

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

Date: 26th August 2020

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

Summary

1. SPI-M-O's best estimate for **R in the UK is between 0.9 and 1.1**. This 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 of the country as a whole.
2. SPI-M-O's best estimate for **R in England is also between 0.9 and 1.1**. As a result, **SPI-M-O do not have confidence that R is *currently* below 1 in England**.
3. The growth rate records how quickly the number of infections is changing each day. SPI-M-O's consensus estimate is that **the growth rate per day in the UK is between -2% and +1% per day**. Care should be taken when interpreting R and growth rate estimates for the UK as this figure masks wide variation in the number of cases and pattern of how this is changing in different parts of the country.
4. **Care should be taken when interpreting the R and growth rate estimates for Scotland, Wales, Northern Ireland, London, East of England, Midlands, North East and Yorkshire, South East and South West**. These estimates are based on low numbers of deaths and / or dominated by clustered outbreaks and so should not be treated as robust enough to inform policy decisions alone.
5. The impact of out of household isolation and quarantine on overall transmission rates in the UK is likely to be modest, given current testing and notification delays. However, if applied to households with higher transmission rates, such as those more densely crowded and those containing clinically vulnerable people, such a policy could decrease the number of COVID-19 deaths and hospital admissions. Further work is required to quantify this intervention and will feed into further SAGE discussions on 10th September.

Reproduction number

6. The reproduction number is the average number of secondary infections produced by a single infected individual. R is an average over time, geographies and communities. Whilst it varies in different geographies and settings of the population, separating transmission within and between these sub-populations increases uncertainty.

7. **SPI-M-O's consensus estimates for R and growth rates are based on a range of models that use all these data sources**, and, as a result, may not fully reflect *recent* changes in transmission.
8. SPI-M-O's agreed national estimates of R are summarised in **Table 1** and **Figures 1 and 2**. SPI-M-O's best estimate for **the UK is that R is between 0.9 and 1.1**. The previous three consensus estimates of R have been included to show the trend in the estimates.
9. SPI-M-O's best estimate for **R in England is also between 0.9 and 1.1**. SPI-M-O do not have confidence that R is *currently* below 1 in England.

Growth rates

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 rate at which an epidemic is growing or shrinking¹.
11. SPI-M-O's consensus estimate is that **growth rate per day in the UK is between -2% to +1% per day**. SPI-M-O's national estimates of growth rates are summarised in **Table 1**.
12. Rounding and differences between the data streams used in the models included in the combinations account for differences between estimates of R and estimated growth rates. Such variation highlights the importance of applying judgement when using these metrics.
13. The proportion of pillar 2 tests returning a positive result has the potential to provide an earlier indicator of observed changes in community transmission. Trends in these data, however, are difficult to interpret due to changes in testing behaviour and strategies, particularly in areas of local intervention where testing volumes have increased. Observation of the proportion of people testing positive in pillar 2 data suggests that the epidemic has been marginally shrinking at around **-1% per day over the past 2 weeks in England (95% confidence interval -2.3% to +0.3%)**. We cannot tell how much this represents a true change in the number of infections, and how much arises from changes in targeting of pillar 2 testing towards (or away from) people who are infected, for example populations with higher or lower prevalence.

¹ The growth rate λ is the exponent of the exponential curve $y = e^{\lambda t}$, where y is the number of new infections, and t is time, given in days. It is approximately the change per day (so $\lambda = -0.04$ corresponds to a 4% decline in cases per day).

Regional variation and reliability

14. Estimates of R at regional levels are subject to the same difficulties in interpretation as national estimates, and these are amplified due to the smaller numbers of cases.
15. As with nation level estimates, models that use pillar 2 testing data suggest higher values for R in several NHS England regions than those models that use more lagged indicators, such as the number of deaths.
16. Consensus estimates for the regional growth rates per day in England are also given in **Table 1** and **Figure 3**. For completeness, consensus regional estimates of R for England are given in **Table 1** and **Figure 4**; some of the ranges of R include 1.
17. Note that the estimate for the North West region is assessed as robust and continues to include a range which encompasses values of R that are greater than 1. A further four regions of England (London, Midlands, South East, and South West) also have R ranges that span 1.
18. SPI-M-O's view is that **care should be taken when interpreting the R and growth rate estimates for: Scotland, Wales, Northern Ireland, London, East of England, Midlands, North East and Yorkshire, South East and South West**. This is because these estimates are based on low numbers of deaths and / or clustered outbreaks. SPI-M-O advice that caution should be used when using these R estimates, either because numbers of deaths have fallen to low levels, there is variability in estimates from different data streams, or there is a high degree of variability in transmission, for example, due to a localised outbreak.
19. Care should also be taken when interpreting the R and growth rate estimates for the UK. These figures mask wide variation in the number of cases and patterns of how transmission is changing in different parts of the country.

Incidence

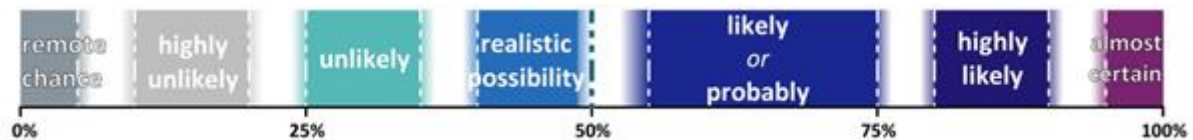
20. Combined estimates from four SPI-M-O models give a 90% confidence interval of **1,000 – 5,000 new infections per day** in England.
21. Modelling from the ONS swabbing survey for the most recent week of the study (14th August to 20th August) estimates that an average of **28,200 people** had COVID-19 in the community in England (credible interval 20,100 to 37,900). In Wales, ONS estimate that an average of 1,100 people had COVID-19 during this period (credible interval 200 to 2,700). The study also estimates that, during the same week, there were **2,200 new**

infections per day in England, with a credible interval of 1,100 to 3,800. Although the ONS survey can directly estimate incidence, it is based on a very small number of positive tests. The ONS data remain broadly flat, in line with SPI-M-O's estimates of R.

Out of household isolation and quarantine

22. SPI-M-O have considered two different modelling studies looking at the impact of the isolation of people with COVID-19 outside of their homes to reduce the risk of within-household transmission, and the impact of quarantining vulnerable people outside of their homes, if a positive case is identified in their household. This will feed into other work for the commission on households, for SAGE discussions on 10th September.
23. The potential impact of these will depend on how rapidly the primary case of COVID-19 is identified, either as a symptomatic case or a contact. Even if delays in testing are short, the case identified may not be the first infection in the household.
24. Given current testing and identification times, the overall impact of such policies on overall transmission rates in the UK are likely to be modest. However, if applied to high risk households, such as crowded households and those containing clinically vulnerable people, such a policy could decrease the number of deaths and hospital admissions.

Annex: PHIA framework of language for discussing probabilities



OFFICIAL – SENSITIVE**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	0.9 – 1.1	+1% to -2%
Scotland*	0.8 – 1.2	+1% to -7%
Wales*	0.5 – 0.9	-2% to -9%
Northern Ireland*	0.8 – 1.3	+5% to -4%
UK†	0.9 – 1.1	+1% to -2%

NHS England region	R	Growth rate per day
East of England*	0.8 – 1.0	0% to -3%
London*	0.9 – 1.1	+1% to -2%
Midlands*	0.8 – 1.1	+1% to -3%
North East and Yorkshire*	0.8 – 1.0	+1% to -3%
North West	0.9 – 1.1	+1% to -3%
South East*	0.9 – 1.1	+1% to -2%
South West*	0.9 – 1.1	+2% to -2%

*Care should be taken when interpreting these estimates as they are based on low numbers of deaths and/or clustered outbreaks within this area.

† 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 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.

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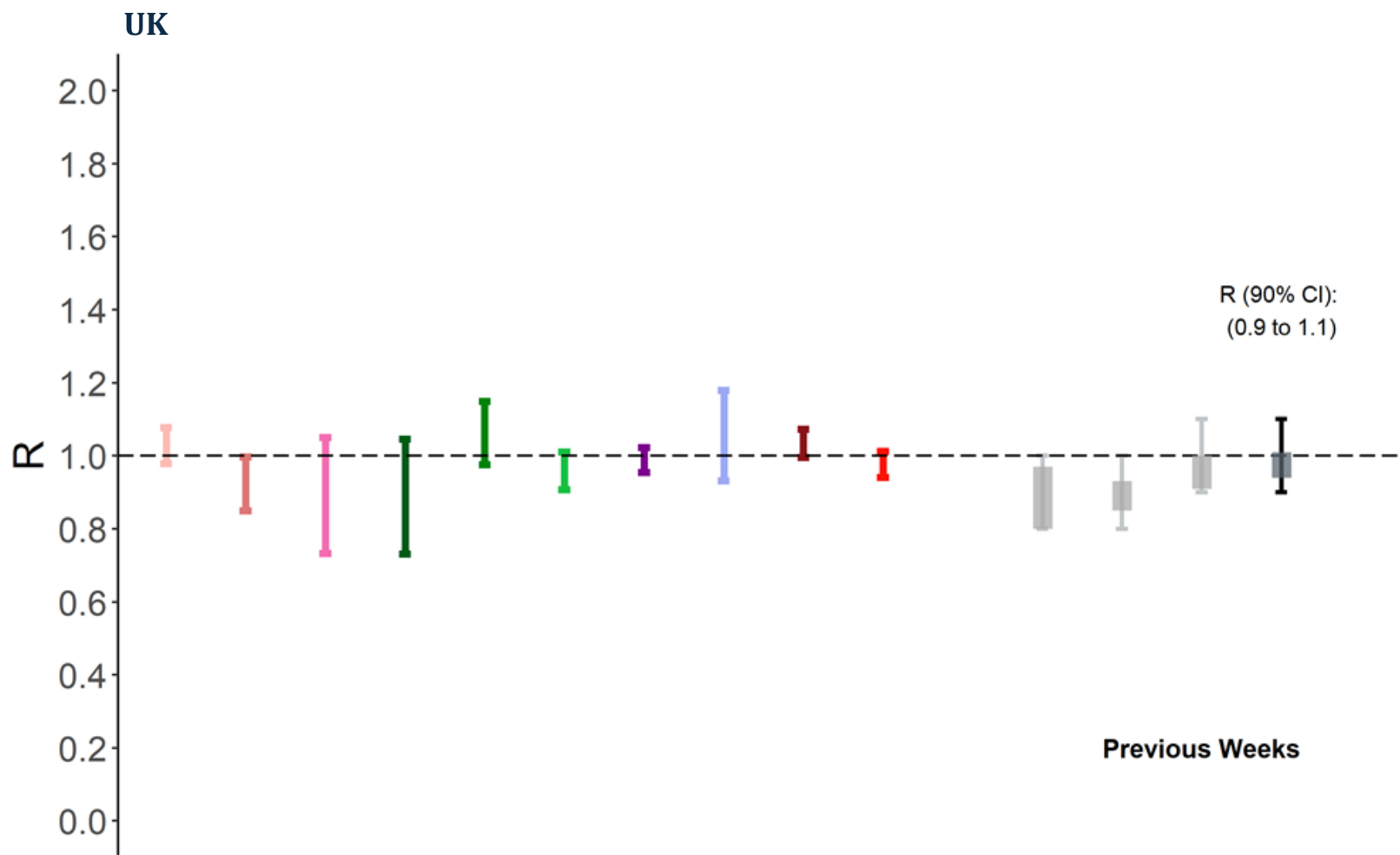


Figure 2: SPI-M-O groups estimates of median R in the four nations of the UK, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

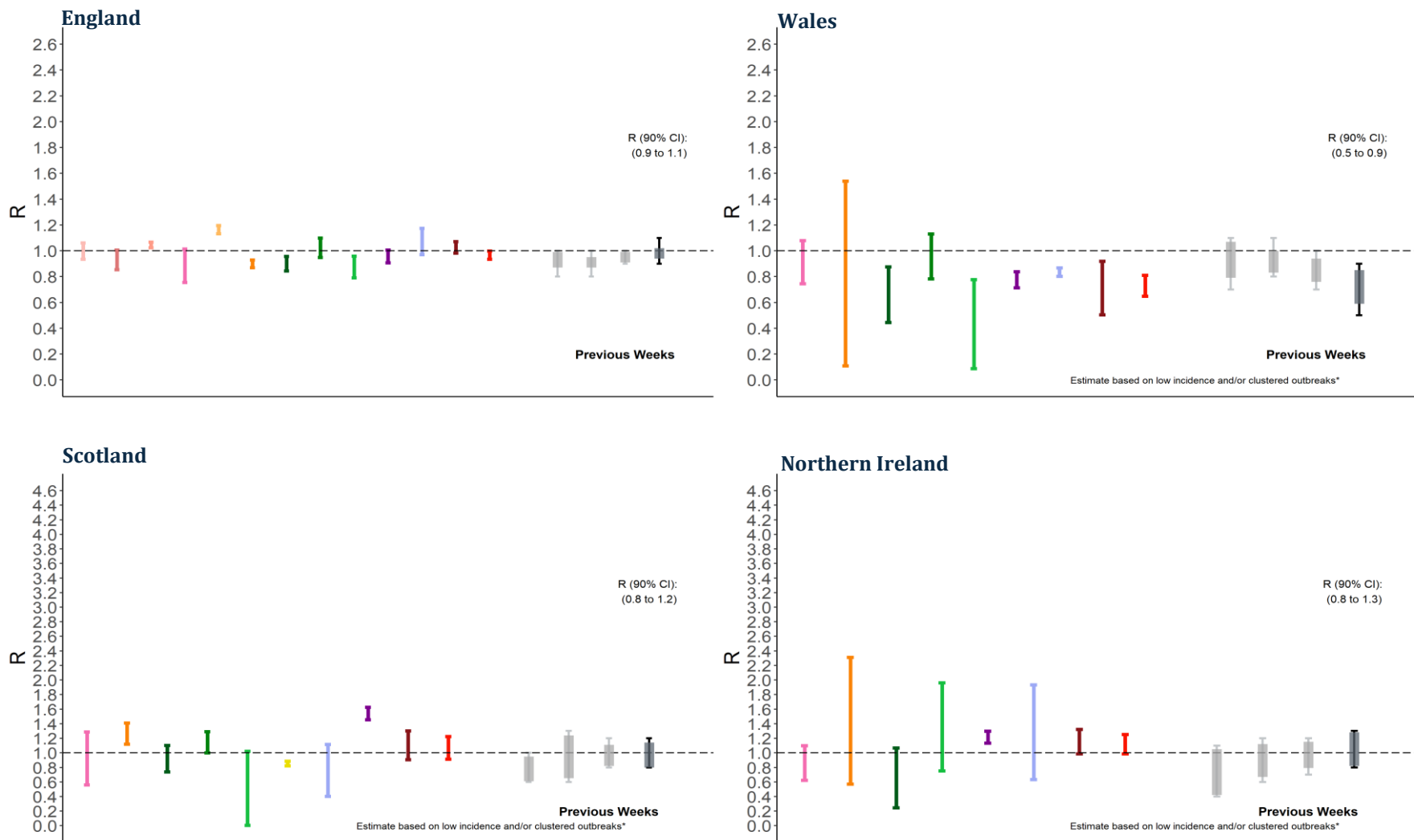


Figure 3: SPI-M-O groups estimates of the growth rate in NHS England regions, including 90% confidence intervals. Bars represent different modelling groups. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 2 decimal places.

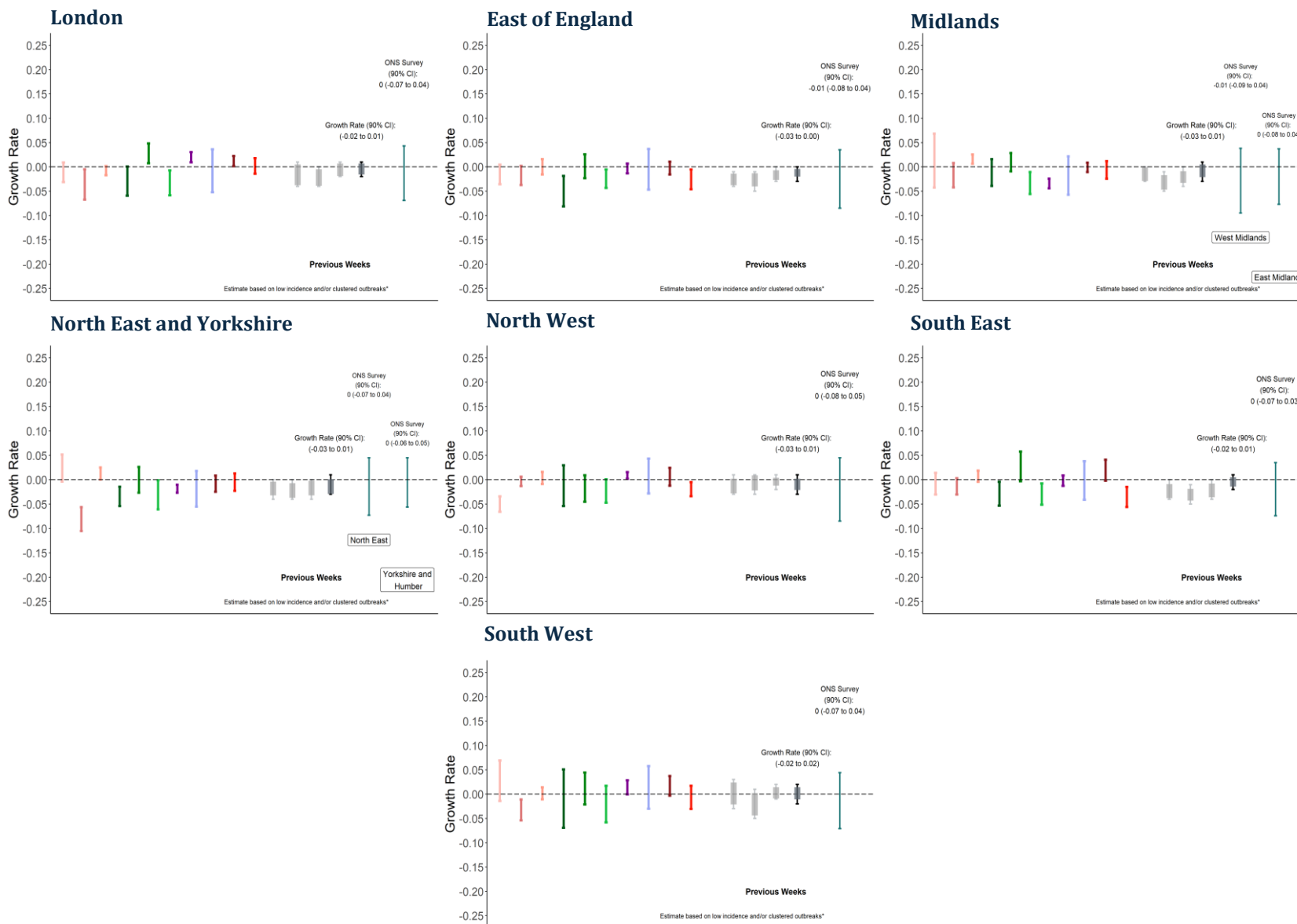


Figure 4: SPI-M-O groups estimates of median R in the NHS England regions, including 90% confidence intervals. Bars represent different independent estimates. The grey shaded areas represent the combined numerical range and the black bars are the combined range after rounding to 1 decimal place.

