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

Date: 9th June 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 1.2 and 1.4**. **R is estimated to be between 1.2 and 1.4 for Scotland, 1.0 and 1.4 for Wales, and 0.8 and 1.3 for Northern Ireland**. These estimates are based on data available up to 7th June, including hospitalisations, deaths, symptomatic testing, and longitudinal studies.
2. SPI-M-O estimates that there are between **7,000 and 13,000 new infections per day in England.**
3. Estimates of epidemic metrics, such as R, are at least two weeks out of date, due to natural delays in data streams, and are yet to fully reflect the rapid increases of transmission seen as a result of B.1.617.2[1] (henceforth referred to as delta). It is very difficult to disentangle the effects of the delta variant's emergence and growth from any changes due to the relaxation of measures on 17th May in England.

Incidence and prevalence

4. Combined estimates from five SPI-M-O models, using data available up to 7th June, suggest there are between **7,000 and 13,000 new infections per day in England.**
5. During its most recent week (30th May to 5th June), the ONS community infection survey estimates that an average of **96,800 people had COVID-19** in the community in England (95% credible interval **80,500** to **114,400**). The survey does not include people in care homes, hospitals, or prisons. Estimates from across the four nations of the UK are:

England	96,800 (95% credible interval 80,500 to 114,400)
Scotland	9,700 (95% credible interval 5,700 to 14,800)
Wales	2,300 (95% credible interval 800 to 4,900)
Northern Ireland	2,600 (95% credible interval 1,000 to 5,200)

[1] The World Health Organisation recently recommended using letters of the Greek alphabet when referring to SARS-CoV-2 variants. Current variants of concern labelling stands as B.1.1.7 as alpha, B.1.351 as beta, P.1 as gamma, and B.1.617.2 as delta.

Growth rate and reproduction number

6. 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 shrinking[2].

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

   England is between **+3% and +6% per day**,
   Scotland is between **+3% to +6% per day**,
   Wales is between **0% to +5% per day**, and
   Northern Ireland is between **-4% to +2% per day**.

   SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 6.

8. 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.

9. SPI-M-O's best estimates for **R in England is between 1.2 and 1.4**. **R is estimated to be between 1.2 and 1.4 for Scotland, 1.0 and 1.4 for Wales, and 0.8 and 1.3 for Northern Ireland**. SPI-M-O's agreed national estimates are summarised in Table 1 and Figure 5, and these are based on the latest data available up to 7th June.

10. R is an indicator that lags by two to three weeks and therefore does not reflect any behavioural changes that have happened during this time, nor can it reflect the full impact of the rapid emergence of the delta variant over the past two weeks. This makes differentiating the effects of delta from any changes that might have been due to the relaxation of measures on 17th May in England very difficult. Regional estimates can be seen in Table 1 and Figure 7.

[2] 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)[3]

Nation	R	Growth rate per day	Doubling time[4]
England	1.2 to 1.4	+3% to +6%	13 to 21 days
Scotland	1.2 to 1.4	+3% to +6%	12 to 19 days
Wales[5]	1.0 to 1.4	0% to +5%	Flat to 16 days
Northern Ireland[4]	0.8 to 1.3	-4% to +2%	-18 days to flat
NHS England region	**R**	**Growth rate per day**	**Doubling time**
East of England	1.1 to 1.4	+2% to +6%	12 to 26 days
London	1.1 to 1.4	+2% to +6%	12 to 26 days
Midlands	1.1 to 1.3	+1% to +5%	Flat to 15 days
North East and Yorkshire	1.0 to 1.2	0% to +4%	Flat to 21 days
North West	1.3 to 1.5	+4% to +8%	9 to 14 days
South East	1.1 to 1.4	+1% to +6%	Flat to 12 days
South West[4]	1.0 to 1.3	0% to +6%	Flat to 13 days

11. It is evident that the incidence of infection is increasing, and that this is widespread across England and Scotland with clear exponential growth of cases consistently seen across SPI-M-O groups' local and regional analyses using a variety of methods. Approximately 80% to 90% of lower tier local authorities have increasing cases, of which 20% to 30% can be ascribed to spill over from neighbouring areas with higher prevalence, i.e. the epidemic is expanding spatially. Areas that have shown decreases due to intensive interventions, such as Bolton, appear to have plateaued rather than declined, and are the exception.
12. The latest data show that almost all English upper tier local authorities (UTLAs), for which S-gene status information is available, have increasing cases, with over 80% of these being S-gene positive (i.e. delta) (Figure 1). It is also evident that Bolton and Bedford are now significant outliers compared to other UTLAs (Figure 2).

[3] 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.

[4] Footnote added for release: Figures amended for rounding; previously England 12 to 20 and London 11 to 26.

[5] 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.

Figure 1: Weekly estimated reproduction number (y axis) and proportion with S-gene target failure (SGTF) (and hence the B.1.1.7 or alpha[1] variant) 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 four weeks. Colours give the NHS England region. Dates correspond to the end of the week.

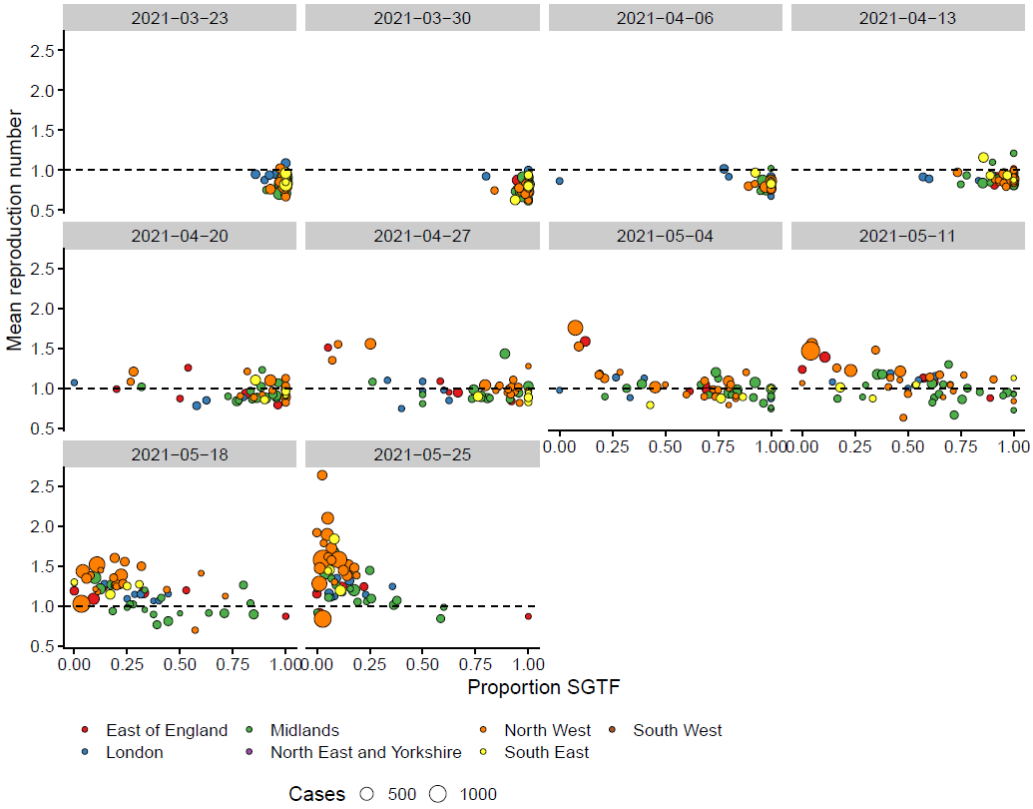
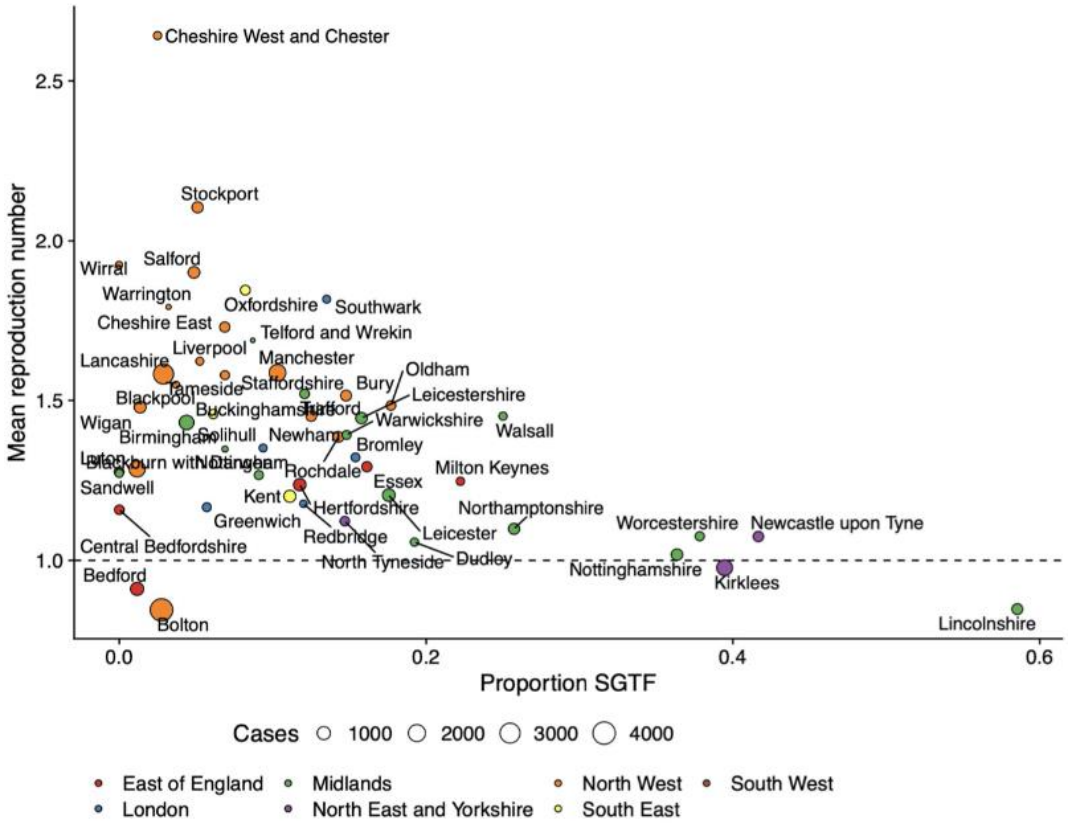


Figure 2: As Figure 1, for the most recent week and for up to 60% SGTF



13. Whilst the proportion of cases that go on to require hospitalisation is now very much lower thanks to vaccination of older age-groups, their rates of change are still linked. If the number of cases double, a week or so later the number of hospitalisations is expected to double. Hospital admissions in the North West are rising and, given trends in cases, are likely to continue to do so for some time. Whilst growing from a low base, there are fewer than four doubling times between the 45 admissions seen in the North West on 6th June and its January 2021 peak of 485 admissions.

14. The lack of S-gene status and sequencing data of cases from Northern Ireland significantly detracts from SPI-M-O's ability to understand the epidemic and estimate metrics and the impact of the delta variant.

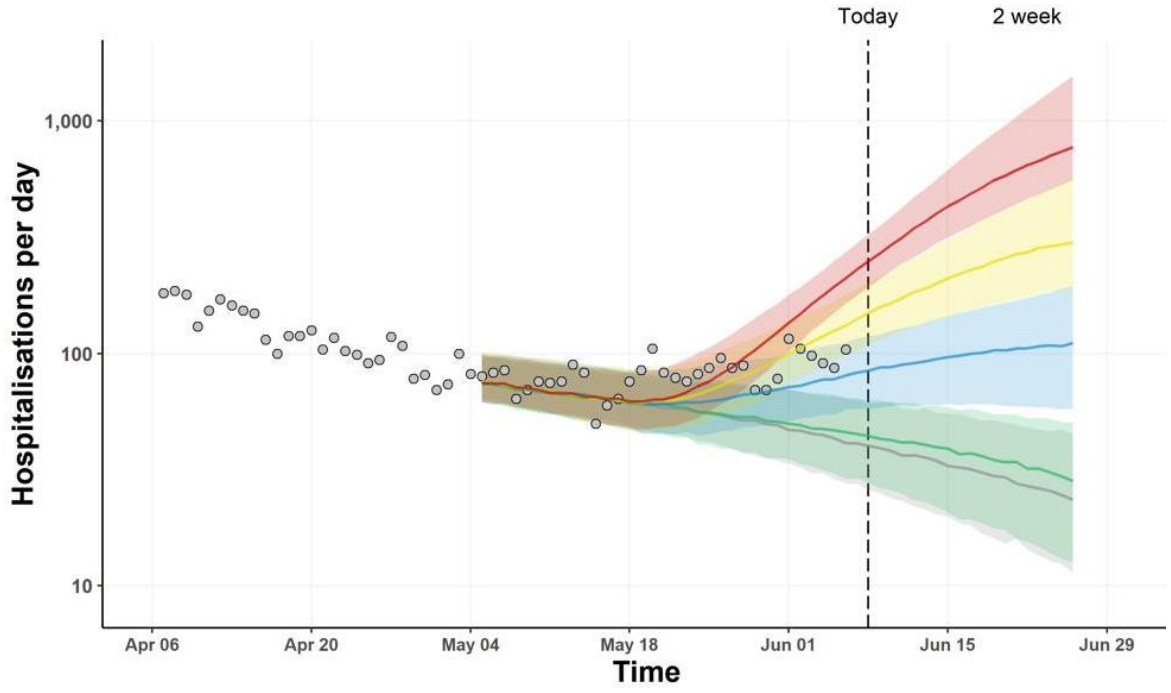
15. On 5th May, SPI-M-O modelled scenarios for several possible values of R following the relaxation of measures on 17th May[6]. When these scenarios were produced, only data up to 30th April was available and the existence of delta was not included in modelling assumptions. These scenarios assume a step change in transmission on 17th May. In reality, an additional, more gradual change in transmission has been seen as the delta variant has become dominant at different times in different parts of the country. This means that a clear trajectory of admissions is still resolving at the national level.

16. Figure 3 shows hospital admissions in England from these scenarios on a logarithmic scale (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[7] would remain low until well into June, but a sustained period with R significantly above 1 would result in hospitalisations being considerably higher by 21st June.

[6] SPI-M-O: Summary of further modelling of easing restrictions – roadmap step 3, 5th May 2021.

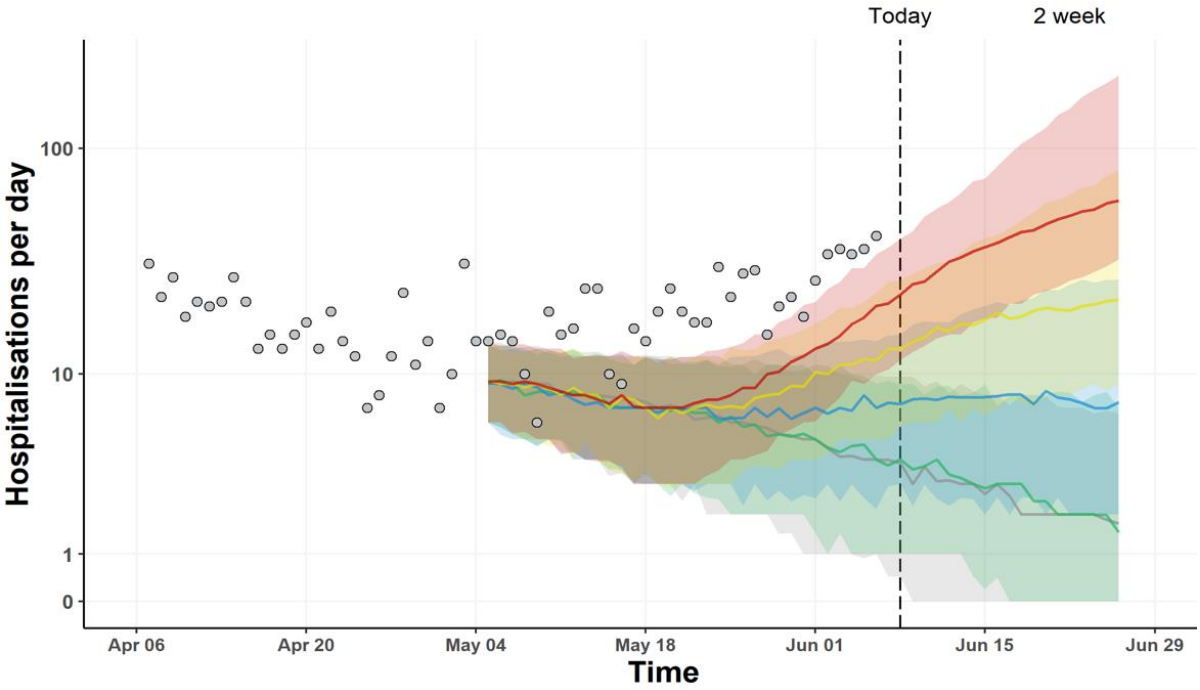
[7] Hospital admissions as recorded in the NHS England daily COVID-19 situation report; includes patients admitted with confirmed COVID-19 and inpatients diagnosed with COVID-19.

Figure 3: Eight-week scenarios for daily hospital admissions in England on a logarithmic 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.



17. The overlapping confidence intervals mean at least one further week of data (i.e. until at least 16th June) will be needed to conclusively differentiate between the current trajectory and the scenarios modelled. There remains regional heterogeneity within England, with some regions increasing faster and others slower than the national average. For example, prevalence of delta increased first in the North West NHS England region. In comparison with England as a whole, this area has already had sustained growth well above any of the scenarios plotted as a result of the emergence and now dominance of the delta variant (Figure 4).

Figure 4: Eight-week scenarios for daily hospital admissions in the North West NHS England region on a logarithmic 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.



Annex: PHIA framework of language for discussing probabilities

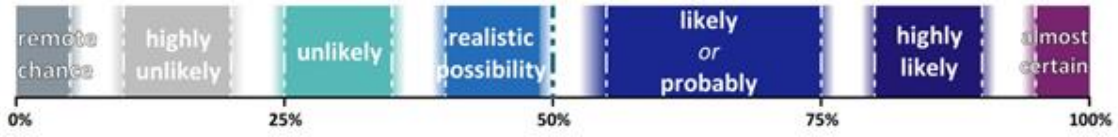


Figure 5: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

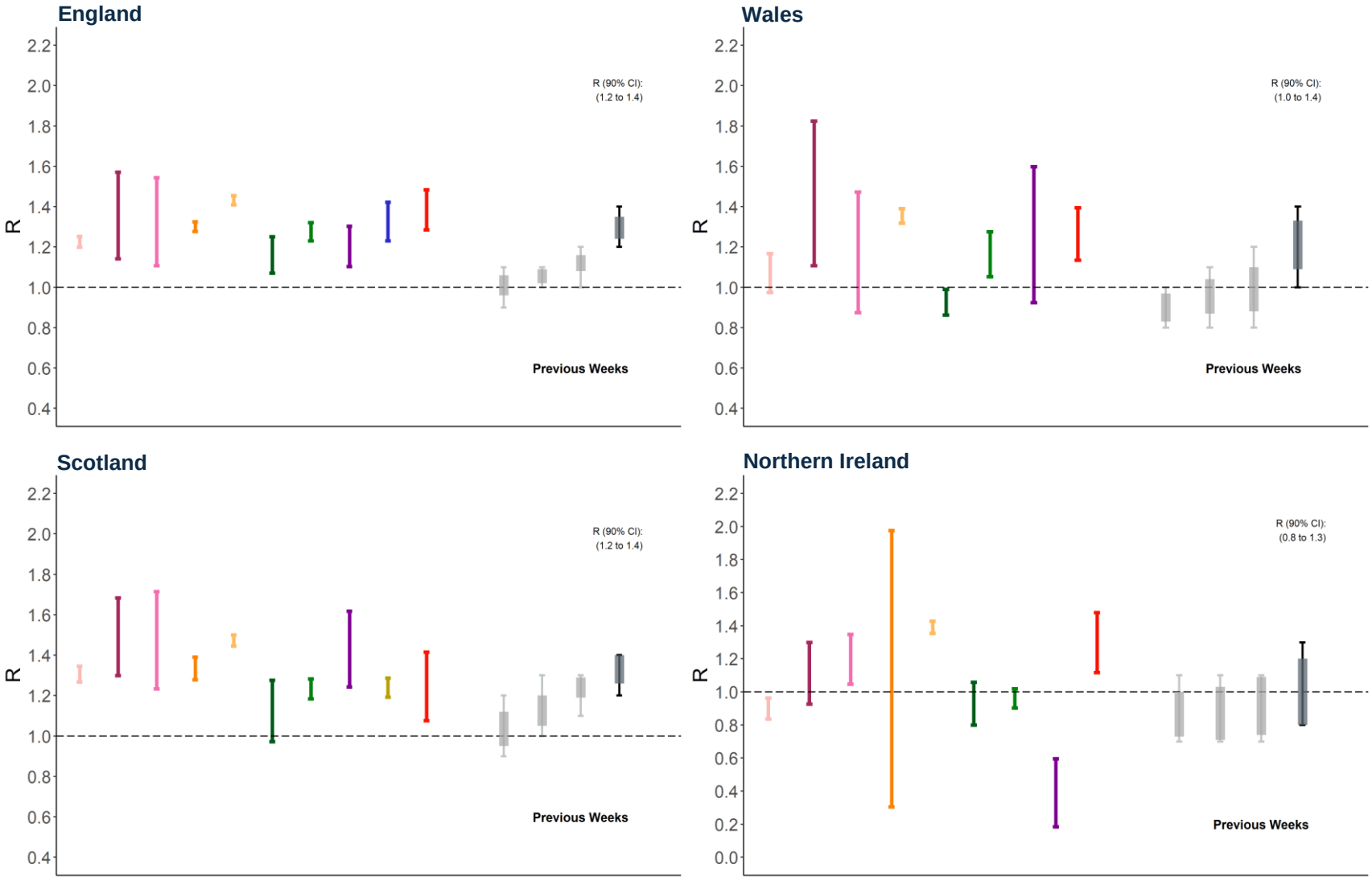


Figure 6: SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

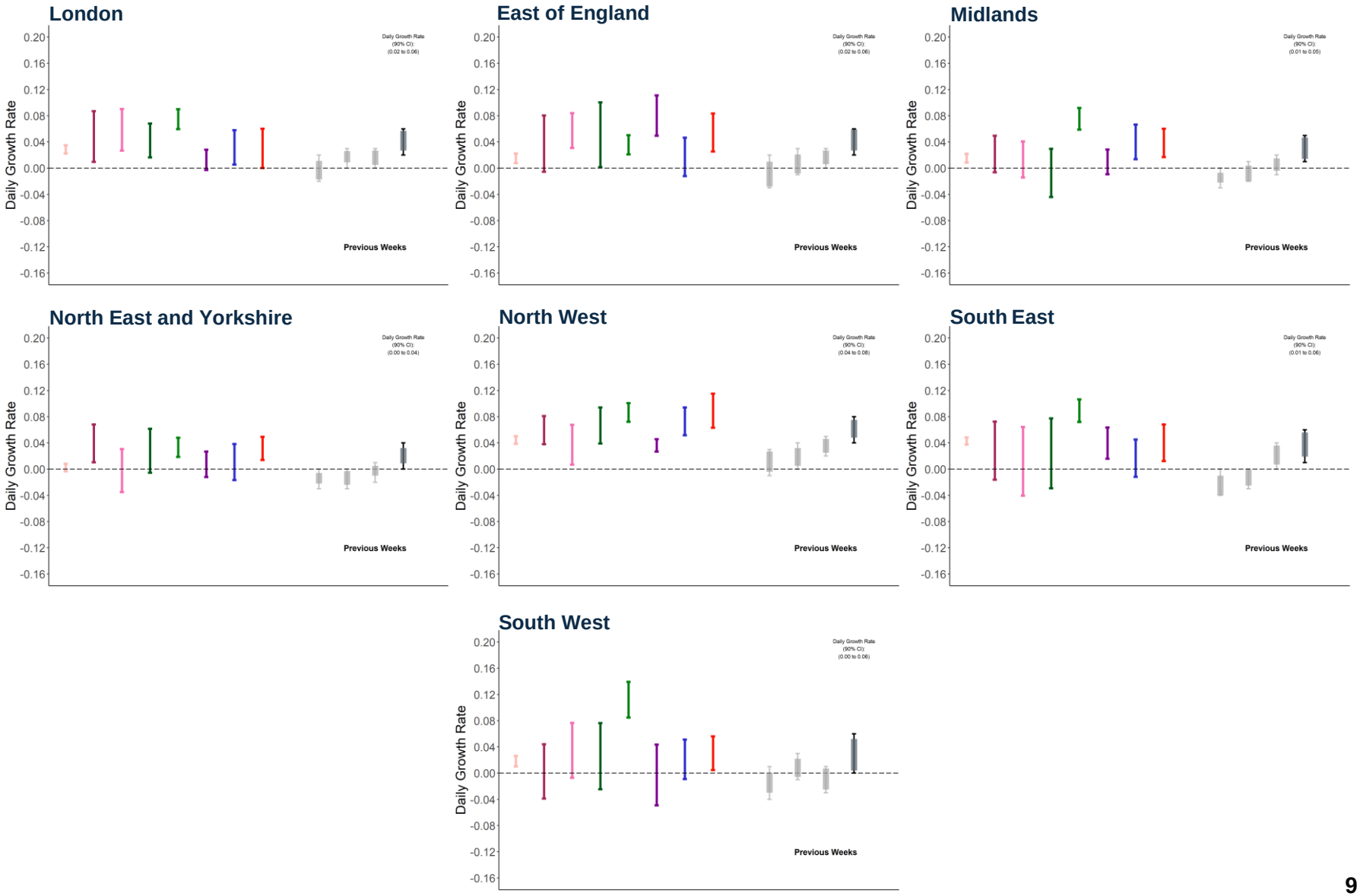


Figure 7: SPI-M-O groups' estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.