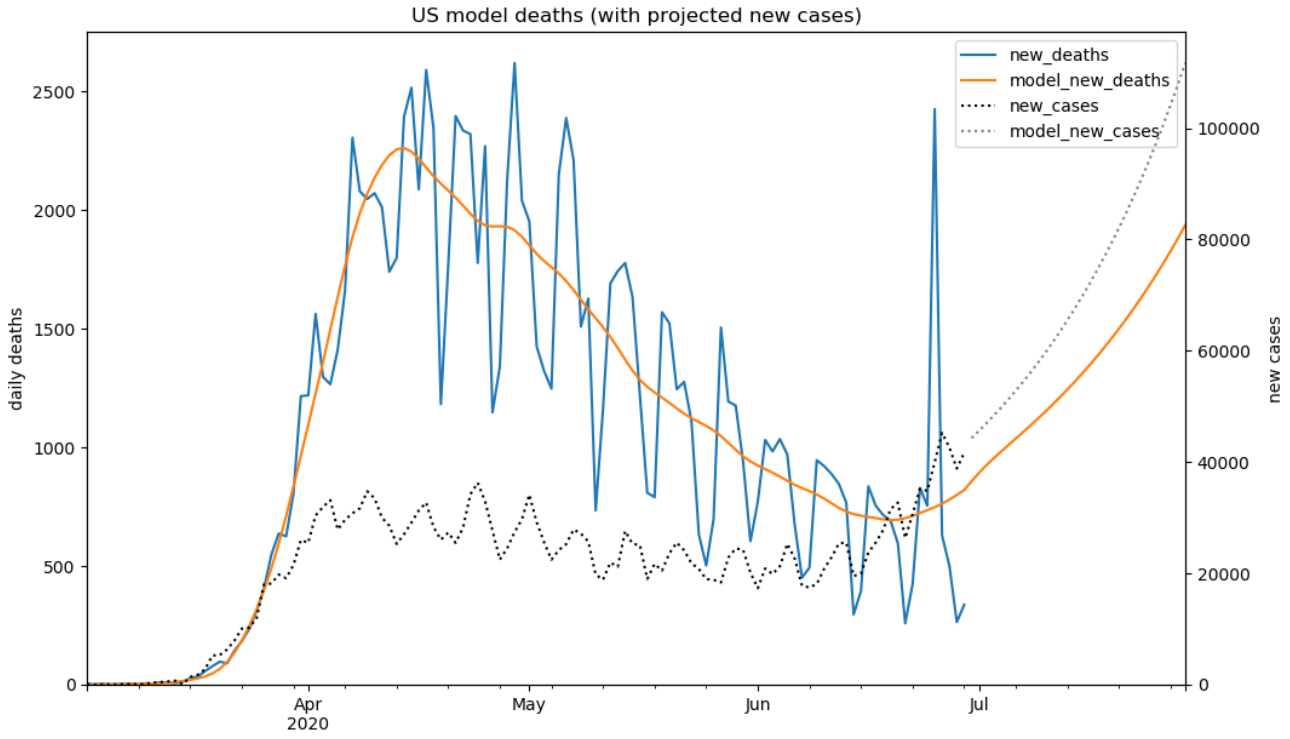
6 November 2020

Retaining historical model fits in COVID-19 deaths projection

The last [model update on 30 June] noted that the improvement in survival rates made it necessary to vary the model survival rate with time using a simple linear trend with a ceiling at 100%.

At the time, constant negative binomial parameters provided a good model fit to the [published U.S. daily deaths] for experience to 30 June 2020:



The [chart archive] shows similar model accuracy for other countries severely affected by the pandemic. Model mean time to death for fatalities following a positive test was then around 9 days. Over the next four months, this model mean time to death has increased to 16 days.

The gradual change in model parameters results means the fit to actual daily deaths 4 months ago is poor for the current set of parameters. This is to be expected, since these changes in parameters reflect improvements in healthcare for those infected with covid.

For future charts I have decided to use the historical parameters as at each past date to plot the model daily deaths, rather than the latest set of parameters. This gives a more realistic representation of the (in sample) goodness-of-fit of the model on each past date.