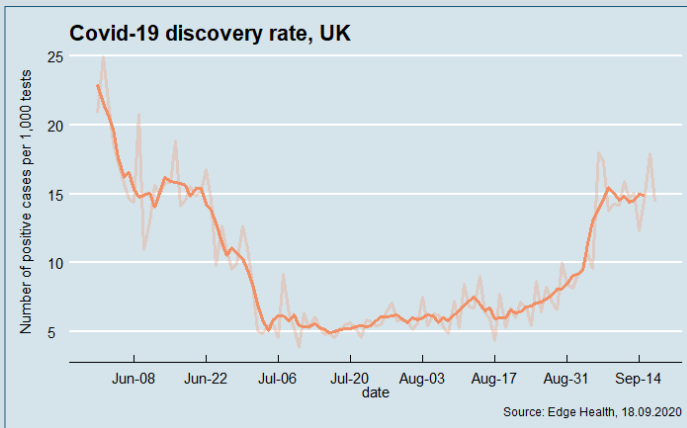
An alternative is to let Covid-19 pass through

Covid-19 discovery rate, UK

Source: Edge Health, 18.09.2020

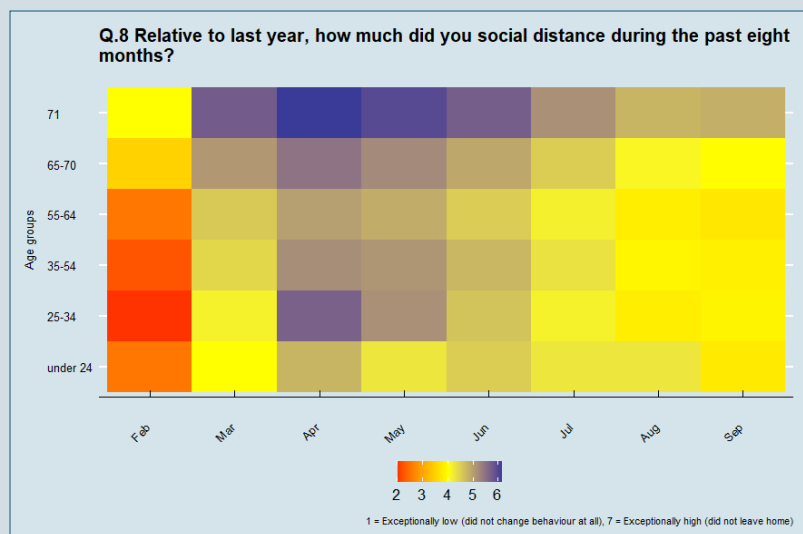higher than capacity; it spills over to the next day.

This is cumulative;

"I didn't get a test yesterday, so I will try again today"

… demand is a big issue as it snowballs: if capacity is 220,000 and demand is 300,000 this creates a deficit of 80,000 on day one, 160,000 on day two and millions within a few days (remember exponential growth?).

This growth in demand for tests wouldn't be a problem if the rate of positive Covid-19 cases per 1,000 tests were falling, but it is increasing.

I am of the view that no one wants to catch the disease, let alone pass it onto someone else.

Q.8 Relative to last year, how much did you social distance during the past eight months?

1 = Exceptionally low (did not change behaviour at all), 7 = Exceptionally high (did not leave home)

the population and hopes the vulnerable people are kept out of the way.

Neither is very appealing.

So once shared, the population would start to alter its behaviour maturely, rather than waiting for and then challenging seemingly arbitrary rules.

If published daily, these data would also allow more targeted warnings in specific geographies just like a weather forecast!