

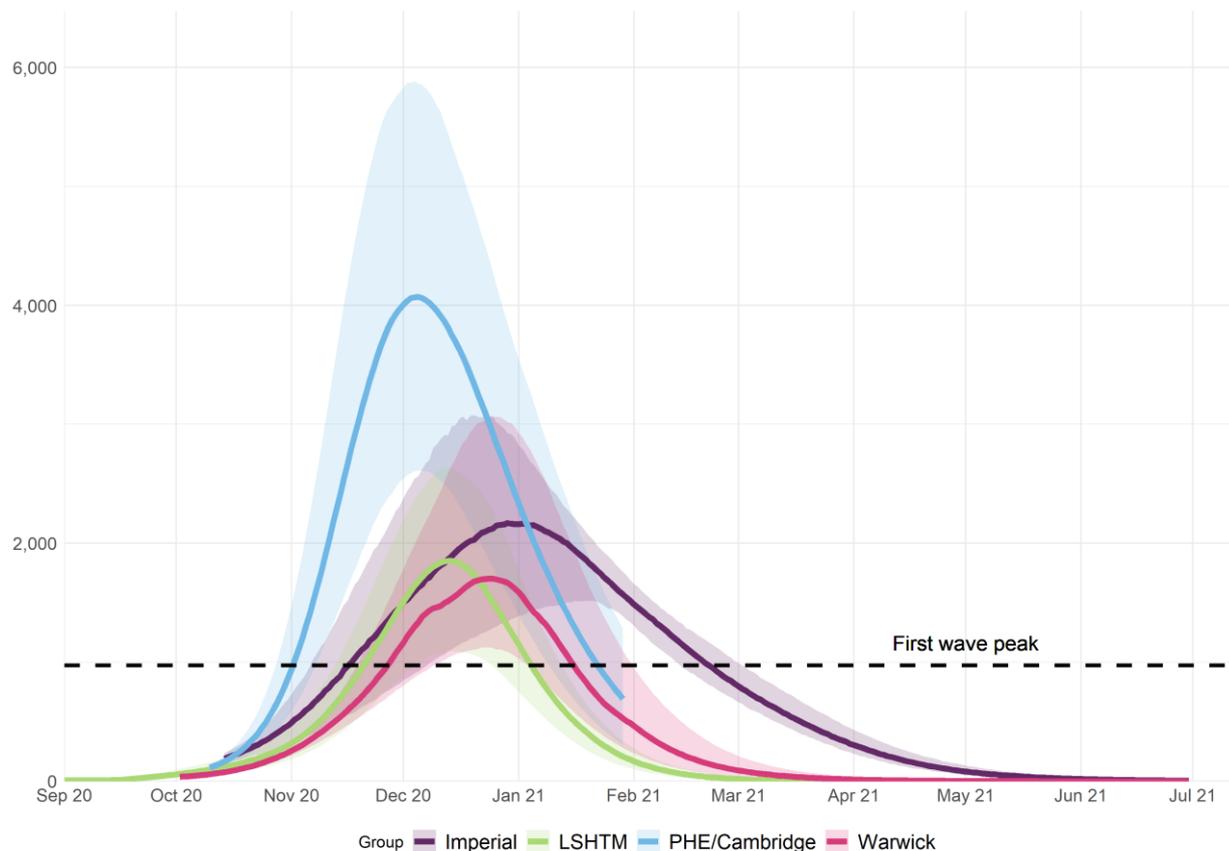
SPI-M-O: Long term winter scenarios preparatory working analysis

Date: 31st October 2020

Long term scenarios

1. SPI-M-O modelling groups conducted preparatory work to support planning for the winter period and the development of a new iteration of the government's reasonable worst case scenario. These models generated a range of possibilities describing what might happen in a worst case scenario under the assumption of no further policy changes and increased seasonal contact patterns. HM Government requires estimates of the future epidemic that allow for short, medium, and longer-term planning for a range of operational and policy purposes.
2. These scenarios made a set of assumptions in order to consider a reasonably bad winter, without further intervention, including:
 - R starting at roughly the levels seen in late September and early October 2020 as measured by a range of data sources including but not limited to SPI-M-O weekly published estimates.
 - Modelling groups R estimates were in the range 1.3 to 1.5 at the start of these scenarios, with different prevalence of infection in different age groups.
 - To reflect a deterioration of the circumstances over the winter, modelling groups included some seasonal changes through the months of November, December, and January; for example, increased contacts between people leading to approximately a 10% increase in transmission.
 - No additional mitigations beyond those in place in early October were modelled. These scenarios therefore did not include the subsequent introduction of the system of medium, high, and very high tiers, i.e. local COVID-19 alert levels.
 - All models assume complete and permanent immunity to the virus after infection. The peak seen is a result of depletion of susceptible individuals in the population in the context of the current R value. The peak is determined by the combination of immunity, behaviours, and intervention; its timing and size are very sensitive to these assumptions.

Figure 1: Early working analysis by SPI-M-O – England daily deaths from mid-October 2020 to end of June 2021.



3. This modelling was conducted by reputable academic modelling groups between 9th and 19th October to support government in its planning for the winter. These groups include:
 - University of Cambridge MRC Biostatistics Unit in conjunction with Public Health England;
 - Imperial College London;
 - London School of Hygiene and Tropical Medicine; and
 - University of Warwick
4. **These indicative scenarios are not precise predictions of what is going to happen.** These show the preparatory work for one set of potential scenarios that explored what might have occurred if the circumstances in place at the time had persisted, alongside assumptions about seasonal increases in contact rates with no additional intervention.
5. SPI-M-O compares multiple different models for its outputs because different reputable models produce different results. SPI-M-O uses a wide range of independent models that take different approaches to gather a range of views for any analysis to provide insights that support decision makers. When these independent approaches give similar answers, it gives greater confidence in those outputs; if they differ then investigating why is, itself, very informative.

6. Further information about the models behind these scenarios and their development can be found in the SPI-M-O medium term projections explainer.

Insights from these analyses

7. There is wide uncertainty in these scenarios as shown in Figure 1, both for individual models and between models. Different models use different data streams and have different structural assumptions underlying them. Models also reflect sensitivities to the initial conditions and how small differences in assumptions for key parameters can lead to large changes in the behaviour of a system under exponential growth.
8. The longer-term scenarios provide qualitative information suitable for broad decision-making. This set of model outputs show that the epidemic unfolding in early October, with no change in policy and assumptions about seasonality, would be large (~2,000 deaths per day) and peak during December.

Scenarios versus projections

9. Longer timescales are only useful to consider as scenarios. For example, the Academy of Medical Sciences' report on "[Preparing for a challenging winter](#)" is a publicly available reasonable worst case. It outlined another plausible scenario of COVID-19 resurgence in winter 2020-21 greater than that seen in spring 2020, with almost 120,000 COVID-19-attributable hospital deaths in the UK between September 2020 and June 2021.
10. Projections get more unreliable the further into the future they look. Out to three weeks, much of what will happen is set by infections that have already occurred. At a six-week point, the (unknown) impact of any recent interventions will be seen, and beyond six weeks models are quantitatively very uncertain.
11. SPI-M-O also produces consensus medium-term projections, which draw on the same set of models and modelling groups used in this analysis (and others). Unlike planning scenarios, these model outputs are specifically designed to give quantitative insights into what might happen in the near term based on current trends. They are less uncertain than longer term scenarios and are combined into one consensus projection. These look ahead six weeks into the future and are produced on a regular basis.
12. While the scenarios discussed here are one part of government decisions making, **we recommend using SPI-M-O's consensus medium term projections to understand the near future, assuming no further changes in policy or behaviour.**