

# Government publishes coronavirus (COVID-19) R value and growth rates

The current growth rate for the UK as a whole is -4% to -2% and the R estimate for the UK, as a whole, remains at 0.7-0.9.

The growth rate reflects how quickly the number of infections are changing day-by-day. It is an approximation of the change of number infections each day. and If the growth rate is greater than zero (+ positive), then the disease will grow, and if the growth rate is less than zero then the disease will shrink.

The size of the growth rate indicates the speed of change. A growth rate of +5% will grow faster than one with a growth rate of +1%. Likewise, a disease with a growth rate of -4% will be shrinking faster than a disease with growth rate of -1%. Further technical information on growth rate can be found here.

R estimates do not tell us how quickly an epidemic is changing and different diseases with the same R can result in epidemics that grow at very different speeds. For instance, a disease with  $R=2$  with infection lasting years will grow much more slowly than a disease with  $R=2$  with infection lasting days. Growth rates provide us with different information to R estimates, by informing us of the size and speed of change, whereas R value only gives us information on the direction of change.

To calculate R, information on the time taken between each generation of infections is needed. That is how long it takes for one set of people in an infected group to infect a new set of people in the next group. This can depend on several different biological, social, and behavioural factors. The growth rate is estimated using a range of data similar to R, however it does not depend on the 'generation time' and so requires fewer assumptions to estimate.

Neither one measure, R nor growth rate, is better than the other but each provide information that is useful in monitoring the spread of a disease. The R estimate and growth rates are not the only important measures of the epidemic. Both should be considered alongside other measures of the spread of disease, such as the number of people currently infected.

The government has also today published updated regional R values, covering each of the NHS England regions in England.

As an average value, R can vary in different parts of the country, communities, and subsections of the population. It cannot be measured directly so there is always some uncertainty around its exact value. This becomes even more of a problem when calculating R using small numbers of cases, either due to lower infection rates or smaller geographical areas. This may be due to the uncertainty of the underlying data leading to a wider range for R.

Estimates of the growth rates and R are currently updated on a weekly basis. However, as the numbers of cases decrease, these metrics will become less helpful indicators and other measures need to be considered. These include the number of new cases of the disease identified during a specified time period (incidence), and the proportion of the population with the disease at a given point in time (prevalence), and these will become more important to monitor.

We are also publishing today under the same embargo further evidence that is informing the advice from SAGE. [See the full set of evidence published to date.](#)