

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

Date: 26th May 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 1.0 and 1.1. R is estimated to be between 1.0 and 1.3 for Scotland, 0.8 and 1.1 for Wales, and 0.7 and 1.1 for Northern Ireland.** These estimates are based on data available up to 24th May, including hospitalisations, deaths, symptomatic testing and longitudinal studies.
2. SPI-M-O estimates that there are between **3,000 and 5,000 new infections per day in England.**
3. Prevalence is growing in almost all those upper tier local authorities in which the majority of samples are S-gene positive, and also in some where most samples are S-gene negative. On a national level, the decreasing epidemic of B.1.1.7 has been masking the rise of B.1.617.2.
4. While it remains almost certain that B.1.617.2 has a significant growth rate advantage over B.1.1.7, **there is still considerable uncertainty around the extent of this estimate.** One group has estimated that R for B.1.617.2 in the UK is 1.2 (95% CI 1.0-1.5), whereas R is below 1 in most local authorities where B.1.1.7 remains dominant.

Incidence and prevalence

5. Combined estimates from six SPI-M-O models, using data available up to 24th May, suggest there are between **3,000 and 5,000 new infections per day in England.**
6. During its most recent week (16th to 22nd May), the ONS community infection survey estimates that an average of **48,500 people had COVID-19** in the community in England (credible interval **38,400 to 60,200**). The survey does not include people in care homes, hospitals, or prisons. Two confirmed B.1.617.2 infections were also detected in the four

weeks up to 16th May, indicating its increasing prevalence. Estimates from across the four nations of the UK are:

England	48,500 (credible interval 38,400 to 60,200)
Scotland	8,300 (credible interval 4,400 to 13,700)
Wales	800 (credible interval 100 to 2,200)
Northern Ireland	2,200 (credible interval 700 to 4,900)

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 **0% and +3% per day**,
 - Scotland** is between **0% and +4% per day**,
 - Wales** is between **-3% and +1% per day**, and
 - Northern Ireland** is between **-5% and 0% per day**.

SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 7.

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, viral variants and communities. This should be considered when interpreting the R estimate for England, given the current local heterogeneity in epidemiological situations.
10. SPI-M-O's best estimates for **R in England is between 1.0 and 1.1. R is estimated to be between 1.0 and 1.3 for Scotland, 0.8 and 1.1 for Wales, and 0.7 and 1.1 for Northern Ireland.** SPI-M-O's agreed national estimates are summarised in Table 1 and Figure 6, and these are based on the latest data available up to 24th May. R is an indicator that lags by two to three weeks and therefore does not reflect the full impact of behavioural changes that have happened during this time. Regional estimates can be seen in Table 1 and Figure 8.

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	1.0 to 1.1	0% to +3%
Scotland	1.0 to 1.3	0% to +4%
Wales	0.8 to 1.1	-3% to +1%
Northern Ireland³	0.7 to 1.1	-5% to 0%
NHS England region	R	Growth rate per day
East of England	0.9 to 1.1	-1% to +3%
London	1.0 to 1.2	0% to +3%
Midlands	0.9 to 1.0	-2% to +1%
North East and Yorkshire	0.8 to 1.0	-3% to 0%
North West	1.0 to 1.2	0% to +4%
South East³	0.8 to 1.0	-3% to 0%
South West	0.9 to 1.1	-1% to +3%

11. R estimates are averages over populations, viral variants, and areas. The combination of clustered outbreaks in some areas and declines in others means the estimates are difficult to interpret and less reliable than usual. The situation could change quickly in the coming days, especially as restrictions were relaxed further on 17th May.

Longer term outlook

12. At a local authority level, there is a clear split in growth rates between S-gene positive and S-gene negative samples, with increasing heterogeneity as clusters begin to form of neighbouring local authorities with growing outbreaks.

13. There has been a general trend over the past two months of gradually increasing R across the country (Figure 1). On top of this pattern, R is currently greater than 1 in almost all those upper tier local authorities in which the majority of samples are S-gene positive, although R is only estimated to be substantially above 1.3 in a handful of such areas (Figure 2). R is also estimated to be above 1 in other local authorities where there is

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.

³ Particular care should be taken when interpreting these estimates as they are based on low numbers of cases, hospitalisations, or deaths and / or are dominated by clustered outbreaks and so should not be treated as robust enough to inform policy decisions alone.

insufficient TaqPath laboratory coverage to determine the S-gene status of more than 20% of positive samples (Figure 3).

Figure 1: Weekly estimated reproduction number (y axis) and proportion S-gene negative (and hence B.1.1.7) in English Upper Tier Local authorities where S-gene status is known for at least 20% of cases and there have been at least 20 S-gene positive cases. Circle size corresponds to the number of cases in the last 4 weeks. Colours give the English region. Dates refer to the end of the week.

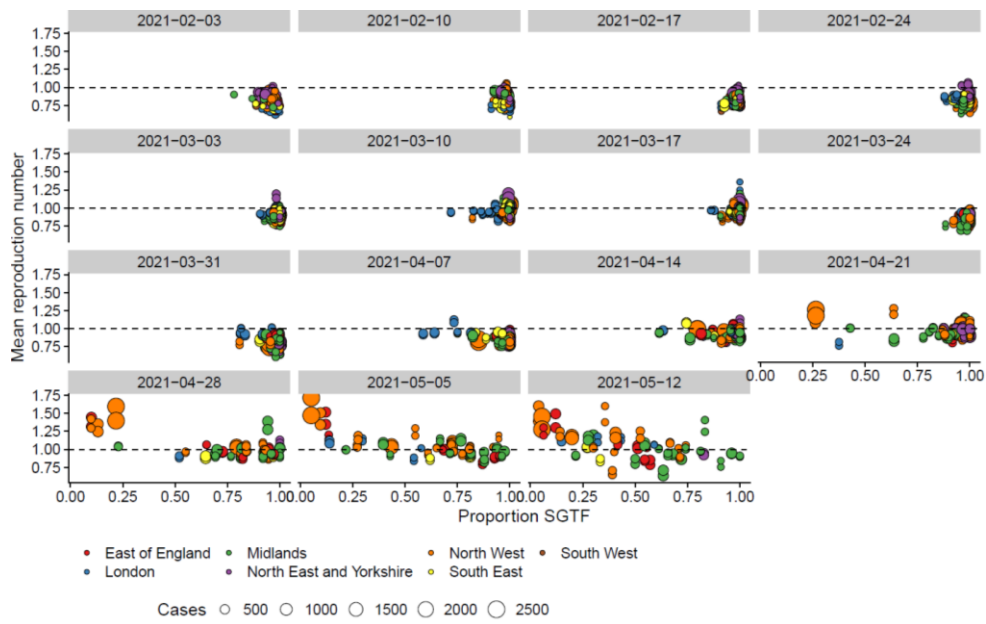


Figure 2: As Figure 1, but for the most recent week.

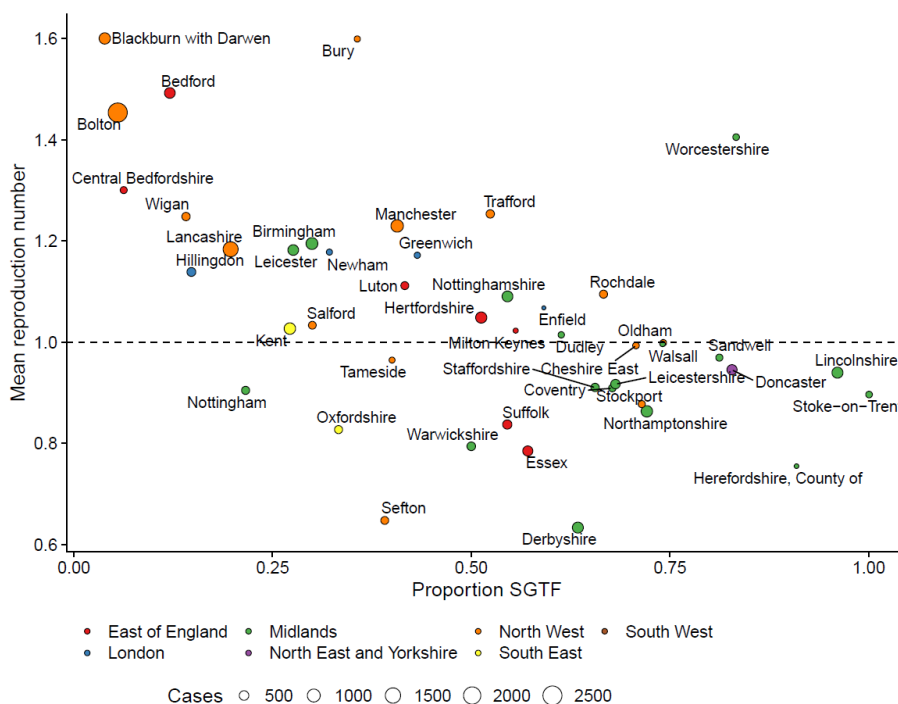
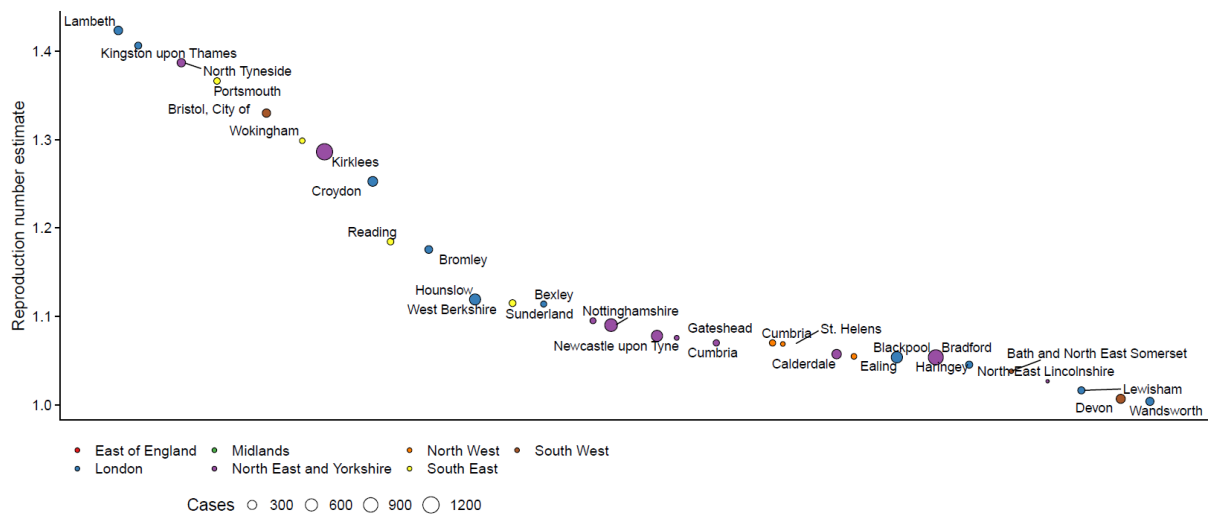


Figure 3: As Figure 2, but for upper tier local authorities **without** sufficient TaqPath coverage.



14. SPI-M-O expect national and regional level growth rates to increase further as B.1.617.2 continues to spread across the country. Changes in behaviour as a result of step 3 of England's Roadmap, which took place on 17th May, will not yet be reflected in these data and will increase growth rates further.

15. It is important to note that **on a national level, the decreasing epidemic of B.1.1.7 has been masking the rise of B.1.617.2, resulting in a relatively flat trajectory.** When prevalence is low, as at present, sustained exponential growth can appear to not be a problem. However, as the last 15 months have shown, it can, very rapidly, result in very large numbers of infections. Even if two vaccine doses reduce the risk of hospitalisation by 90%, and two dose uptake were 95% among the highest risk people, that still leaves 14.5% of that population at risk of severe disease (in addition to those in lower risk groups). This means that a large increase in prevalence will almost certainly lead to significant pressures on the health service.

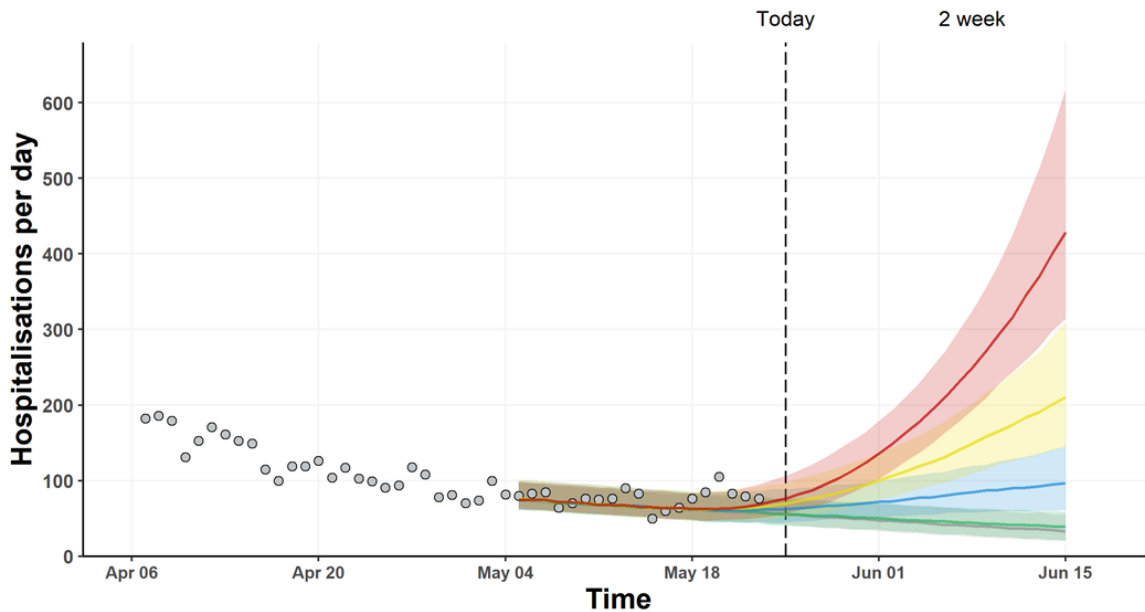
16. On 5th May, SPI-M-O modelled scenarios for several possible values of R following the relaxation of measures on the 17th May⁴. When these scenarios were produced, only data up to 30th April was available, and the existence of B.1.617.2 was not included in modelling assumptions.

17. Figure 4 shows hospital admissions in England from these scenarios (R = 0.9 – green; R = 1.2 – blue; R = 1.5 – yellow; R = 1.8 – red). **This shows that following a step change in transmission from 17th May, hospital admissions would remain low until well into**

⁴ [SPI-M-O: Summary of further modelling of easing restrictions – roadmap step 3](#), 5 May 2021.

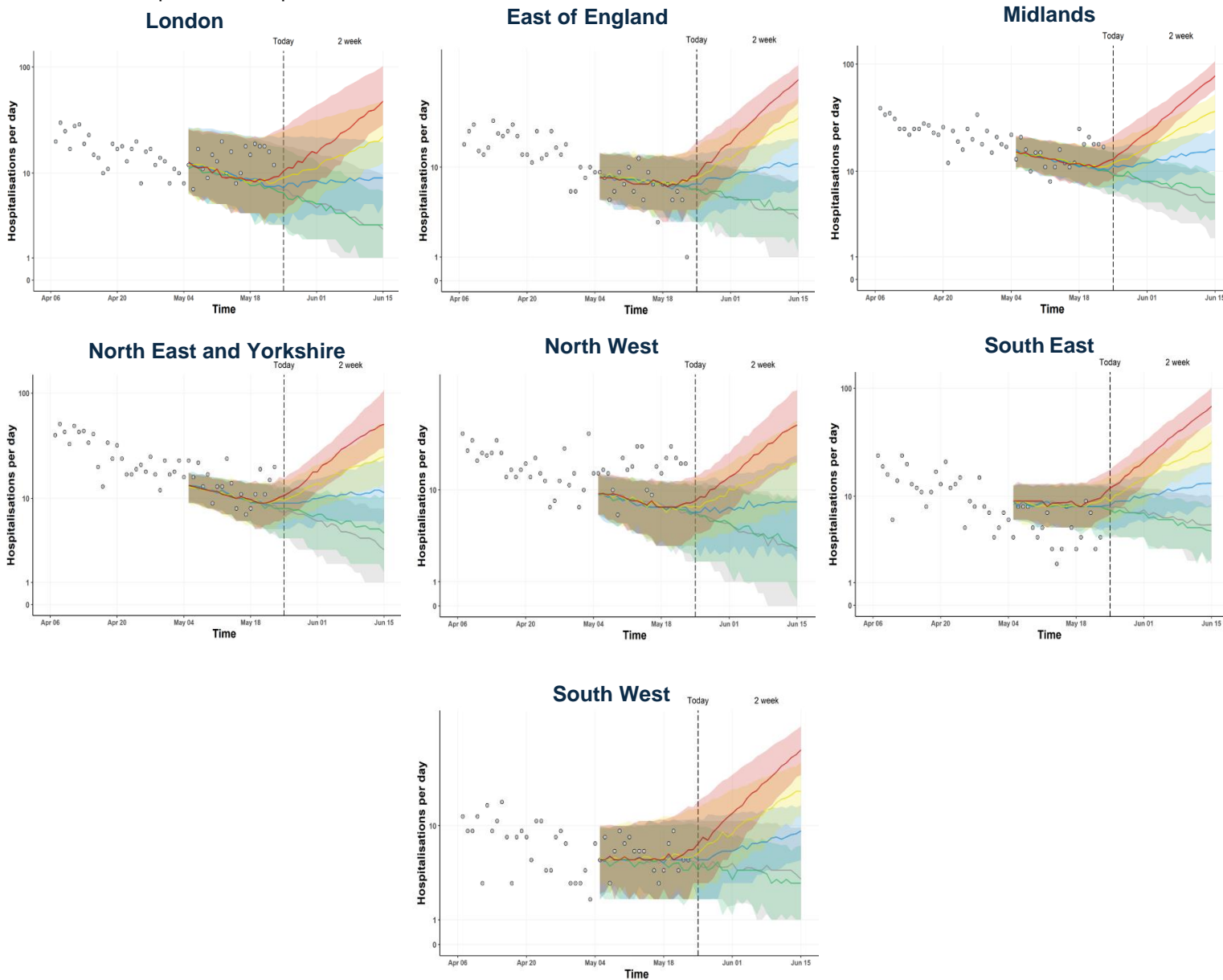
June, but a sustained period with R significantly above 1 would result in them being considerably higher by 21st June.

Figure 4: Eight-week scenarios for daily hospital admissions in England over a range of R values (0.9 – green; 1.2 – blue; 1.5 – yellow; 1.8 – red) reflecting the possible impact of the easements from 17th May. The grey lines are SPI-M-O's medium-term projection of then-current trends. All scenarios show interquartile ranges of model combinations as the shaded band.



18. An English regional breakdown is given on a log scale in Figure 5. It is noticeable that **the number of daily hospital admissions in the North West has been above the trajectory expected when the projections were produced (i.e. before step 3 was made on 17th May)**. In contrast, daily admissions in the South East have been below the trajectory suggested by the scenarios.

Figure 5: Eight-week scenarios for daily hospital admissions in NHS England regions on a log scale over a range of R values (0.9 – green; 1.2 – blue; 1.5 – yellow; 1.8 – red) reflecting the possible impact of the easements from 17th May. The grey lines are SPI-M-O’s medium-term projection of then-current trends. All scenarios show interquartile ranges of model combinations as the shaded band, i.e. 50% of data points are expected to land outside them.



19. SPI-M-O have considered a further update of modelling from LSHTM, which estimates the reproduction number for B.1.617.2 in the UK, based on data from COG-UK. This model has been updated to allow R to vary in the most recent time period and suggests that R in the community has decreased from 1.9 (95% CI: 1.7-2.0) to 1.2 (95% CI 1.0-1.5), with the change being around 7th May (95% CI: 2nd-11th May). This decrease could be a result of the variant spreading to different parts of the community with relatively lower growth, and/or targeted measures or behavioural changes in those areas with higher B.1.617.2 prevalence.

20. While it remains almost certain that B.1.617.2 has a significant growth rate advantage over B.1.1.7, **there is still considerable uncertainty around the extent of this estimate.**
21. SPI-M-O have also considered a statistical comparison of the age and sex distributions of S-gene positive and S-gene negative cases over time. Age distributions in Bolton showed a divergence during April 2021, potentially reflecting B.1.617.2 in returning travellers. More recently there has been no statistically significant difference between the two. This suggests that B.1.617.2 has a similar pattern of susceptibility to B.1.1.7, and provides further evidence of sustained community transmission of B.1.617.2.
22. A third, preliminary, piece of analysis suggests that some ethnic groups remain a risk factor for a positive case being S-gene positive rather than negative, as well as providing further evidence that vaccines offer slightly less protection against B.1.617.2 than B.1.1.7, and of the former's growth rate advantage.

Annex: PHIA framework of language for discussing probabilities

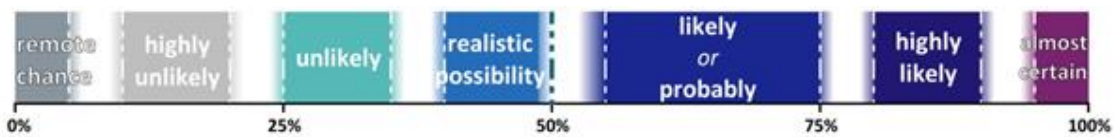


Figure 6: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

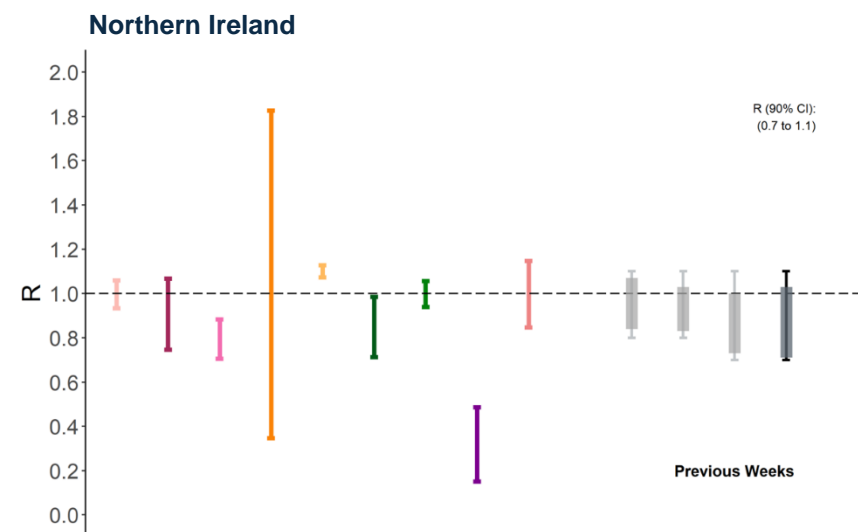
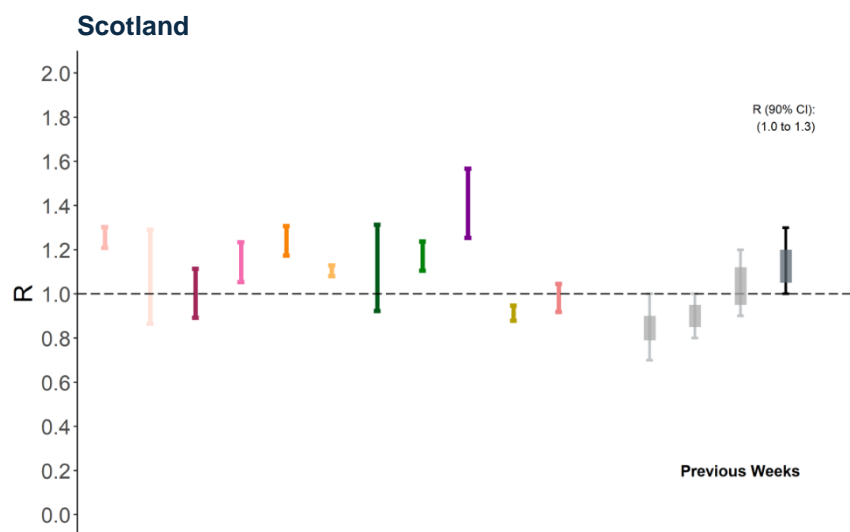
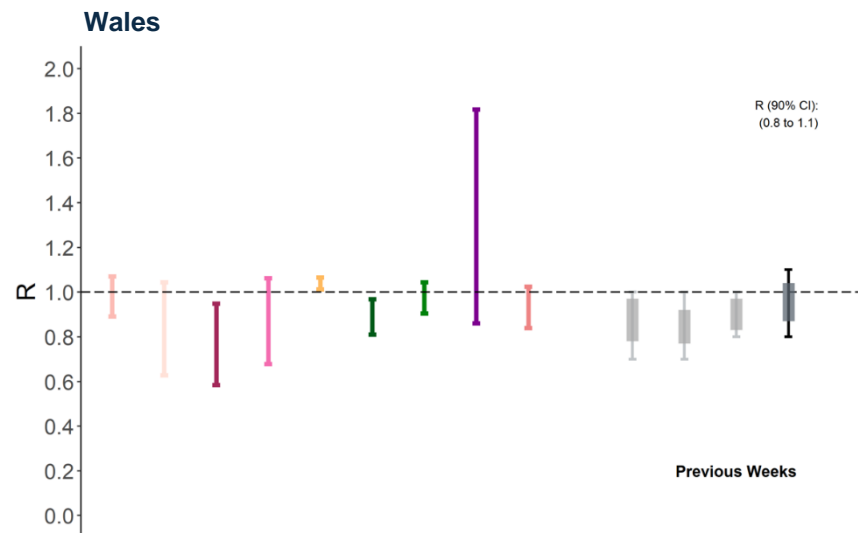
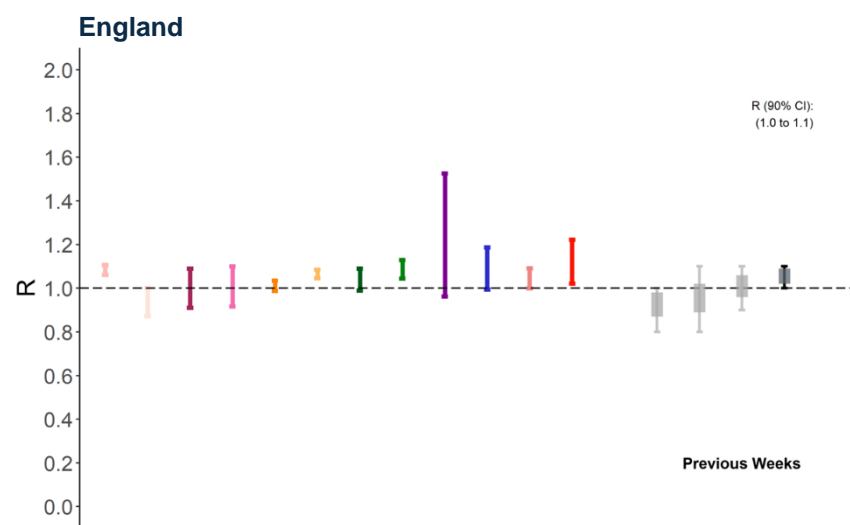


Figure 7: SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

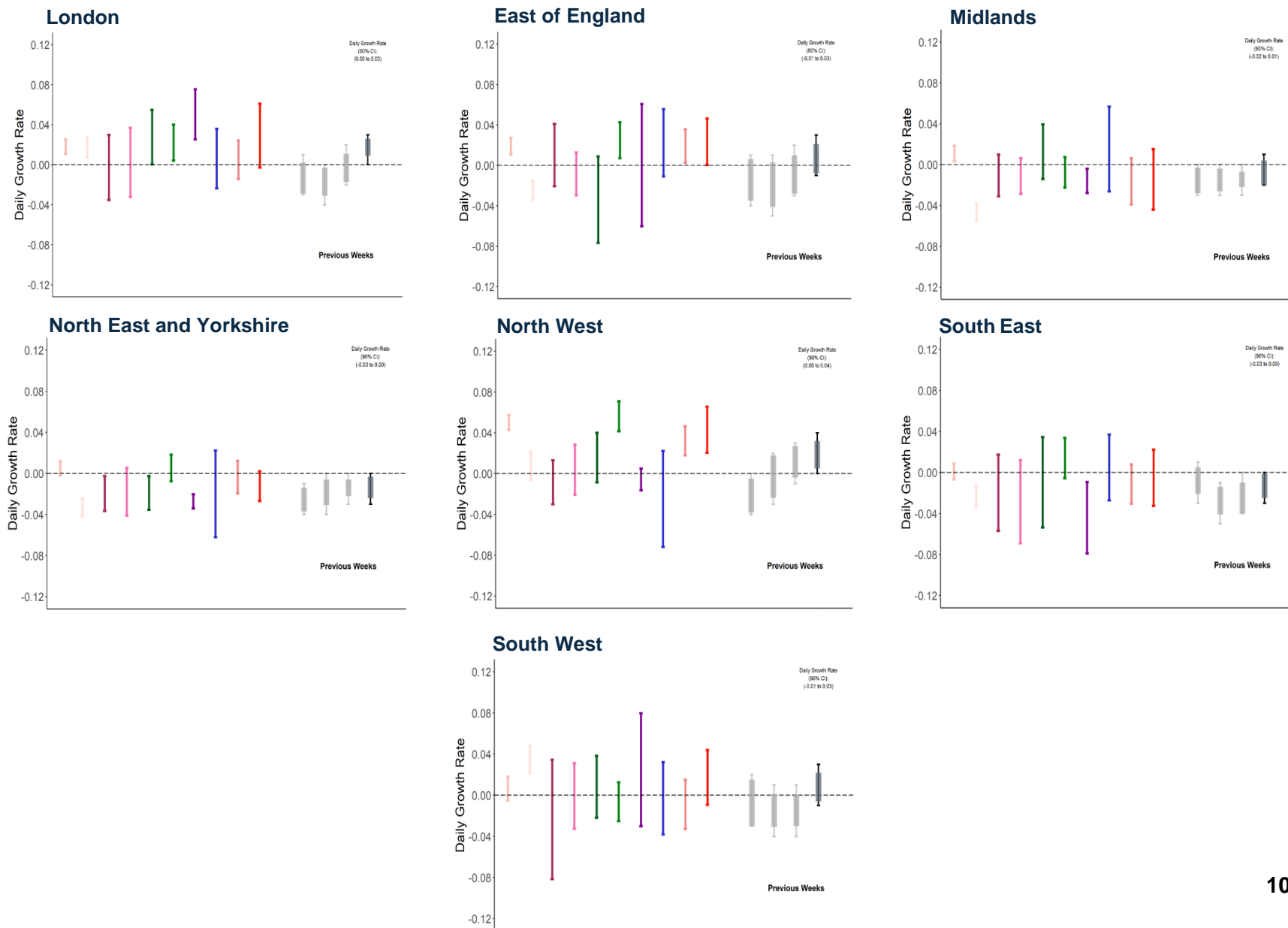


Figure 8: SPI-M-O groups' estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

