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

*Date: 21st 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 1.0**. **For Scotland, Wales, and Northern Ireland, R is estimated to be between 0.7 and 0.9, 0.7 and 1.0, and 0.7 and 1.1 respectively**. These estimates are based on the latest data available up to 19th April, including hospitalisations and deaths as well as symptomatic testing and prevalence studies. They will not reflect behavioural changes which have taken place since the easing of restrictions on 12th April.

2. **SPI-M-O is *not confident* that R is *currently* below 1 in most NHS England regions**.

3. Estimates of R and growth rates are becoming less reliable and less useful in determining the state of the epidemic as hospitalisations and deaths reach very low levels.

4. These low numbers are consistent with previous modelling of scenarios for relaxing restrictions and are not an indication that the epidemic has been shrinking more rapidly than expected.

5. SPI-M-O estimates that there are between **2,000 and 9,000 new infections per day in England.**

6. Close monitoring of the proportion of tests that are S-gene positive is important, as it offers a rapid view of possible variants of concern. The S-gene positive proportion of tests is growing, although it is too early to determine the significance of this observation.

7. As restrictions are lifted, gatherings of between 10 and 50 people are expected to have a disproportionate impact on transmission.

## Incidence and prevalence

8. Combined estimates from eight SPI-M-O models, using data available up to 19th April, suggest there are between **2,000 and 9,000 new infections per day in England.** The ONS community infection survey estimates that there were 7,100 new infections per day in England (credible interval of 5,300 to 9,100) on 6th April 2021.

9. During the most recent week of the study (10th April to 16th April), the survey estimates that an average of **90,000 people had COVID-19** in the community in England (credible

interval **75,900** to **105,700**). The survey does not include people in care homes, hospitals, or prisons. Estimates from across the four nations of the UK are:

England           90,000 (credible interval 75,900 to 105,700)
Scotland          9,300 (credible interval 5,500 to 14,300)
Wales             3,600 (credible interval 1,700 to 6,400)
Northern Ireland  2,800 (credible interval 1,100 to 5,300)

## Growth rate and reproduction number

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 speed at which an epidemic is growing or shrinking[1].

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

    **England** is between **-5% 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 **-5% and +2% per day**.

    SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 5.

12. 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.

13. SPI-M-O's best estimates for **R in England is between 0.8 and 1.0**. **For Scotland, Wales, and Northern Ireland, R is estimated to be between 0.7 and 0.9, 0.7 and 1.0, and 0.7 and 1.1 respectively**. 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 19th April. R is an indicator that lags by two to three weeks and, therefore, the impact of behavioural changes that have happened since easing of restrictions on 12th April will not be reflected and nor will the return of schools after the Easter holidays.

14. Due to the lag in these indicators, **SPI-M-O is *not confident* that R is *currently* below 1 in most NHS England regions**, and these estimates can be seen in Table 1 and Figure 6. Geographical heterogeneity in transmission continues at a sub-regional level, and it is important that this is carefully monitored as measures are relaxed. In particular, hospital admissions in London and the East of England are no longer clearly falling.

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[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 1.0 | -5% to -1% |
| **Scotland*** | 0.7 to 0.9 | -4% to -1% |
| **Wales*** | 0.7 to 1.0 | -4% to +1% |
| **Northern Ireland*** | 0.7 to 1.1 | -5% to +2% |
| **NHS England region** | **R** | **Growth rate per day** |
| **East of England*** | 0.8 to 1.1 | -5% to +1% |
| **London*** | 0.8 to 1.1 | -5% to +1% |
| **Midlands*** | 0.7 to 0.9 | -7% to -3% |
| **North East and Yorkshire** | 0.7 to 1.0 | -6% to -1% |
| **North West*** | 0.7 to 0.9 | -7% to -2% |
| **South East*** | 0.7 to 0.9 | -6% to -2% |
| **South West*** | 0.7 to 1.1 | -6% to 0% |

15. **Estimates of R and growth rates become more uncertain as hospitalisations and deaths reach low levels**. These estimates are becoming less reliable and 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. 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.

16. Restrictions across the UK since the start of 2021 have driven infections down. Even as lockdown is lifted, an extended period of low hospitalisations and deaths is in line with previous modelled scenarios, as illustrated in Figure 1. This figure shows modelling from SPI-M-O of the published Roadmap from 31st March[3]. In each of these modelled scenarios, hospital admissions and deaths drop considerably in May before increasing again as unlocking progresses.

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[2] 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.
* Particular care should be taken when interpreting these estimates as they are based on low numbers of cases or deaths and / or dominated by clustered outbreaks and so should not be treated as robust enough to inform policy decisions alone.
[3]SPI-M-O: Summary of further modelling of easing restrictions – Roadmap Step 2; SAGE 85 31 March 2021;

**Figure 1:** Previous modelling from SPI-M-O showing an expected period of very low hospital occupancy during the month of May in the modelled Roadmap scenarios from March in both the Imperial (left) and Warwick (right) models. Peaks in occupancy in Spring 2020 are shown by dashed horizontal lines. Vertical dashed lines show the dates at which each Roadmap step is taken. Shaded regions show the 95% credible intervals and lines indicate the medians of the distributions. Details of the assumptions are given in the previously published modelling summary[3].
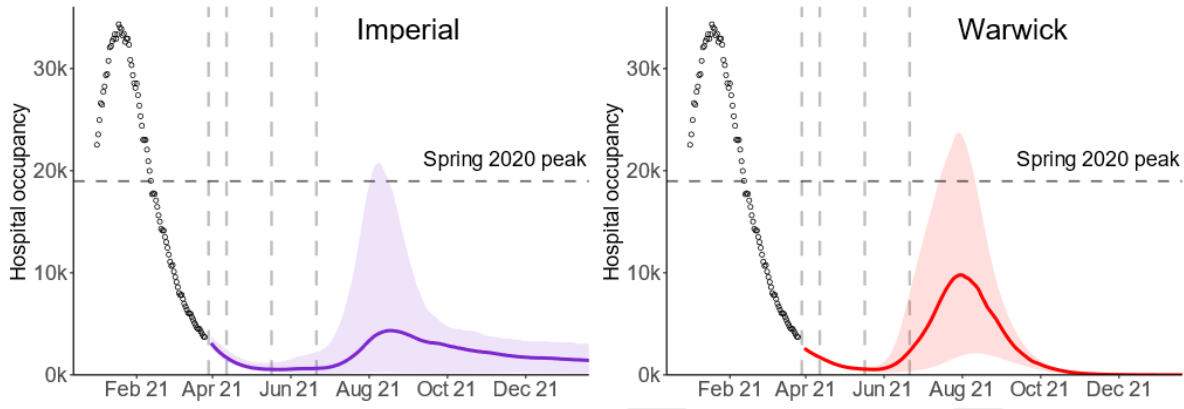


## Variants of concern

17. 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. The proportion of samples that are S-gene positive is therefore worth close examination and targeted sequencing, particularly in hospitalised people. The proportion of S-gene positive samples has recently been rising in some areas, notably in London.

## Effect of school re-opening

18. Schools re-opened in England on 8th March for around three weeks before closing for the Easter holidays. The brevity of this window means that it is difficult to clearly quantify the effect this had, and to determine whether infections then spread to the community.

19. Lateral flow test positivity increased in schools during this period as illustrated in Figure 2. There was also a modest increase in positivity in school aged children in ONS's Community Infection Survey. This highlights the importance of maintaining current mitigation measures in schools, such as testing and mask wearing, in the coming months.

**Figure 2:** Positivity of lateral flow tests in primary school households (dark green), primary school staff (orange), secondary school households (purple), secondary school staff (pink), and secondary school students (light green) between February and April. The dashed vertical lines give the start and end dates for the school holidays (note: these vary across England).
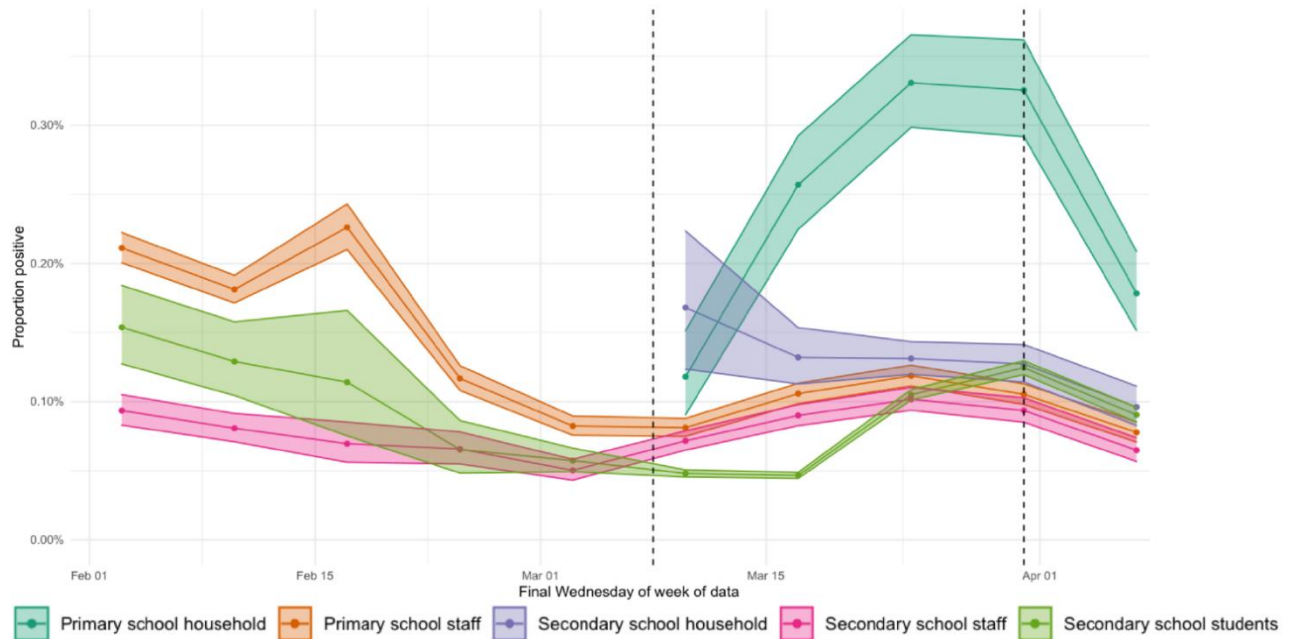


## Importance of medium gatherings of different sizes

20. An accompanying paper used [data from surveys on social contacts](#) from 2009-10 to estimate the proportion of infections attributable to gatherings of different sizes if the UK were to return to pre-pandemic behaviours . This proportion is equivalent to a percentage change in R.

21. The paper estimates that only 0.6% of infections would be attributable to gatherings of over 100 people; 5.5% to groups of over 50; 18.9% to groups of over 20 and 25.2% to groups of over 10 (Figure 3). **The relatively small proportion of infections attributable to larger events is the result of them happening far less frequently**. Whether these gatherings happen inside or outdoors will also affect their impact on transmission – this is not considered here.

**Figure 3:** The proportion of infections that would be attributable to groups of different sizes, were behaviours to revert to those seen in 2009-2010. Purple=all groups, Blue=groups who know each other. Note the log scale. 95% confidence intervals shown. Taken from Brooks-Pollock *et al.*
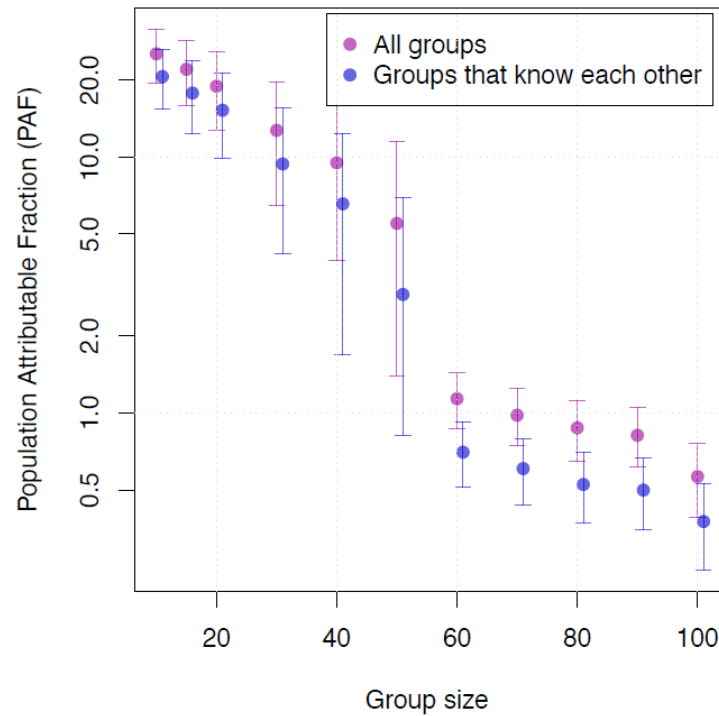


22. These results demonstrate that, as restrictions are removed, it is important to keep a focus on making gatherings of 10-50 people as safe as possible. As such gatherings are common, they have a greater impact on transmission than comparatively infrequent meetings of very large numbers of people. There is a chance that very large gatherings, such as those with hundreds or thousands of attendees may disassociate into lots of smaller groups. The base data upon which this analysis draws acknowledges this possibility – "if a person attended a concert with 1,000 people, but only spoke to five people, the number of recorded group contacts would be five".

23. Compared to individual contacts, group contacts were more likely to be more than two miles from the participants' homes, less likely to involve physical contact, and more likely to involve meeting new people.

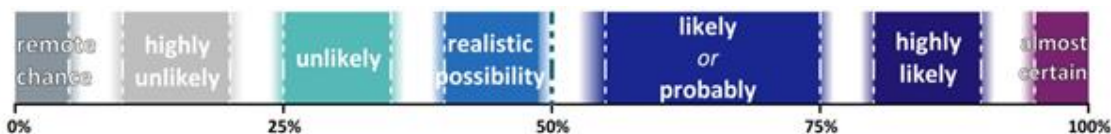## Annex: PHIA framework of language for discussing probabilities

**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.
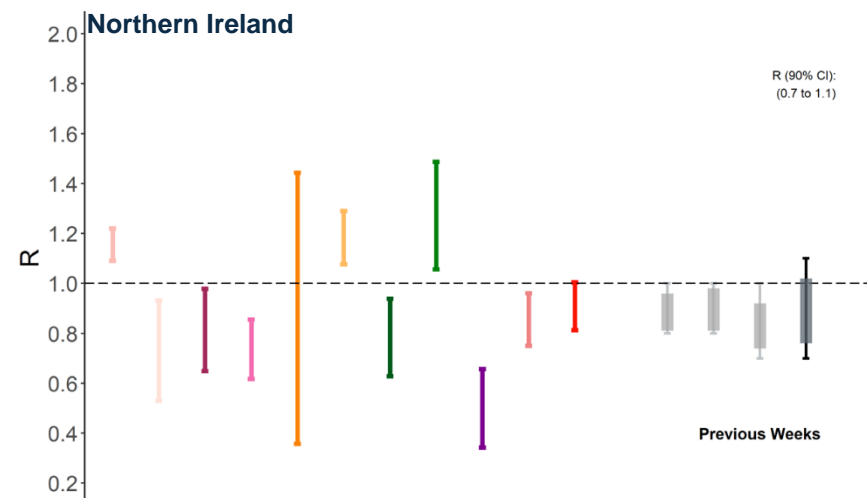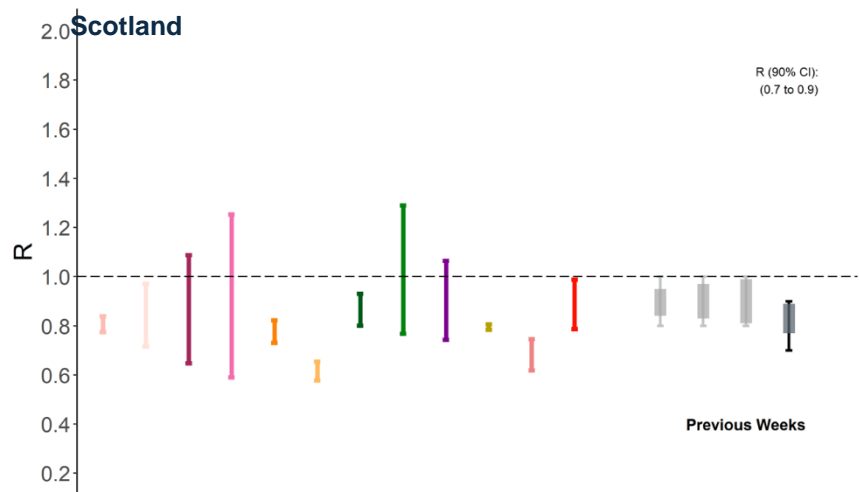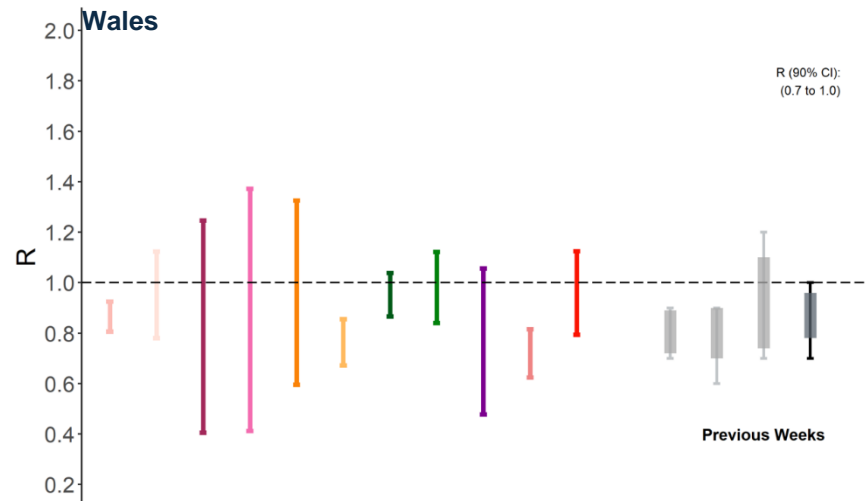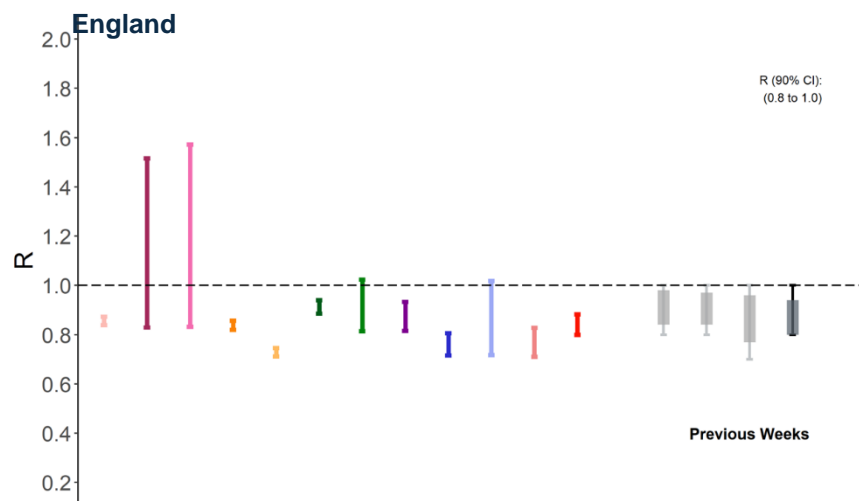
**Figure 5:** SPI-M-O groups' estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.
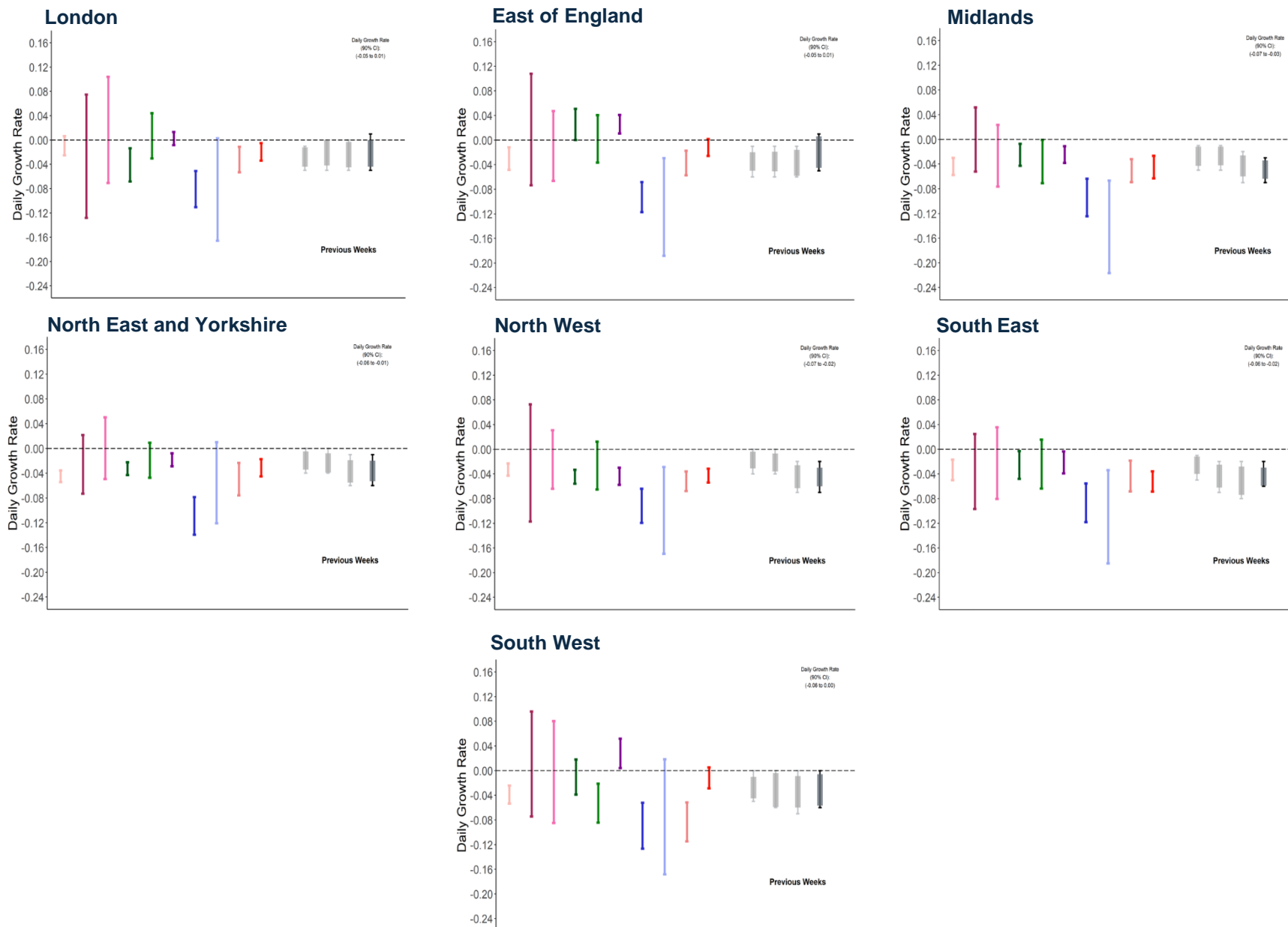
**Figure 6:** SPI-M-O groups' estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.