

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

Date: 6th January 2021

FINAL – SIGNED OFF BY SAGE

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 1.0 and 1.4, while England is between 1.1 and 1.4**. Estimates of R for Scotland, Wales, and Northern Ireland are between **0.9 and 1.3, 0.8 and 1.1, and 1.0 and 1.4 respectively**.
2. SPI-M-O estimate that R is above 1.0 in all NHS England regions. Its value is relatively similar across the English regions.
3. SPI-M-O estimate that there are between **117,000 and 287,000 new infections per day in England**.
4. R is a lagging indicator and these estimates are based on the latest data available up to 4th January. These estimates, therefore, do not account for the latest measures across the four nations including the lockdown in England from 5th January and may not have fully incorporated any increase in transmission that might have occurred over the festive period and due to the progression of the B.1.1.7 variant outside of southern England. As anticipated, changes and disruption to data streams over the festive period add uncertainty to the current epidemiological picture. These factors lead to greater uncertainty than usual around SPI-M-O's estimates.

Outlook for the coming weeks

5. It is not clear whether the English national lockdown will reduce R below 1. It is highly likely that R will be higher than it was during the spring 2020 lockdown.
6. The first solid evidence of whether or not the national lockdown has reduced R below 1 will likely be given by the ONS Community Infection Survey and the REACT study, most likely from results published during the week commencing 18th January. Some evidence will come from that survey a week earlier from the parts of England that were in Tier 4 with schools closed over Christmas.
7. Even if R is sustained below 1 until mid-February, it is highly likely to be higher than it was during the spring 2020 lockdown. This means that prevalence would drop more slowly than seen during April and May. In spring 2020, hospital occupancy peaked around three weeks post-lockdown and took another four weeks to halve. **As a result, it is highly likely that hospital occupancy will be at or above its current levels in mid-February.**

8. It will take around three weeks for SPI-M-O's medium-term projections (and estimates of R and growth rates) to fully take account of the effect of lockdown.

Vaccination

9. SPI-M-O do not yet know NHS rollout timelines for vaccination, nor do SPI-M-O have access to detailed data on who has been vaccinated. These data are already critical for SPI-M-O to be able to provide scientific evidence to SAGE, including accurate R estimates and projections.
10. It will take two to three weeks for a vaccine to induce an immune response. It takes around two weeks for an infected person to require hospitalisation. For that reason, there will be a lag of around four weeks before the benefits of vaccines are seen on hospital admissions, and longer for deaths.
11. As previously stated, even if vaccines are very effective at reducing transmission, any vaccine-induced reduction in R by mid-February would be modest. Reaching herd immunity from vaccination alone may not be possible; it would require very high coverage in all adult age groups and for the vaccine to be highly effective against transmission.
12. The age profile of those being admitted to hospital is less skewed towards the oldest in society than the age profile of deaths. For that reason, vaccines will reduce pressure on the NHS less rapidly than they will reduce the number of deaths.
13. If, in future, the Government was to follow a strategy of allowing R to be sustained above 1 before vaccines have been offered to all adults, **very high coverage in older and more vulnerable groups is absolutely critical** to avoid the NHS being so stretched that it cannot provide its usual levels of care during in the epidemic that would follow.
14. The NHS would be also less likely to be under extreme pressure if any such relaxation:
 - Starts when prevalence and hospital occupancy are low;
 - Takes place gradually, with R not getting far above 1;
 - Takes place after a greater proportion of the population had been vaccinated.

Incidence and prevalence

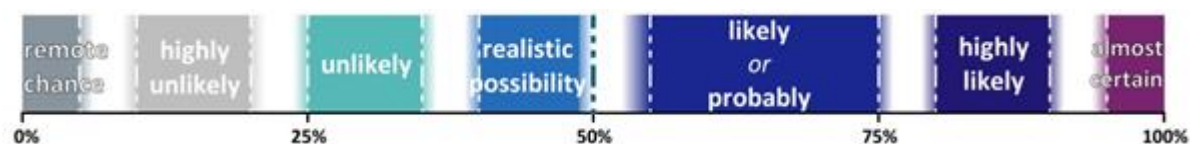
15. Combined estimates from five SPI-M-O models, using data available up to 4th January, suggest there are between **117,000 and 287,000 new infections per day in England**.
16. Modelling from the ONS community infection survey for the most recent week of the study (27th December 2020 to 2nd January 2021) estimates that an average of **1,122,000 people had COVID-19** in the community in England (credible interval **1,070,600 to 1,175,700**). The survey does not include people in care homes, hospitals or prisons. The equivalent estimates for the devolved administrations are:

Scotland	45,900 (credible interval 37,900 to 54,900) ¹
Wales	44,100 (credible interval 33,700 to 56,300)
Northern Ireland	9,100 (credible interval 5,400 to 14,000)

Reproduction number and growth rate

17. 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.
18. **SPI-M-O's best estimate for R in the UK is between 1.0 and 1.4, while in England this is between 1.1 and 1.4.** Estimates of R for Scotland, Wales, and Northern Ireland are between **0.9 and 1.3**, **0.8 and 1.1**, and **1.0 and 1.4 respectively**. SPI-M-O's agreed national estimates are summarised in Table 1 and Figures 1 and 2.
19. R is a lagging indicator and these estimates are based on the latest data available up to 4th January. These estimates, therefore, do not account for the latest measures across the four nations including the lockdown in England from 5th January. As anticipated, changes to data streams over the festive period add uncertainty to the current epidemiological picture. This combined with the emergence of the B.1.1.7 variant leads to greater uncertainty than usual around SPI-M-O's estimates. SPI-M-O has confidence in the combined estimates.
20. SPI-M-O estimate that R is above 1 in all NHS England regions. Its value is relatively similar across the English regions, and these can be seen in Figure 4.
21. 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 shrinking².
22. SPI-M-O's consensus estimate is that the **growth rate in the UK is between +0% and +6% per day**, and between **+1% and +6%** in England. SPI-M-O's national and regional estimates of growth rates are summarised in Table 1 and Figure 3.

Annex: PHIA framework of language for discussing probabilities



¹ Data in Scotland cover 25th – 31st December

² Further technical information on the growth rate can be found in [Plus magazine](#).

Table 1: Combined estimate of R and the growth rate in the UK, four nations and NHS England regions (90% confidence interval)³

Nation	R	Growth rate per day
England	1.1 – 1.4	+1% to +6%
Scotland	0.9 – 1.3	-2% to +5%
Wales	0.8 – 1.1	-4% to +1%
Northern Ireland	1.0 – 1.4	0% to +8%
UK	1.0 – 1.4	0% to +6%

NHS England region	R	Growth rate per day
East of England	1.1 – 1.3	+1% to +6%
London	1.1 – 1.4	+1% to +6%
Midlands	1.1 – 1.4	+1% to +7%
North East and Yorkshire	1.1 – 1.4	+1% to +6%
North West	1.0 – 1.4	0% to +6%
South East	1.1 – 1.4	+1% to +6%
South West	1.1 – 1.5	+2% to +8%

³ The estimate intervals for R and growth may not exactly correspond to each other due to the submission of different independent estimates and rounding in presentation.

Figure 1: 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.

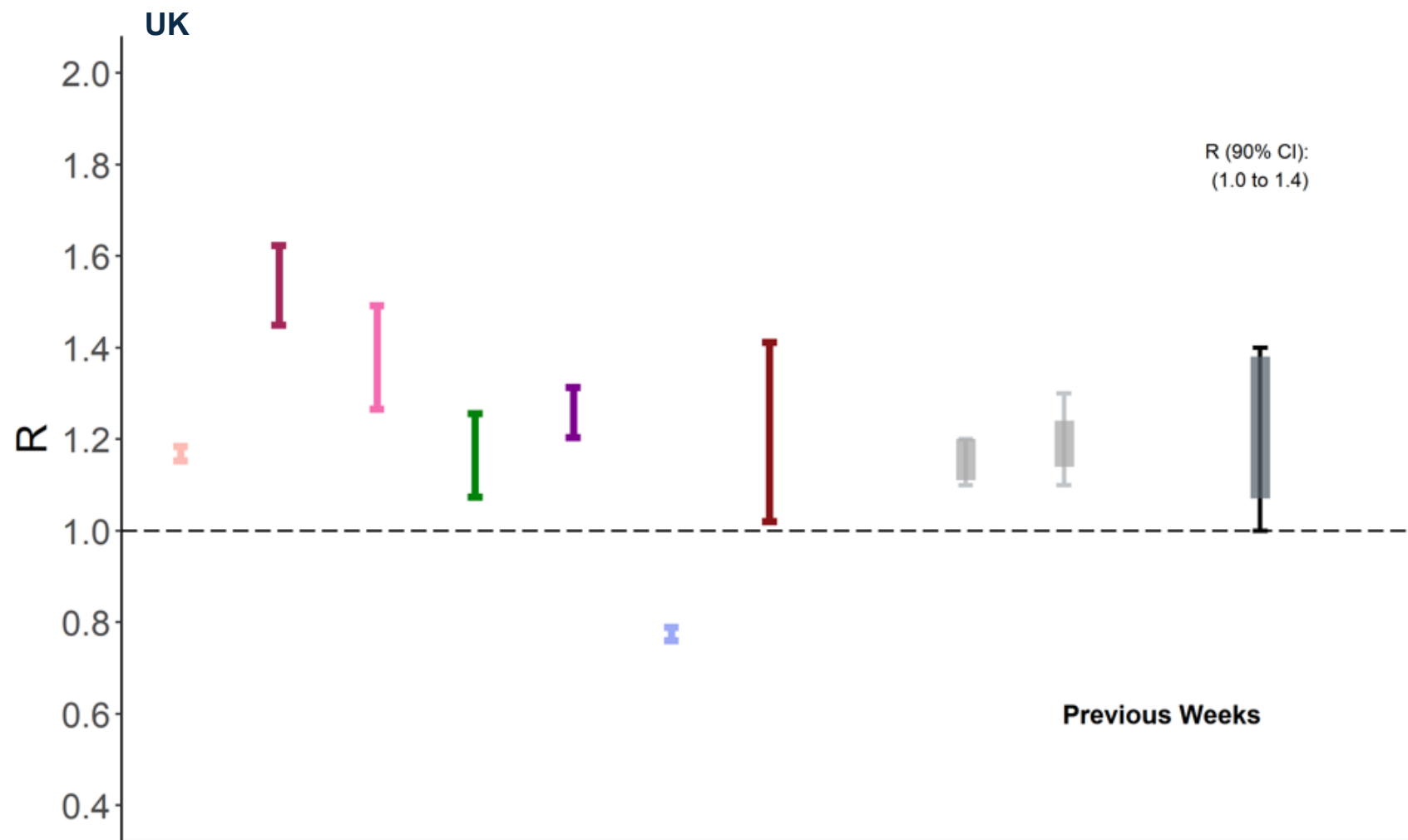


Figure 2: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

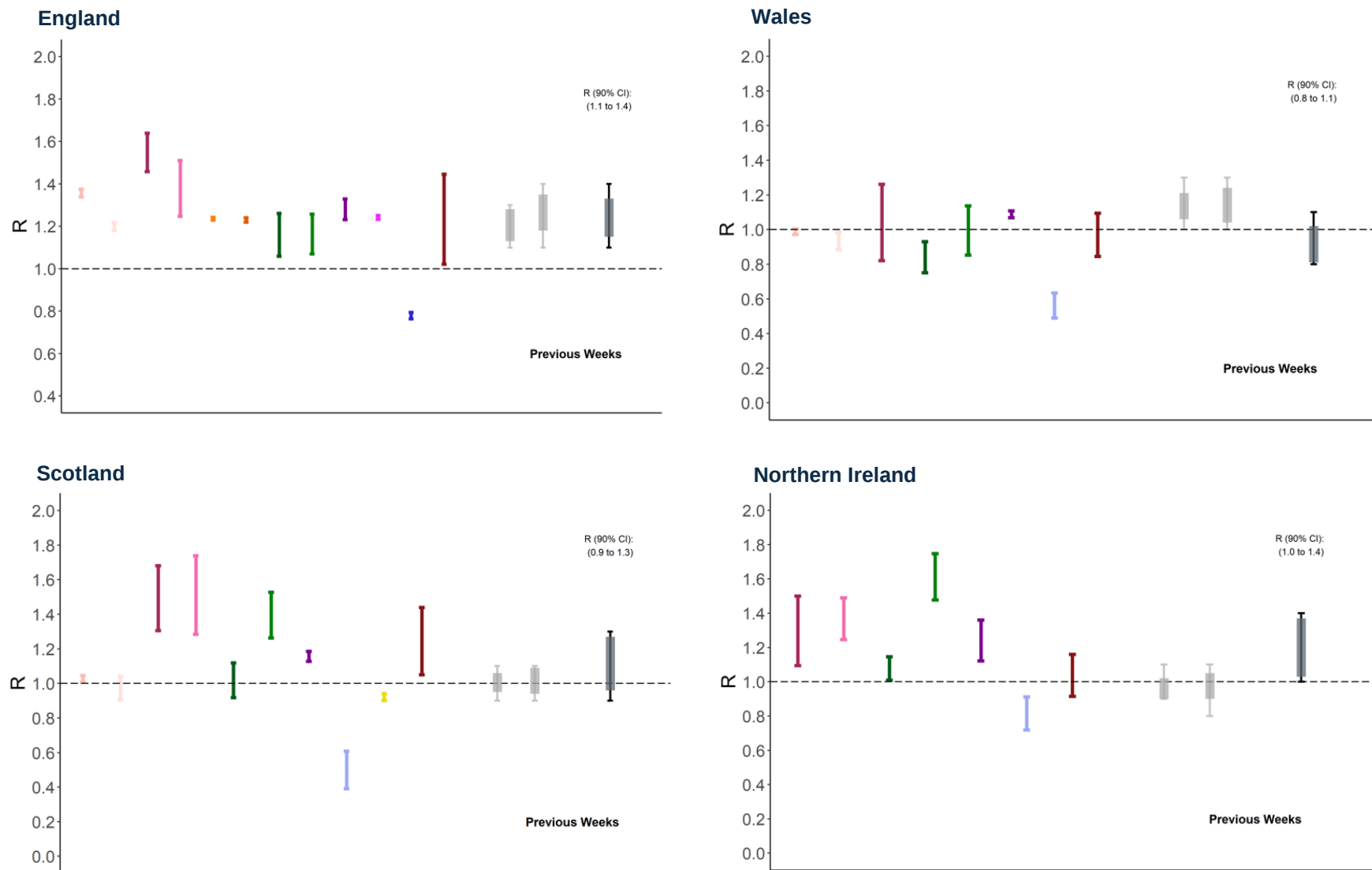


Figure 3: SPI-M-O groups estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.



Figure 4: 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.

