

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

Date: 5th 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 0.8 and 1.0. R is estimated to be between 0.7 and 1.0 for both Scotland and Wales, and 0.8 and 1.1 for Northern Ireland.** These estimates are based on the data available up to 30th April. They will reflect behavioural changes since the latest easing of restrictions in England on 12th April, but not the full effect of the return of schools from 19th April.
2. Overall, the epidemic in England is either flat or shrinking slowly, potentially shrinking faster in Scotland and Wales, and potentially growing in Northern Ireland. There are local areas in all nations where the epidemic is increasing.
3. SPI-M-O estimates that there are between **1,000 and 5,000 new infections per day in England.**

Incidence and prevalence

4. Combined estimates from five SPI-M-O models, using data available up to 30th April, suggest there are between **1,000 and 5,000 new infections per day in England.**
5. ONS community infection survey estimates were unavailable at the time of writing.

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 shrinking¹.
7. SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 5. SPI-M-O's consensus estimates for the **growth rates in the four nations are:**
England is between **-3% and 0% per day**,
Scotland is between **-5% and -2% per day**,
Wales is between **-5% and 0% per day**, and
Northern Ireland is between **-4% and +2% per day**.

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

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, and communities.
9. SPI-M-O's best estimate for **R in England is between 0.8 and 1.0. R is estimated to be between 0.7 and 1.0 for both Scotland and Wales, and 0.8 and 1.1 for Northern Ireland.** SPI-M-O's agreed national estimates are summarised in Table 1 and Figure 4, and these are based on the latest data available up to 30th April. Regional estimates can be seen in Table 1 and Figure 6.
10. R is an indicator that lags by two to three weeks and therefore they will reflect behavioural changes since the latest easing of restrictions in England on 12th April but not the full effect of the return of schools from 19th April.
11. Overall, the epidemic in England is either flat or shrinking slowly, potentially shrinking faster in Scotland and Wales, and potentially growing in Northern Ireland. There are local areas in all nations where the epidemic is increasing.

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 1.0	-3% to 0%
Scotland	0.7 to 1.0	-5% to -2%
Wales	0.7 to 1.0	-5% to 0%
Northern Ireland*	0.8 to 1.1	-4% to +2%
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	-3% to +1%
Midlands	0.8 to 1.0	-3% to 0%
North East and Yorkshire	0.7 to 1.0	-4% to -1%
North West	0.7 to 1.0	-4% to 0%
South East	0.8 to 1.1	-3% to +1%
South West	0.8 to 1.1	-3% to +2%

12. **Estimates of R and growth rates become more uncertain as hospitalisations and deaths reach low levels.** Both R and growth rates are average measures and smooth over outbreaks at small spatial scales or over short periods of time.

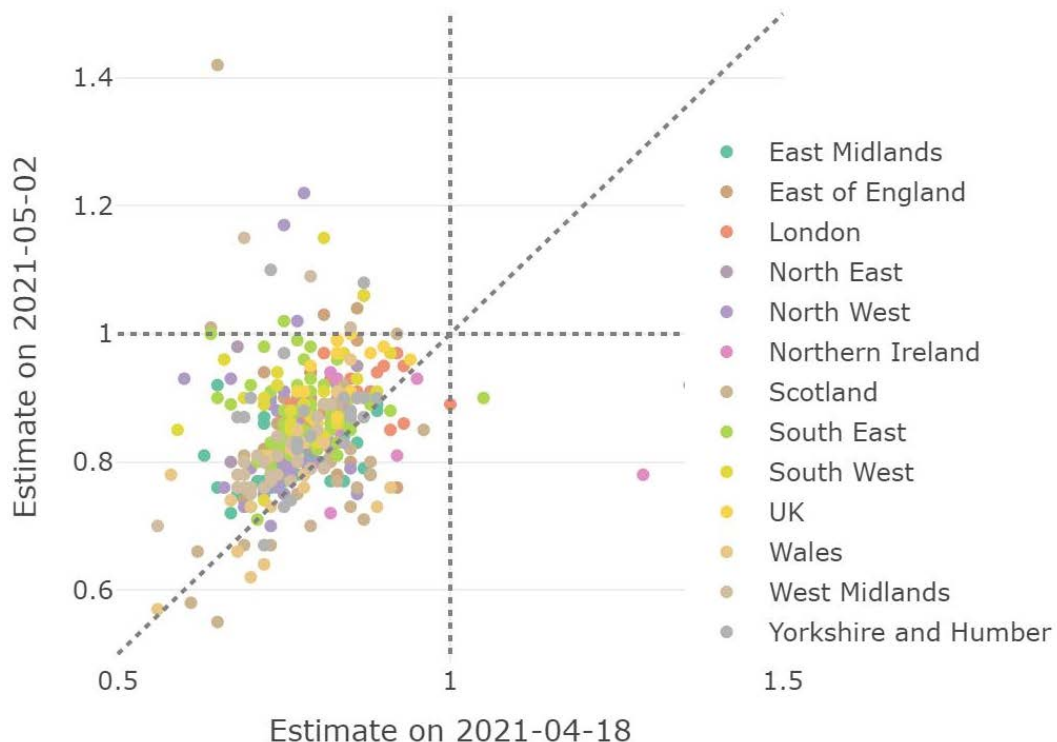
² The estimated intervals for R and growth rate may not exactly correspond to each other due to the submission of different independent estimates and rounding in presentation.

* 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.

Sub-regional variation

13. SPI-M-O have been monitoring spatial heterogeneity in observed patterns at a fine local level. In some parts of the country, R is greater than 1. Currently these seem to be largely driven by local outbreaks, with highly stochastic processes dominating.
14. It is possible that these minor local outbreaks might combine and lead to a regional increase of large proportions. While R is greater than 1 in only a few places now, this would not be the case in many local authorities if there is a small overall increase in transmission. The implications of large numbers of cases for hospitalisations and deaths is still unknown.
15. Figure 1 shows how the estimates of R at the Lower Tier Local Authority (LTLA) level have changed over a two-week period from one analysis by Imperial College London³. The clustering of dots in the bottom left quadrant shows that the epidemic was shrinking in most LTLAs both two weeks ago (horizontal axis) and now (vertical axis). Reproduction numbers, however, have increased in those LTLAs above the diagonal line, which is almost all of them.

Figure 1: How LTLA level R estimates have changed compared to two weeks earlier. The y-axis shows R estimates for LTLAs from 2nd May whereas the x-axis shows the R estimate for the same LTLA from 18th April. Any data point that is above the diagonal dotted line shows an increase across the time period. Colour represent the regions and nations.

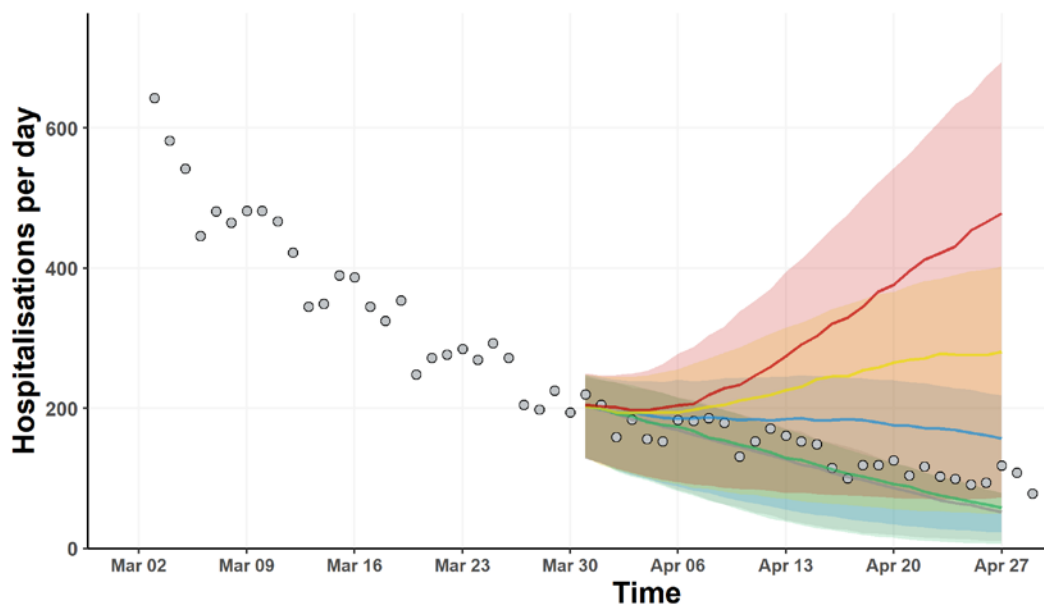


³ <https://imperialcollegelondon.github.io/covid19local/>

Reviewing SPI-M-O's medium-term scenarios from 31st March

16. On 31st March, SPI-M-O modelled scenarios for several possible values of R following the relaxations of measures on the 29th March⁴. When these scenarios were produced, only data up to 29th March was available. As can be seen in Figure 2, daily hospital admissions in England⁵ (data points in grey) were between the R=0.8 and R=1.1 scenarios.

Figure 2: Four-week scenarios for daily hospital admissions in England over a range of R values (0.8 – green; 1.1 – blue; 1.3 – yellow; 1.5 – red) reflecting the possible impact of the easements from 29th March. SPI-M-O's medium-term projection from the 31st March is included in grey, however it is almost directly aligned with the green band. All scenarios show interquartile ranges of model combinations as shaded bands.



17. An NHS England regional breakdown is given in Figure 7. It is noticeable that daily hospital admissions have fallen faster in some regions than others. The North West and North East and Yorkshire have been closer to the R=0.8 scenario, whereas East of England, London, Midlands, South East, and the South West have been closer to the R=1.1 scenario.

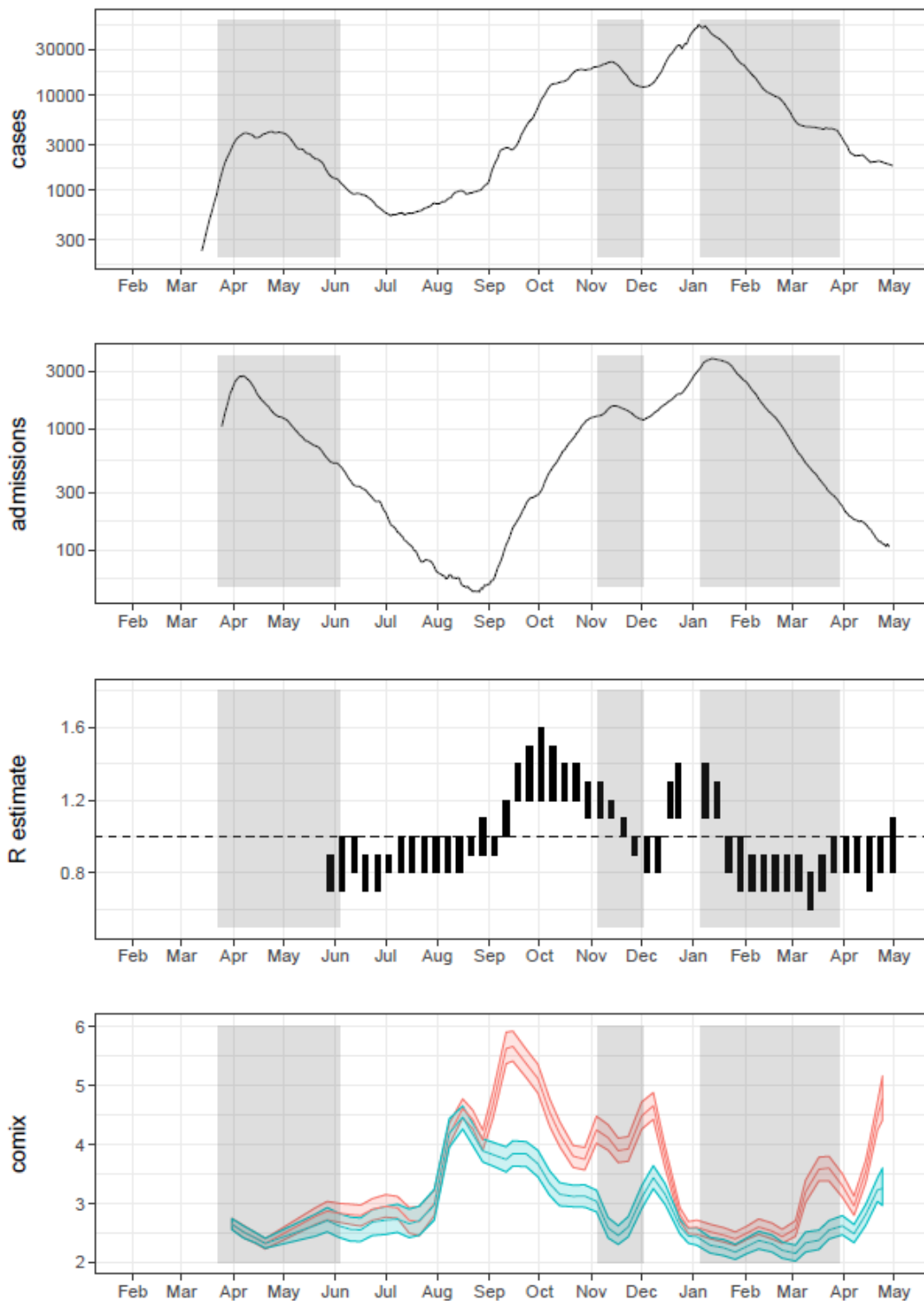
Comparison of metrics

18. Figure 3 shows (from top to bottom) a timeseries of daily confirmed cases; daily hospital admissions; SPI-M-O's weekly R estimates and the mean number of daily contacts from COMIX.

⁴ [SPI-M-O: Summary of further modelling of easing restrictions – Roadmap Step 2](#), 31 March 2021.

⁵ Hospital admissions data is taken from the NHS England daily COVID-19 situation report and includes patients admitted with confirmed COVID-19 and inpatients diagnosed with COVID-19.

Figure 3: A timeseries of (top to bottom) daily recorded cases, daily recorded hospital admissions, weekly SPI-M R estimates and the mean number of daily contacts from Comix.



19. Prior to vaccination, an increase in mean daily contacts has been followed by an increase to R estimates and cases, and then a lagged increase in the number of hospital admissions. Data from the Comix study shows recent increases in the mean number of contacts people have per day, with levels in adults commensurate with those seen in

October 2020, but far below the pre-pandemic average of around 11. Note that the number of contacts remained low in 2020 until the start of August, despite there being many policy changes in over that period.

Annex: PHIA framework of language for discussing probabilities

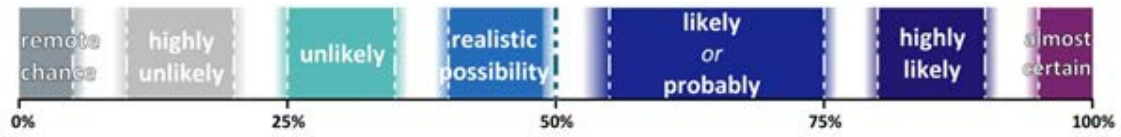


Figure 4: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

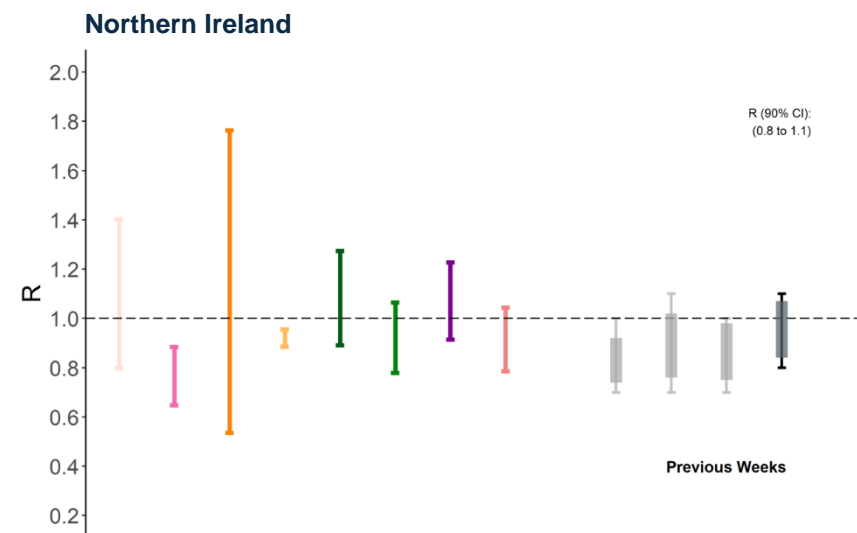
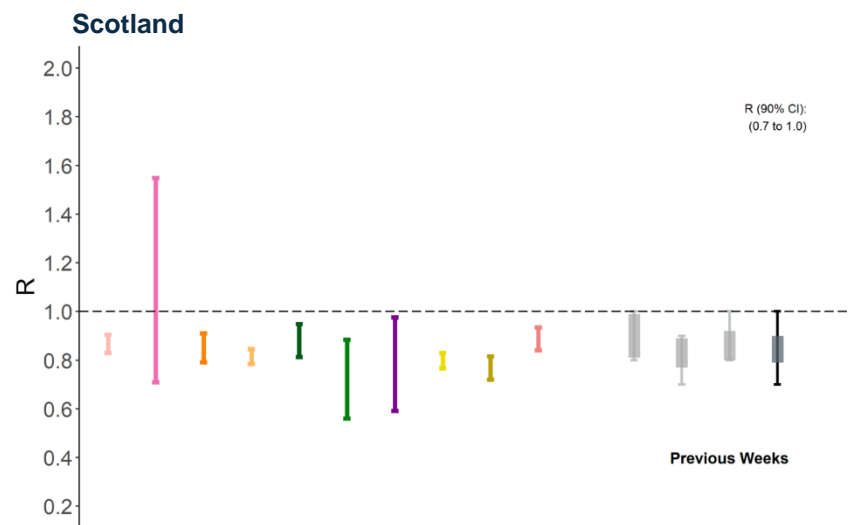
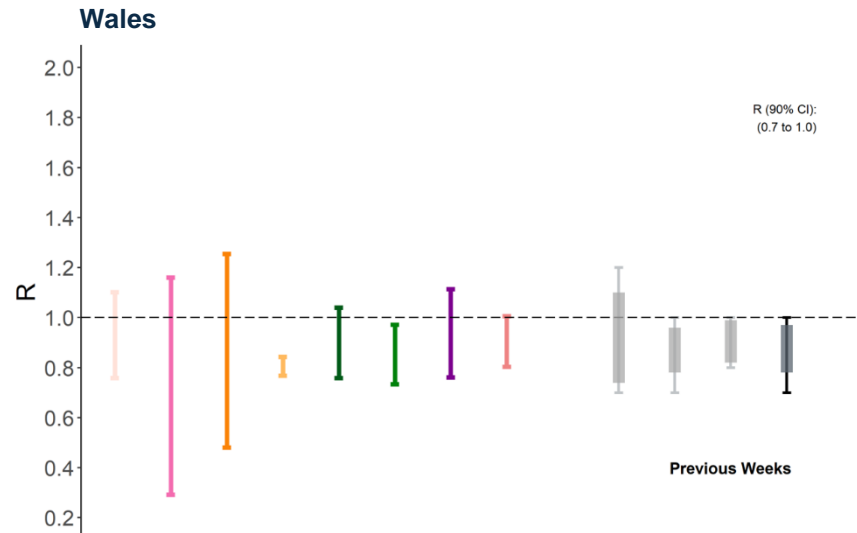
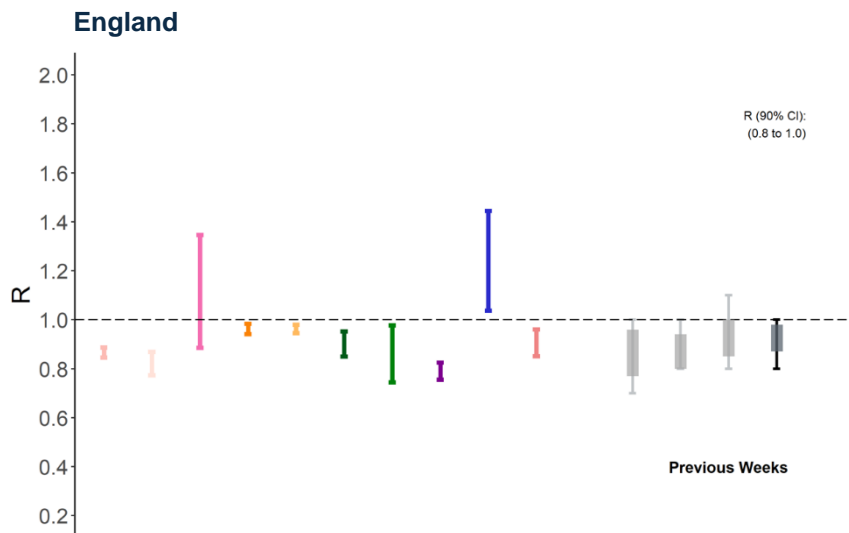


Figure 5: SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

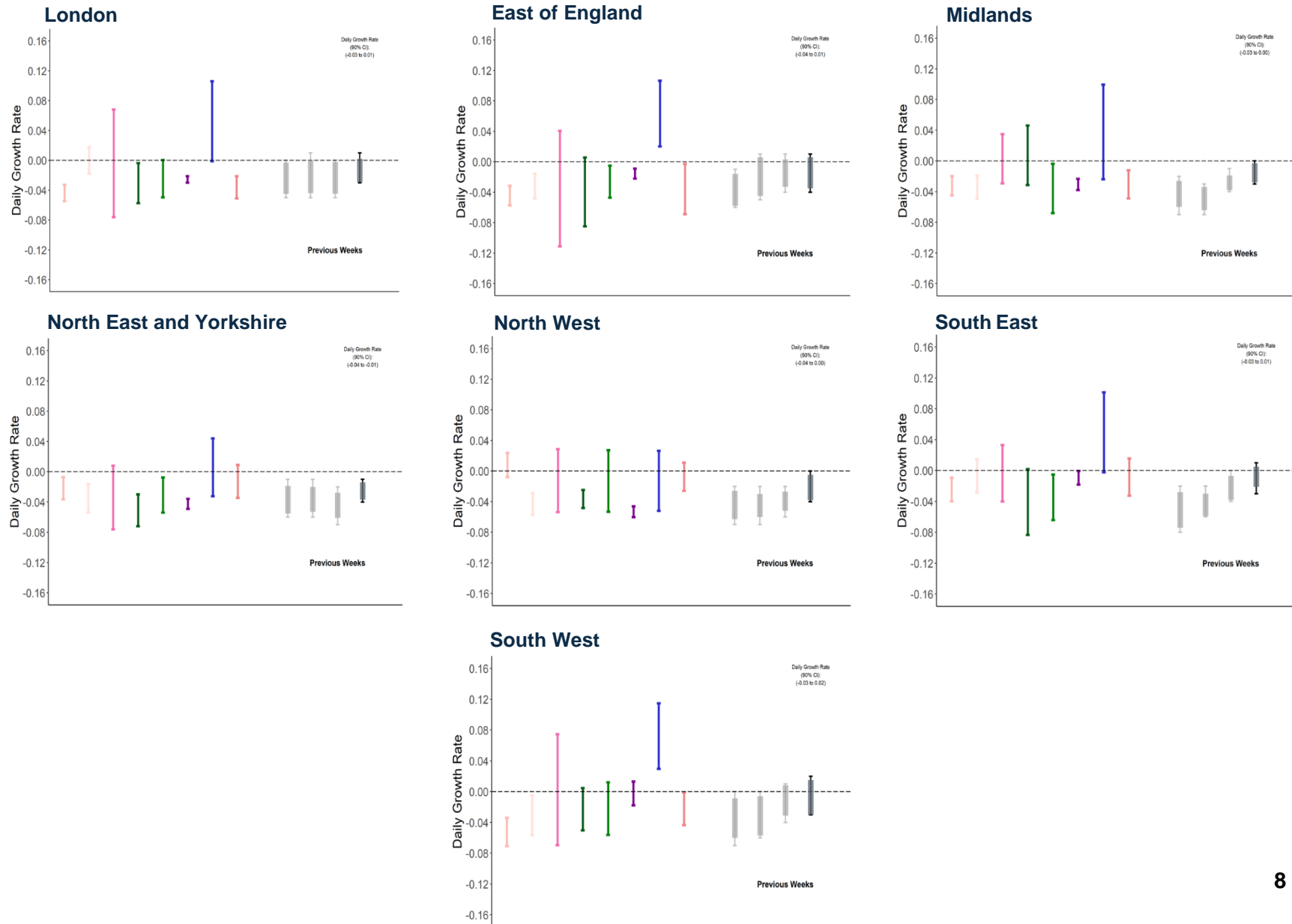


Figure 6: SPI-M-O groups' estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

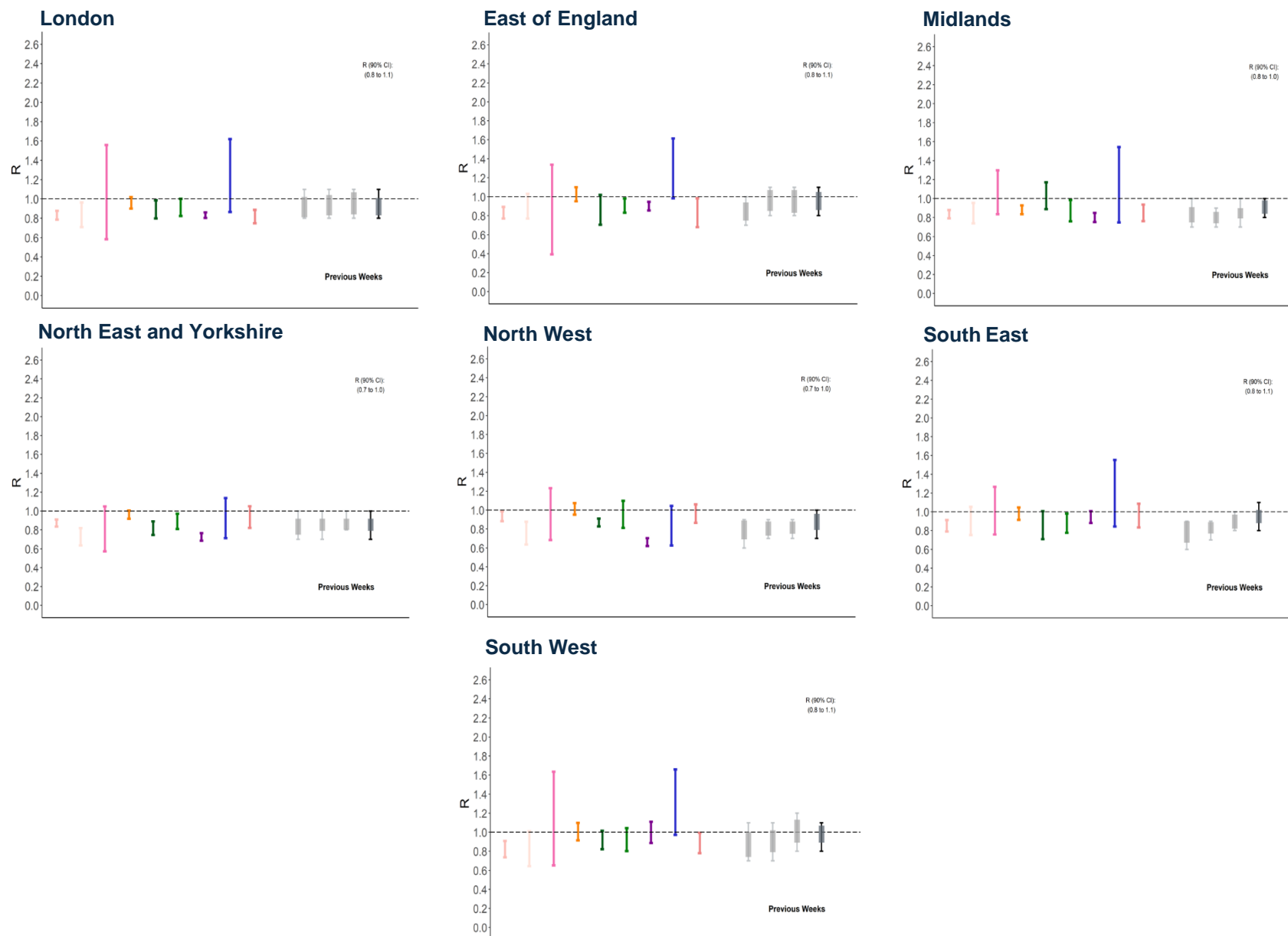


Figure 7: Four-week scenarios for daily hospital admissions in NHS England regions over a range of R values (0.8 – green; 1.1 – blue; 1.3 – yellow; 1.5 – red) reflecting a range of possible scenarios for the impact of the easing of restrictions on 29th March. SPI-M-O’s medium-term projection from the 31st March is included in grey, however it is almost directly aligned with the green band in some regions. All scenarios show interquartile ranges of model combinations as shaded bands.

