

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

Date: 30th September 2020

SIGNED OFF BY CO-CHAIRS ON BEHALF OF SPI-M-O

Summary

1. SPI-M-O's best estimate for **R in the UK is between 1.3 and 1.6**. SPI-M-O's national and regional estimates suggest **R is almost certainly above 1 in England, Scotland, Wales, Northern Ireland, and all regions of England**. The UK estimate of R is an average over a range of different epidemiological situations and is a guide to the general trend rather than a description of the epidemic state in every location.
2. **Medium-term projections from five SPI-M-O models suggest the epidemic is likely to breach the agreed reasonable worst case scenario over the next two weeks**. As outlined by COVID-S, NHS, DHSC and HMG planning has followed a strategy under which action is taken in mid-September to halt epidemic growth. Recently announced measures might reduce R back below 1, however it is likely that infection incidence, hospital admissions, and deaths will exceed planning levels over the next few weeks. If R has been recently brought below 1, this exceedance of the reasonable worst case scenario could be modest and short-lived, but if R remains above 1 then the epidemic will further diverge from the planning scenario.
3. Although there are some early, tentative indications that the epidemic's growth may be slowing, it is still too early to draw conclusions. While more data are needed to accurately assess any recent changes to the growth rate it is highly likely that infection incidence is growing overall. This situation will be closely reviewed in the coming weeks.
4. Due to continued difficulties in interpreting testing data, estimates of doubling times are uncertain. SPI-M-O's modelled consensus is a **doubling time in the UK for new infections of between 8 and 14 days**. There is significant heterogeneity across geographies and the potential for faster doubling times in certain areas.
5. The delay between initial infection, developing symptoms, the need for hospital care, and death means these estimates **cannot fully reflect recent changes in transmission which might have occurred over the past two to three weeks, including any impact from the recently announced measures**.

Reproduction number

6. 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. Therefore, these estimates should be used as a guide to the general trend rather than a description of the epidemic state in all places.
7. **SPI-M-O's best estimate is that R is between 1.3 and 1.6 in the UK.** SPI-M-O's agreed national and regional estimates are summarised in **Table 1** and **Figures 1, 2, and 4**. These suggest R is almost certainly above 1 in England, Scotland, Wales, Northern Ireland, and all regions in England.
8. SPI-M-O's consensus R and growth rate estimates are based on a range of models that use a variety of data sources including deaths, hospital admissions, and number of individuals testing positive. The delay between initial infection, developing symptoms and the need for hospital care, means that, **such estimates cannot yet fully reflect the most recent changes in transmission from the past two to three weeks**, including any impact from the measures recently announced.
9. Operational issues with NHS Test and Trace continue to exacerbate the level of uncertainty in SPI-M-O's estimates. Demand for symptomatic testing and testing delays have changed over recent weeks, making it difficult to interpret trends in the data and adding further uncertainty to the modelling.
10. There are very early, tentative indications that the growth of the epidemic might be slowing, with the number of hospitalisations in several regions and calls to NHS 111 beginning to flatten over recent days. It is unclear whether this deceleration is a result of slower growth in the number of infections, or due to changes in the way care is being accessed or reported. **SPI-M-O's view is that it is too early to draw conclusions and that further data are needed to accurately assess whether the trajectory of the epidemic is changing.** Interim results from the REACT surveillance study suggest a substantial increase in prevalence in the population, but the estimates of growth are consistent with both slowing and continued increase. Consequently, REACT is consistent with SPI-M-O modelling results and the epidemic itself continues to grow overall.

Growth rates and doubling times

11. 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 shrinking¹.
12. SPI-M-O's consensus estimate is that **growth rate in the UK is between +5% to +9% per day**. SPI-M-O's national and regional estimates are summarised in **Table 1** and **Figure 3**. This growth rate suggests **the number of new daily infections was doubling in the recent past every 8 to 14 days in the UK**. As mentioned above, these estimates cannot fully reflect any changes in transmission which might have occurred over past two to three weeks. As with R, there is uncertainty in estimates of growth rate and doubling time, although there is less variability between different group's estimates of these measures.

Reliability

13. As the number of infections is increasing across the UK, SPI-M-O's view is that there is less variability in the R and growth rate estimates two to three months ago. There may still be high degrees of variability in, for example, a localised outbreak, however, **SPI-M-O considers all this week's estimates to be reliable**.
14. Care should still be taken when interpreting R and growth rate estimates for the UK, due to their inherently lagged nature, and as these figures mask variation in the number of infections and how transmission is changing in some parts of the country.

Incidence

15. Combined estimates from five SPI-M-O models suggest there are **13,000 to 49,000 new infections per day in England**.² This is above the profile of the reasonable worst-case scenario, where the number of daily infections in England remained between 12,000 – 13,000 from mid-September and throughout October.
16. Modelling from the ONS swabbing survey for the most recent week of the study (18th to 24th September) estimates that an average of **116,600 people had COVID-19** in the community in England (credible interval 101,000 to 133,100). In Wales, ONS estimate that an average of **6,400 people had COVID-19** during this period (credible interval 2,700 to

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

² Footnote added for release: This incorrectly cites estimates for the UK; the estimates for England are 10,000 to 45,000.

12,100). The study also estimates that, during the same week, there were **8,400 new infections per day in England** (credible interval of 6,500 to 10,700).

17. As the ONS survey estimates are based on survey results collected between mid and late September. It is **highly likely that the epidemic has continued to grow since** and, therefore, the number of new infections each day is likely to be higher than estimated by the swabbing survey.
18. The latest interim findings from the REACT surveillance survey have been reported from 19th to 26th September. Over this time, a weighted prevalence of 0.55% was estimated, the highest observed in any round of the survey, and **equivalent to over 400,000 people in England being virus positive**. REACT estimates for the latest round data only, also suggest the epidemic could be either stable, growing, or declining. There is some limited evidence from the ONS survey that the incidence rate may be levelling off following steep increases during August and early September, however the wide credible intervals mean it is too early to draw conclusions. These trends will continue to be closely monitored over the coming weeks.
19. SPI-M-O remain concerned that data flowing from testing systems is limited in terms of its utility for understanding the epidemiology. Consideration should also be given to the distribution of testing between areas in terms of control of transmission. In particular, **the re-distribution of testing effort away from areas of apparent low prevalence is sub-optimal in terms of both disease control and surveillance**. If testing is removed from apparently “low” prevalence areas, it is very possible that increases in incidence will occur due to a reduction in isolation and contact tracing, and that these increases will not be observed before there is a large disease burden. Serological studies are a potent source of information, if symptomatic testing capacity is reached, and should be expanded.

Medium-term projections

20. SPI-M-O are developing medium term projections, looking ahead to the next six weeks. Projections from a range of groups are given in the accompanying document. They show the range of hospital admissions per day for each UK nation that might be expected, based on current trends assuming no further policy or behavioural changes occur. Projected numbers of deaths are also included. **All projections suggest the epidemic is likely to breach the agreed reasonable worst case scenario over the next two weeks.**
21. **Beyond two weeks the projections become more uncertain and there is more variability between models.** This reflects the considerable unpredictability that exists between different data streams and the large differences that can result from even small

differences in the estimated growth rate and current incidence. **Projections in the nearer term, however, are more certain;** for example, those who are projected to die from COVID-19 in two weeks' time are likely to already be infected.

22. These projections should not be interpreted as forecasts or predictions of what will happen but are intended to project potential outcomes based on current trends. They do not include the impact of any measures that have not yet been detected in observed data, including any national and local measures introduced in the last 1-2 weeks, or any future changes that might be implemented. Nor do they reflect the impact of any recent changes such as the return of universities.

Influenza and COVID-19

23. Work conducted by one SPI-M-O contributor considered a study of excess all-cause mortality from twenty-four European countries over the period 2015-2020. **For most previous years, there is no clear association between higher peak excess mortality in past years and the peak excess mortality during COVID-19.** There is a positive correlation between peak excess mortality in the first half of 2018 and the first half of 2020 (moderate confidence). Further information can be found in the supporting document "*Evaluation of excess mortality*", presented to SAGE on 1st October 2020.

Annex: PHIA framework of language for discussing probabilities

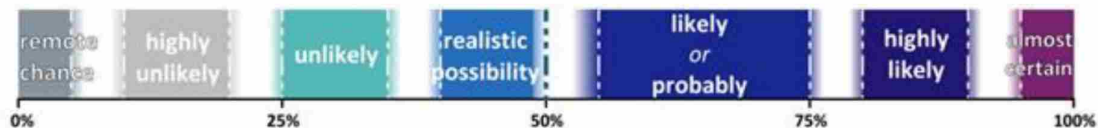


Table 1: Combined estimate of R and the growth rate in the UK, four nations and English NHS regions (90% confidence interval)

| Nation | R | Growth rate per day |
|------------------|------------------|----------------------------|
| England | 1.2 – 1.6 | +4% to +8% |
| Scotland | 1.3 – 1.7 | +5% to +10% |
| Wales | 1.3 – 1.6 | +5% to +9% |
| Northern Ireland | 1.1 – 1.5 | +3% to +7% |
| UK | 1.3 – 1.6 | +5% to +9% |

| NHS England region | R | Growth rate per day |
|---------------------------|-----------|----------------------------|
| East of England | 1.0 – 1.3 | +1% to +6% |
| London | 1.2 – 1.6 | +3% to +9% |
| Midlands | 1.2 – 1.5 | +3% to +8% |
| North East and Yorkshire | 1.2 – 1.6 | +4% to +9% |
| North West | 1.2 – 1.5 | +4% to +8% |
| South East | 1.1 – 1.4 | +2% to +6% |
| South West | 1.1 – 1.4 | +2% to +7% |

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.

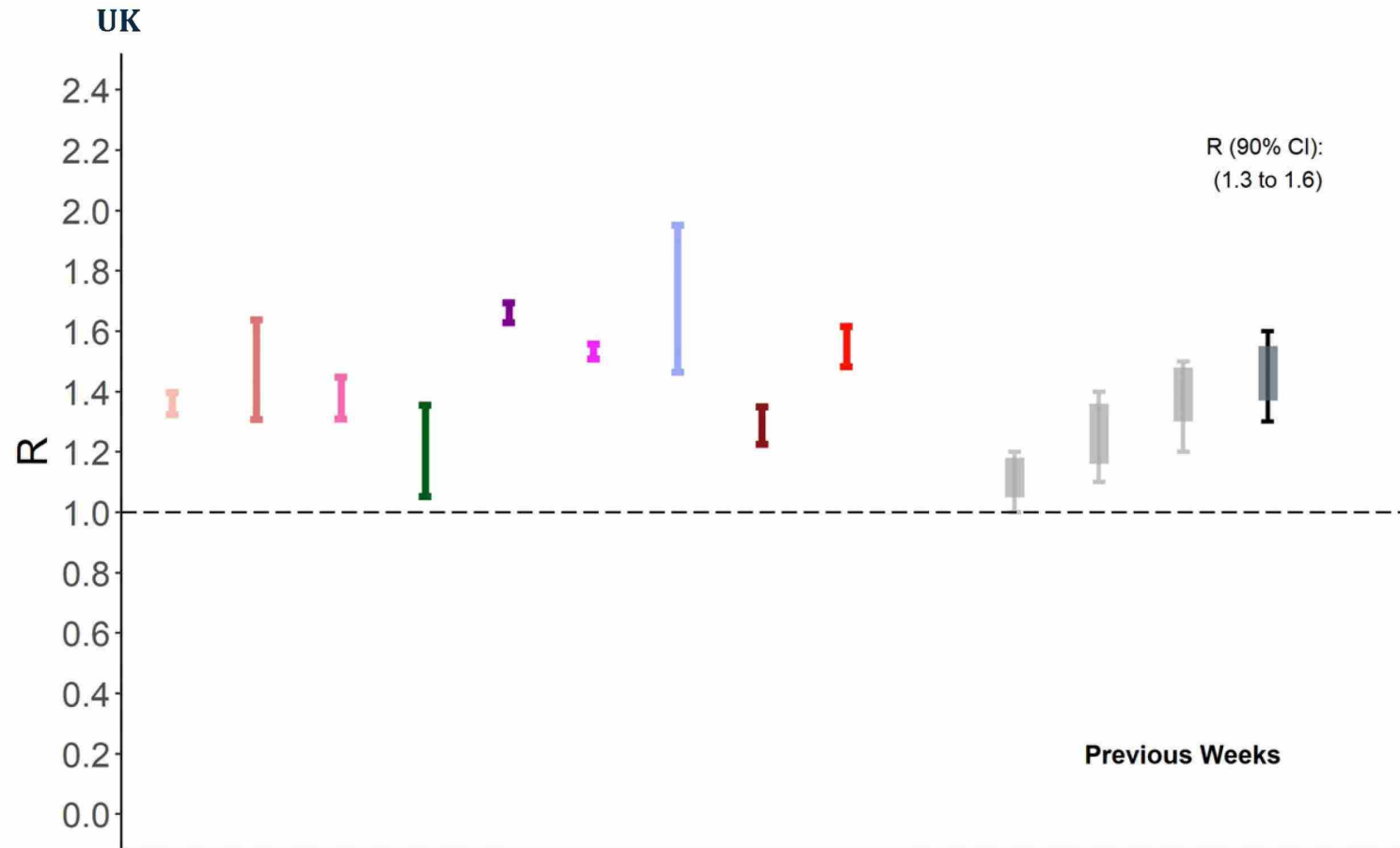


Figure 2: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

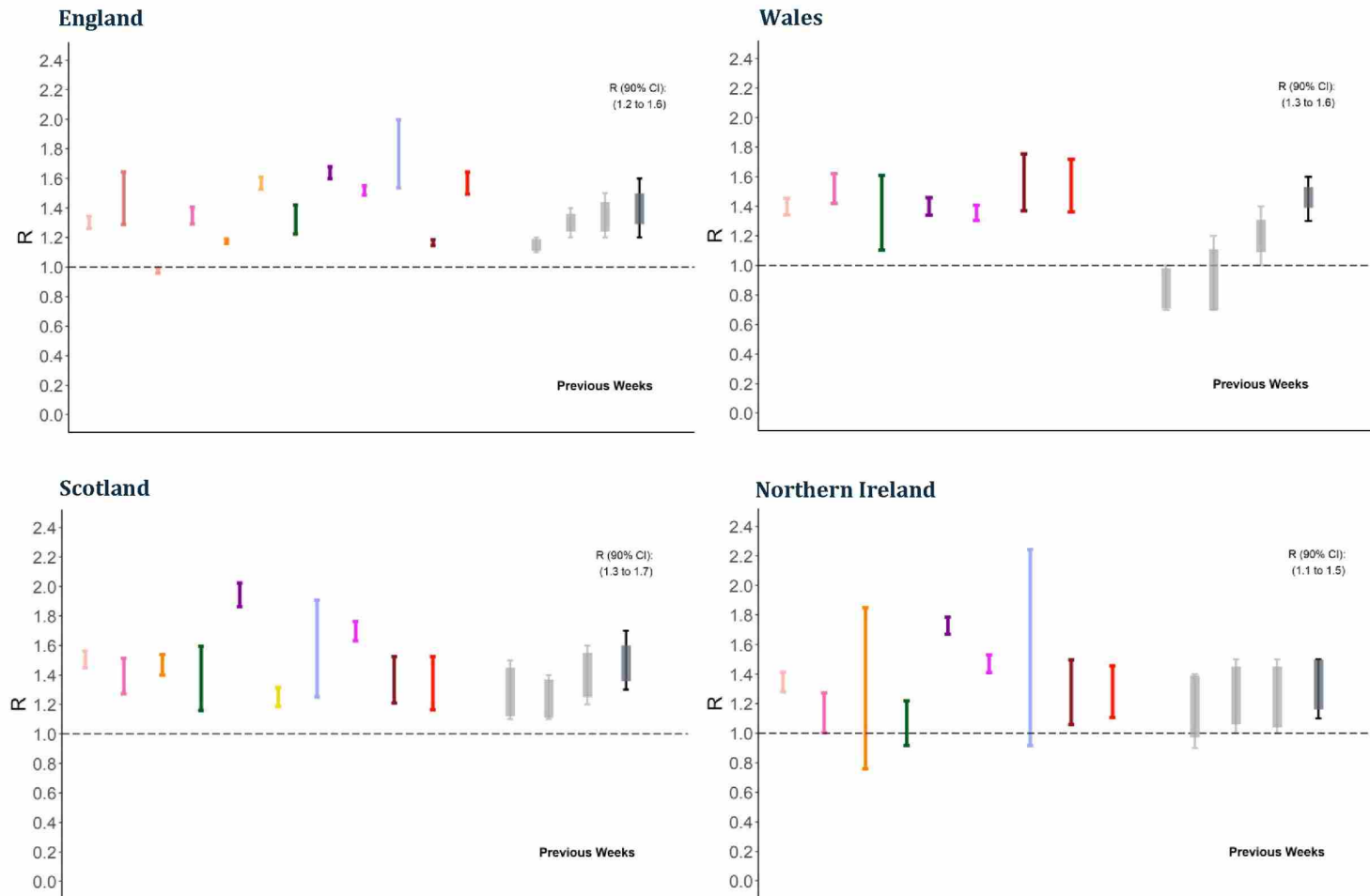


Figure 3: SPI-M-O groups estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

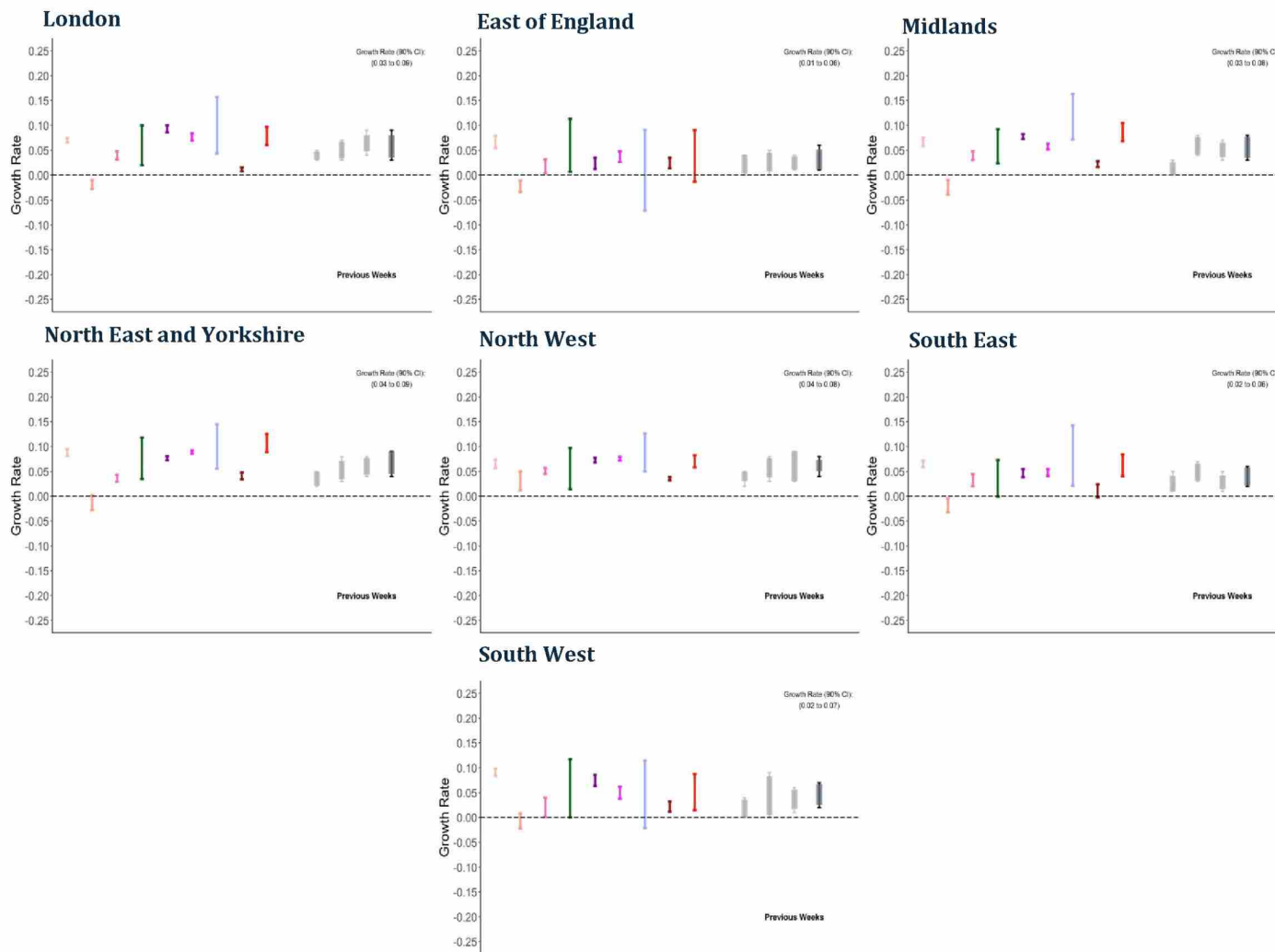


Figure 4: SPI-M-O groups estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

