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

Date: 3rd February 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 the UK is between 0.7 and 1.0, while England is between 0.7 and 0.9**. Estimates of R for Scotland, Wales, and Northern Ireland are all also between **0.7 and 0.9**[a]. R is a lagging indicator and these estimates are based on the latest data, available up to 1st February, including hospitalisations and deaths as well as symptomatic testing and prevalence studies.
2. SPI-M-O estimates that R is now below 1 across all NHS England regions, although the upper limit of these ranges for the North East & Yorkshire and the North West are both 1. Although the epidemic is decreasing in all the nations and regions, transmission is heterogeneous more locally. This heterogeneity contributes to the variation in R estimates and is will be important for future patterns if it remains.
3. SPI-M-O estimates that there are between **24,000 and 91,000 new infections per day in England.**

Incidence and prevalence

4. Combined estimates from seven SPI-M-O models, using data available up to 1st February, suggest there are between **24,000 and 91,000 new infections per day in England**.
5. The ONS community infection survey for the most recent week of the study (24th to 30th January) estimates that an average of **846,900 people had COVID-19** in the community in England (credible interval **806,500** to **886,700**). The survey does not include people in care homes, hospitals, or prisons. Estimates from across the four nations of the UK are:

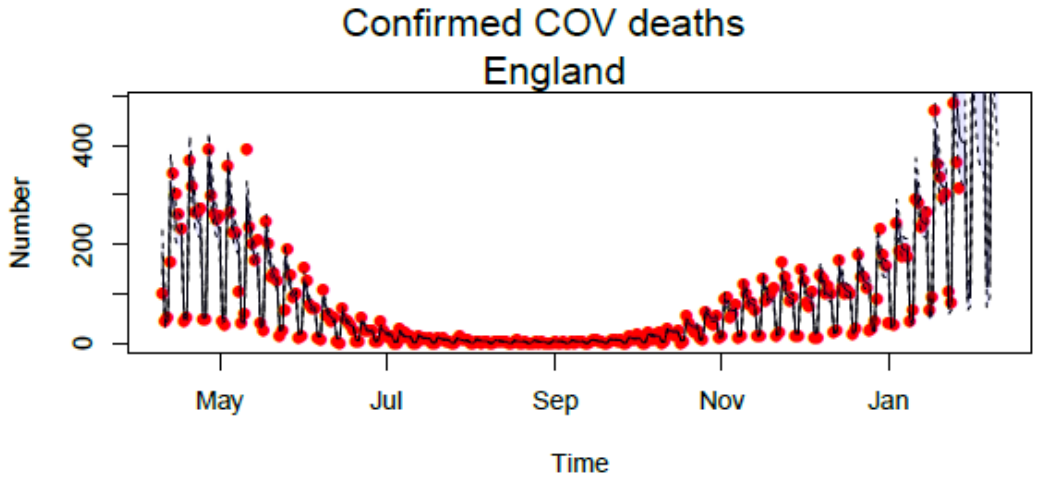
England	846,900 (credible interval 806,500 to 886,700)
Scotland	46,100 (credible interval 39,600 to 53,100)
Wales	42,700 (credible interval 36,200 to 49,500)
Northern Ireland	28,700 (credible interval 23,600 to 34,400)

6. Confirmed COVID-19 deaths in care homes in England currently continue to increase and are at or above levels seen in the first wave in spring 2020 (Figure 1). It is in these

[a] The estimate intervals for R for the UK may not exactly correspond to its constituent nations due to the submission of different independent estimates and rounding in presentation.

residential settings where it is hoped that the impact of the vaccination programme will be seen in testing data over the next two to three weeks. It is estimated that the care home population has approximately 25% naturally acquired immunity, apparently clustered in care homes that have reported COVID-19 mortality, indicating the importance of immunisation.

Figure 1: Confirmed COVID-19 deaths in care homes in England per day; red dots are observed deaths per day; black line is a modelled daily mean; dashed line with light blue shading is the 95% confidence interval. *Note*: the lag between vaccination and reduction in deaths, and a further lag in available data means no reduction in deaths was observed as of 3rd February. The peaks and troughs are due to reduced reporting at weekends.



Reproduction number and growth rate

7. The reproduction number is the average number of secondary infections produced by a single infected individual. R is an average value over time, geographies, and communities. This should be considered when interpreting the R estimate for the UK given the differences in policies across the four nations.

8. **SPI-M-O's best estimates for R in the UK is between 0.7 and 1.0, while England is between 0.7 and 0.9**. Estimates of R for Scotland, Wales, and Northern Ireland are all also between **0.7 and 0.9**[b]. SPI-M-O's agreed national estimates are summarised in Table 1 and Figures 4 and 5. R is a lagging indicator and these estimates are based on the latest data available up to 1st February.

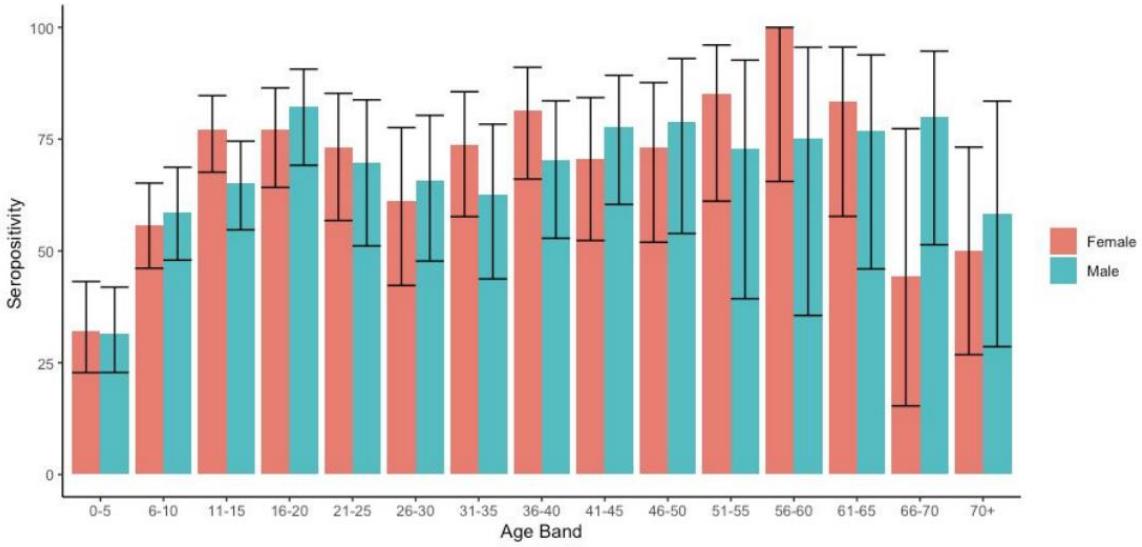
9. SPI-M-O is confident that R is below 1 in all NHS England regions, although the upper limit of the ranges for the North East & Yorkshire and the North West are 1. The regional R estimates can be seen in Table 1 and Figure 7. While R appears to be at or below 1 across the country, trends are still heterogeneous between and within nations and regions. It is

[b] The estimate intervals for R for the UK may not exactly correspond to its constituent nations due to the submission of different, independent estimates and rounding in presentation.

possible that the resolution to identify such differences is lost when averaging across areas and analyses conducted at smaller spatial scales may suggest growth in some local authorities [c,d,e]. If a return to growth were seen, for example due to a relaxation in non-pharmaceutical interventions, this heterogeneity would be magnified, and areas that have high prevalence will become future areas of concern, especially if they correlate with communities with low vaccine uptake.

10. 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 rate at which an epidemic is growing or shrinking[f].
11. SPI-M-O's consensus estimate is that the **growth rate in the UK and England is between -5% and -2% per day[g]**. SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 6.
12. It is clear from multiple data-streams that control measures across the UK are working to bring down infections, hospital admissions, and deaths. Data from a serological survey of a single close-knit community in the UK illustrates a real-life counterfactual of what might have happened without such control. If infection is poorly controlled infection can spread to such an extent that more than 70% of adults become infected (Figure 2).

Figure 2: Age and gender specific seroprevalence in a comprehensive study of a strictly Orthodox Jewish community in the UK between late October and early December 2020. From Gaskell *et al*[h].



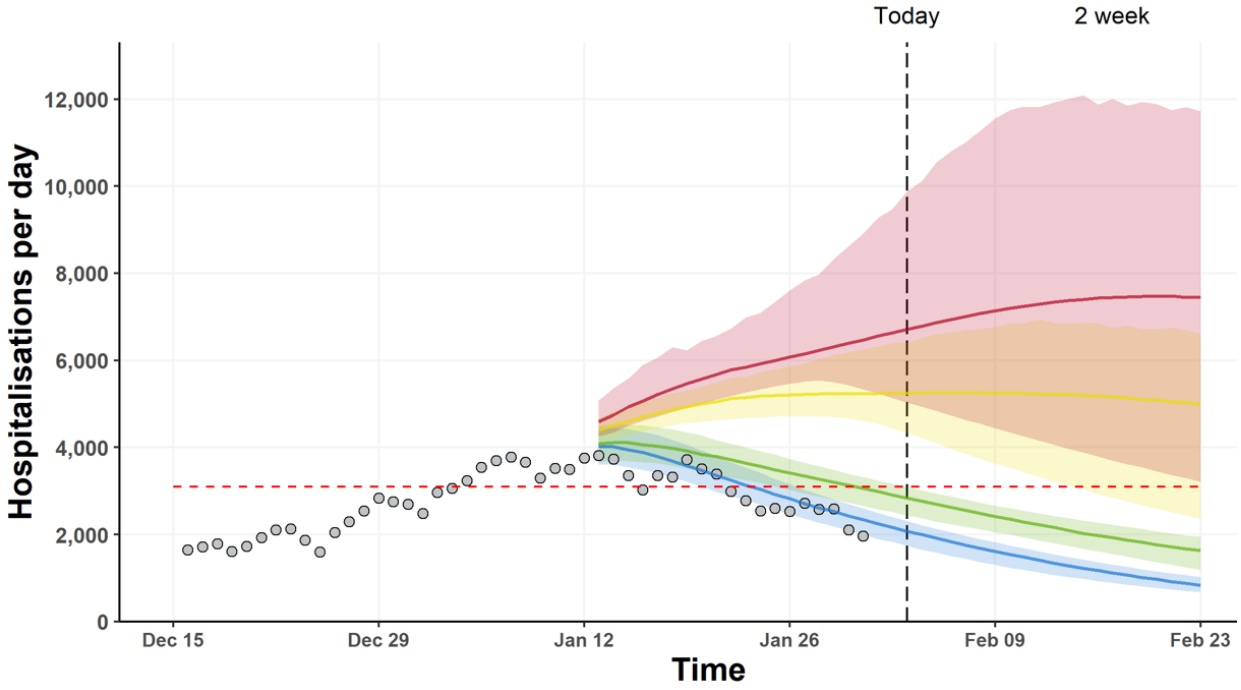
[c] Imperial College London
[d] Lancaster University
[e] London School of Hygiene and Tropical Medicine
[f] Further technical information on the growth rate can be found in Plus magazine
[g] The estimate intervals for R and growth rate may not exactly correspond to each other due to the submission of different independent estimates and rounding in presentation.
[h] Gaskell, KM, *et al* (2021). Extremely high SARS-CoV-2 seroprevalence in a strictly Orthodox Jewish community in the UK.

Comparison of SPI-M-O medium-term scenarios from four weeks ago compared to outturn data, as of 1st February

13. SPI-M-O has compared its previous medium-term scenarios from its consensus statement dated 13th January with the updated outturn data available up to 1st February for the six-week daily hospital admissions. When first discussed, only data up to 11th January was available. As can be seen, the actual data points for daily hospital admissions in England (grey data points in Figure 3) has closely followed or lies within the interquartile range of the R=0.8 scenario. This is at the lower limit of what SPI-M-O considered feasible at the time.

14. A regional breakdown for NHS England regions is available in Figure 8. It is noticeable that daily hospital admissions have fallen faster in some regions than others; specifically, the East of England, London, and the South East have all been closer to or slightly below the R=0.8 scenario, whereas the North East & Yorkshire and the North West have been closer to the R=0.9 scenario.

Figure 3: SPI-M-O six-week scenarios from 13th January 2021 for daily hospital admissions in England over a range of R values (0.8 – blue; 0.9 – green; 1.1 – yellow; 1.2 – red) reflecting the possible impact of the national lockdown, announced on 5th January. All trajectories show interquartile ranges of model combinations as the shaded band. The red dashed line is the peak from the first wave of the epidemic in spring 2020. Actual data points are the grey dots.



Annex: PHIA framework of language for discussing probabilities

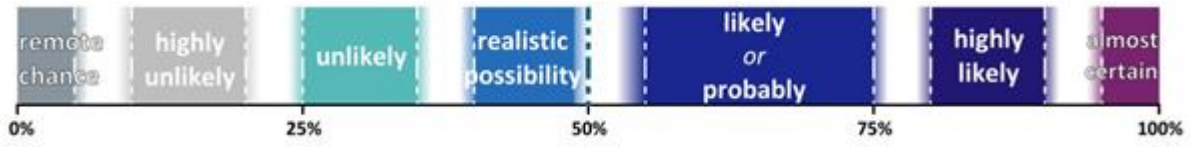


Table 1: Combined estimates of R values and growth rates in the UK, four nations, and NHS England regions (90% confidence interval)[i]

Nation	R	Growth rate per day
England	0.7 to 0.9	-5% to -2%
Scotland	0.7 to 0.9	-5% to -2%
Wales	0.7 to 0.9	-6% to -3%
Northern Ireland	0.7 to 0.9	-6% to -3%
UK	**0.7 to 1.0**	**-5% to -2%**

NHS England region	R	Growth rate per day
East of England	0.7 to 0.9	-6% to -3%
London	0.6 to 0.8	-8% to -4%
Midlands	0.7 to 0.9	-6% to -2%
North East and Yorkshire	0.8 to 1.0	-4% to 0%
North West	0.7 to 1.0	-4% to -1%
South East	0.6 to 0.9	-7% to -4%
South West	0.7 to 0.9	-6% to -2%

[i] The estimate 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. R estimate intervals for the UK may not exactly correspond to its constituent nations for the same reason.

Figure 4: SPI-M-O groups' estimates of median R in the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded area represents the combined numerical range and the black bar is the combined range after rounding to 1 decimal place. The UK estimate of R is the average over very different epidemiological situations and should be regarded as a guide to the general trend rather than a description of the epidemic state.

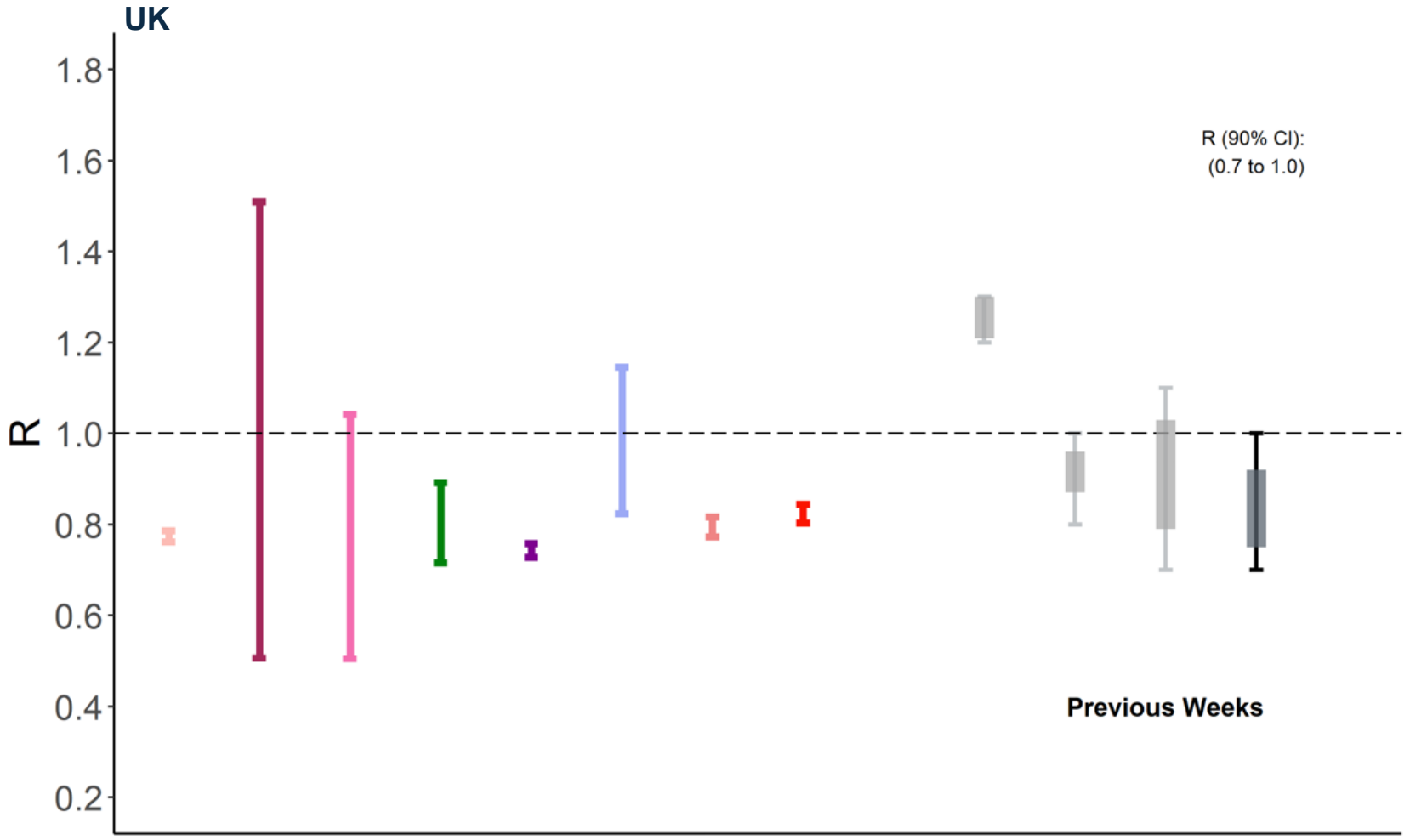


Figure 5: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

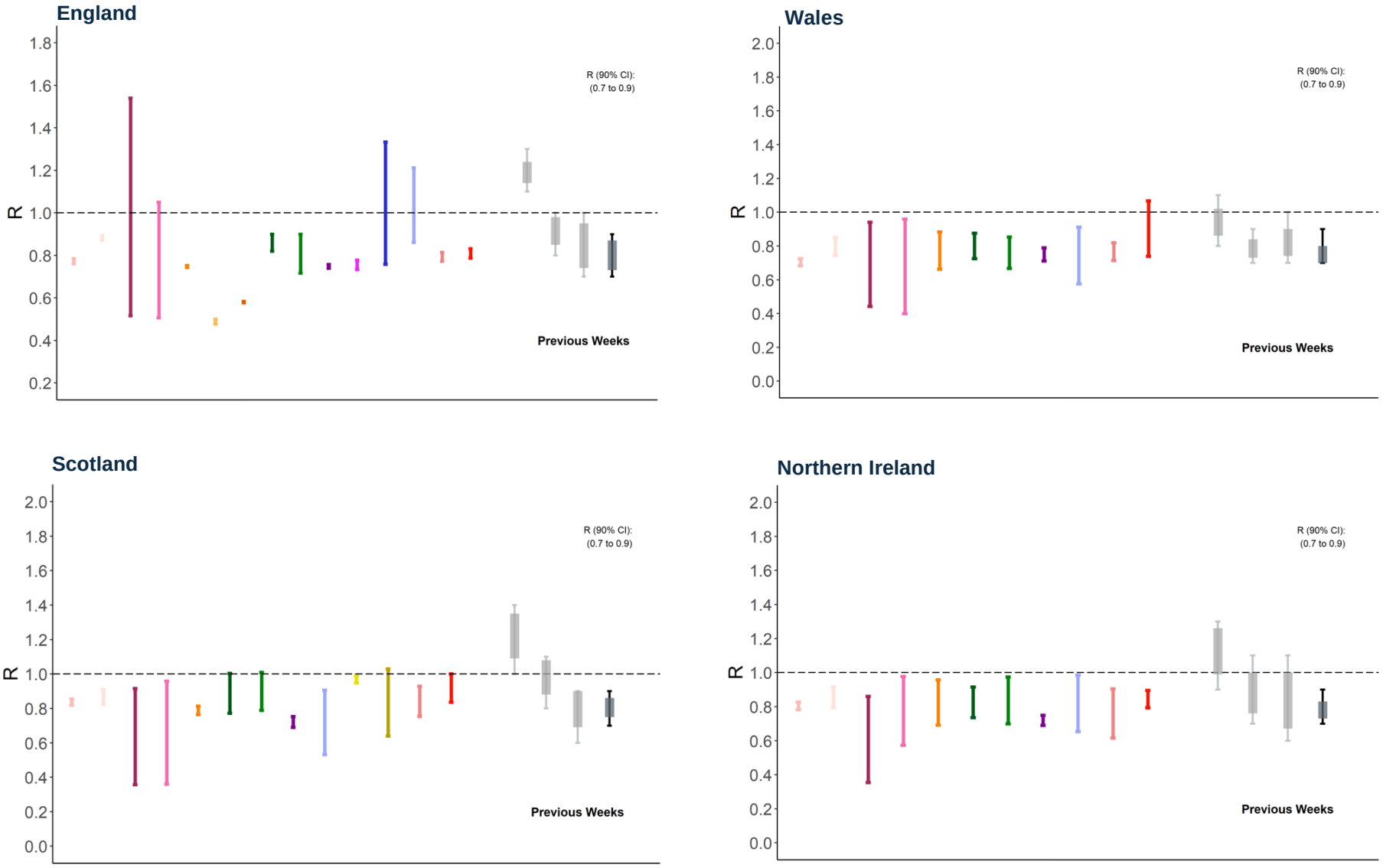


Figure 6: SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

Figure 7: 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.

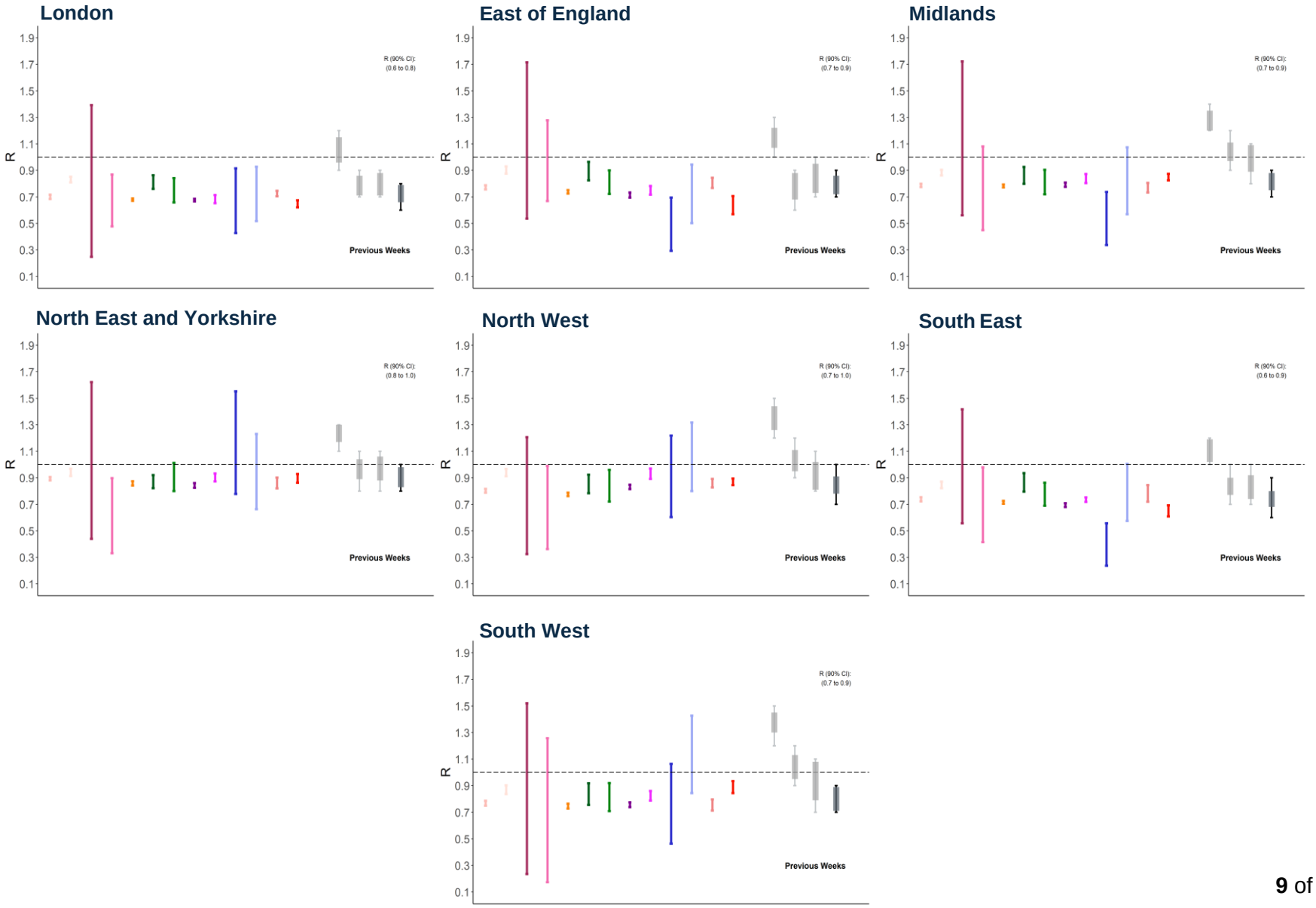


Figure 8: SPI-M-O six-week scenarios (***Log scale***) using data up to 11th January 2021 for daily hospital admissions in NHS England regions over a range of R values (0.8 – blue; 0.9 – green; 1.1 – yellow; 1.2 – red) reflecting the possible impact of the national lockdown, announced on 5th January. All trajectories show interquartile ranges of model combinations as the shaded band. The red dashed line is the peak from the first wave of the epidemic in spring 2020. Actual data points are the grey dots.