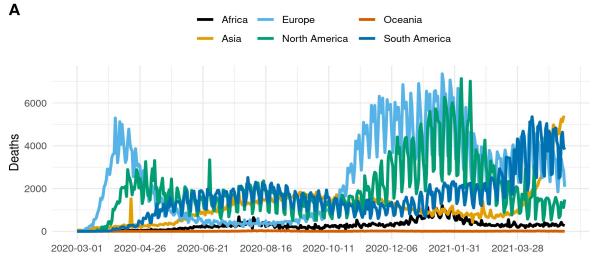
Global predictions of short to medium-term COVID-19 transmission trends - a retrospective assessment

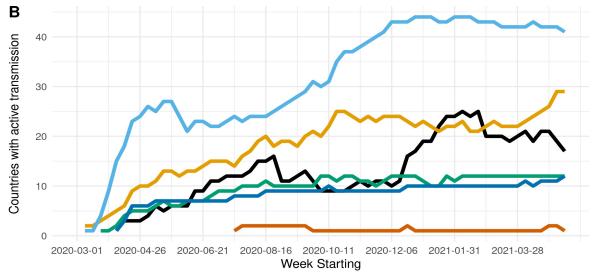








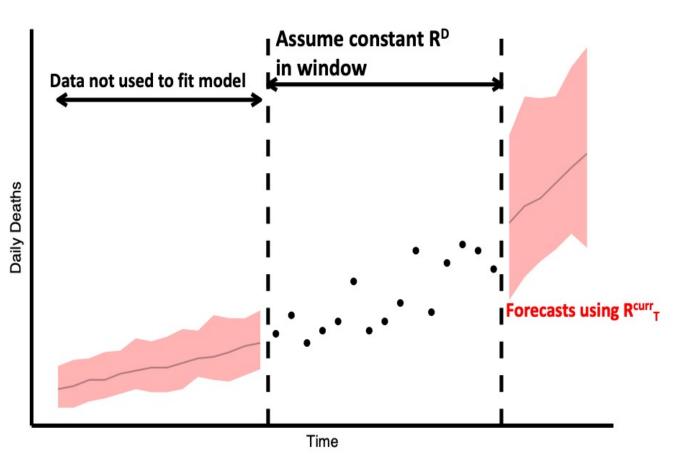








Methods – Model 1

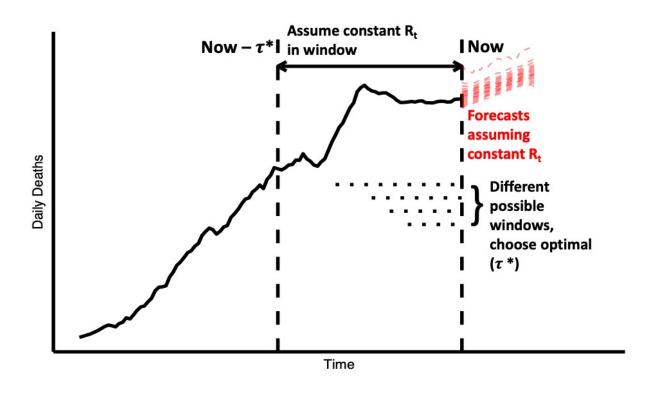








Methods – Model 2

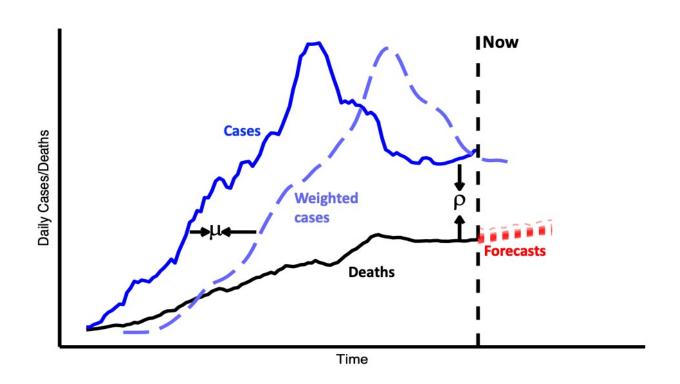








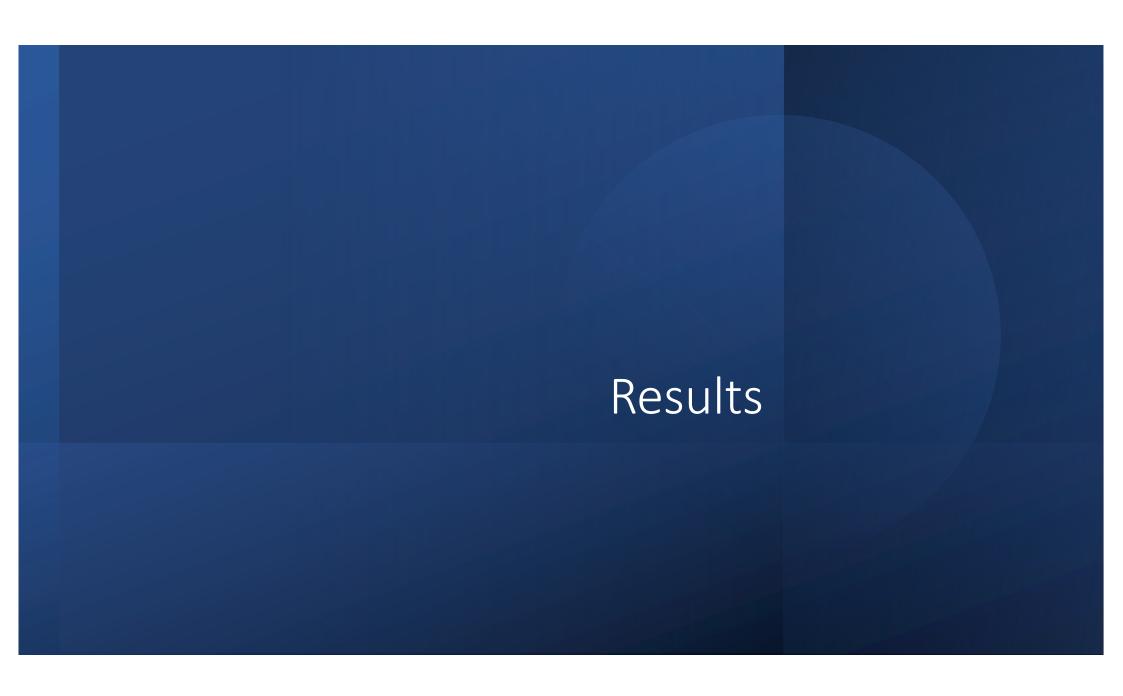
Methods: Model 3

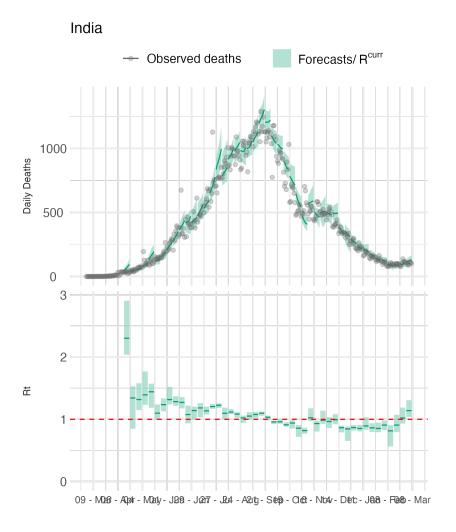




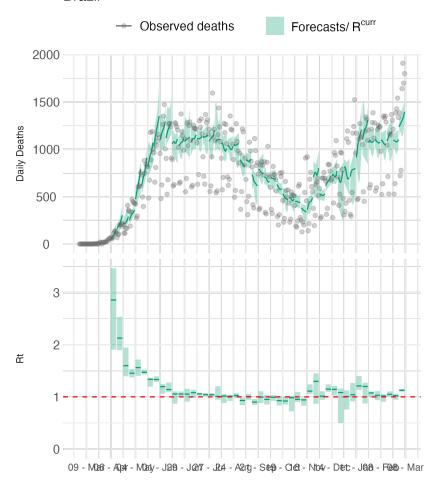






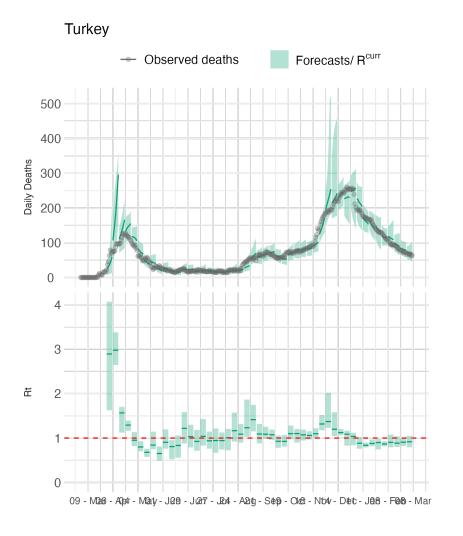


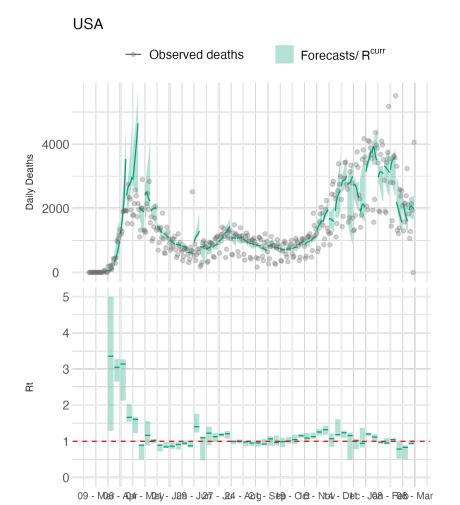










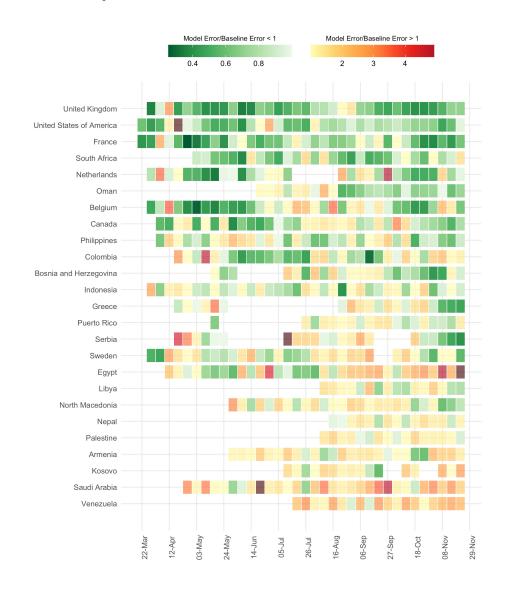




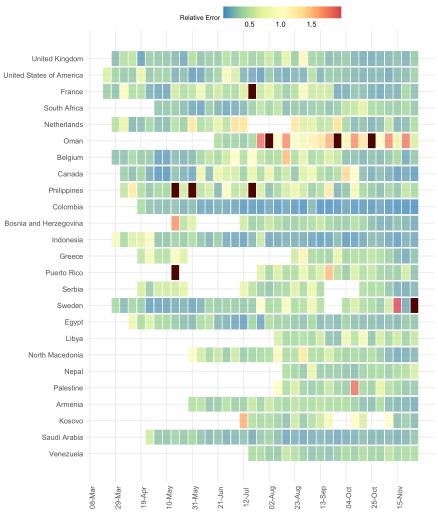




Compare ensemble and null model error



Model relative error







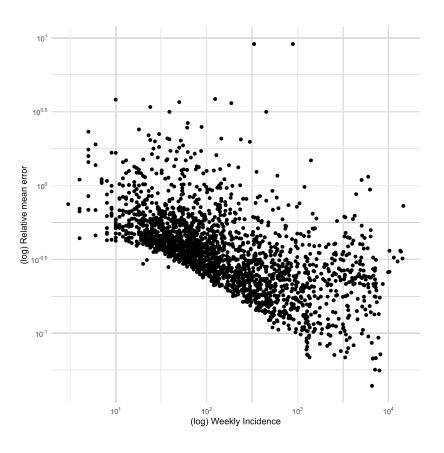
Phase	Ensemble model error >Null model error	Ensemble model error <null error<="" model="" th=""></null>
Declining	16.5% (32)	83.5% (162)
Growing	30.5% (107)	69.5% (244)
Stable/growing slowly	55.4% (640)	44.6% (516)
Unclear	68.4% (322)	31.6% (149)



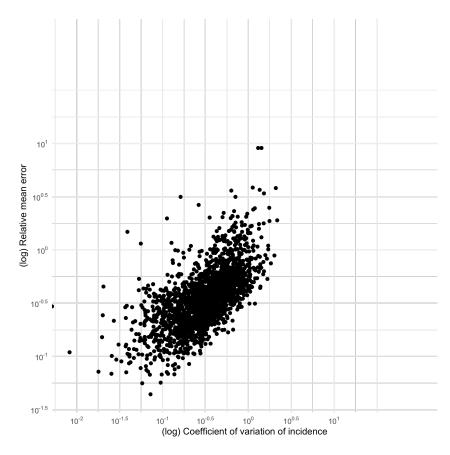




Model error varies inversely with the weekly incidence



Model error varies directly with the variability in weekly incidence







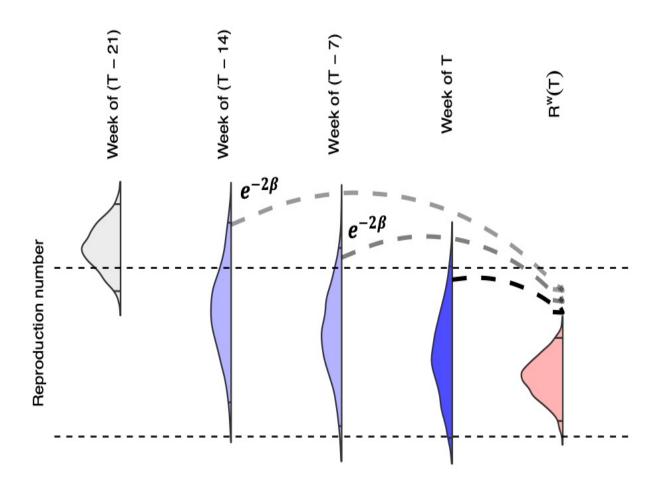
The second contract of United Kingdom Brazil United States of America Switzerland Russia Argentina Chile Spain ____ Ecuador India Germany Oman Belgium Canada Afghanistan Guatemala Ukraine Czechia Philippines Austria Iran Greece Pakistan Indonesia Japan Croatia Puerto Rico Dominican Republic Turkey Serbia Peru Sweden Ethiopia Nigeria Egypt Libya Click to add text Click to add text Click to add text North Macedonia Portugal Nepal Iraq Palestine Algeria Panama Armenia Angola Kosovo United Arab Emirates Saudi Arabia Click to add text Venezuela Uzbekistan United States of America Mexico France Russia South Africa Chile Netherlands Ecuador Poland Germany Italy Belgium Honduras Afghanistan Ukraine Colombia Hungary Philippines -----Bosnia and Herzegovina Iran Bulgaria Pakistan Japan Romania Puerto Rico Kenya Turkey Peru Morocco Bolivia Ethiopia Denmark Egypt Azerbaijan North Macedonia Bangladesh Nepal Israel Palestine Moldova Armenia Paraguay Kosovo United Arab Emirates South Korea Venezuela Albania Kuwait 08-Mar 29-Mar 10-May 31-May 21-Jun 12-Jul 02-Aug 23-Aug 13-Sep 04-Oct 25-Oct 08-Mar 19-Apr 10-May 31-May 21-Jun 12-Jul 02-Aug 23-Aug 13-Sep 04-Oct 25-Oct 15-Nov

Proportion in 50% Crl









$$R_t^{eff} = \frac{R_t^w}{p_t^S}$$

$$R_{t+i}^S = R_t^{eff} p_{t+i}^S$$

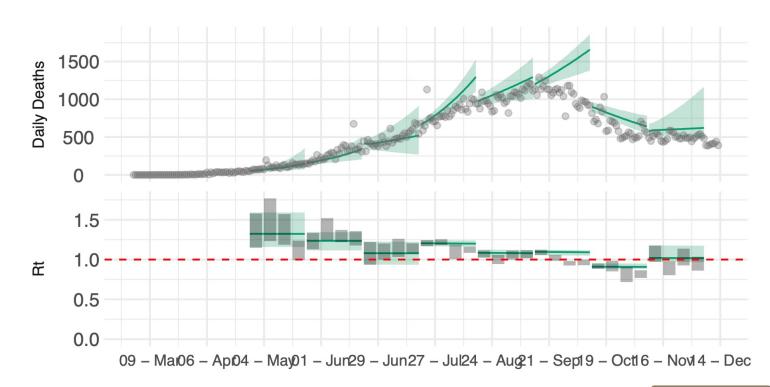








Observed deaths — Forecasts (median and 95% Crl)

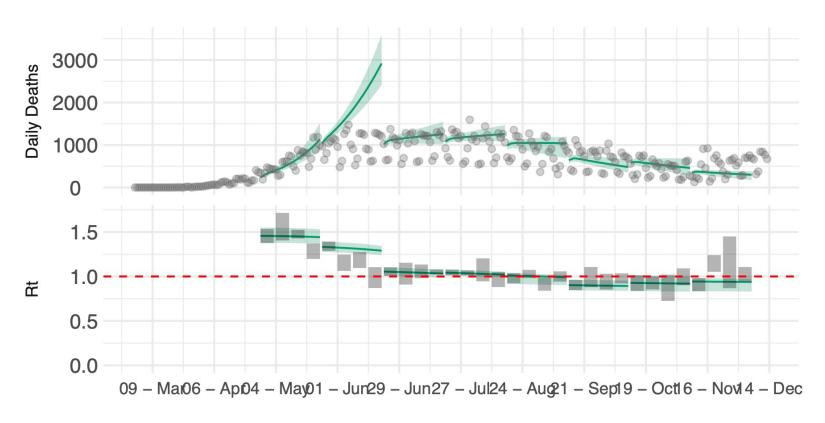






Brazil

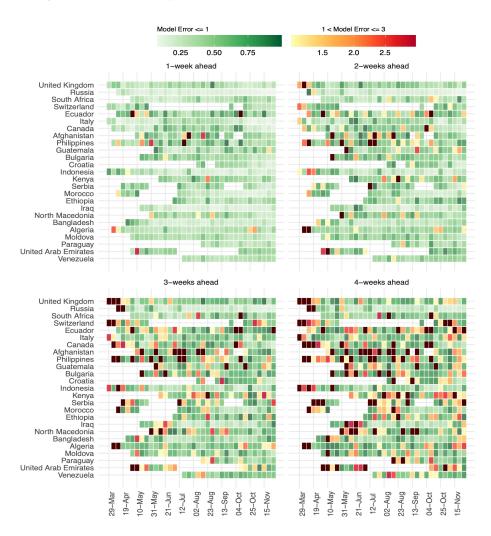
Observed deaths
Forecasts (median and 95% Crl)







Medium-term forecasts relative error

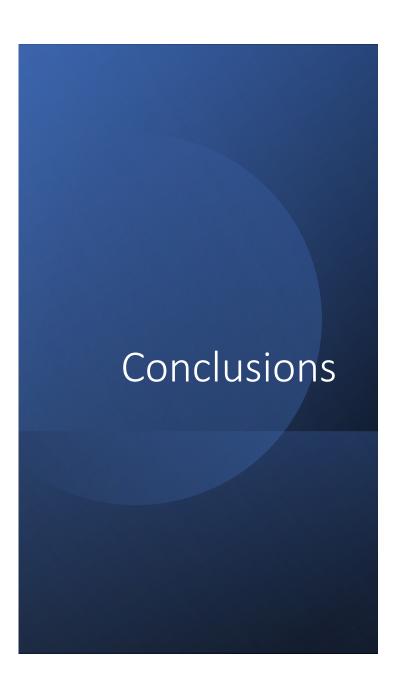


 Model error grows over the projection horizon, with relatively small error up to 4 weeks.









- Simple models, relying on the reported number of cases and deaths
- Ensemble model does well at capturing the transmission trends
- Medium-term forecasts perform well up to 4 weeks ahead.