

SPI-M-O: Consensus Statement on COVID-19

Date: 28th April 2021

All probability statements are in line with the framework given in the Annex.

Summary

1. SPI-M-O's best estimate for **R in England is between 0.8 and 1.1. R is estimated to be between 0.8 and 1.0 for both Scotland and Wales, and 0.7 and 1.0 for Northern Ireland.** These estimates are based on the data available up to 26th April, including hospitalisations and deaths as well as symptomatic testing and prevalence studies. They will not yet fully reflect behavioural changes which have taken place since the latest easing of restrictions on 12th April.
2. **SPI-M-O is not confident that R is below 1 in England.** The upper limit of SPI-M-O's estimates of R now exceeds 1 in East of England, London, and South West regions. There is evidence that the epidemic in England is no longer falling and is plateauing.
3. SPI-M-O estimates that there are between **2,000 and 6,000 new infections per day in England.**
4. Close monitoring of the proportion of tests that are S-gene positive offers an early indication of possible variants of concern. The number and proportion of cases that are S-gene positive continues to increase but this is highly heterogeneous across regions and ethnicities. The extent of community transmission of non-B.1.1.7 variants is difficult to ascertain due to targeted testing of travellers and in areas where variants of concern have already been detected.

Incidences and prevalence

5. Combined estimates from eight SPI-M-O models, using data available up to 26th April, suggest there are between **2,000 and 6,000 new infections per day in England.** The ONS community infection survey estimates that there were 3,600 new infections per day in England (credible interval of 2,200 to 5,100) on 14th April 2021.
6. During the most recent week of this study (18th to 24th April), the survey also estimates that an average of **54,200 people had COVID-19** in the community in England (credible

interval **43,700 to 66,100**). The survey does not include people in care homes, hospitals, or prisons. Estimates from across the four nations of the UK are:

England	54,200 (credible interval 43,700 to 66,100)
Scotland	8,200 (credible interval 4,500 to 13,200)
Wales	1,900 (credible interval 700 to 4,100)
Northern Ireland	1,900 (credible interval 600 to 4,100)

Growth rate and reproduction number

7. For small daily changes, the growth rate is approximately the proportion by which the number of infections increases or decreases per day, i.e. the speed at which an epidemic is growing or shrinking¹.

8. SPI-M-O's consensus estimates for the **growth rates in the four nations are:**

England is between **-4% and -1% per day**,

Scotland is between **-4% and -1% per day**,

Wales is between **-4% and +1% per day**, and

Northern Ireland is between **-6% and +1% per day**.

SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 2.

9. The reproduction number (R) is the average number of secondary infections produced by a single infected individual; it is an average over time, geographies, and communities.
10. SPI-M-O's best estimate for **R in England is between 0.8 and 1.1. R is estimated to be between 0.8 and 1.0 for both Scotland and Wales, and 0.7 and 1.0 for Northern Ireland**. SPI-M-O's agreed national estimates are summarised in Table 1 and Figure 1, and these are based on the latest data available up to 26th April. R is an indicator that lags by two to three weeks and, therefore, the full impact of behavioural changes that have happened since easing of restrictions on 12th April will not be reflected, nor will the return of schools after the Easter holidays.
11. Due to the lag in these indicators, **SPI-M-O is not confident that R is below 1 in England**. Regional estimates can be seen in Table 1 and Figure 3. The upper limit of SPI-M-O's estimates of R now exceeds 1 in the East of England, London, and South West regions.

¹ Further technical information on the growth rate can be found in [Plus magazine](#)

Table 1: Combined estimates of R values and growth rates in the four nations of the UK and NHS England regions (90% confidence interval)²

Nation	R	Growth rate per day
England	0.8 to 1.1	-4% to -1%
Scotland	0.8 to 1.0	-4% to -1%
Wales	0.8 to 1.0	-4% to +1%
Northern Ireland*	0.7 to 1.0	-6% to +1%
NHS England region	R	Growth rate per day
East of England	0.8 to 1.1	-4% to +1%
London	0.8 to 1.1	-5% to 0%
Midlands	0.7 to 1.0	-4% to -1%
North East and Yorkshire	0.8 to 1.0	-7% to -2%
North West	0.7 to 0.9	-6% to -2%
South East	0.8 to 1.0	-4% to 0%
South West	0.8 to 1.2	-4% to +1%

12. **Estimates of R and growth rates become more uncertain as hospitalisations and deaths reach low levels.** These estimates are becoming less useful in determining the state of the epidemic as these data reach low levels and as clustered outbreaks start to make up a greater proportion of cases. They can also become inconsistent with each other in this situation. Both R and growth rates are average measures and smooth over outbreaks at small spatial scales or over short periods of time. They should not be treated as robust enough to inform policy decisions alone.
13. SPI-M uses a basic reliability score to ensure the combined R and growth rate estimates are representative. This is calculated by determining whether the estimate is based on very few cases in the modelled region, and the variability of the numbers of cases in space³. Up until now, the very low estimated case numbers has been assessed using daily deaths in a region, averaged over a 10-day period; these were agreed to be the most reliable and unbiased data stream when the indicator was developed in summer 2020.
14. Over recent months, lockdown and the COVID-19 vaccination programme have driven the number of deaths down to very low levels, consequently reducing the reliability scores for

² The estimated intervals for R and growth rate may not exactly correspond to each other due to the submission of different independent estimates and rounding in presentation.

* Particular care should be taken when interpreting these estimates as they are based on low numbers of cases, hospitalisations, or deaths and / or dominated by clustered outbreaks and so should not be treated as robust enough to inform policy decisions alone.

³ [Maishman et al. 2021. Statistical methods used to combine the effective reproduction number, R\(t\), and other related measures of COVID-19 in the UK](#)

many regions. As a result, the number of individuals admitted to hospital with COVID-19 and inpatients newly diagnosed with COVID-19 has now replaced deaths in estimating the reliability score.

S-gene positivity and variants of concern

15. As B.1.1.7 is the dominant variant in the UK, S-gene positivity can be used as a proxy for other variants of SARS-CoV-2. While this cannot distinguish between these other variants, it offers the advantage of being more timely than sequenced samples.
16. The number and proportion of Pillar 2 cases that are S-gene positive continue to increase, but this is highly heterogeneous across regions and ethnicities. The extent of community transmission of non-B.1.1.7 variants is difficult to ascertain due to targeted testing of travellers and in areas where variants of concern have already been detected.
17. While a substantial proportion of Pillar 2 S-gene positive cases are either variants of concern or variants under investigation, this is not the case in the ONS's Community Infection Survey. The latter provides a representative sample of infection in the community and contains very small numbers of S-gene positive infections. This suggests that Pillar 2 cases are biased by testing strategies, such as surge and traveller testing.
18. A critical surveillance stream is the association of variants with hospital admissions and clinical outcomes. Sequencing monitors genotype variation, but it is phenotype variation that determines the impact. SPI-M-O strongly advise that there is timely linkage between vaccination, hospitalisation, and sequencing data sets to quickly reveal outbreaks of more pathogenic variants.

Effectiveness of isolation on symptoms

19. One SPI-M-O group has updated their estimate of the potential effectiveness of isolation of symptomatic people, based on emerging evidence around the trajectories of viral load.
20. Consistent [with previous modelling](#)⁴, they estimate that if all individuals were able to fully isolate upon symptom onset (so that they caused no further onward transmission) R would be reduced by around 50%. Some transmission would remain due to asymptomatic and pre-symptomatic transmission. This reduction in R drops to 39%, if a one-day delay is assumed before isolation, and 25% with a two-day delay.
21. This highlights the importance of enabling isolation from the onset of symptoms, not just from the receipt of a positive test result.

⁴ [Grassly *et al*, Comparison of molecular testing strategies for COVID-19 control: a mathematical modelling study. Lancet Infectious Diseases 2020.](#)

Annex: PHIA framework of language for discussing probabilities

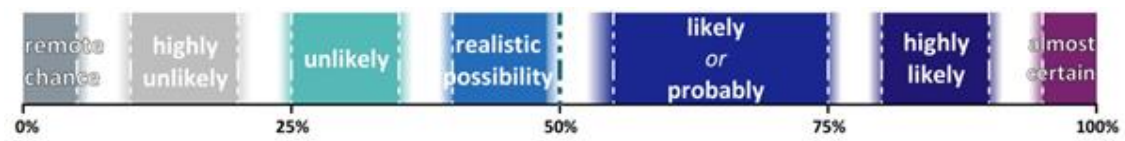


Figure 1: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

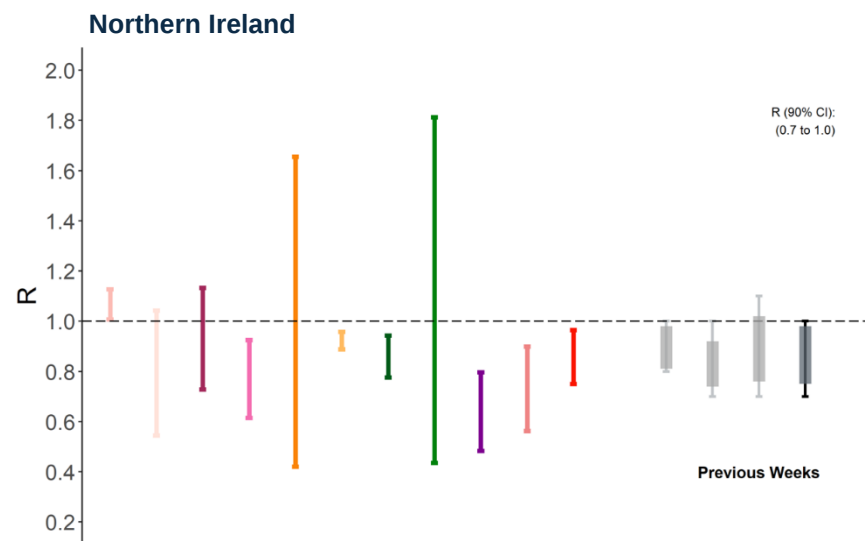
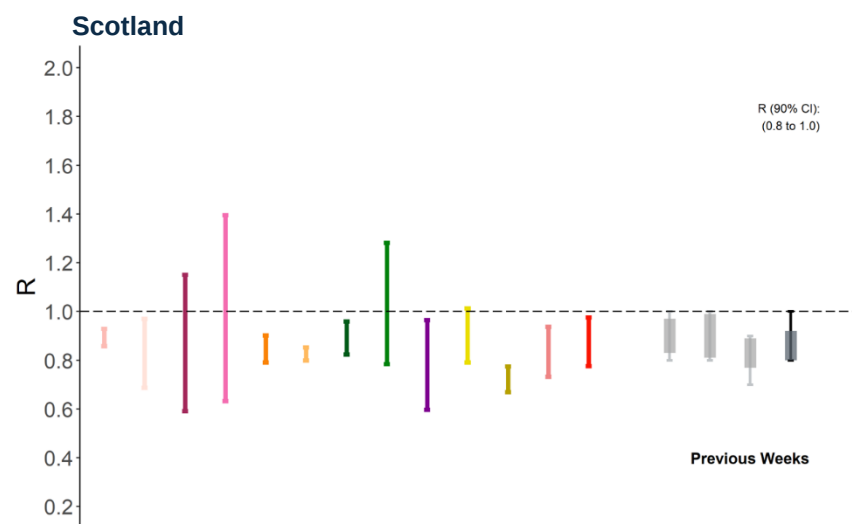
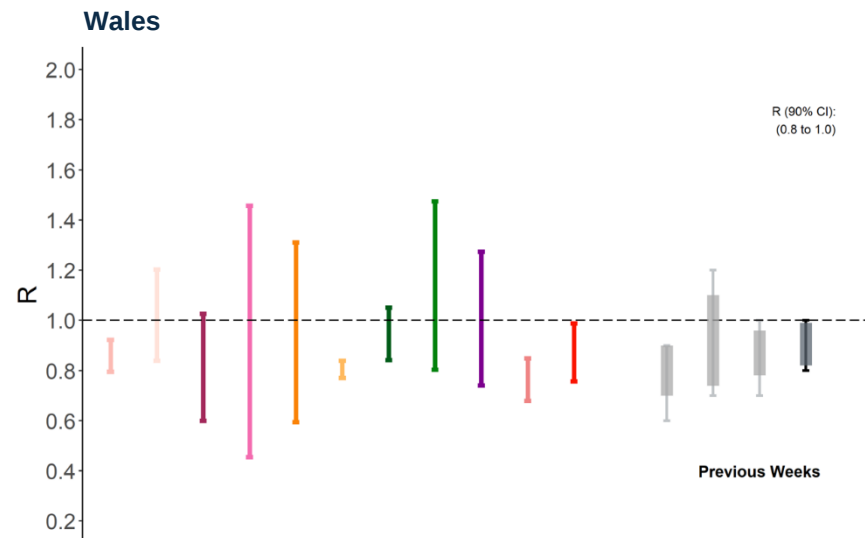
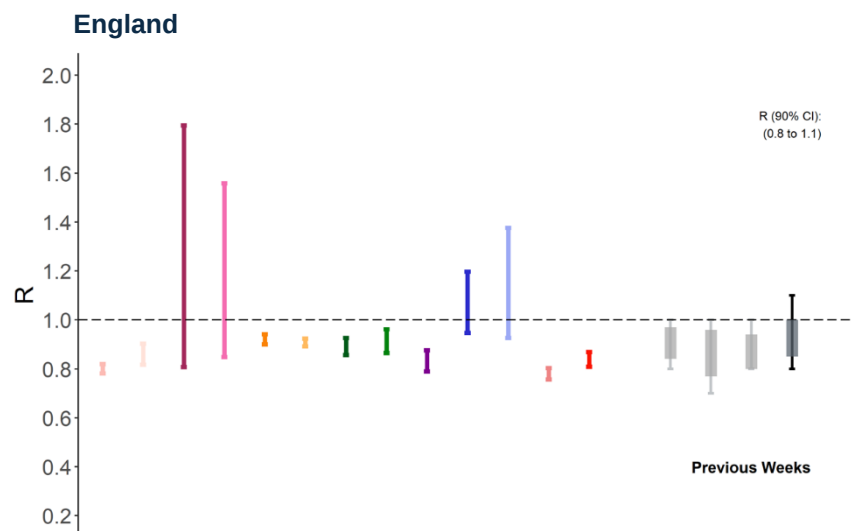


Figure 2: SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

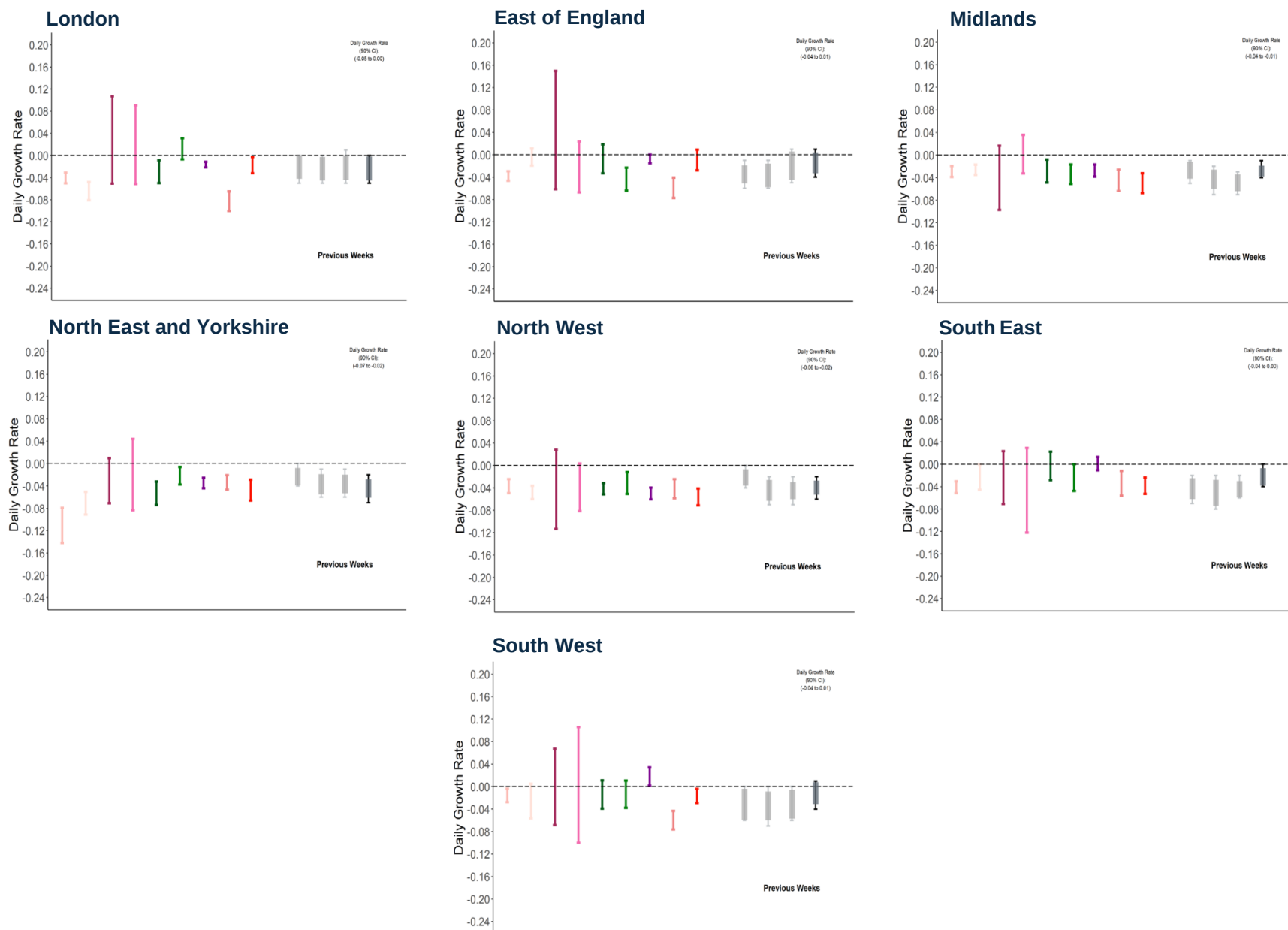


Figure 3: SPI-M-O groups' estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

