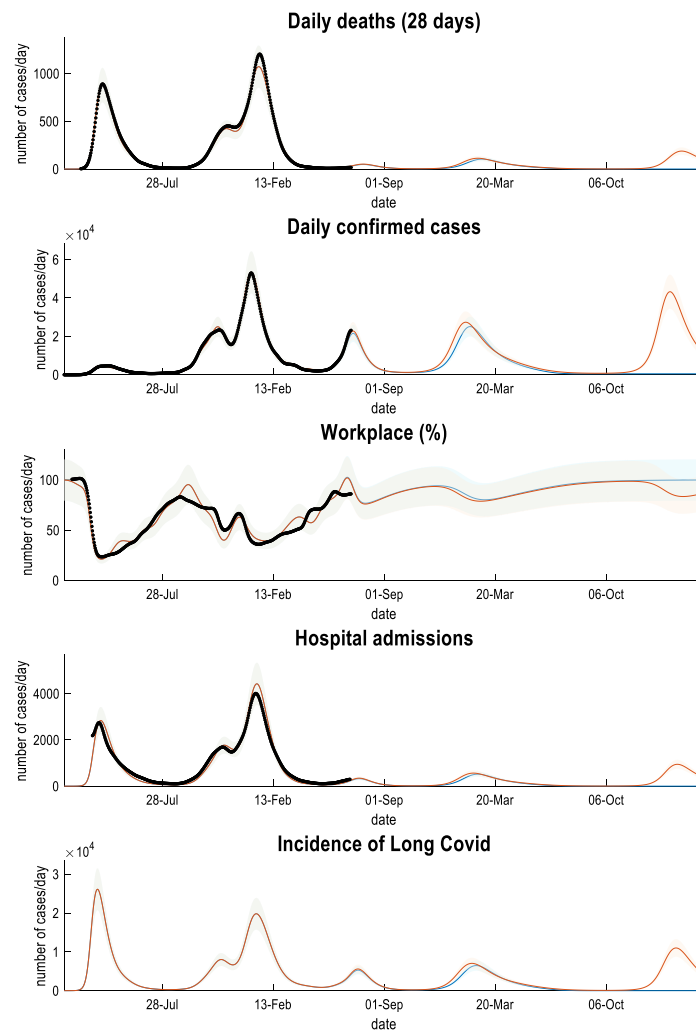


Scenario modelling for advisory board to the Cabinet office (7 July 2021)

Hypothesis: will withholding vaccination from children preclude long-term suppression? In other words, if we treat COVID-19 like measles—and vaccinate children on a rolling basis—would this produce a different long-term outcome (i.e., endemic equilibrium) compared to treating COVID-19 like seasonal influenza, for which we only vaccinate vulnerable people.

This question can be answered using a [dynamic causal model](#) of the coronavirus pandemic based upon epidemiological and behavioural parameters optimised given timeseries from the onset of the epidemic. By rolling out into the future—with and without rolling vaccination of the youngest age cohort (up to 15 years of age)—one can get an impression of the long-term consequences of not vaccinating children:



This figure reports the results of scenario modelling using the parameters of a [dynamic causal model](#) based on data covering the entire pandemic until 7 July 2021. The projections are until April 2023. The lines correspond to expected deaths per day, daily confirmed cases, workplace activity (based upon Google mobility data), hospital admissions and the incidence of long COVID. The shaded areas correspond to 90% confidence intervals. The [blue](#) lines are the most likely estimates assuming that the entire population is offered vaccination in descending order of age and a rolling vaccination programme is in place. Age-specific vaccination rates are estimated using vaccination data from the Office of National statistics (ONS). The black dots correspond to (smoothed) data from the [ONS](#) and [Google mobility data](#). The [red](#) lines show what might happen if the youngest cohort (0 to 15 years) are not vaccinated.

Conclusion: withholding vaccination from children will not markedly affect a winter resurgence of SARS-CoV-2 this winter but will result in a marked winter resurgence next year (2022/2023). This is indicative of the kind of endemic equilibrium (with seasonal fluctuations) one can expect in the absence of vaccinating the entire population on a rolling basis. Conversely, if everybody were vaccinated every year, one would attenuate the seasonal fluctuations towards an innocuous endemic equilibrium.