Report Task 5

Code I added: `az.summary(idata, var_names=["~mu", "~month mu_raw"])`

$\hat{R}$ = 1 for every posterior distribution.

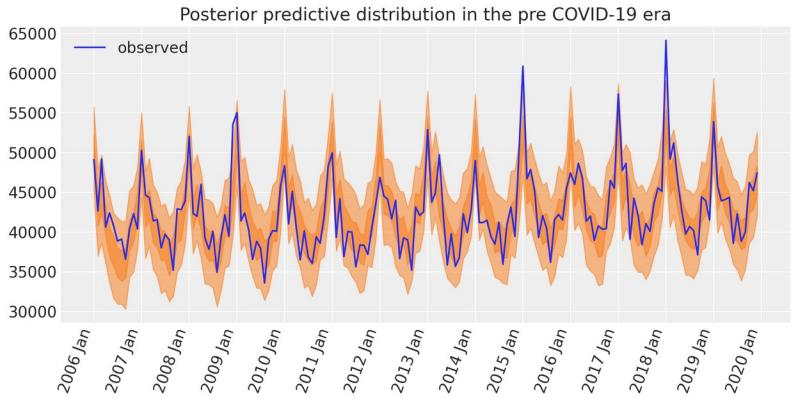
The $\hat{R}$ value is of interest as it measures whether the MCMC chains have converged to the target distribution – that is, if $\hat{R} \approx 1$ then the chains have likely converged, however if $\hat{R} > 1.01$ then the chains have not converged, and may be stuck in different local peaks.

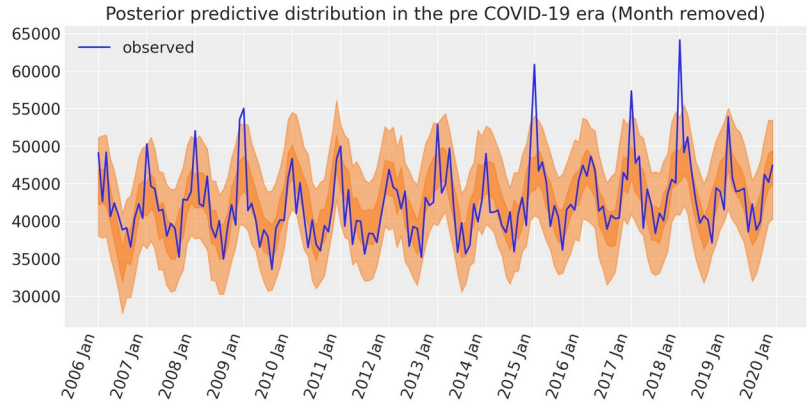
There is nothing wrong with the model per se. The prediction model was trained only on pre-COVID data, but the number of reported deaths is obviously affected by COVID, and so the gap between the two sets of values shows the 'excess' deaths (the number of deaths beyond what would be expected under standard conditions)

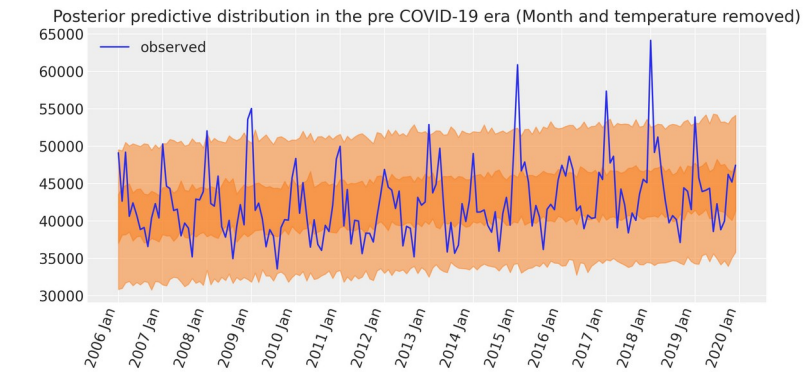
Report Task 6

For the linear trend posterior, the old pre model's version is Gaussian centered around 23-24, indicating there is a positive linear trend over time. However, the new pre model's is highly skewed and peaks near 0, suggesting that the linear trend is negligible.

Report Task 7







In the month removed graph, the fit is only slightly looser than the full model, so we can see the temperature has a much greater effect on the death rate than the month.

When both the month and temperature data are removed, the model has no way of knowing why the data oscillates, and can only recognise the long-term trend.