

COVID-19 Scenario Modeling Hub Report

02 February, 2021
Scenario Modeling Hub Team¹

Executive Summary

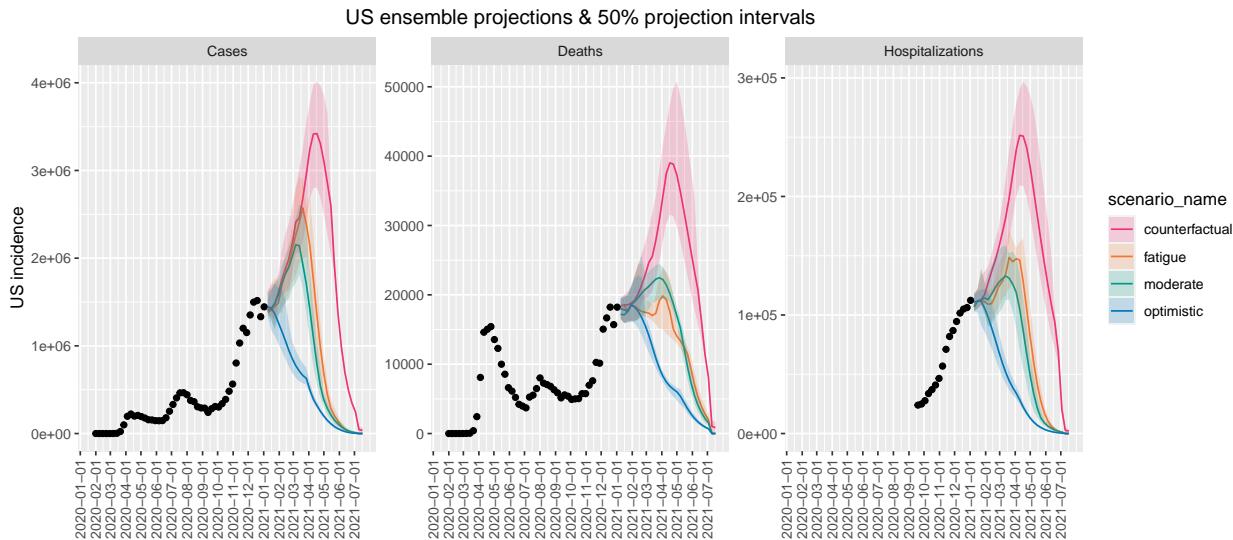
This report presents the results of the first round of projections from the COVID-19 Scenario Modeling Hub. A consortium of six modeling groups convened to make weekly projections of COVID-19 cases, deaths, and hospitalizations given four scenarios. Detailed scenario descriptions and setting assumptions are provided here.

Key Takeaways From First Round

- Ensemble projections point to some increase in cases in the short term in all but the most optimistic scenario.
- In scenarios including vaccination, we see stabilization of decreases in hospitalization even before decreases in cases.
- There is reasonably high variation in epidemic course over models.
 - We see some consistency in where we are at on July 1, particularly in deaths and hospitalizations.
 - There are large differences in how we get there, particularly for less optimistic scenarios, resulting in big differences in cumulative number of cases.

National ensemble projections

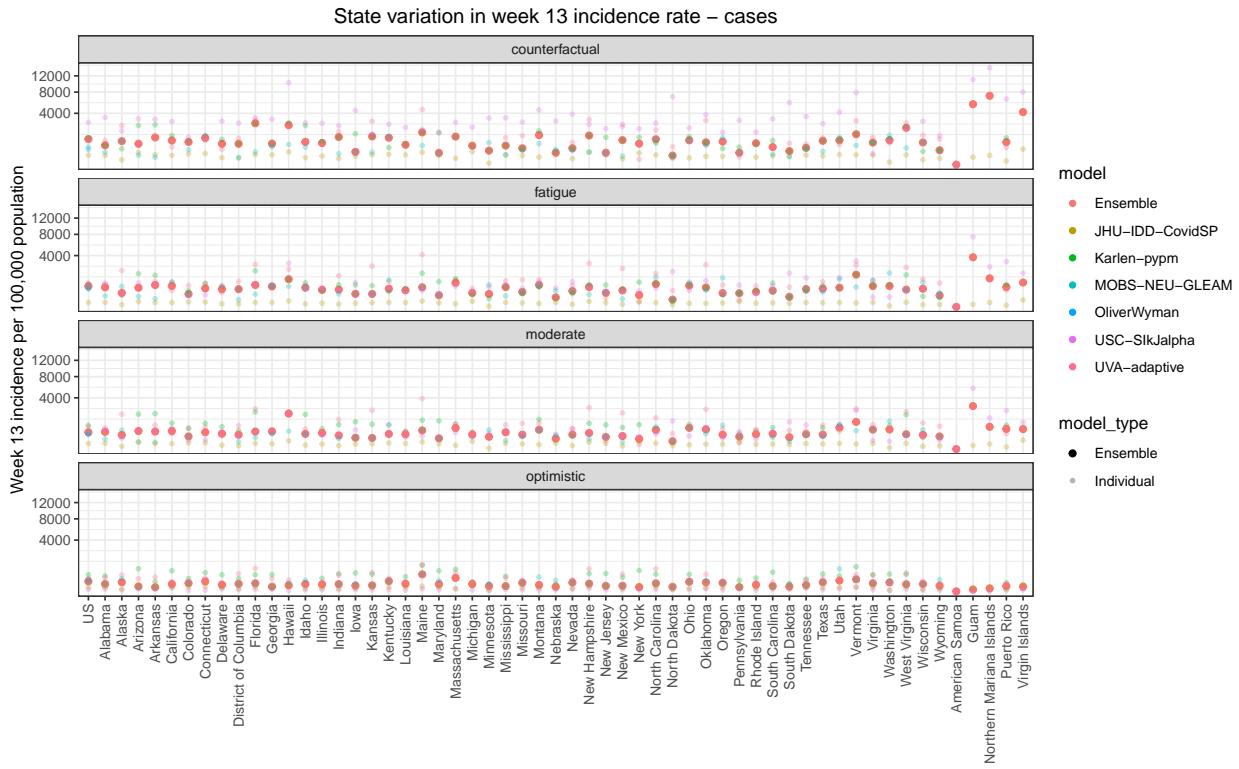
Ensemble projections for national cases, deaths, and hospitalizations, separated by scenario.



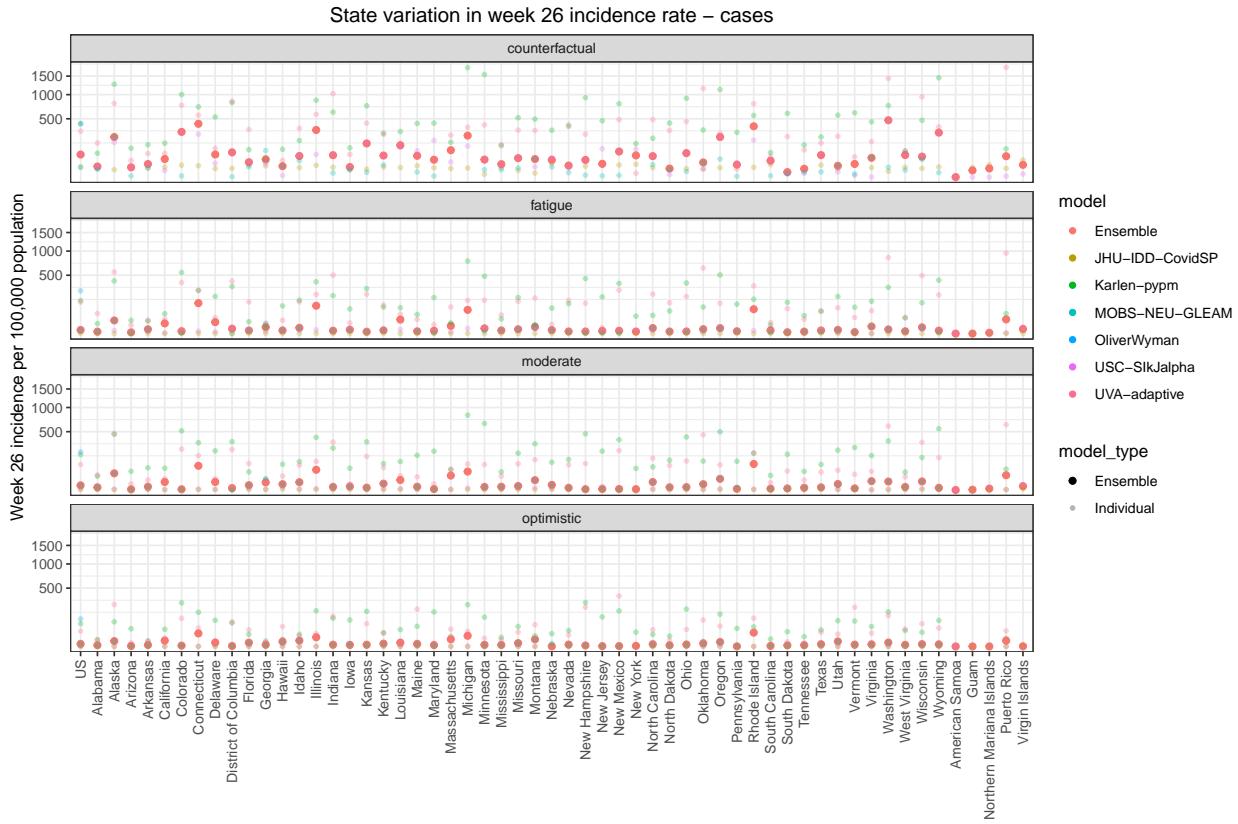
¹Compiled by Justin Lessler, Rebecca Borchering, and Claire Smith

State-level deviation from national

Individual model and ensembles projections for state-level case incidence per 100,000 population at week 13.

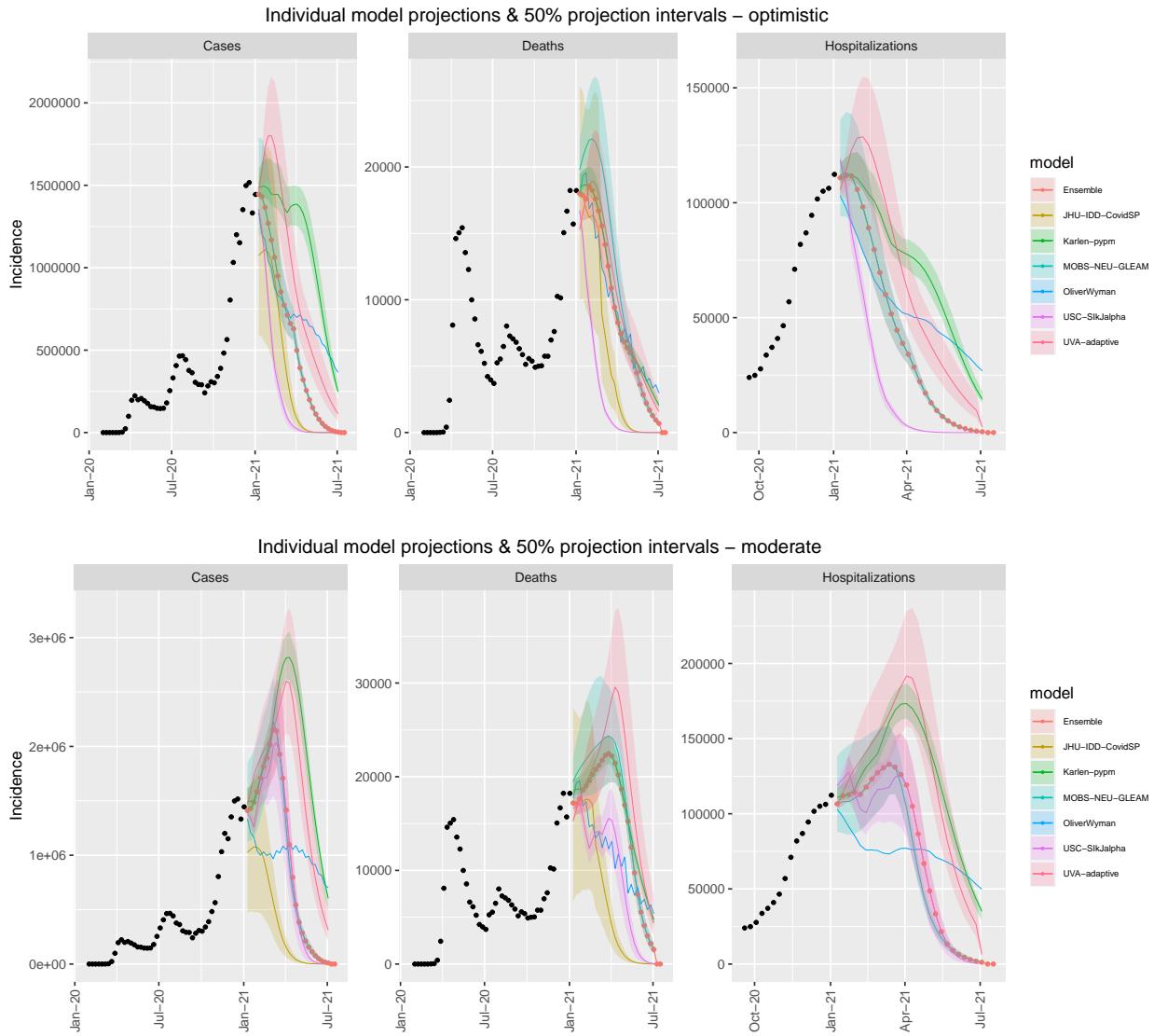


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

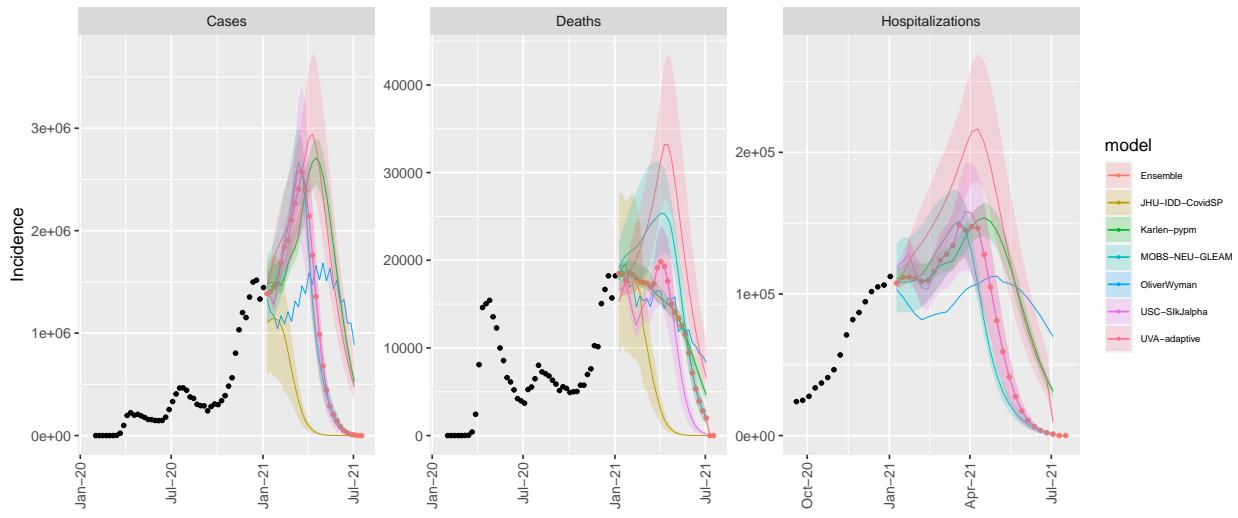


National model variation

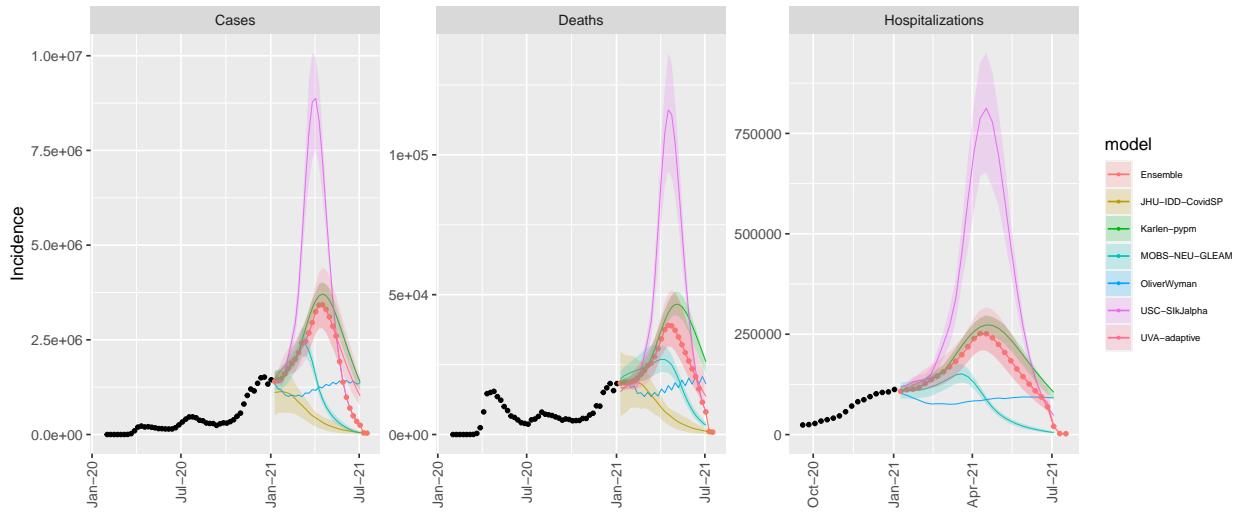
Individual model projections for national incident cases, deaths, and hospitalizations.



Individual model projections & 50% projection intervals – fatigue

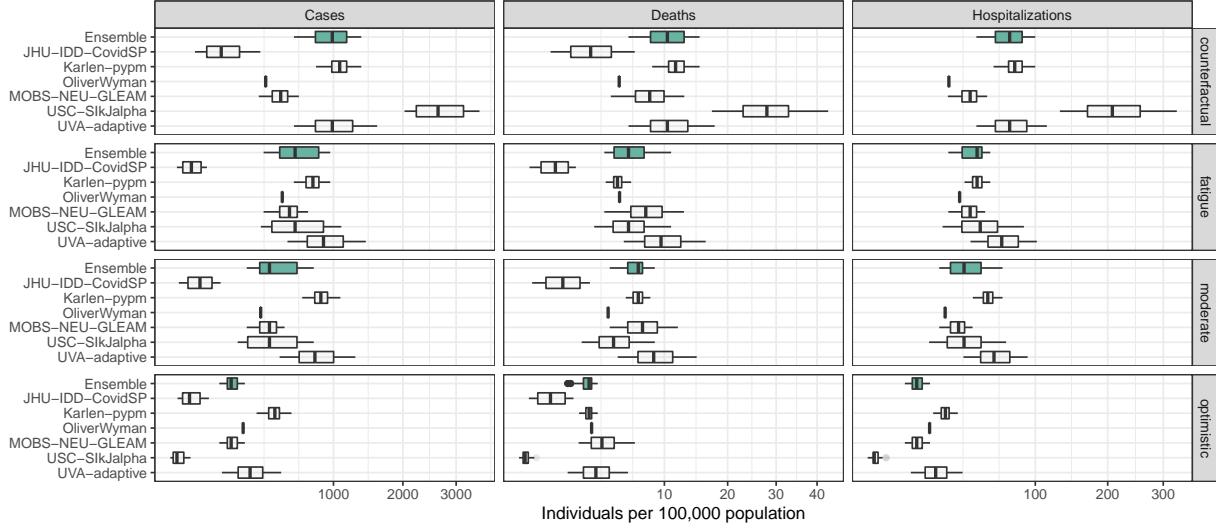


Individual model projections & 50% projection intervals – counterfactual

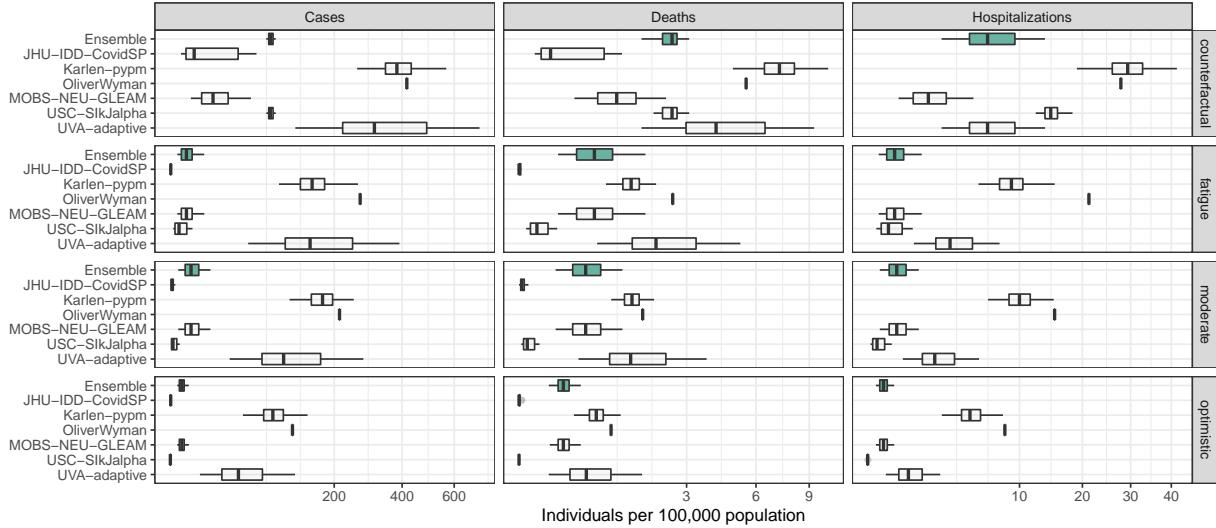


Projection distributions

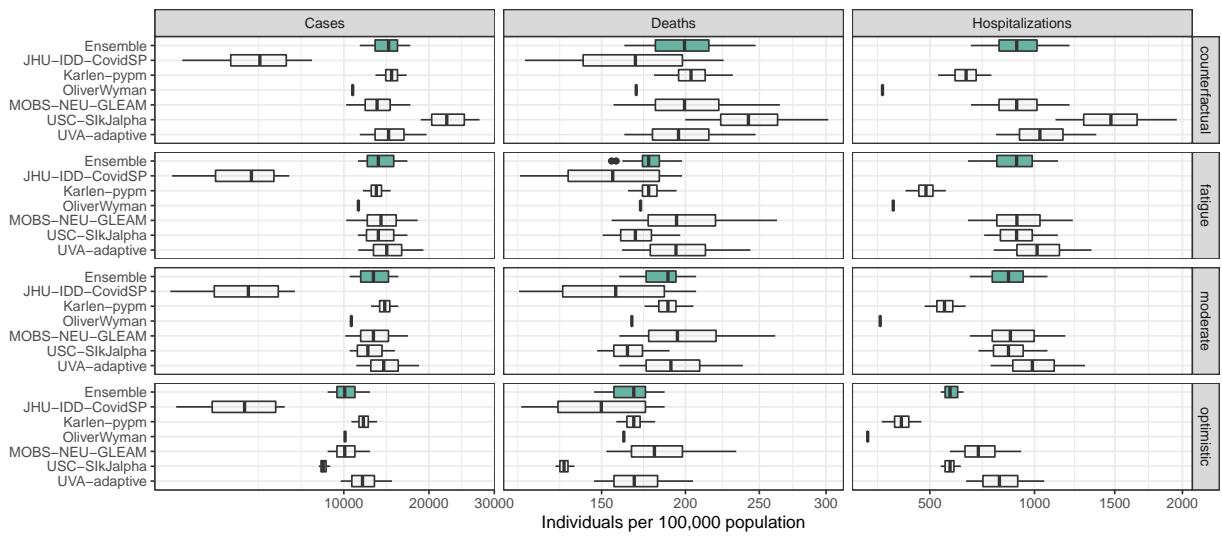
Model variation – 13 week ahead incidence



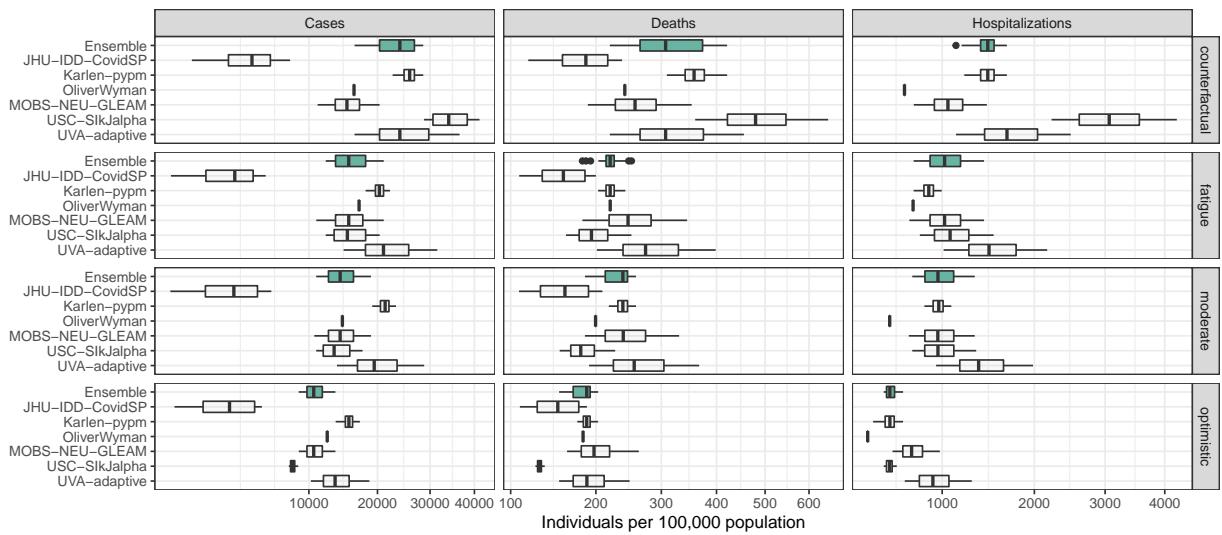
Model variation – 26 week ahead incidence



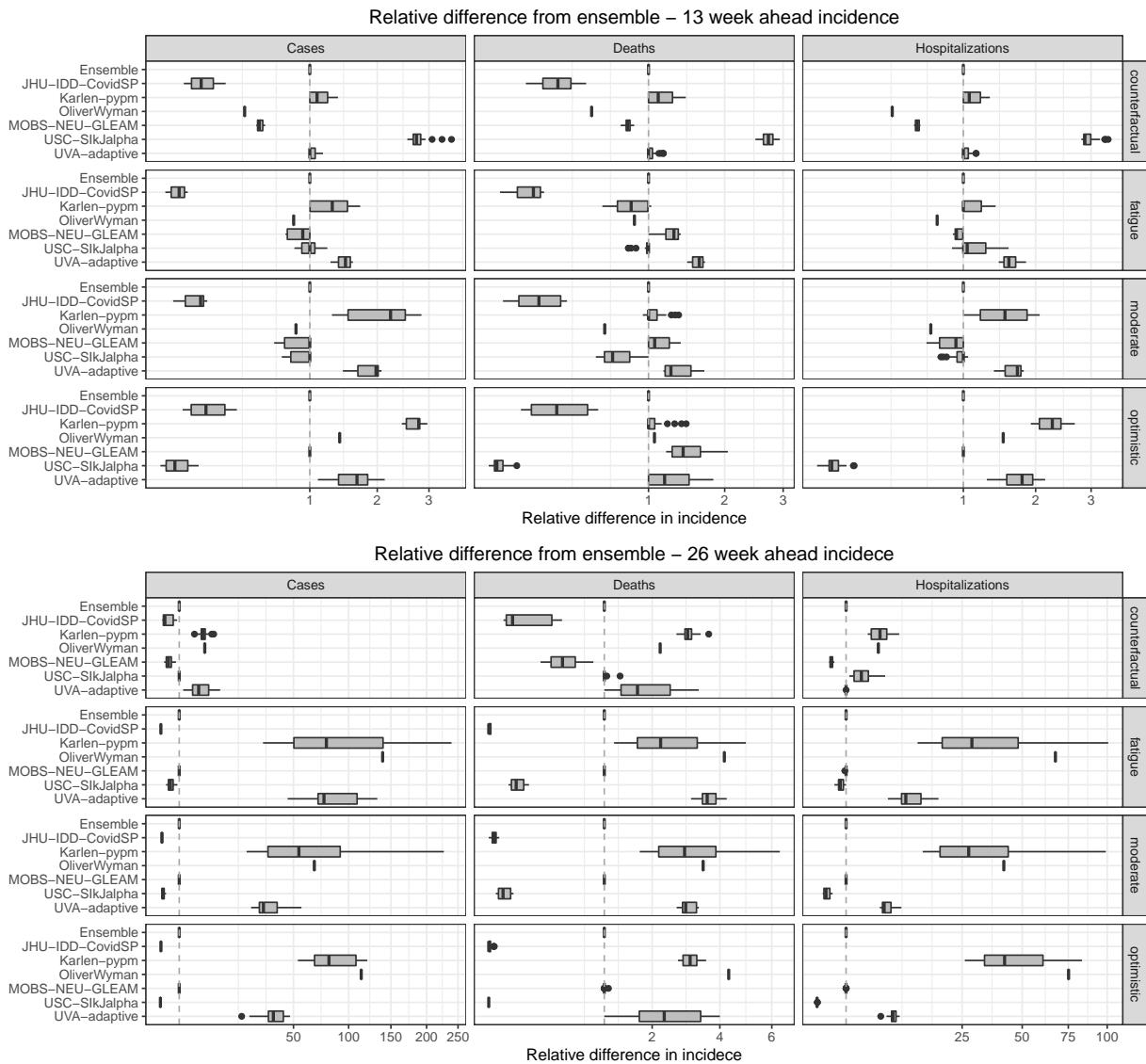
Model variation – 13 week ahead cumulative incidence

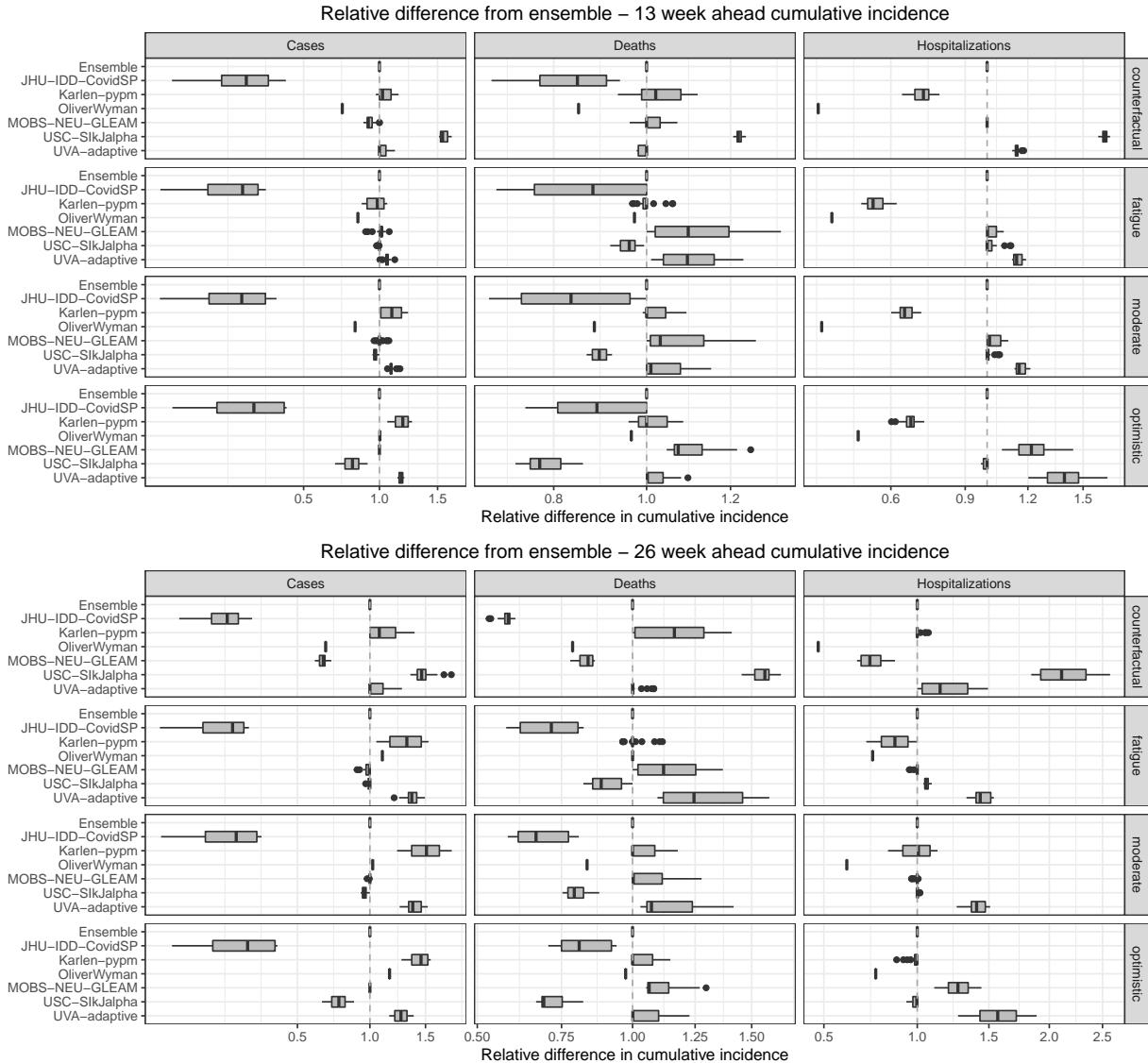


Model variation – 26 week ahead cumulative incidence



Difference between model and ensemble distributions





Teams and models

- Johns Hopkins ID Dynamics COVID-19 Working Group — COVID Scenario Pipeline
- Karlen Working Group — Karlen-pypm
- Northeastern University MOBS Lab — GLEAM COVID
- Olivar Wyman — Navigator
- USC Data Science Lab — SI kJalpha
- University of Virginia — adaptive

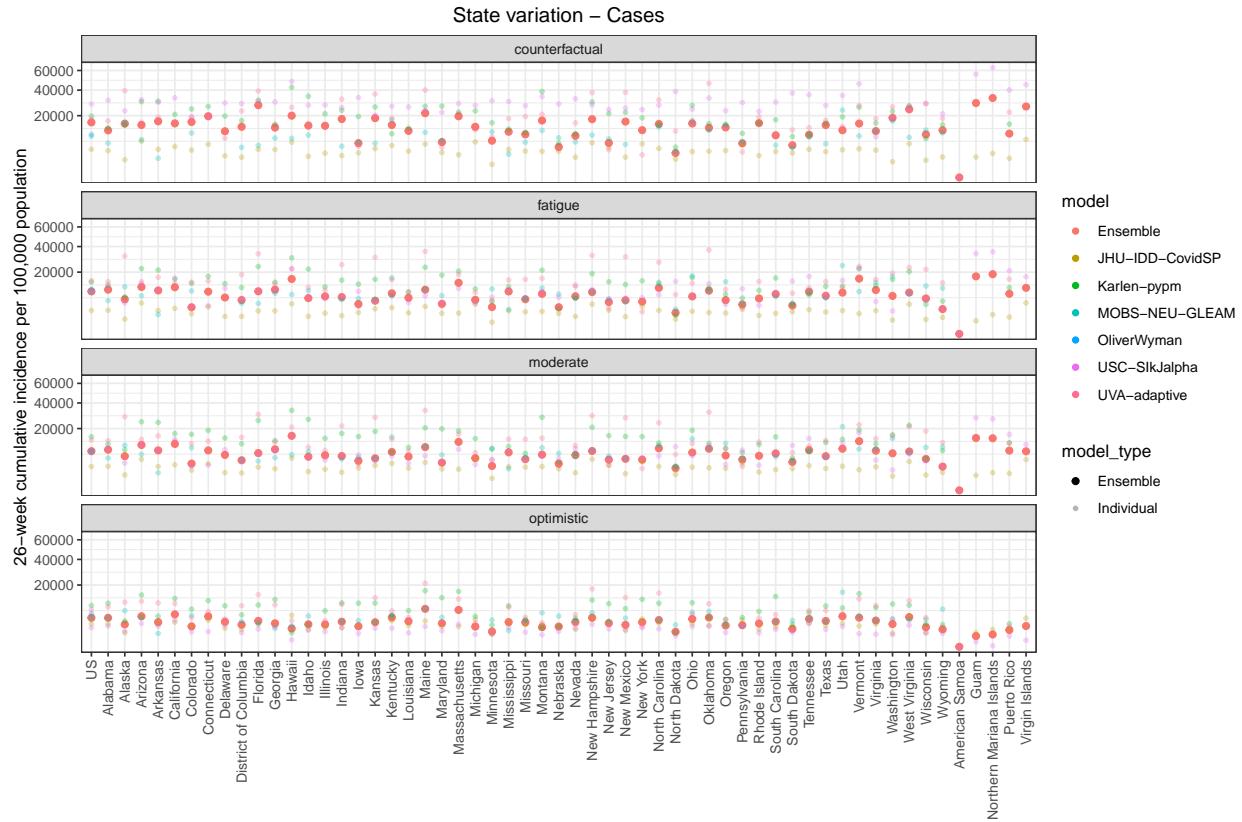
The COVID-19 Scenario Modeling Hub Team

- Justin Lessler, Johns Hopkins University
- Katriona Shea, Penn State University
- Cécile Viboud, NIH Fogarty
- Shaun Truelove, Johns Hopkins University
- Rebecca Borchering, Penn State University

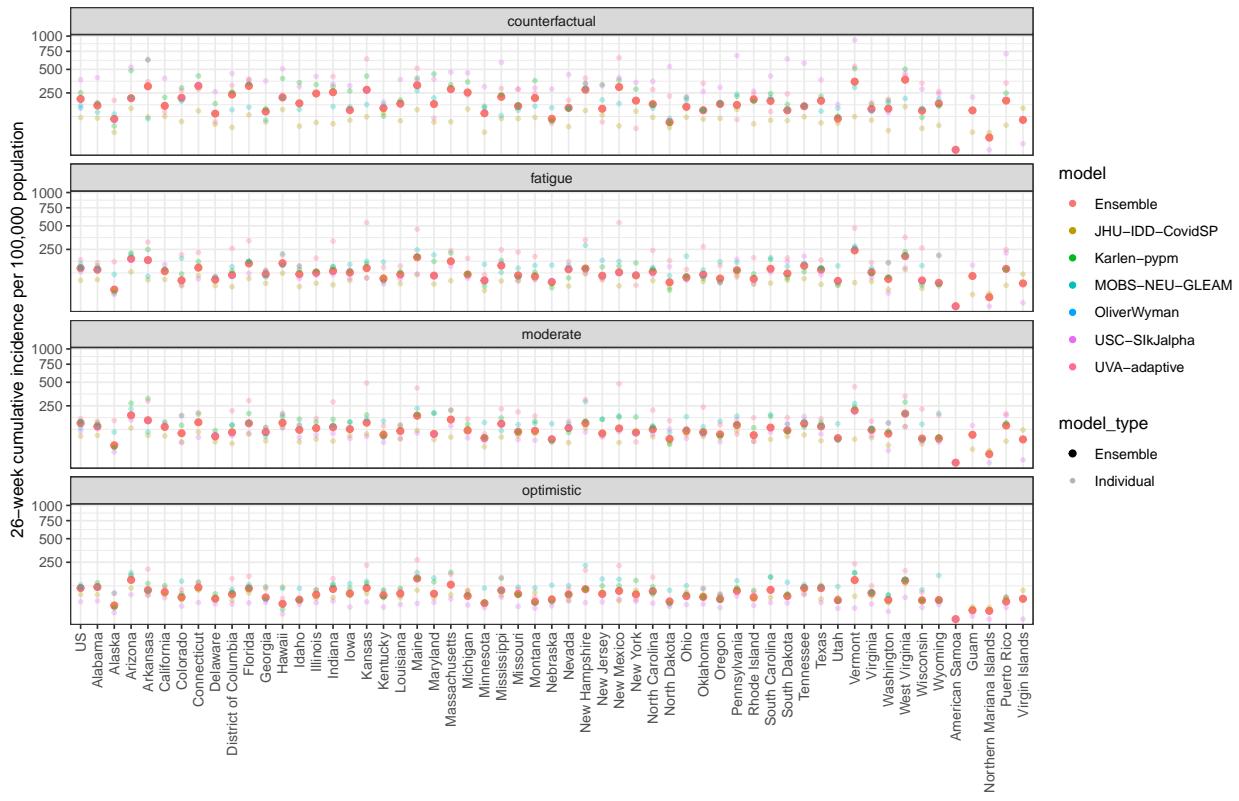
- Claire Smith, Johns Hopkins University
- Nick Reich, University of Massachusetts at Amherst
- Wilbert Van Panhuis, University of Pittsburgh
- Michael Runge, USGS
- Lucie Contamin, University of Pittsburgh
- John Levander, University of Pittsburgh
- Jessica Salerno, University of Pittsburgh

Supplemental Plots

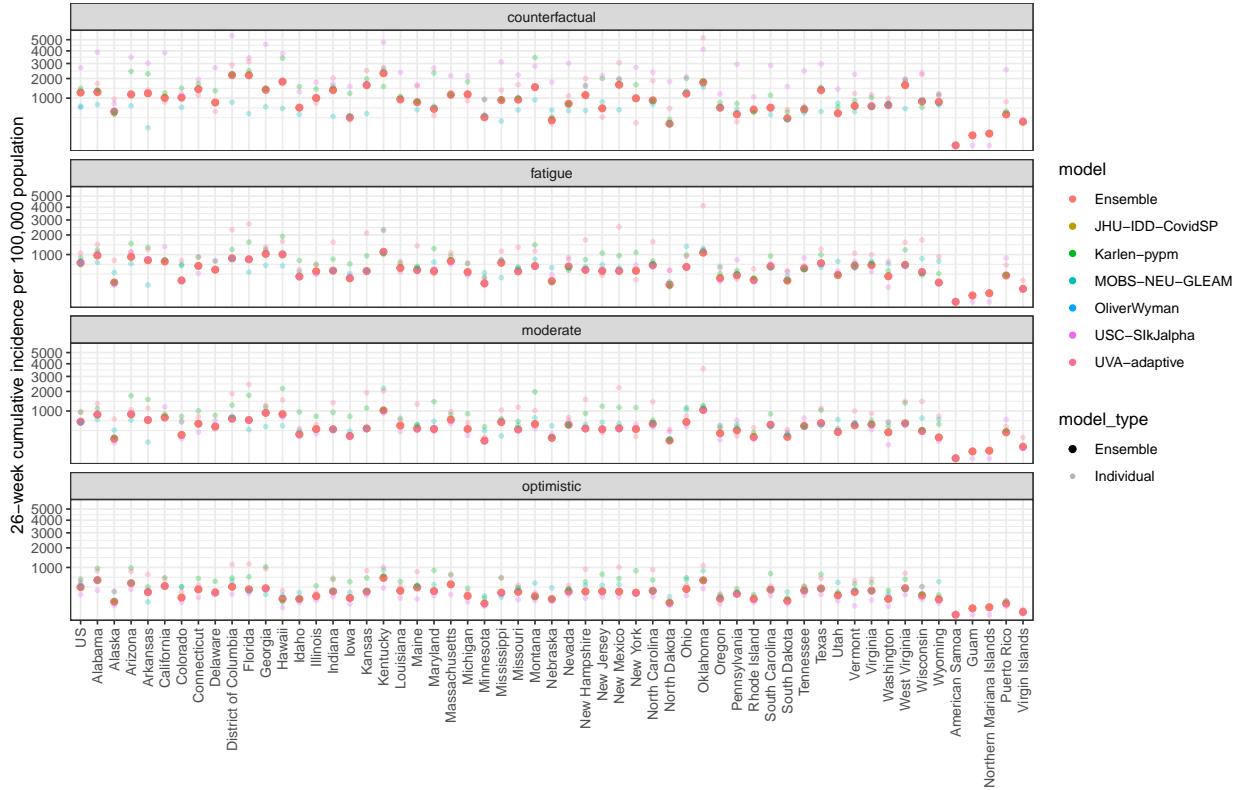
Individual model and ensembles projections for state-level cumulative incidence per 100,000 population over 26-week projection period. Please note the relatively small number of models incorporated in the ensemble at this stage, particularly states and territories for which only one or two models have submitted projections.



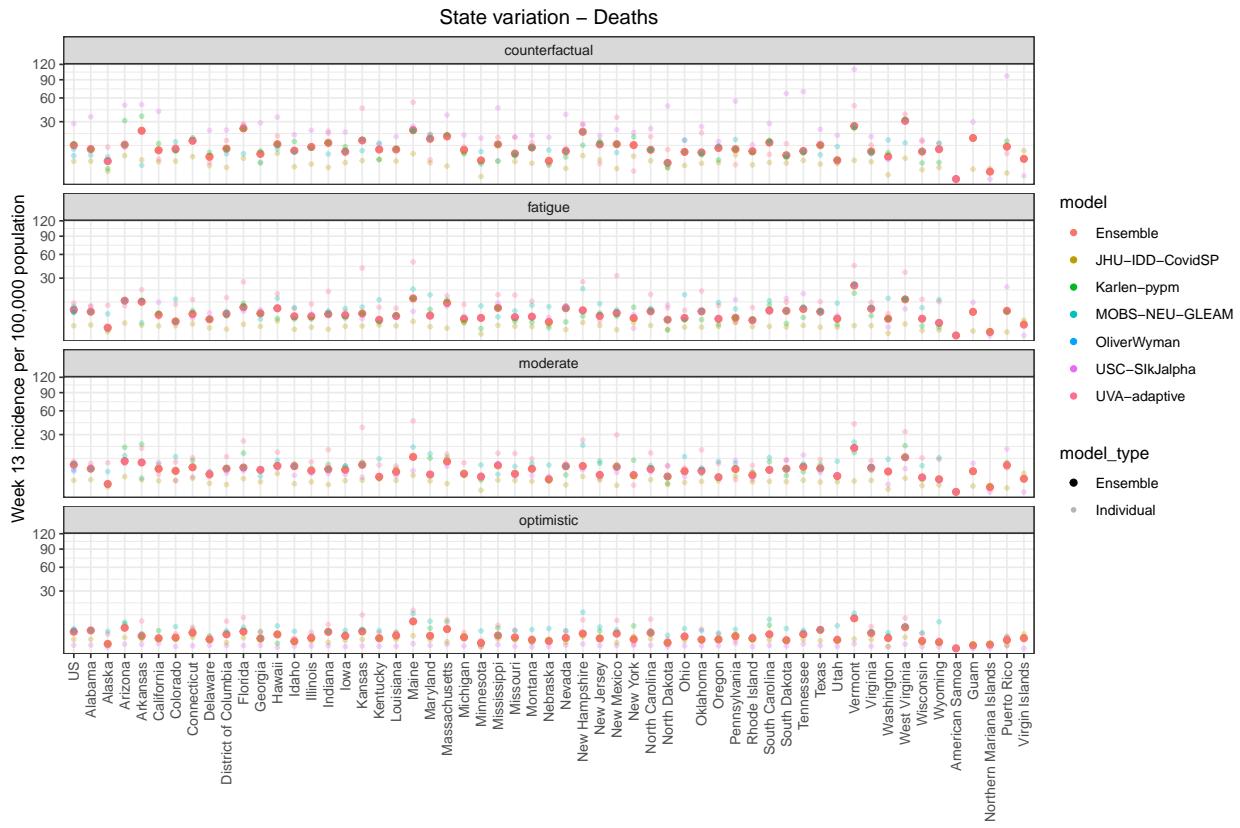
State variation – Deaths

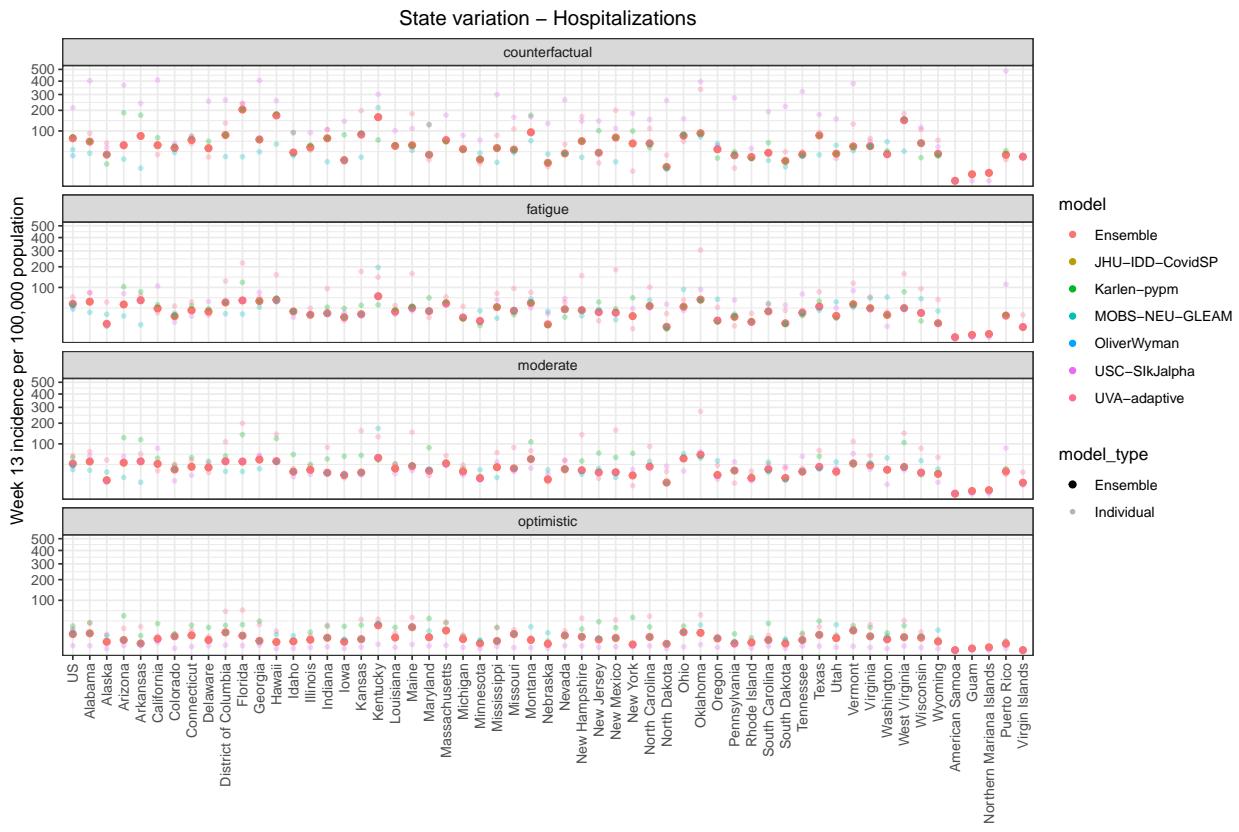


State variation – Hospitalizations

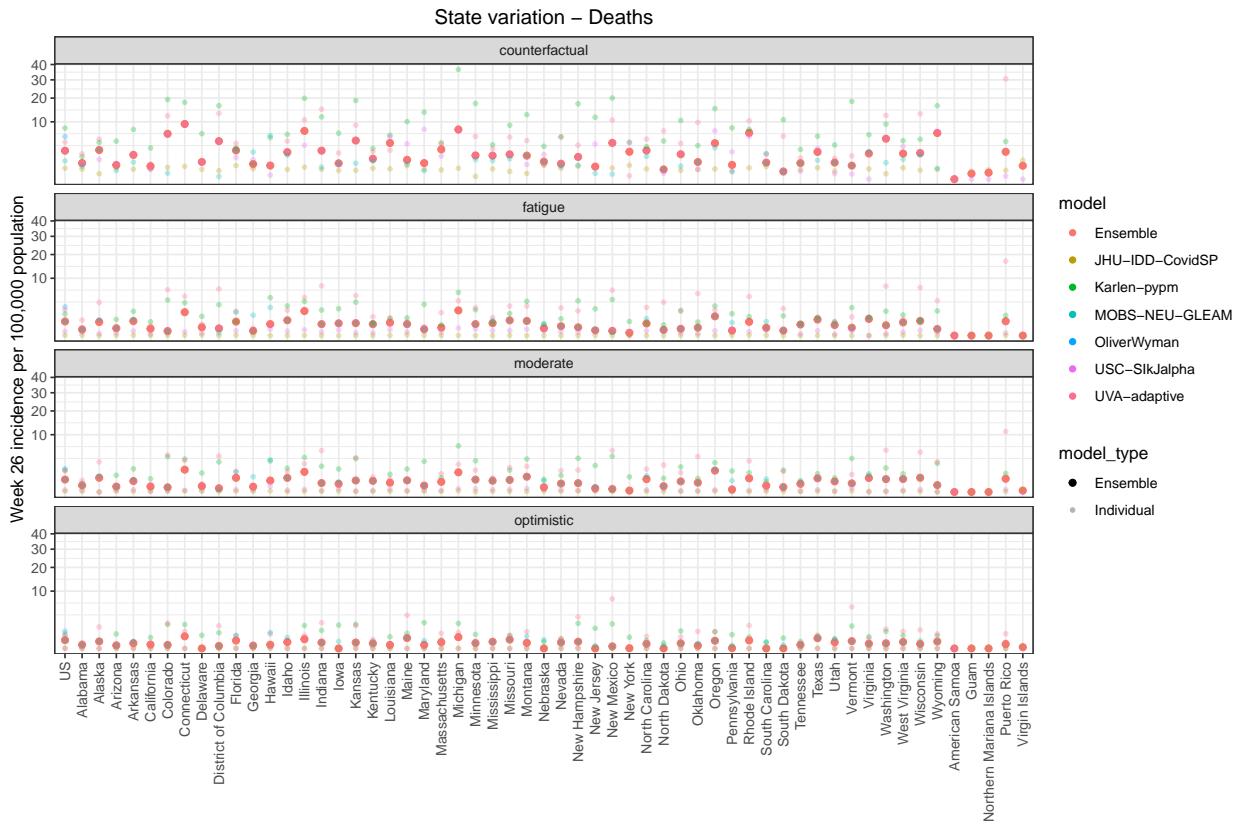


Individual model and ensembles projections for state-level death and hospitalization incidence per 100,000 population at week 13.

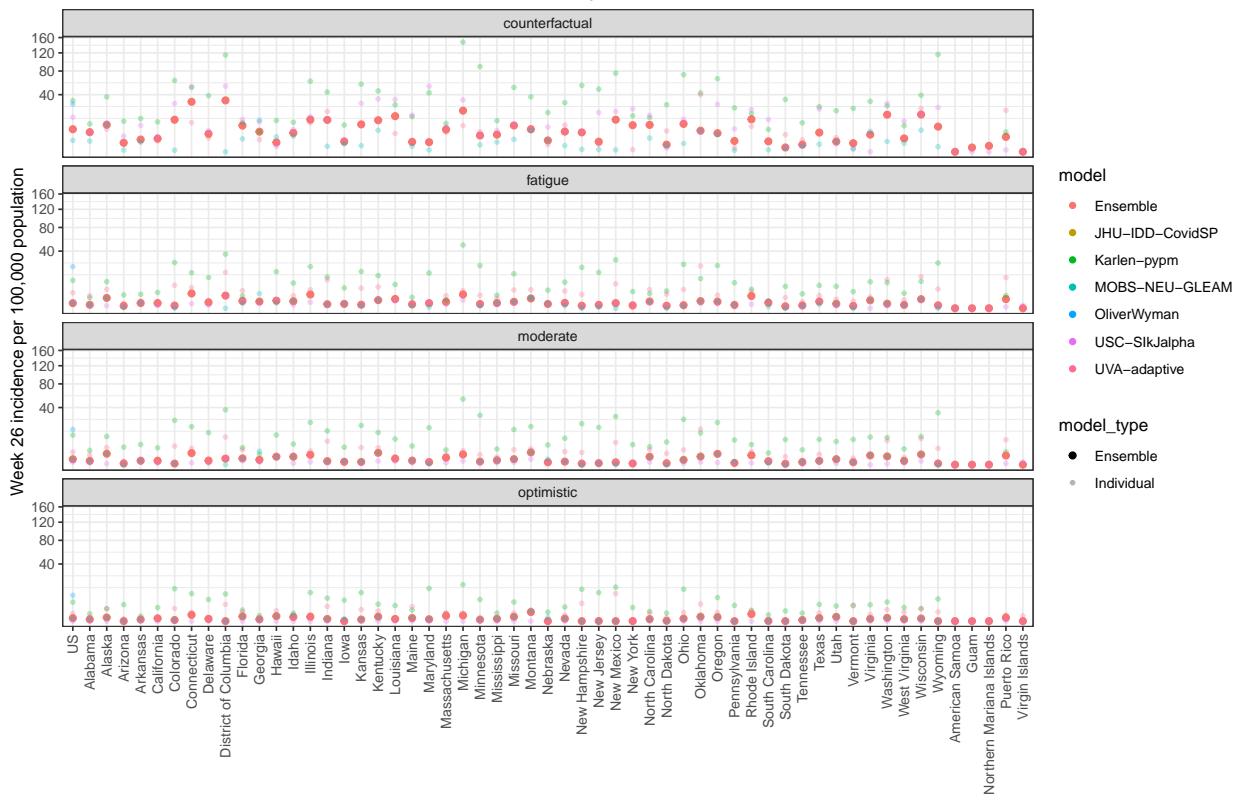




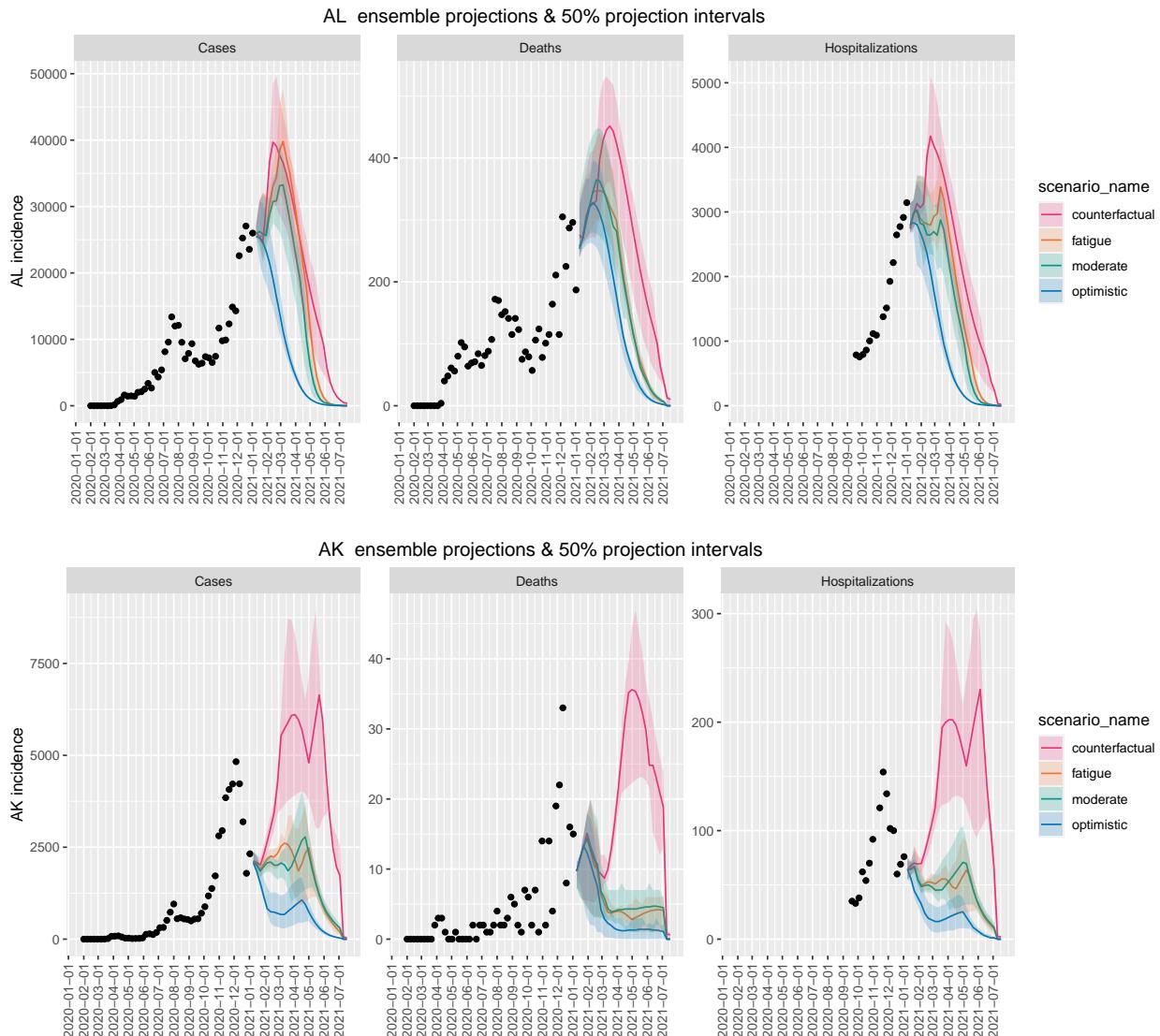
Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.



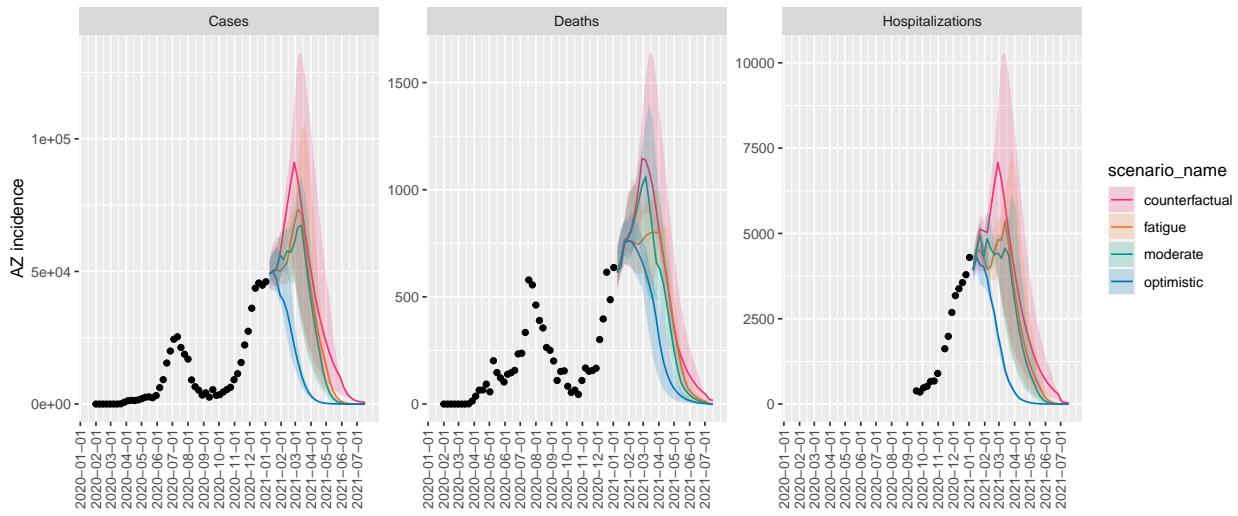
State variation – Hospitalizations



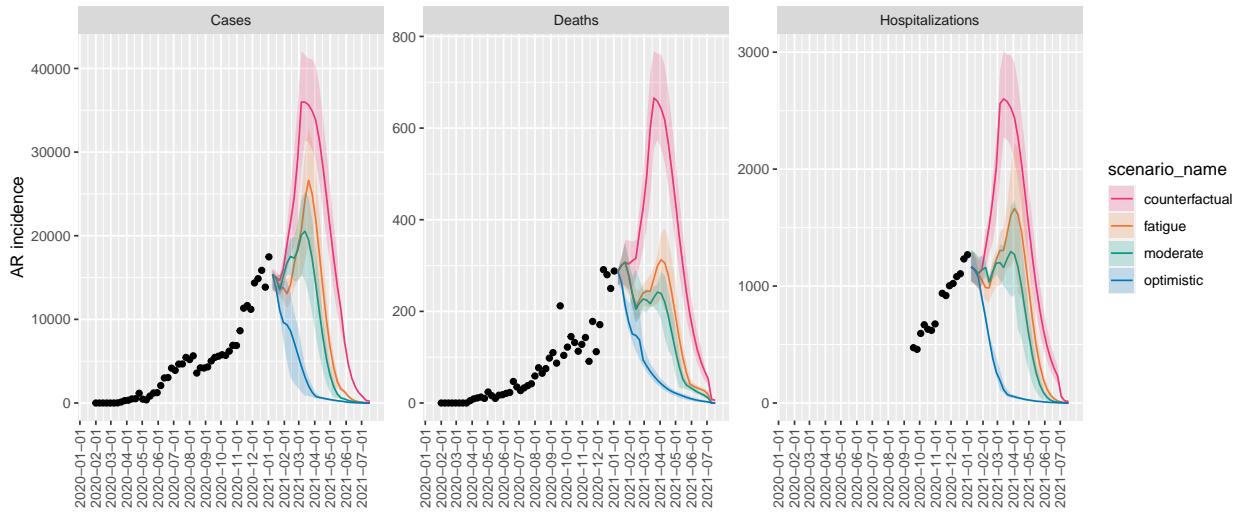
State-level ensemble plots



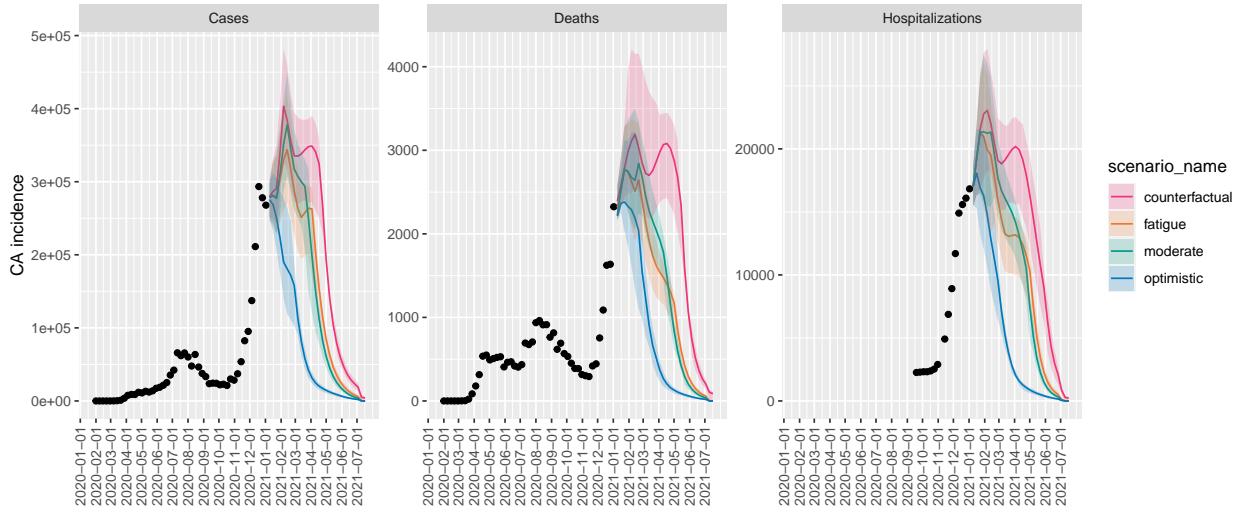
AZ ensemble projections & 50% projection intervals



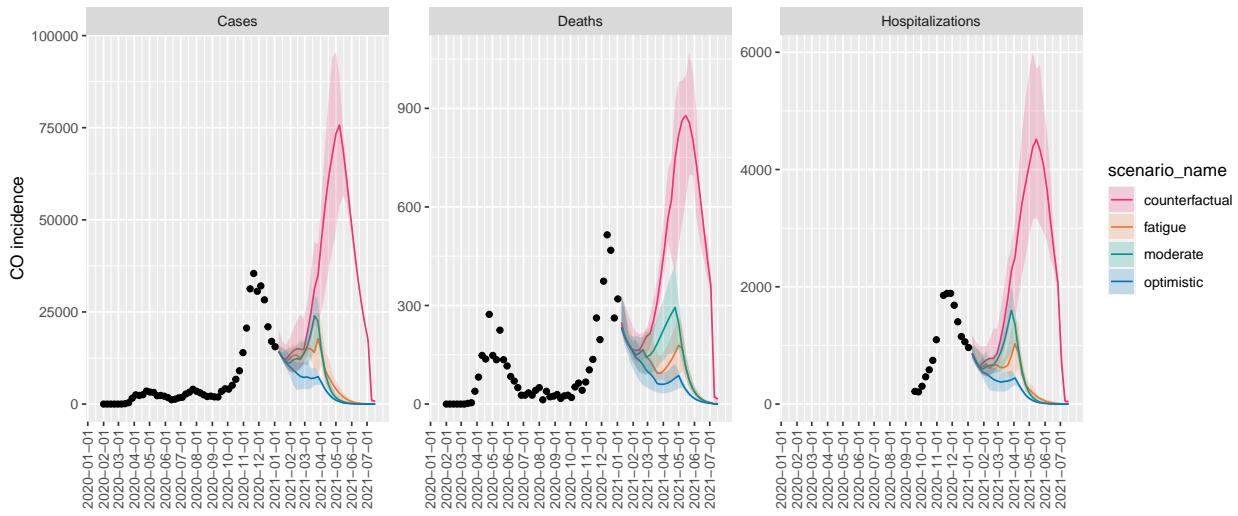
AR ensemble projections & 50% projection intervals



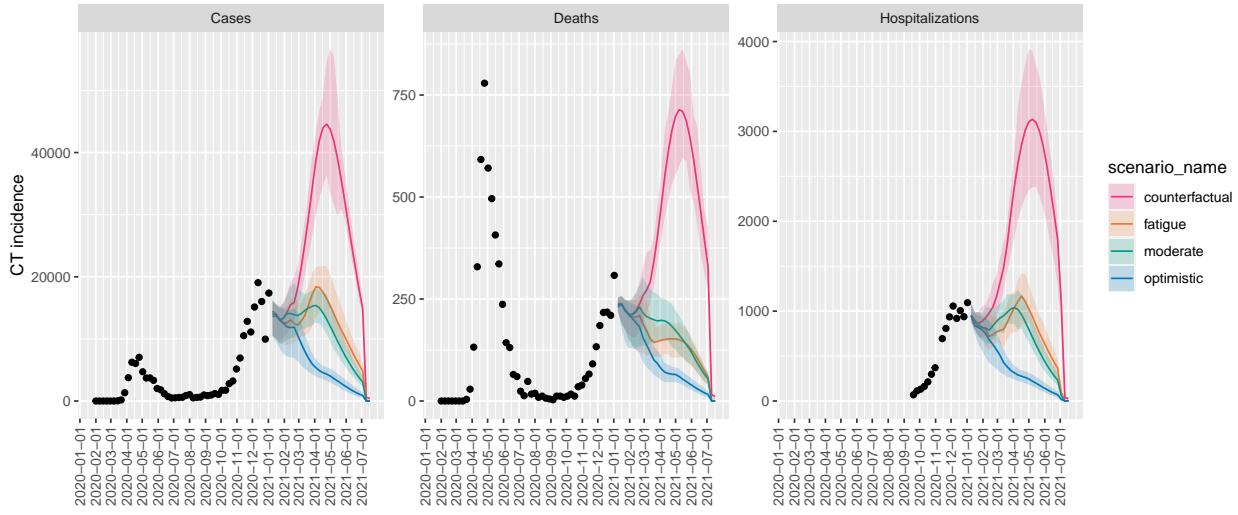
CA ensemble projections & 50% projection intervals



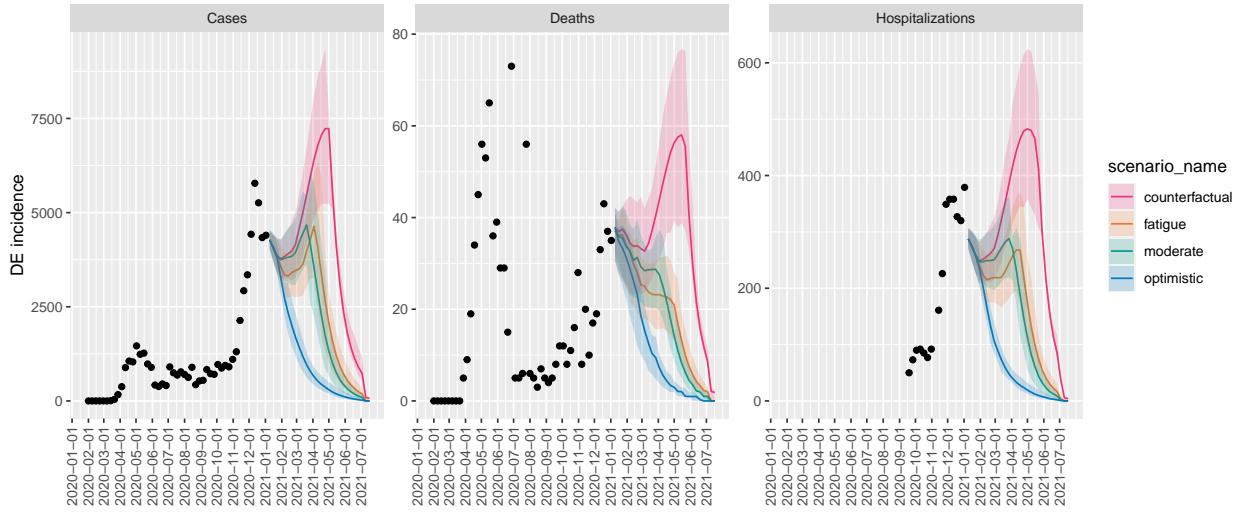
CO ensemble projections & 50% projection intervals



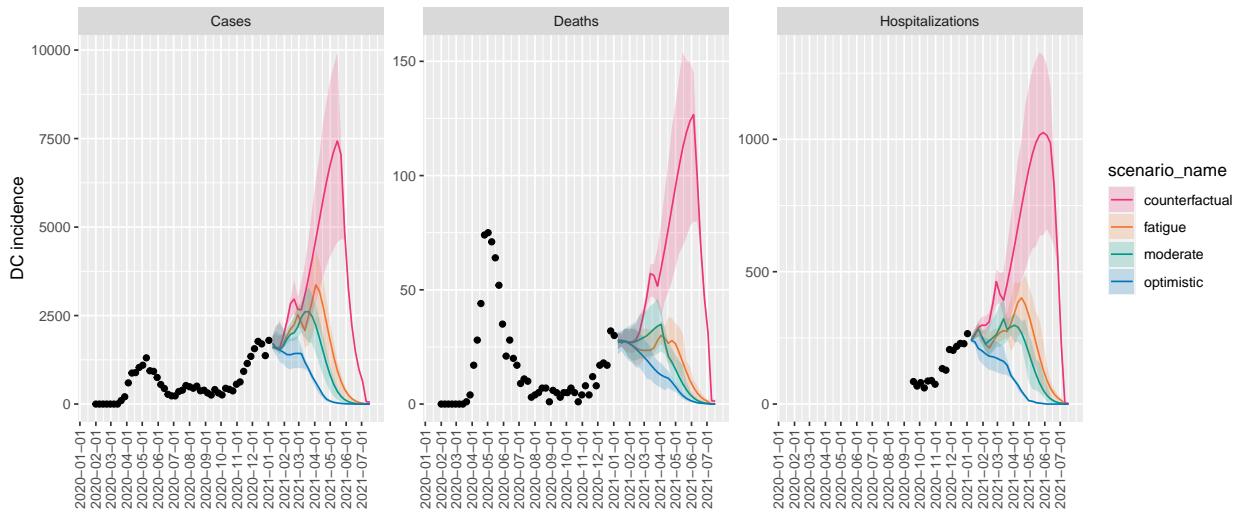
CT ensemble projections & 50% projection intervals



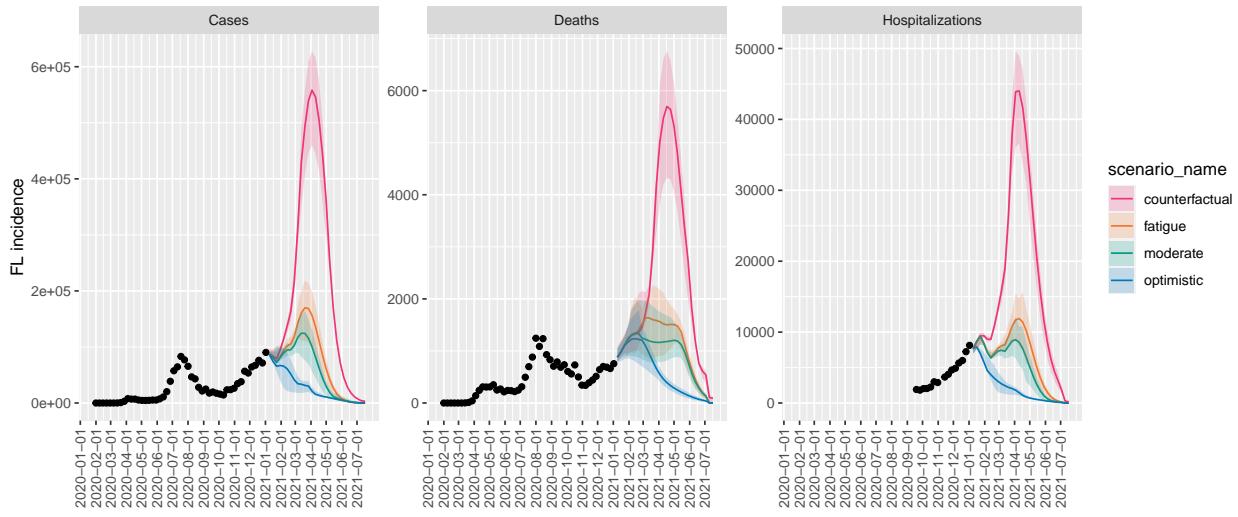
DE ensemble projections & 50% projection intervals



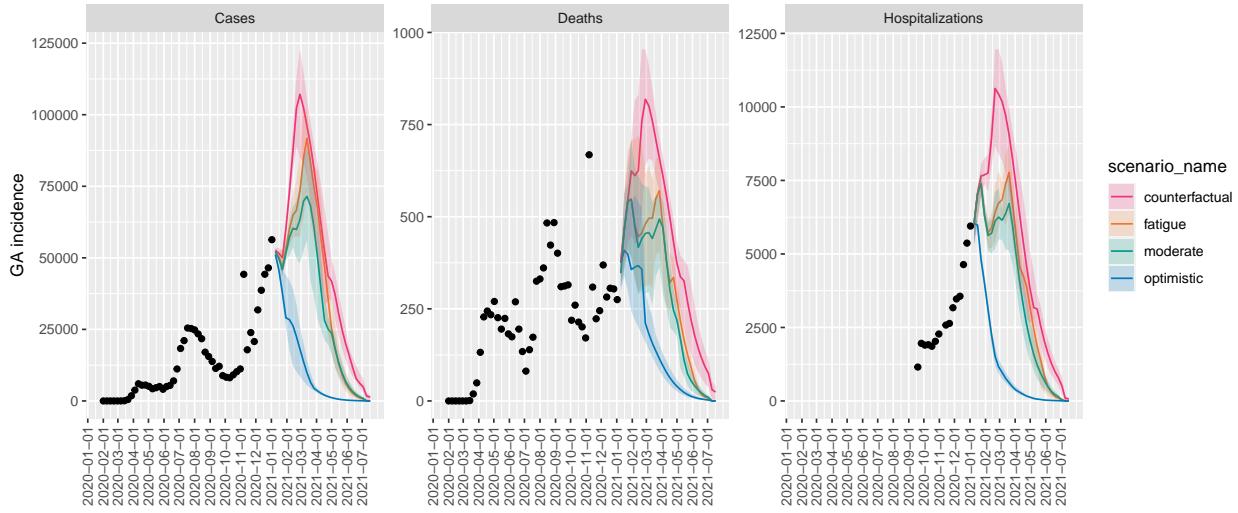
DC ensemble projections & 50% projection intervals



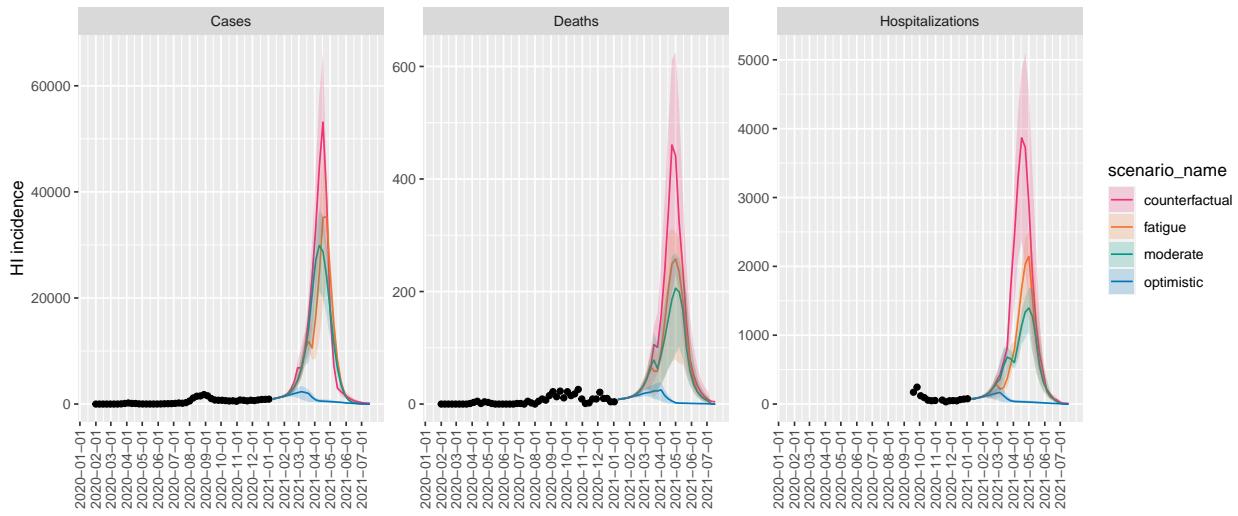
FL ensemble projections & 50% projection intervals



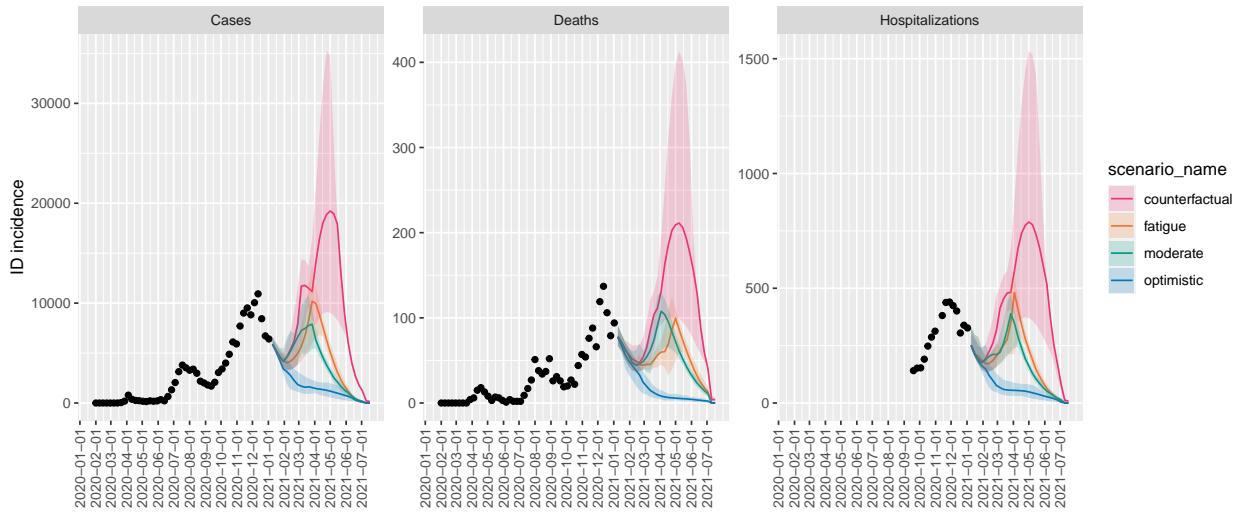
GA ensemble projections & 50% projection intervals



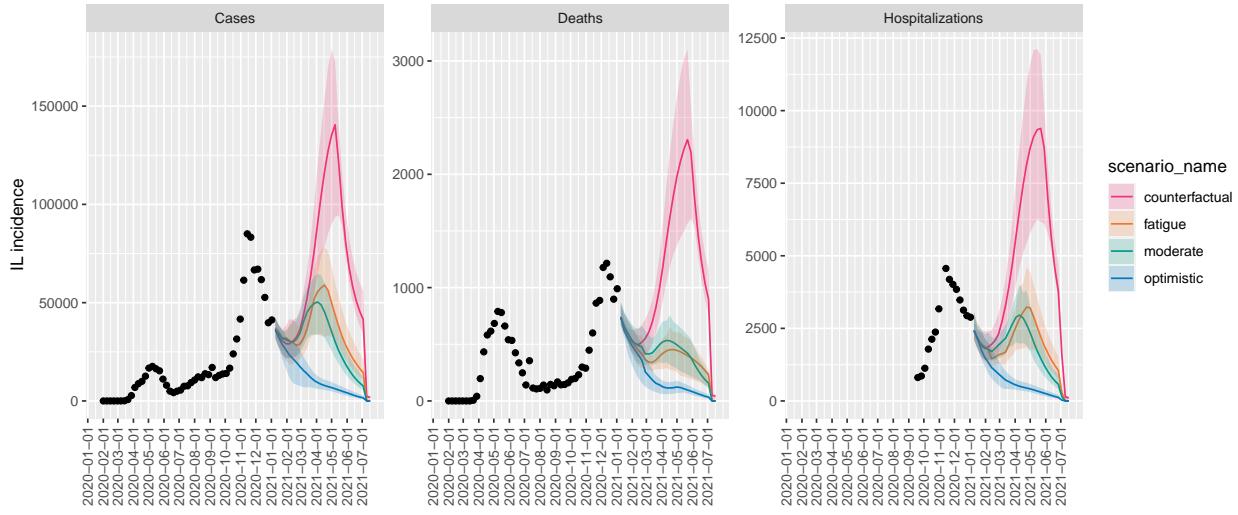
HI ensemble projections & 50% projection intervals



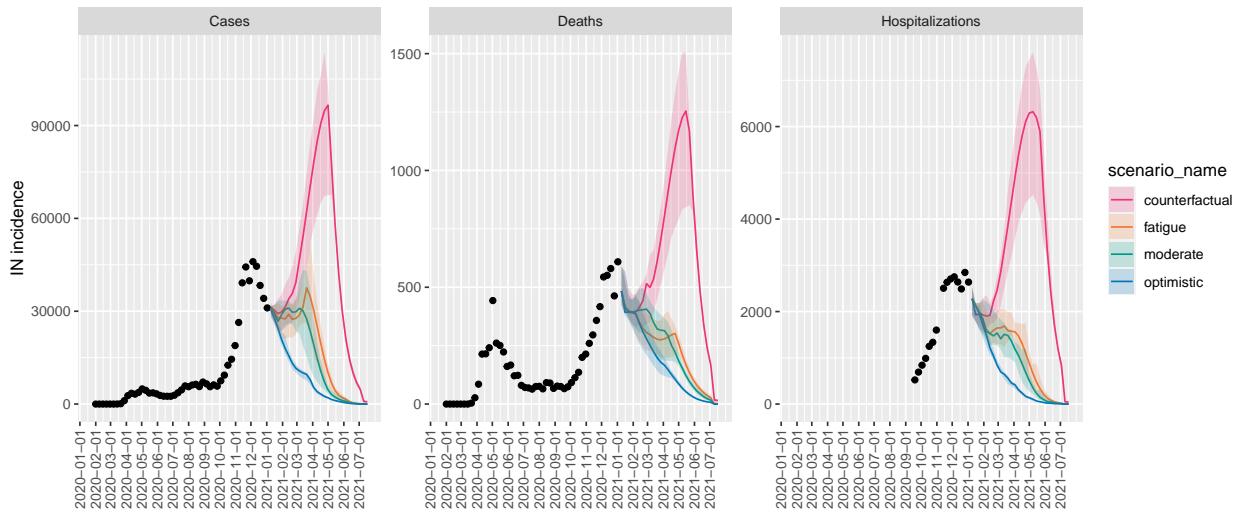
ID ensemble projections & 50% projection intervals



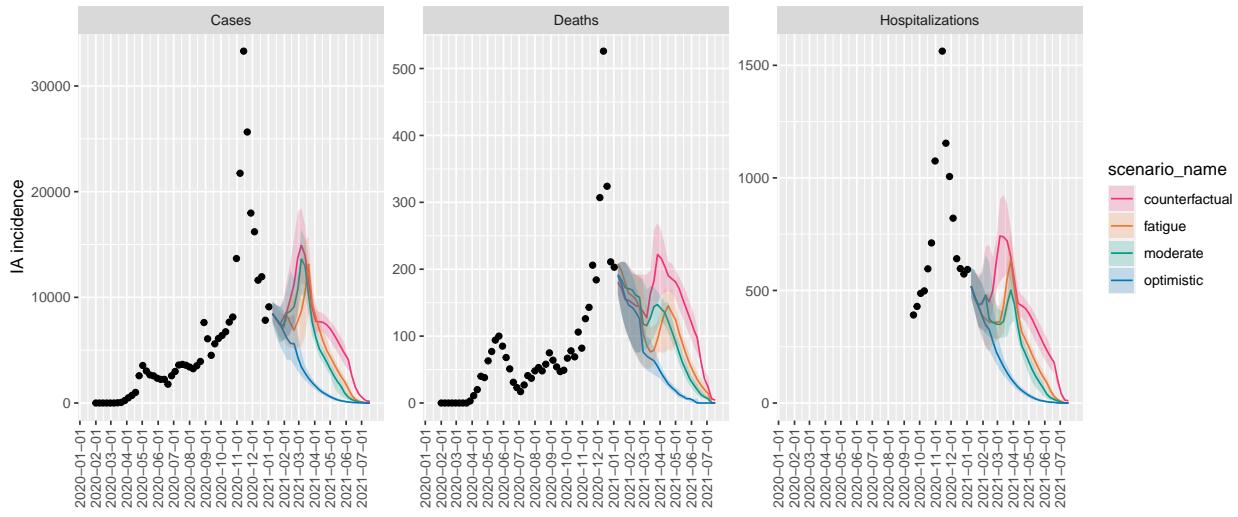
IL ensemble projections & 50% projection intervals



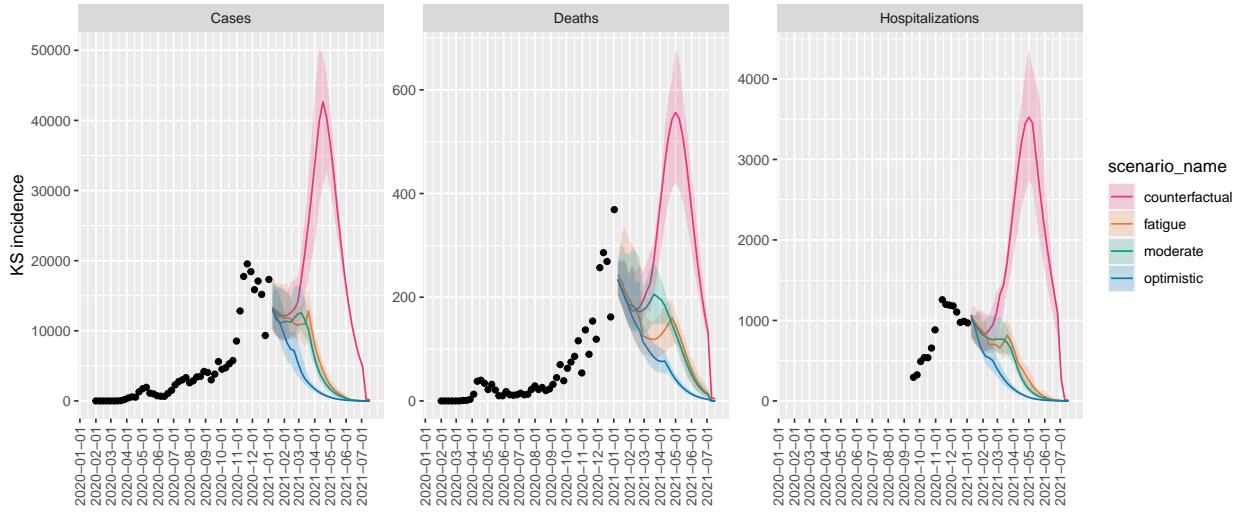
IN ensemble projections & 50% projection intervals



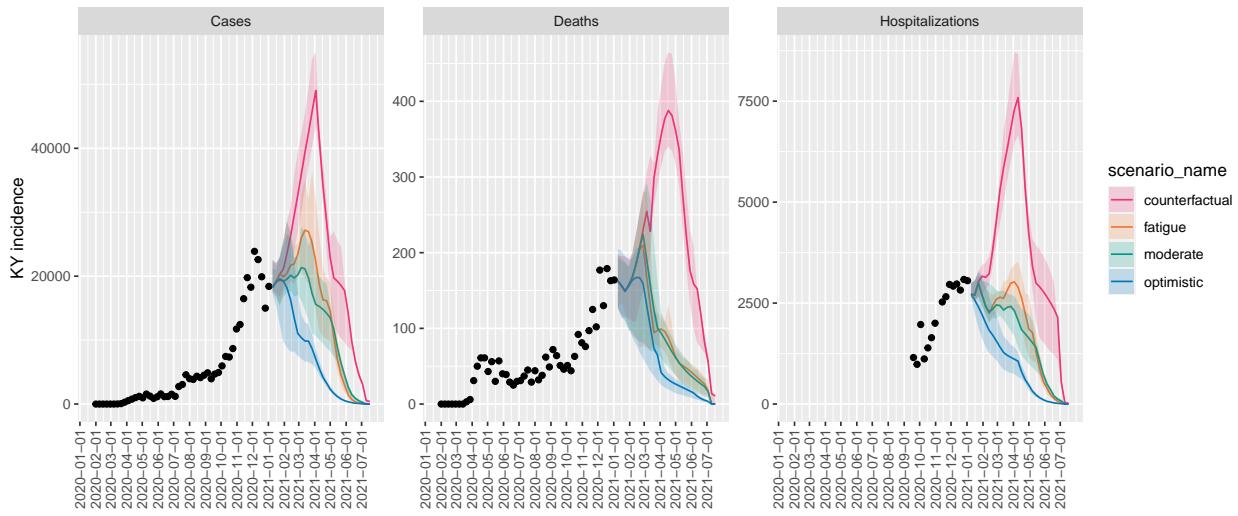
IA ensemble projections & 50% projection intervals



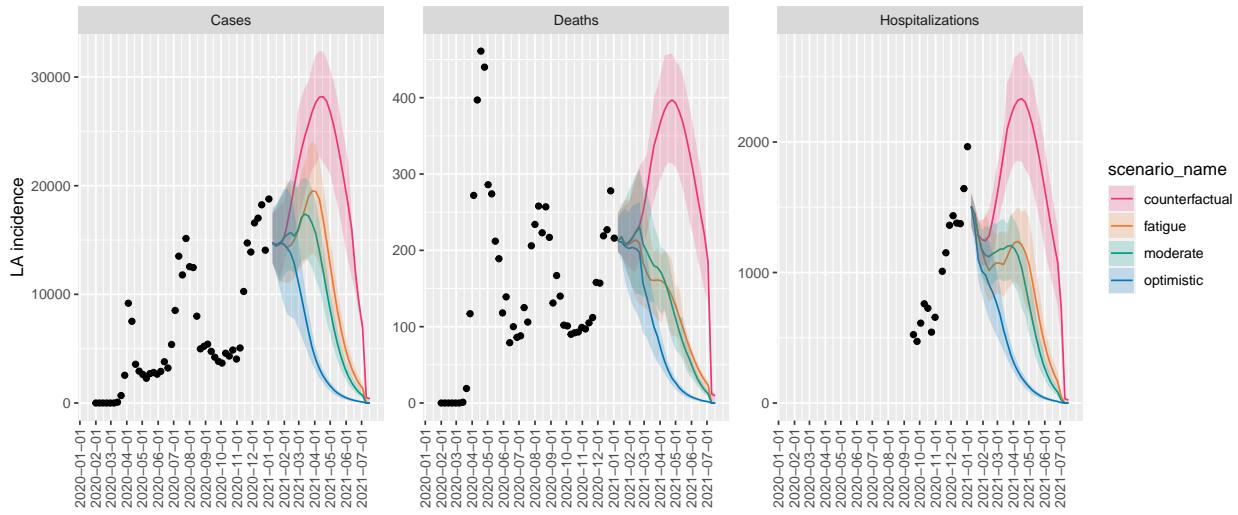
KS ensemble projections & 50% projection intervals



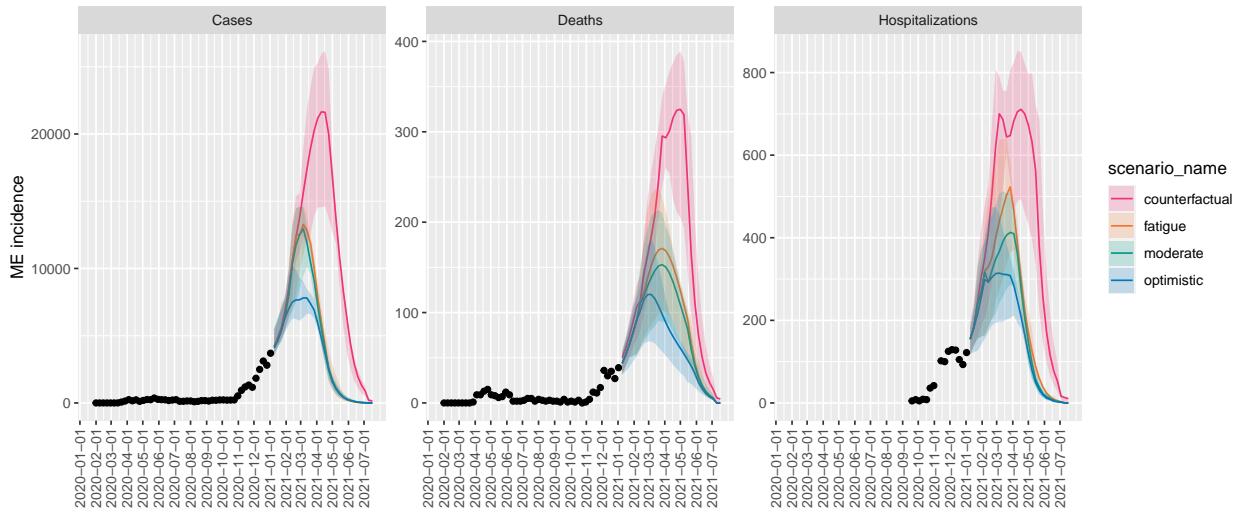
KY ensemble projections & 50% projection intervals



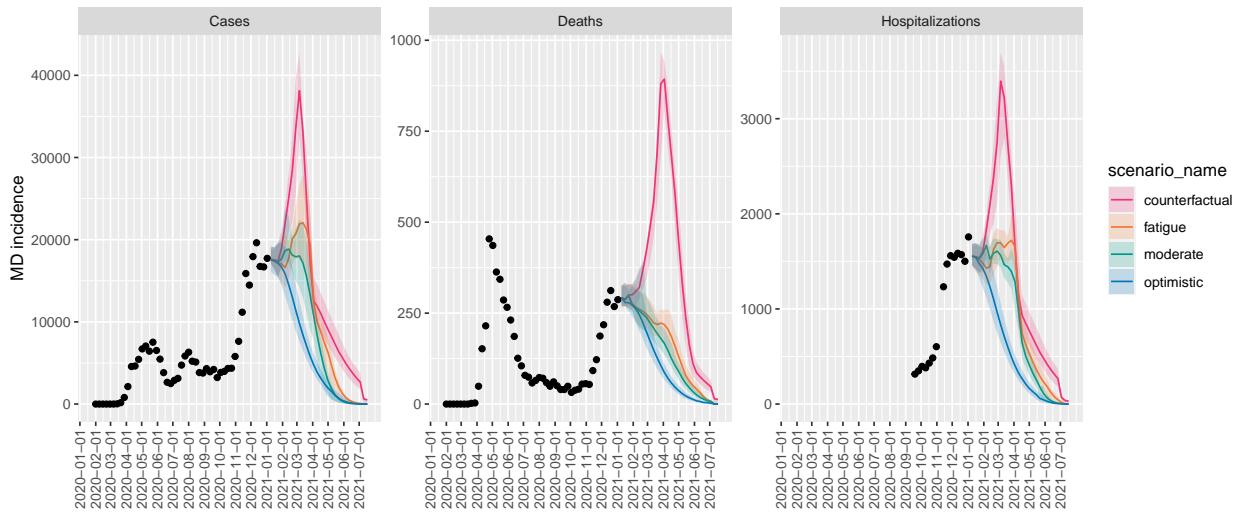
LA ensemble projections & 50% projection intervals



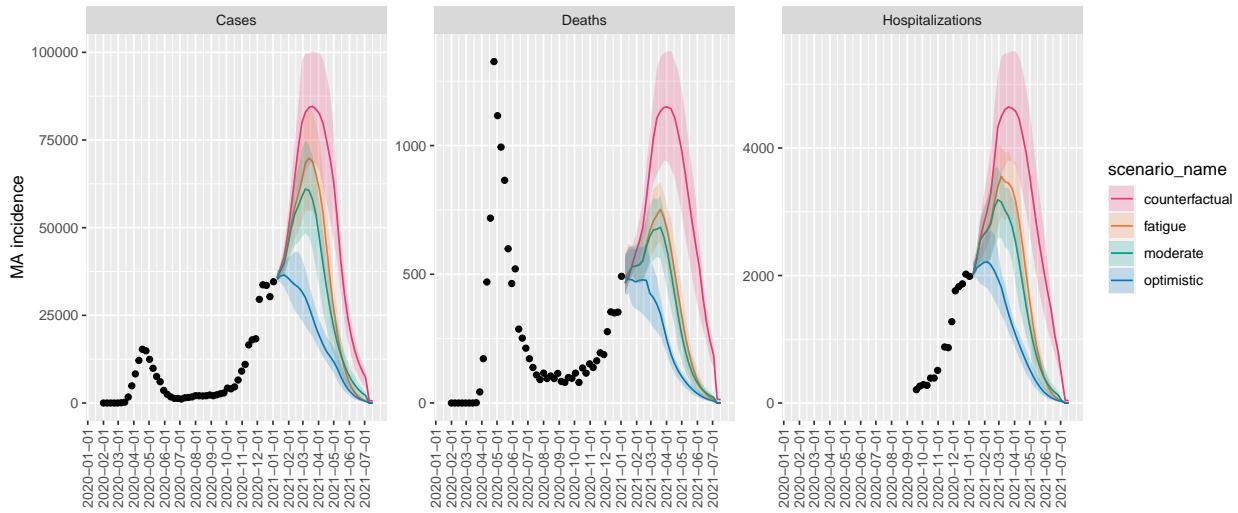
ME ensemble projections & 50% projection intervals



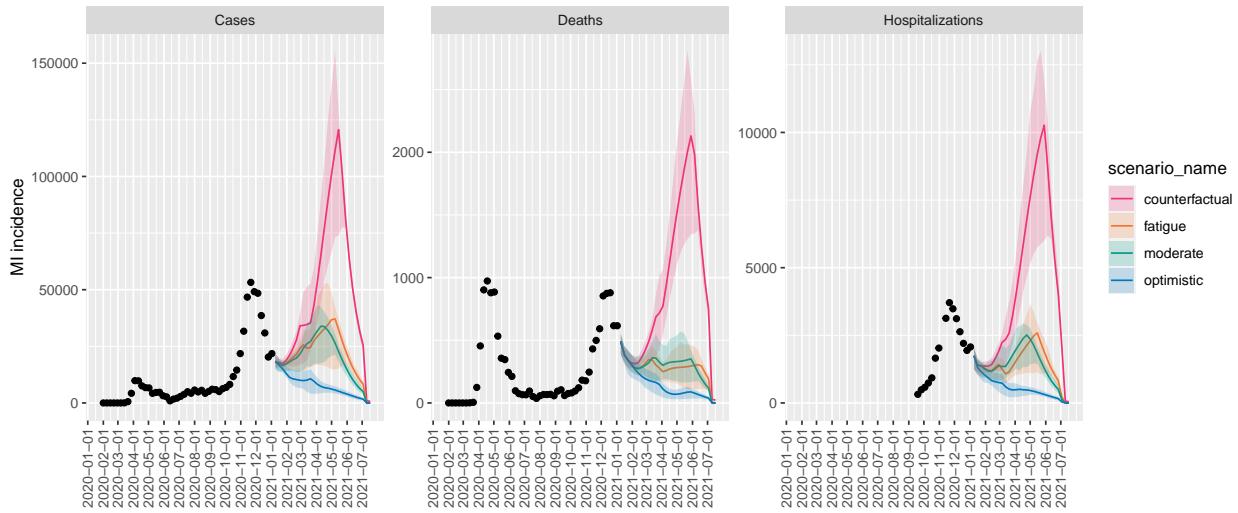
MD ensemble projections & 50% projection intervals



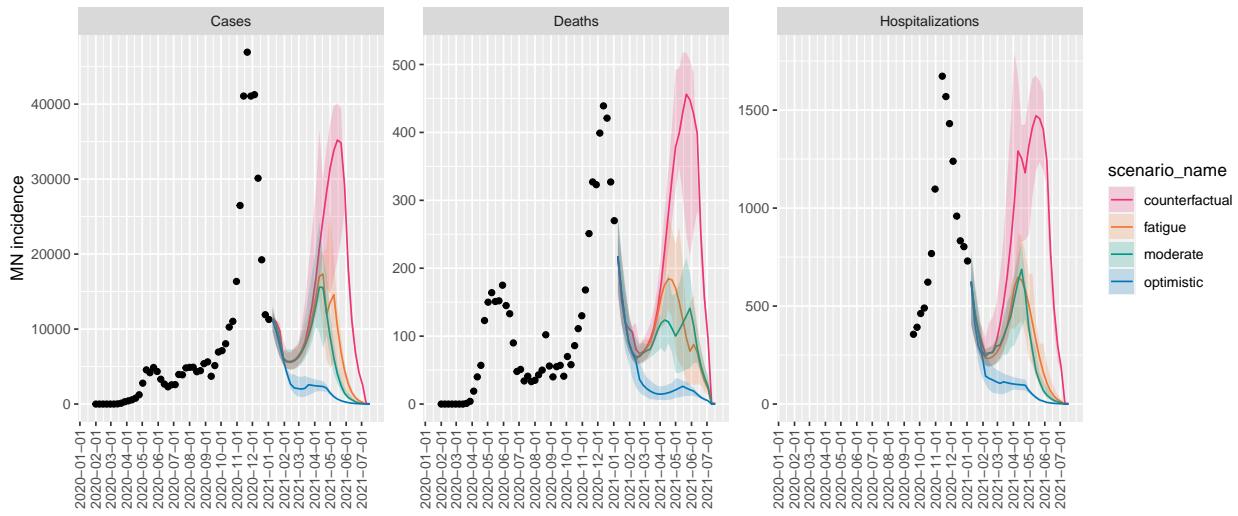
MA ensemble projections & 50% projection intervals



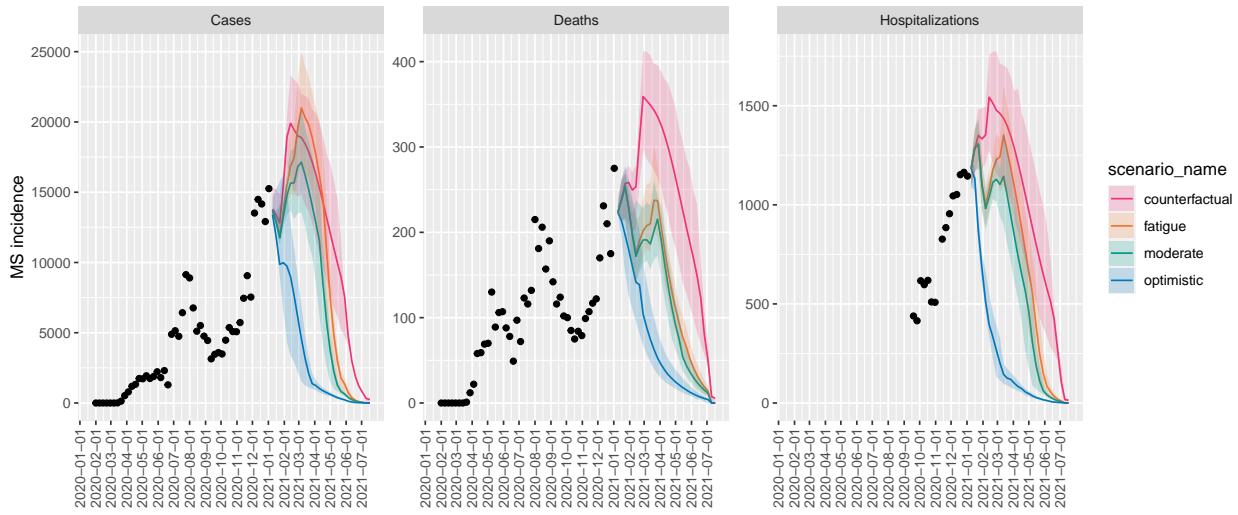
MI ensemble projections & 50% projection intervals



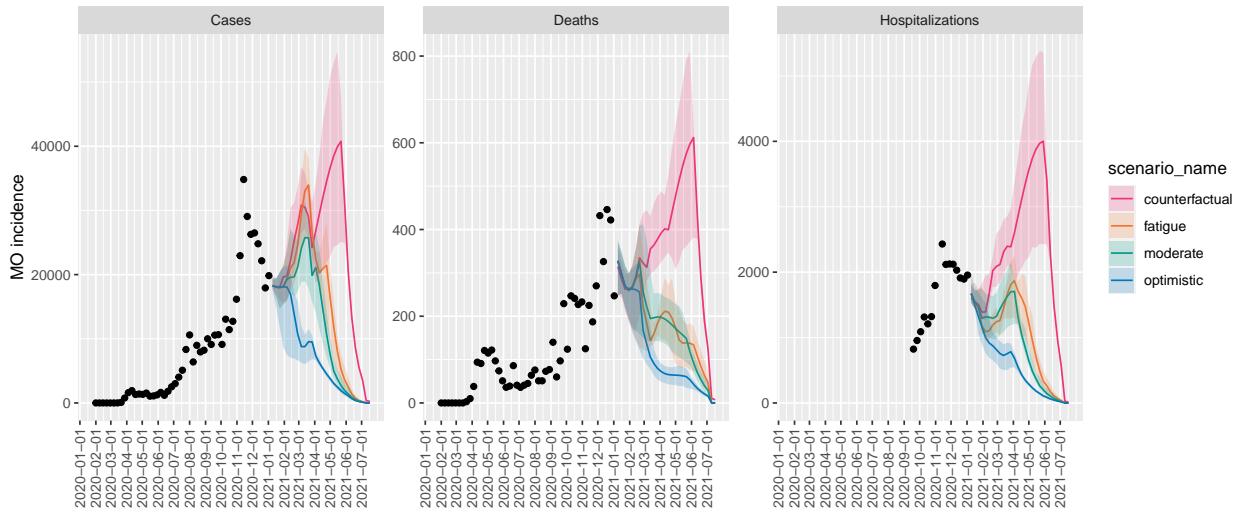
MN ensemble projections & 50% projection intervals



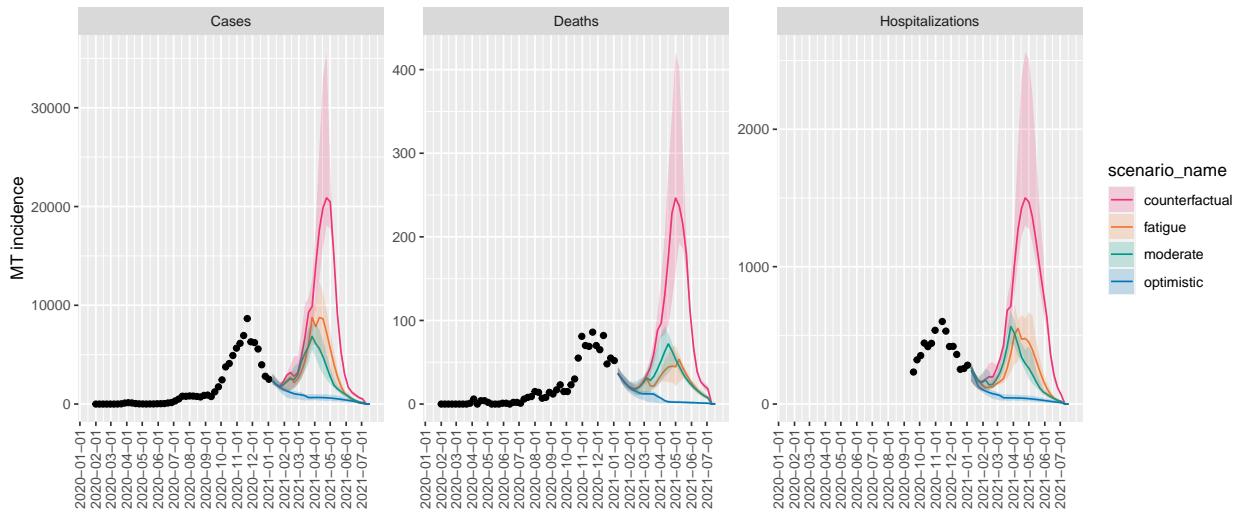
MS ensemble projections & 50% projection intervals



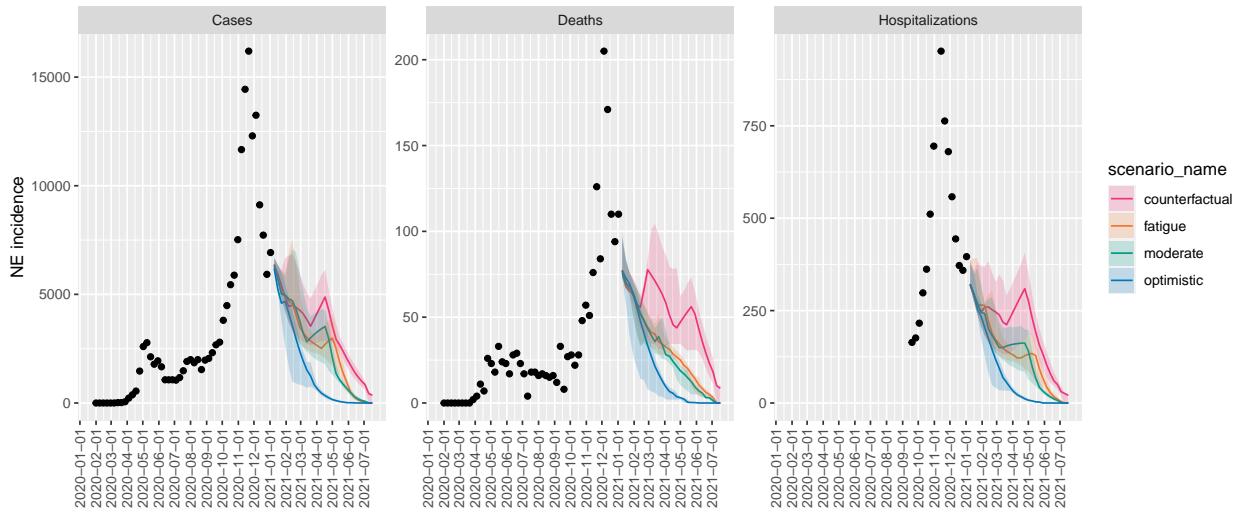
MO ensemble projections & 50% projection intervals



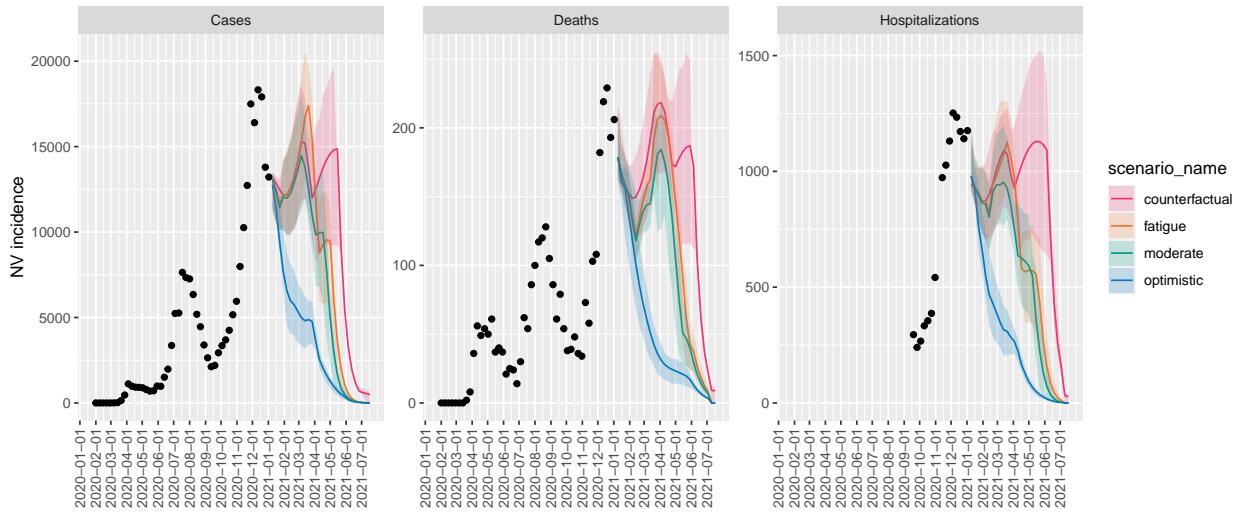
MT ensemble projections & 50% projection intervals



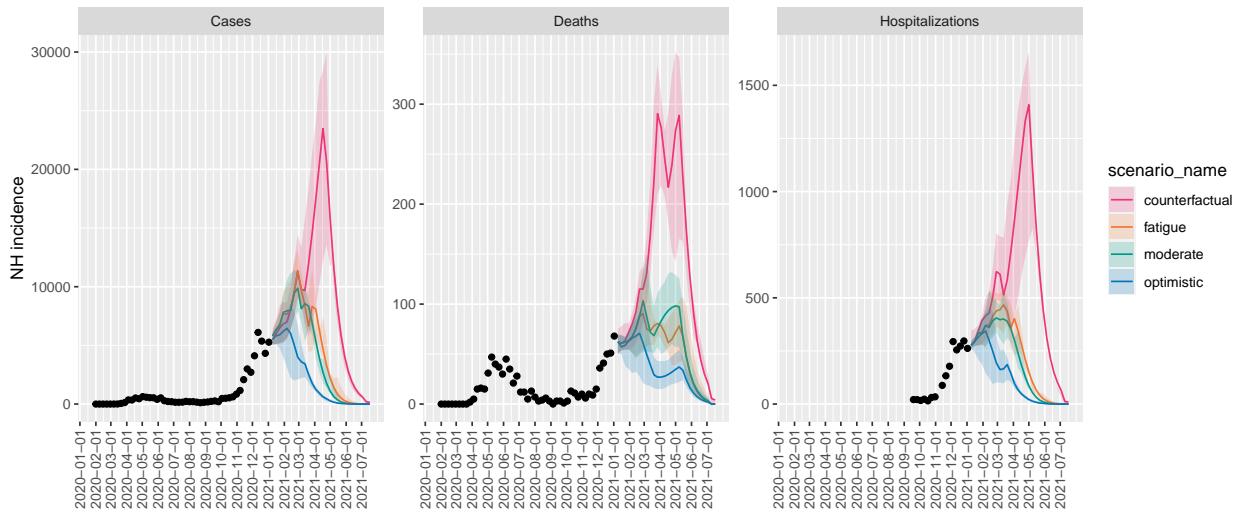
NE ensemble projections & 50% projection intervals



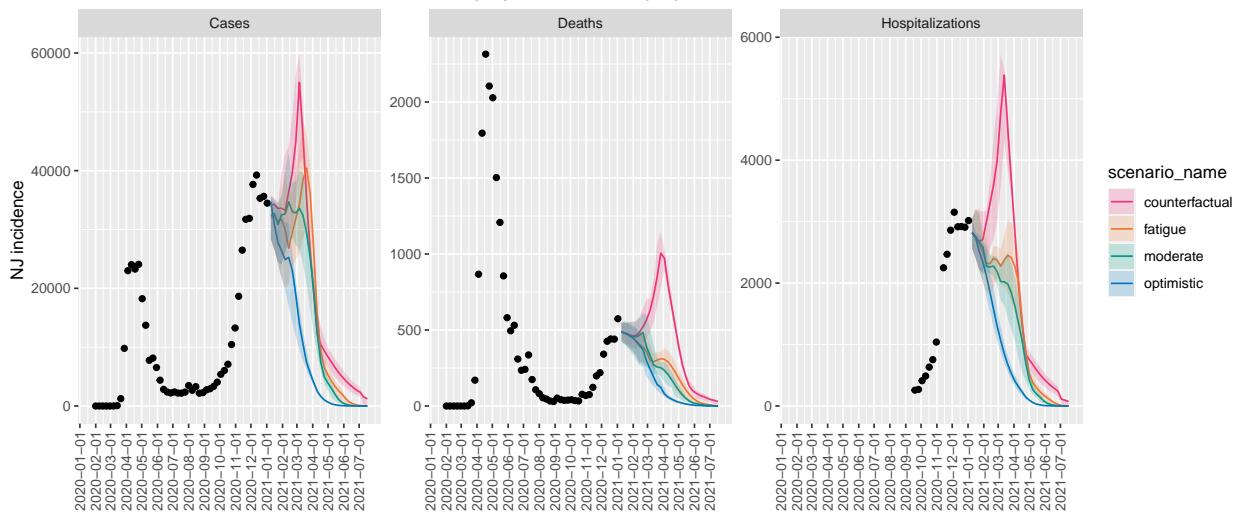
NV ensemble projections & 50% projection intervals



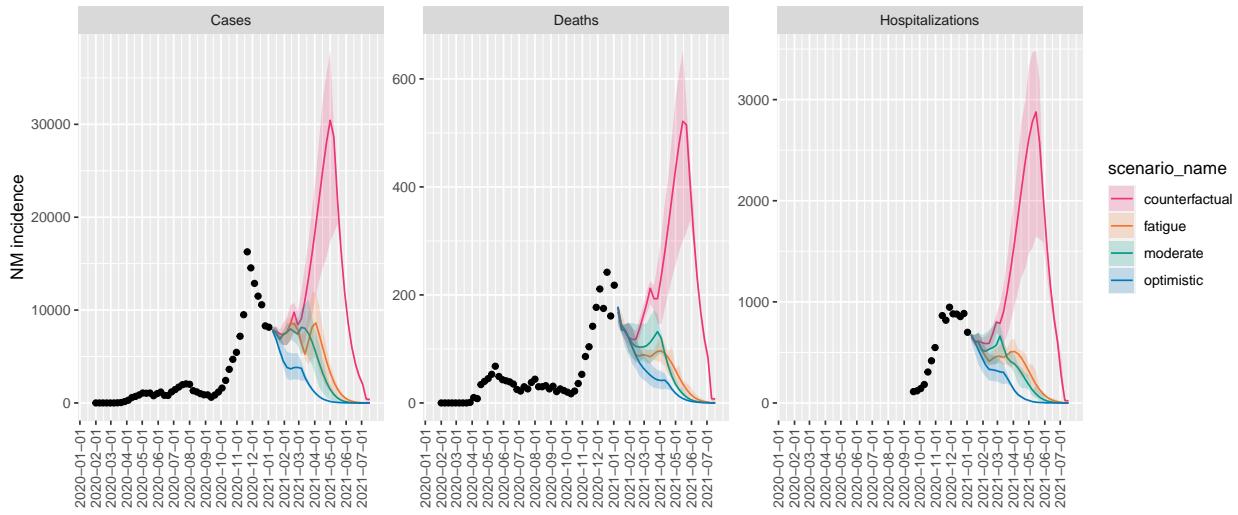
NH ensemble projections & 50% projection intervals



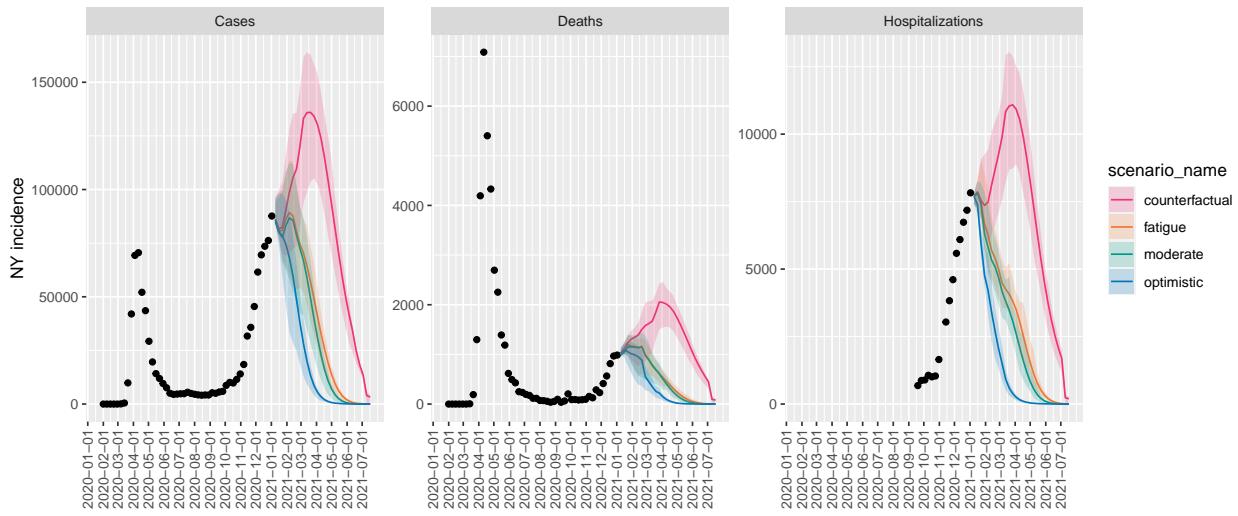
NJ ensemble projections & 50% projection intervals



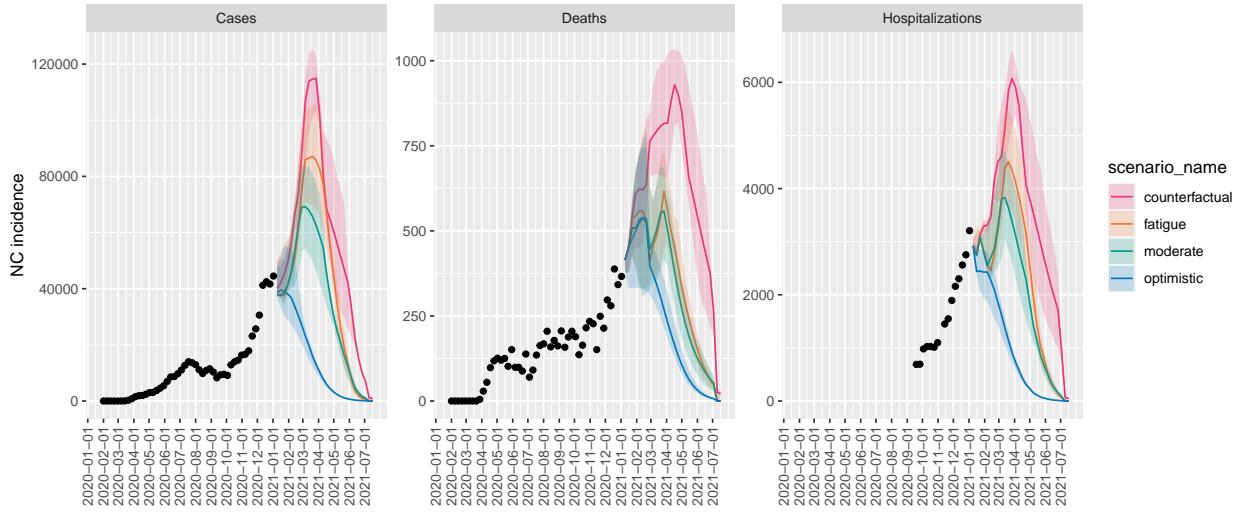
NM ensemble projections & 50% projection intervals



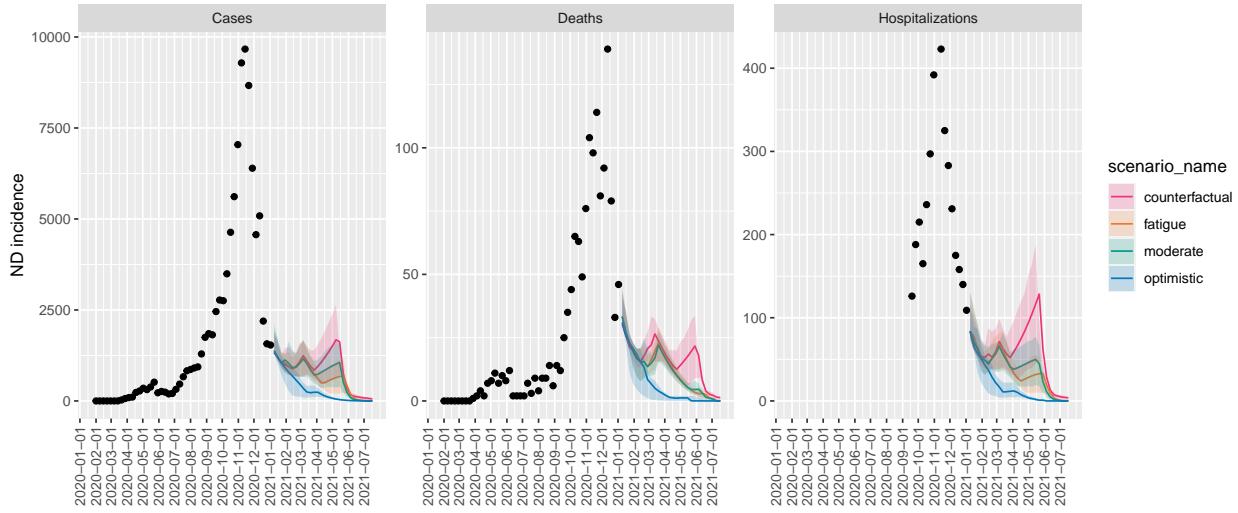
NY ensemble projections & 50% projection intervals



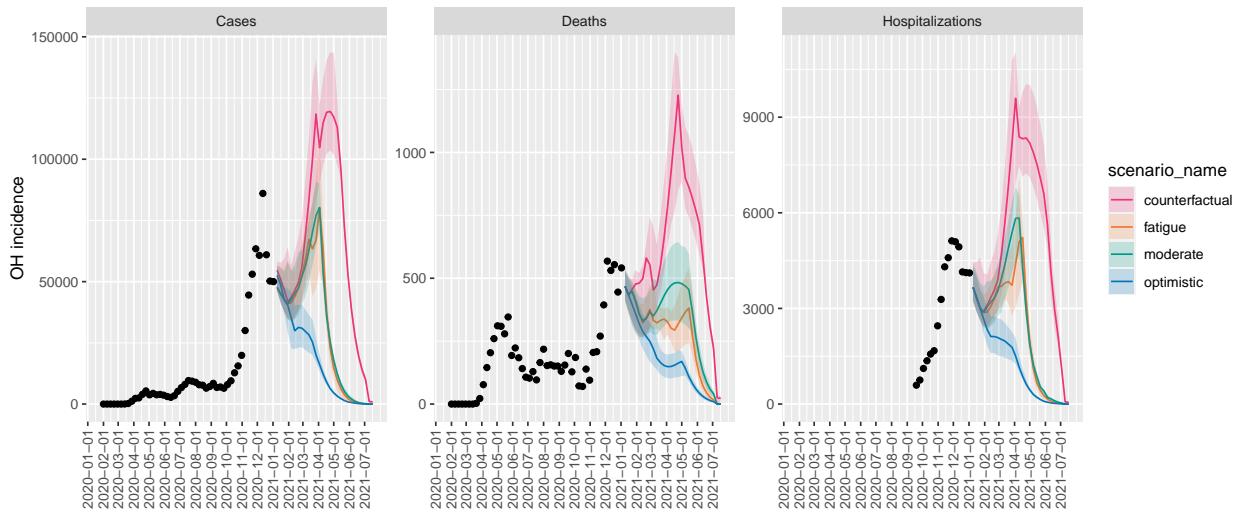
NC ensemble projections & 50% projection intervals



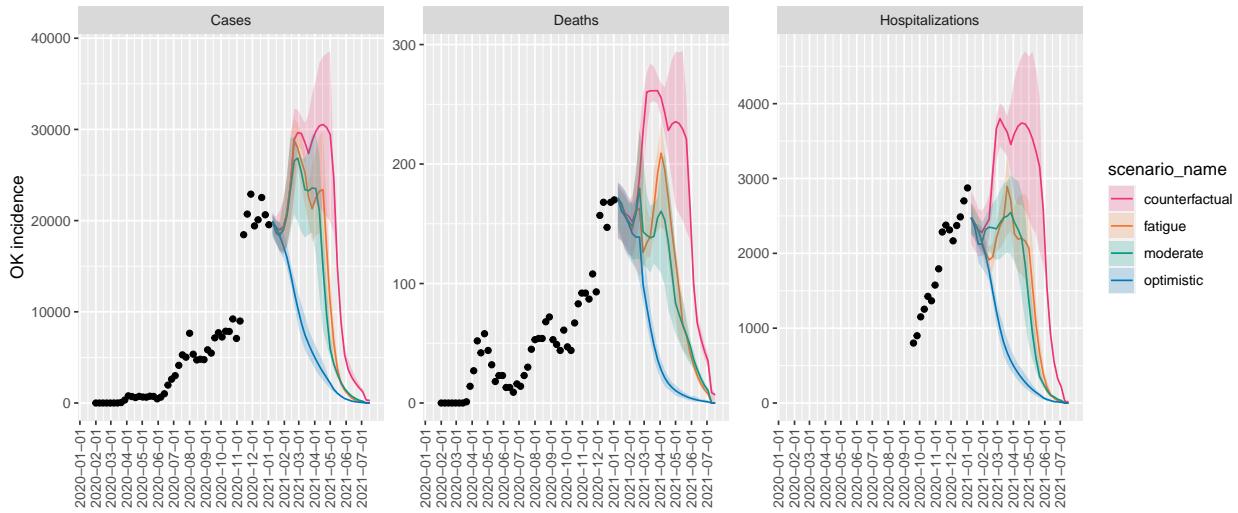
ND ensemble projections & 50% projection intervals



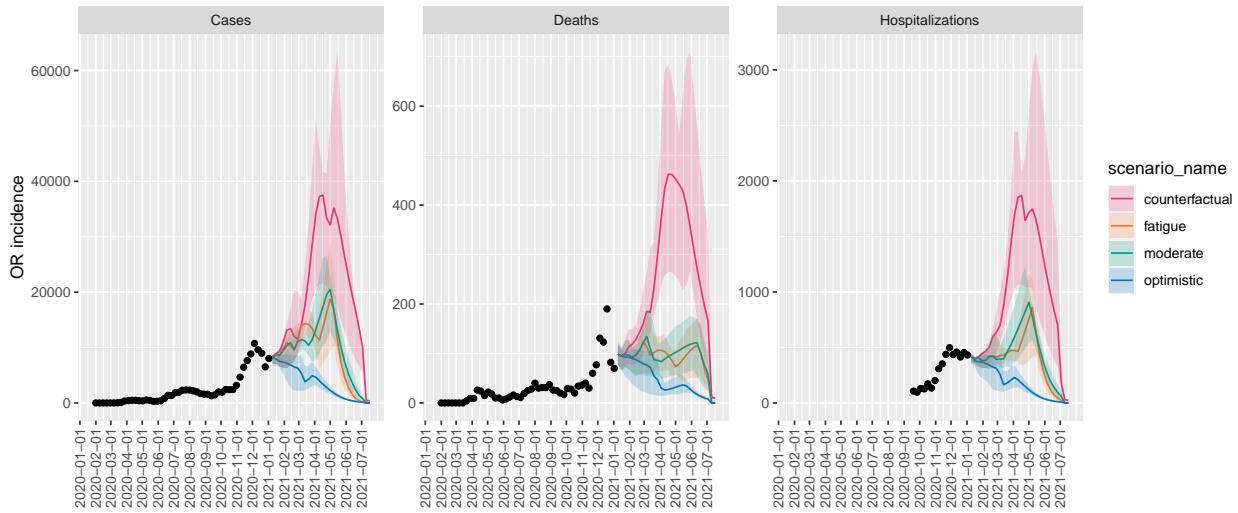
OH ensemble projections & 50% projection intervals



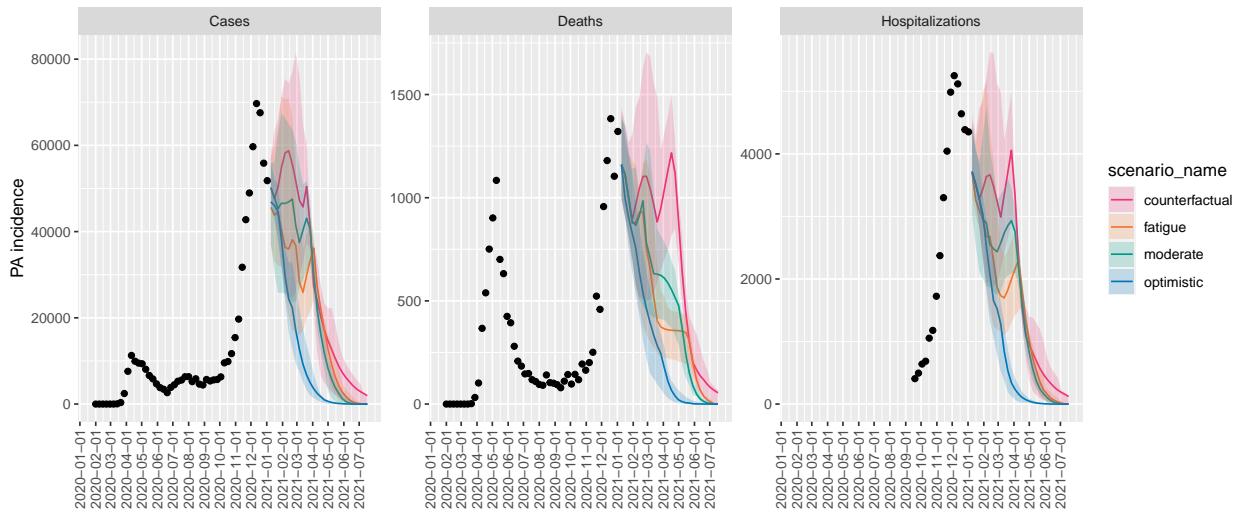
OK ensemble projections & 50% projection intervals



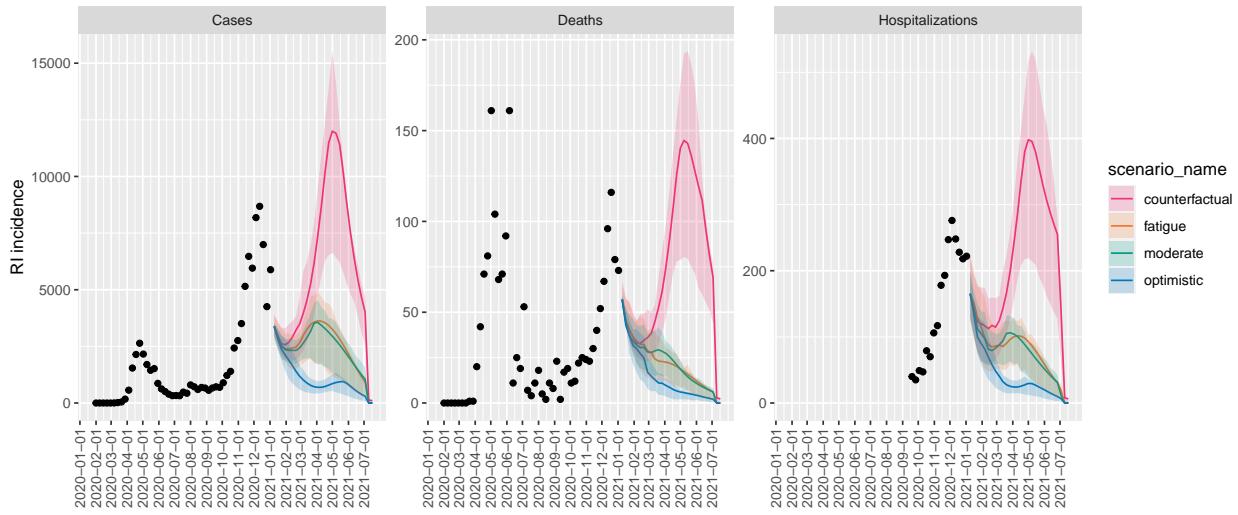
OR ensemble projections & 50% projection intervals



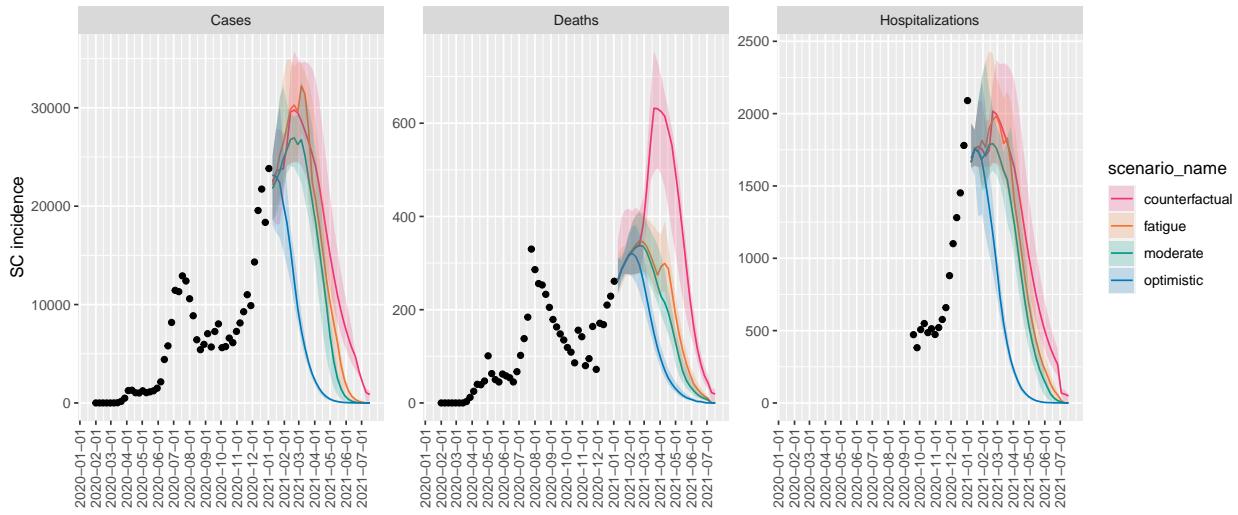
PA ensemble projections & 50% projection intervals



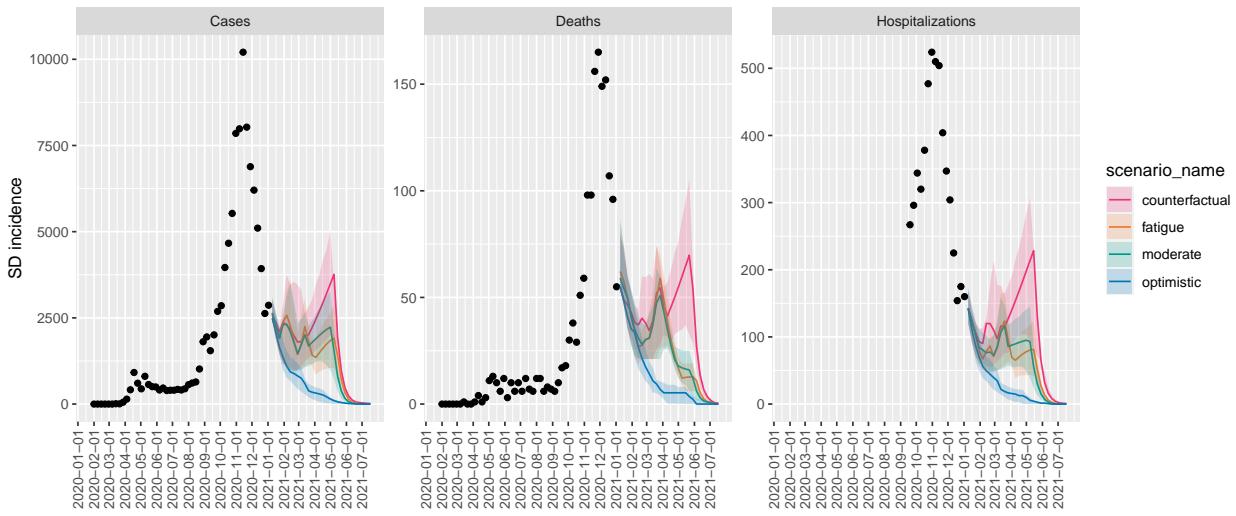
RI ensemble projections & 50% projection intervals



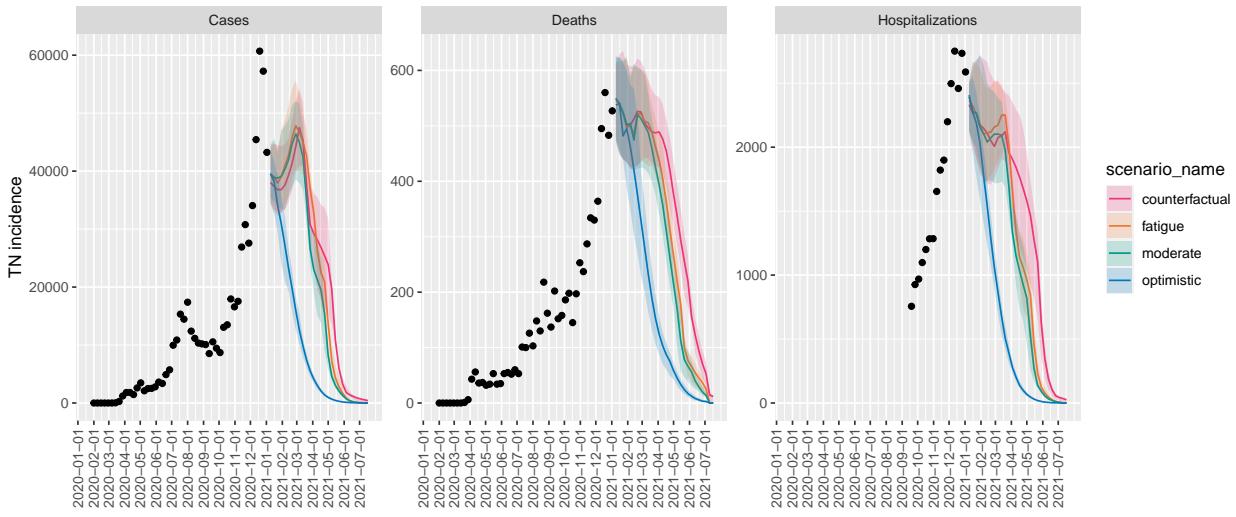
SC ensemble projections & 50% projection intervals



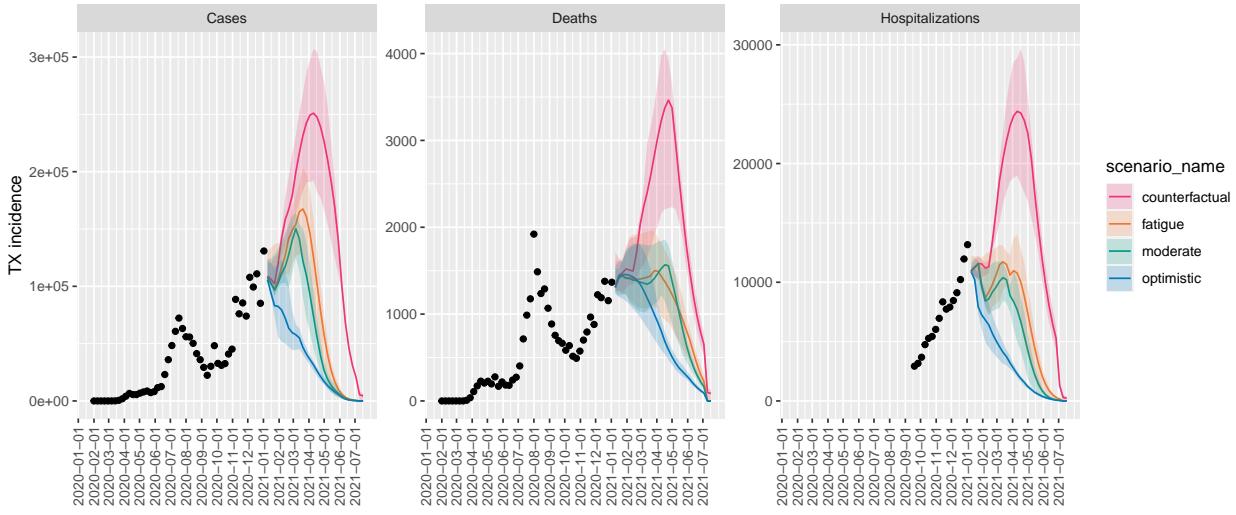
SD ensemble projections & 50% projection intervals



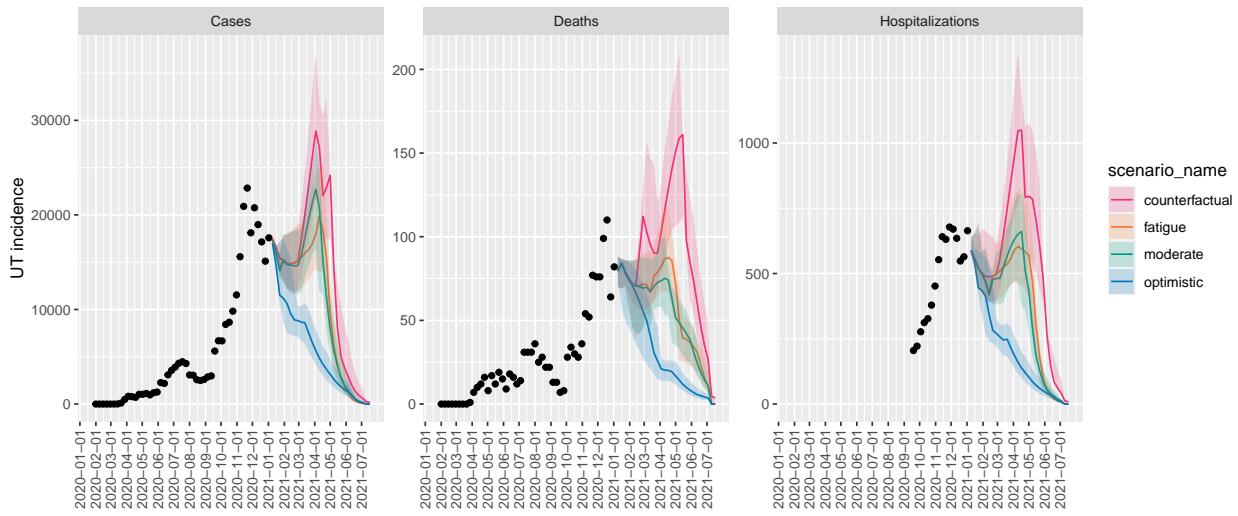
TN ensemble projections & 50% projection intervals



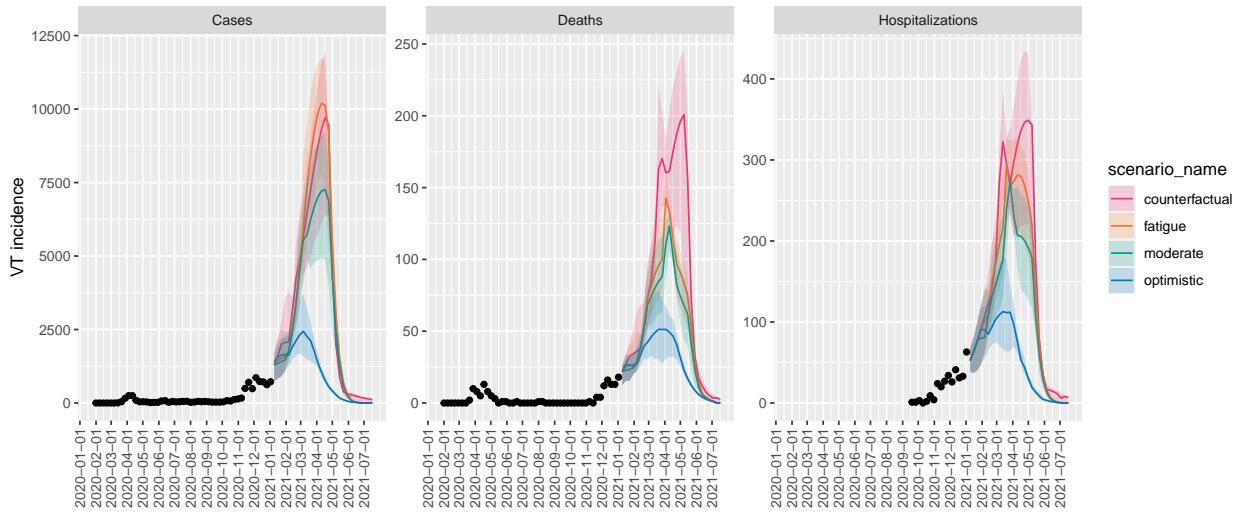
TX ensemble projections & 50% projection intervals



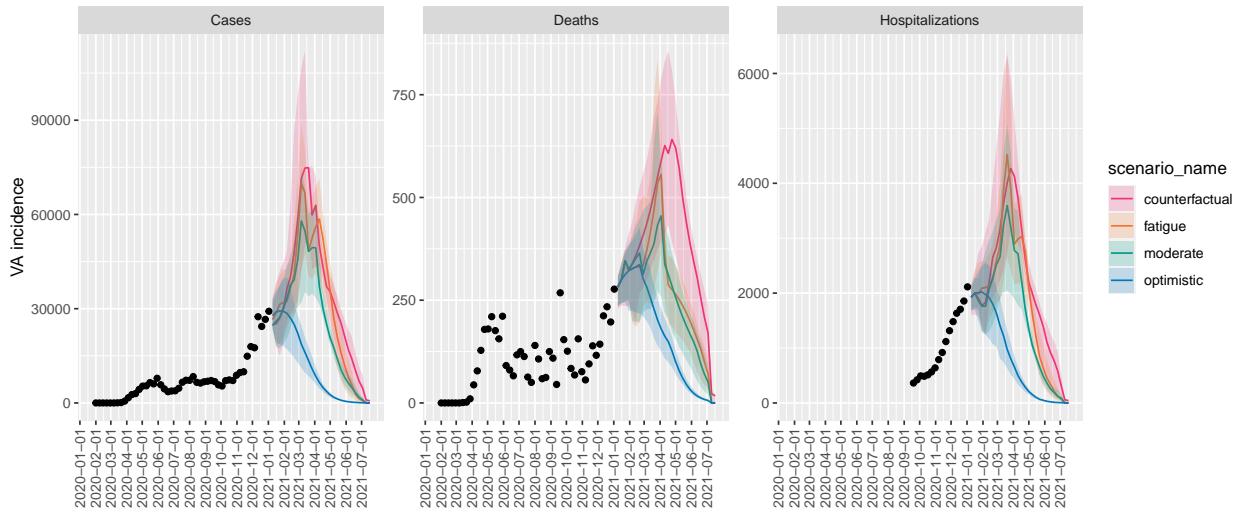
UT ensemble projections & 50% projection intervals



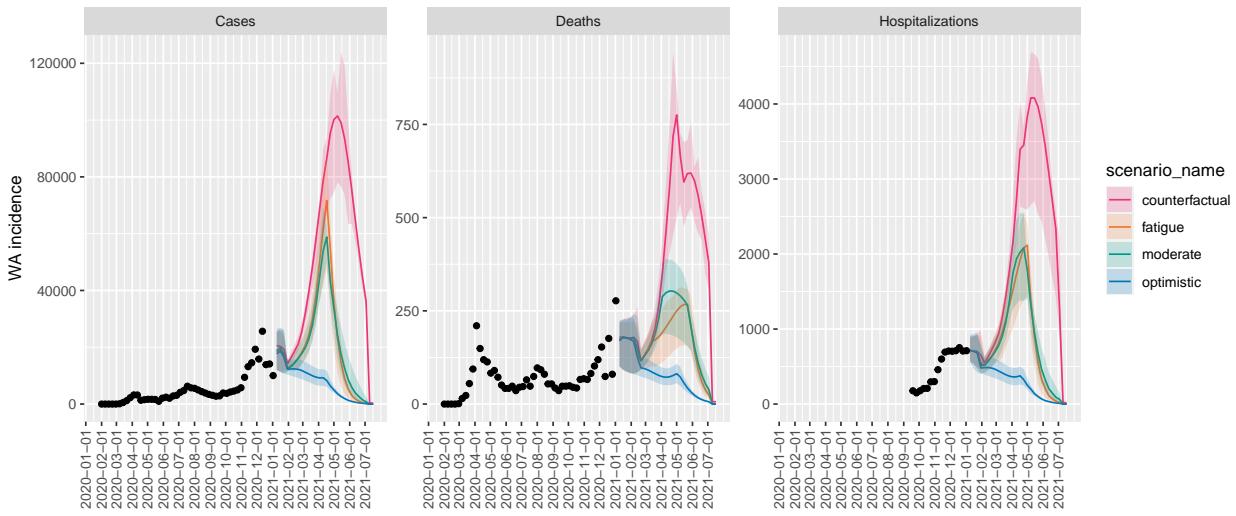
VT ensemble projections & 50% projection intervals



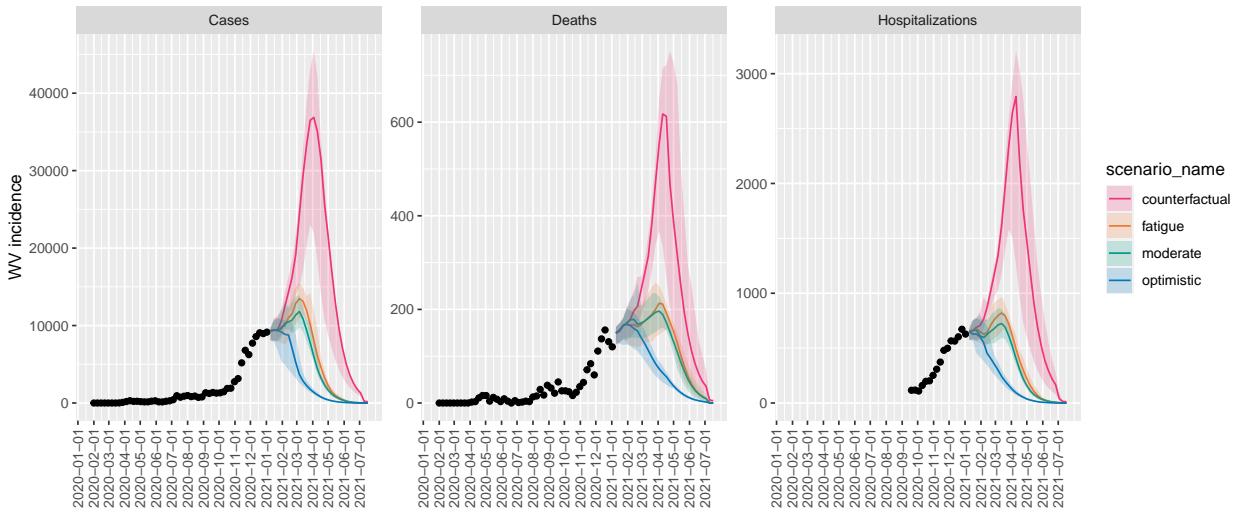
VA ensemble projections & 50% projection intervals



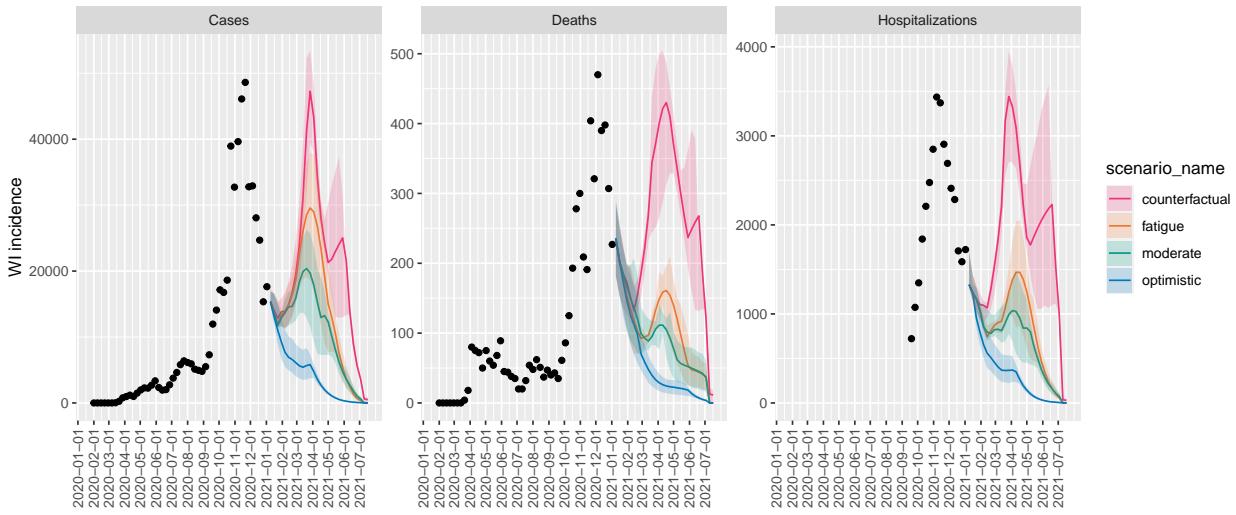
WA ensemble projections & 50% projection intervals



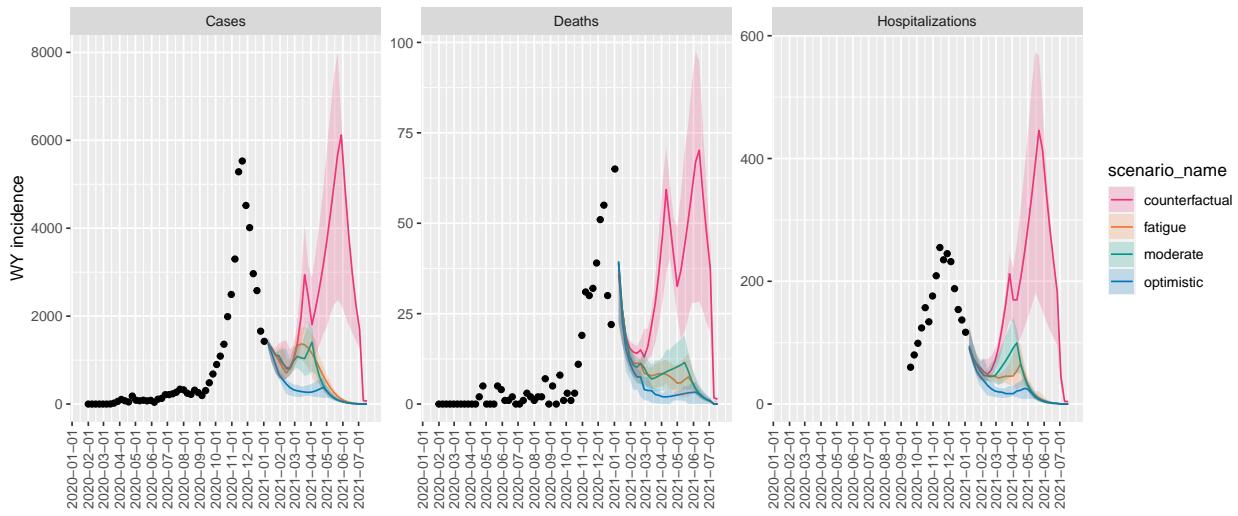
WV ensemble projections & 50% projection intervals



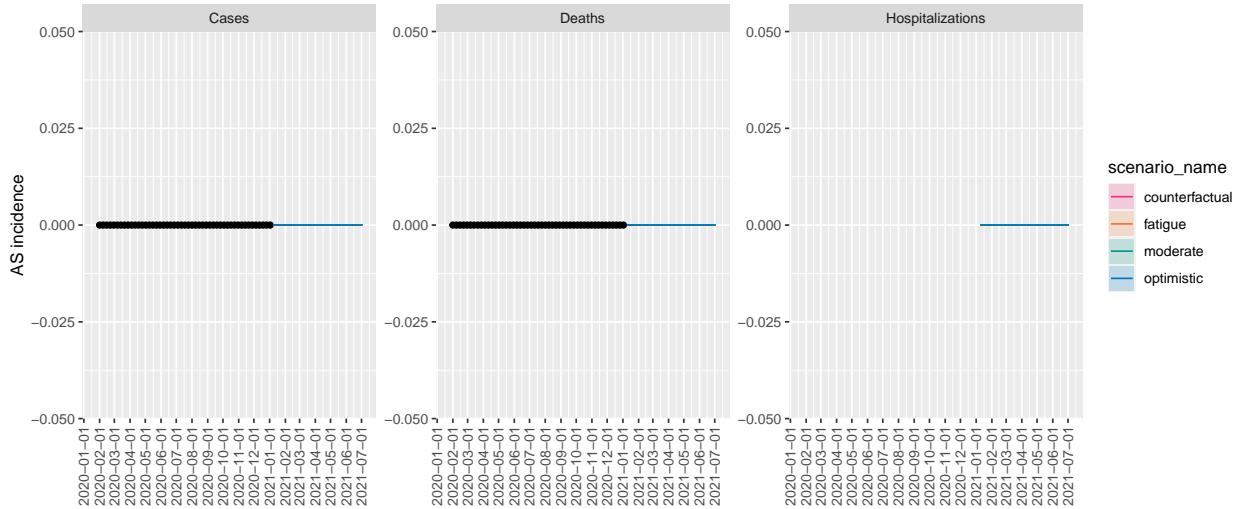
WI ensemble projections & 50% projection intervals



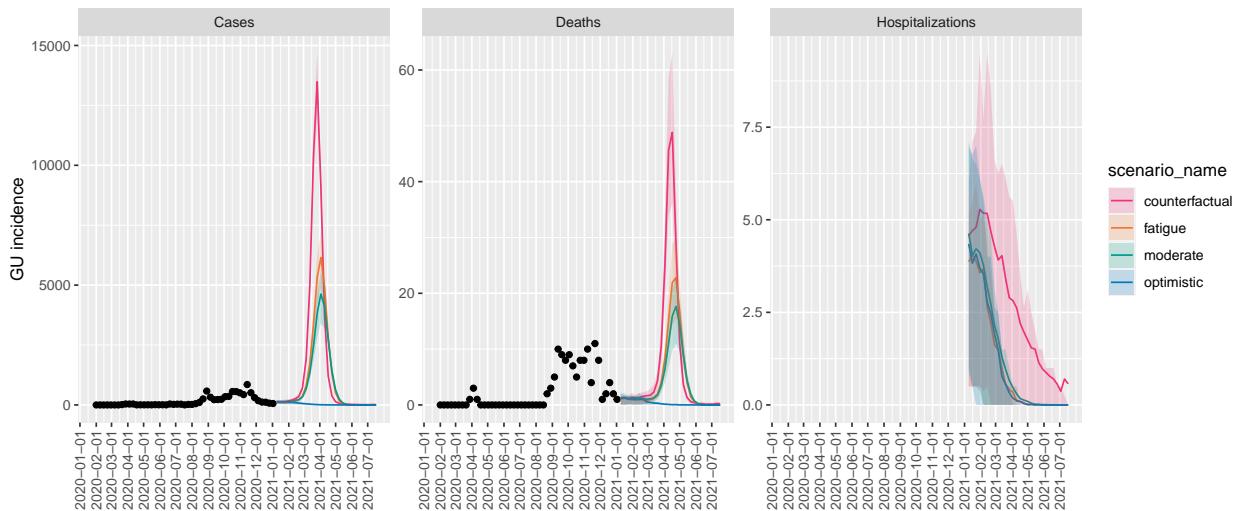
WY ensemble projections & 50% projection intervals



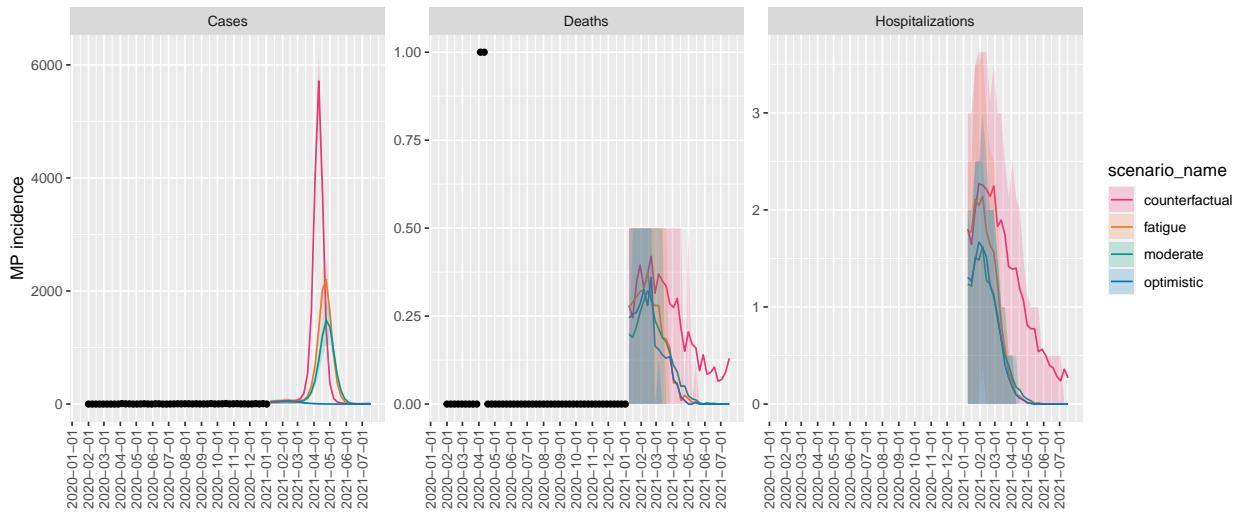
AS ensemble projections & 50% projection intervals



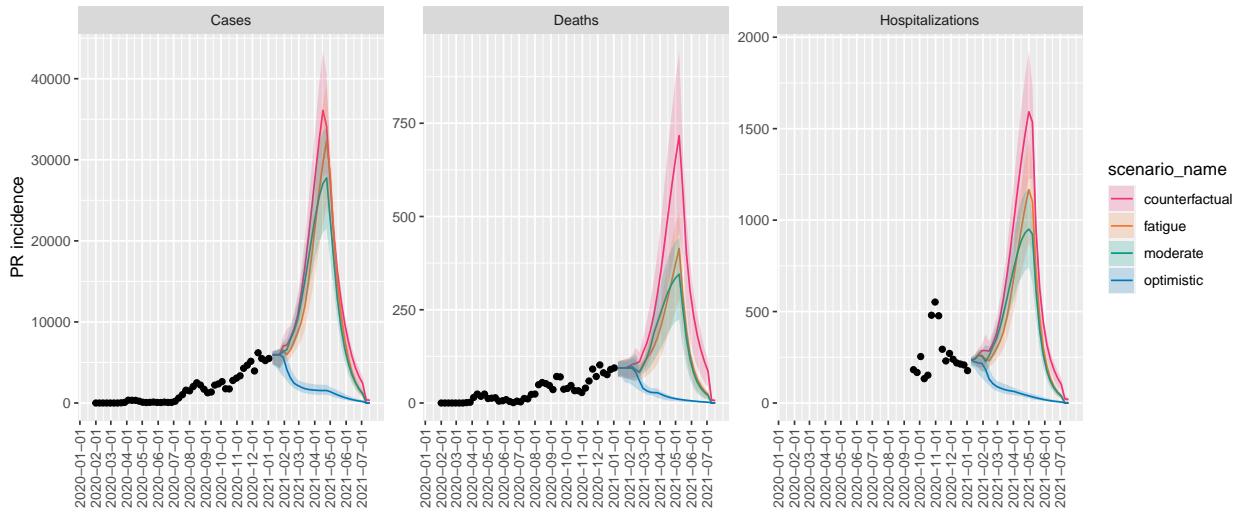
GU ensemble projections & 50% projection intervals



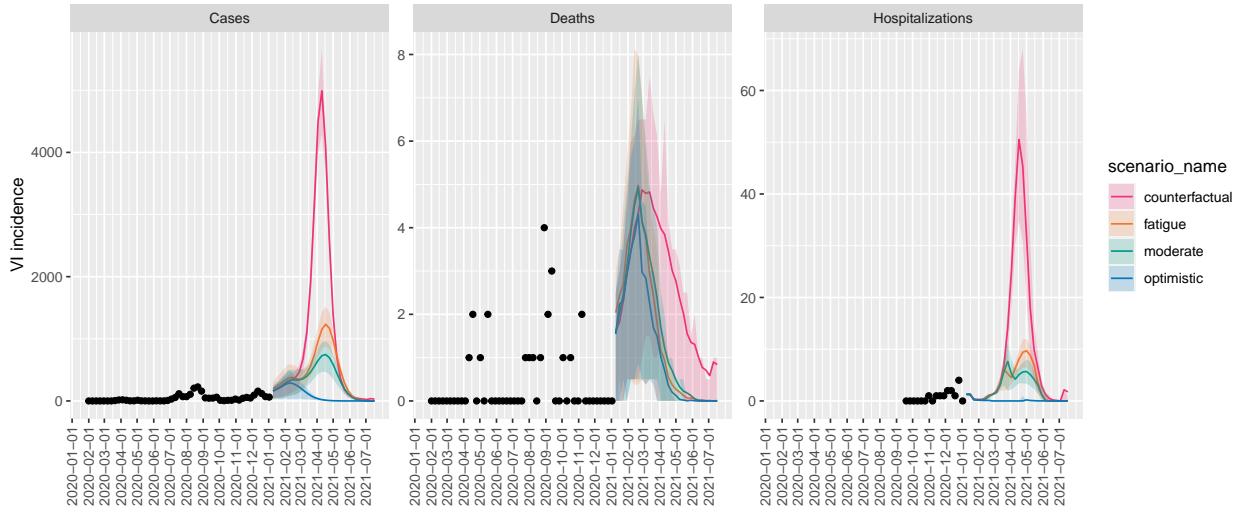
MP ensemble projections & 50% projection intervals



PR ensemble projections & 50% projection intervals

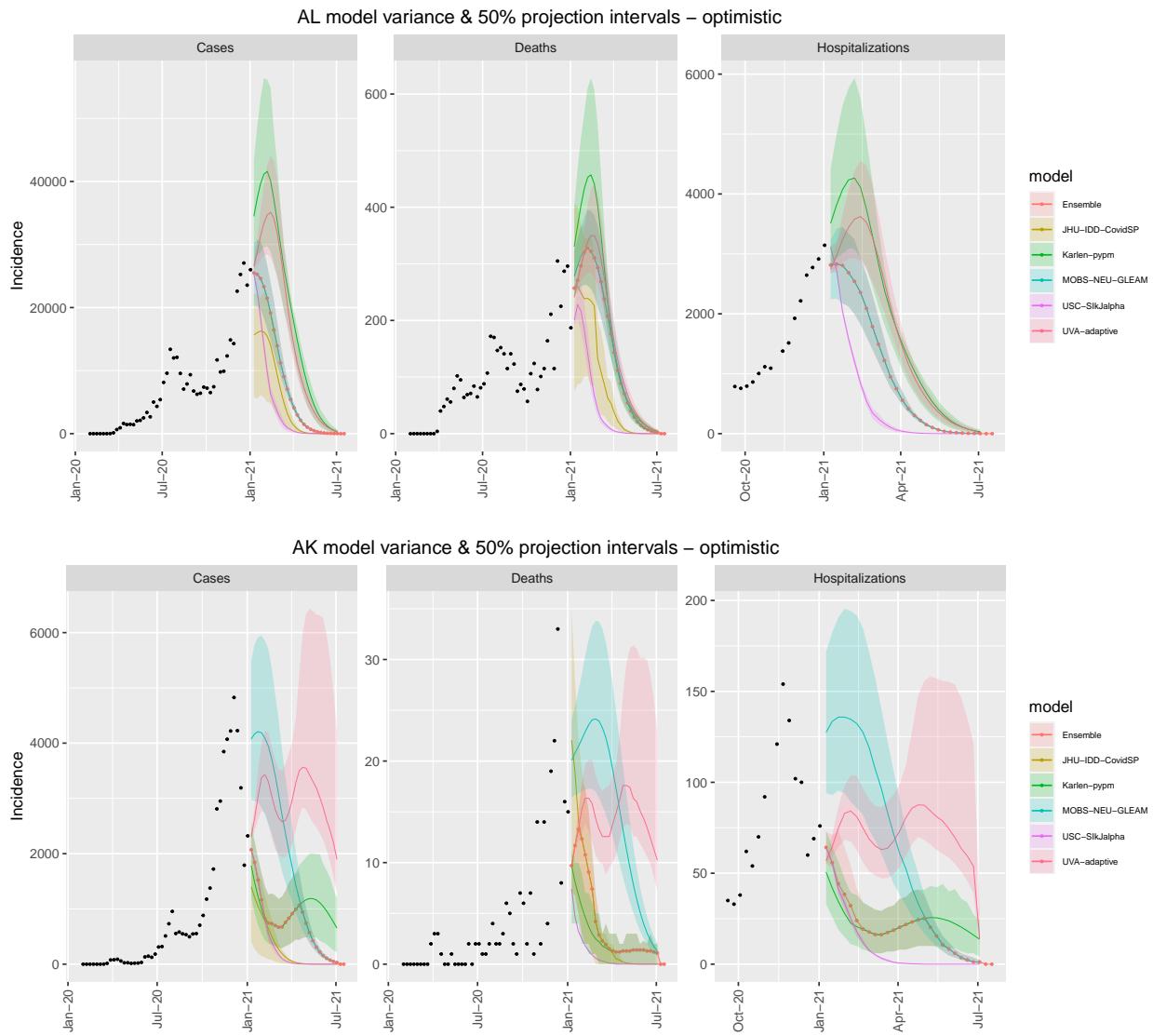


VI ensemble projections & 50% projection intervals

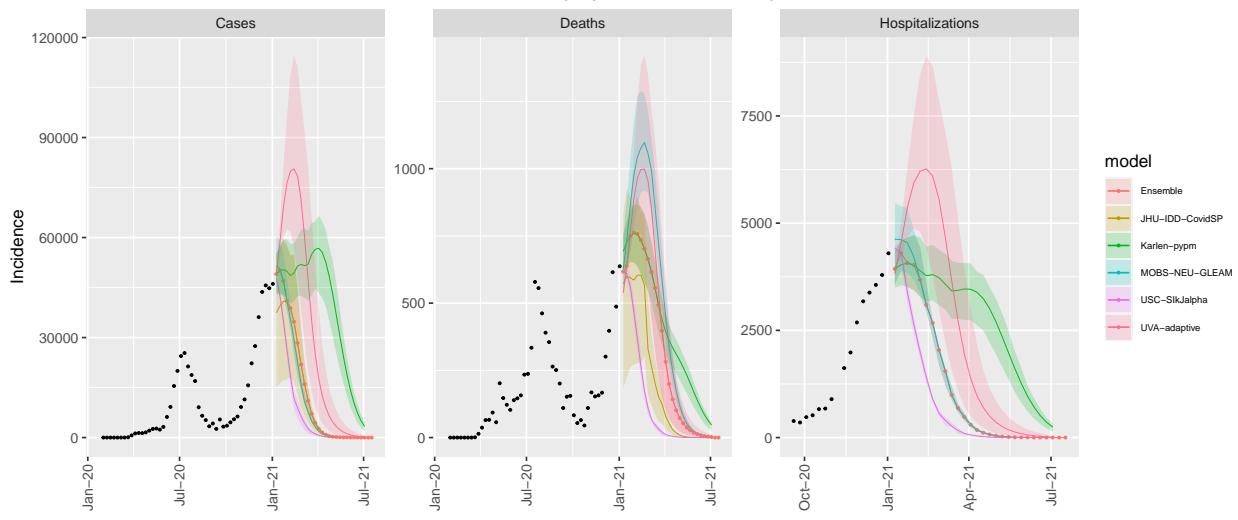


State-level model variation

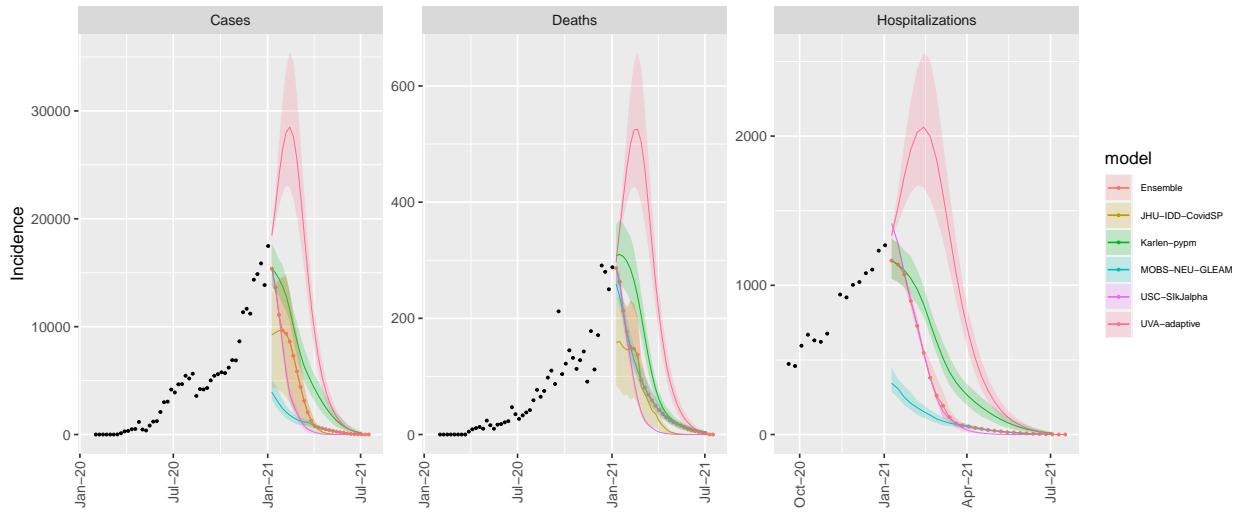
National model variation for the optimistic scenario



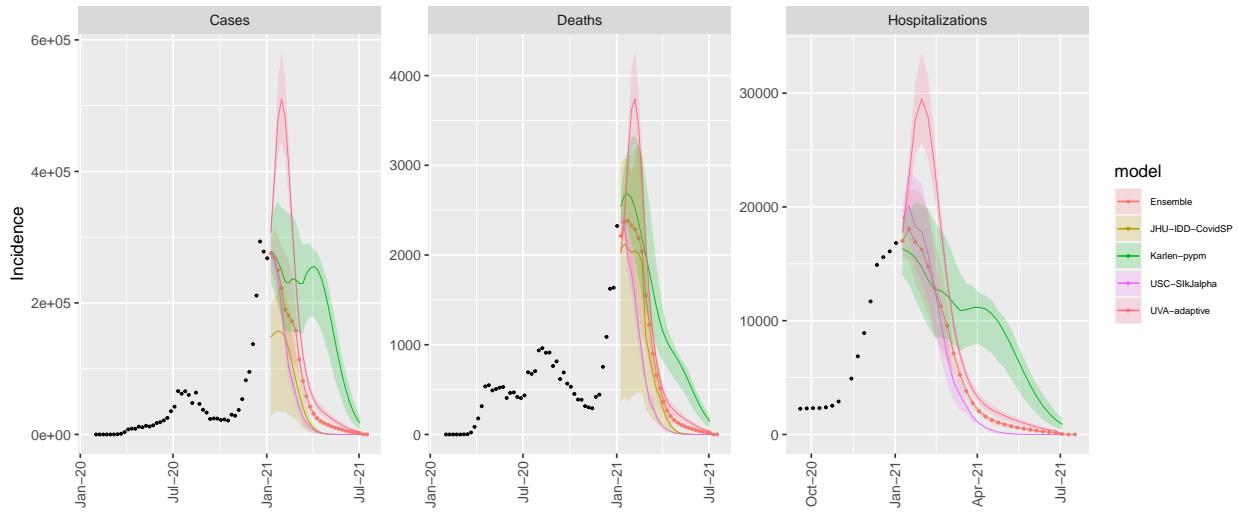
AZ model variance & 50% projection intervals – optimistic



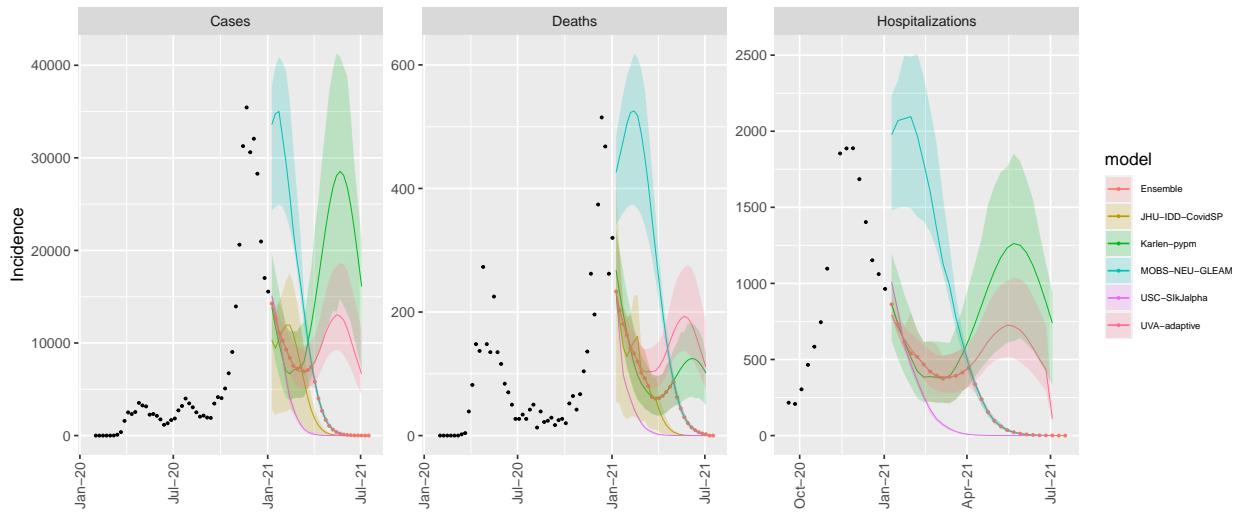
AR model variance & 50% projection intervals – optimistic



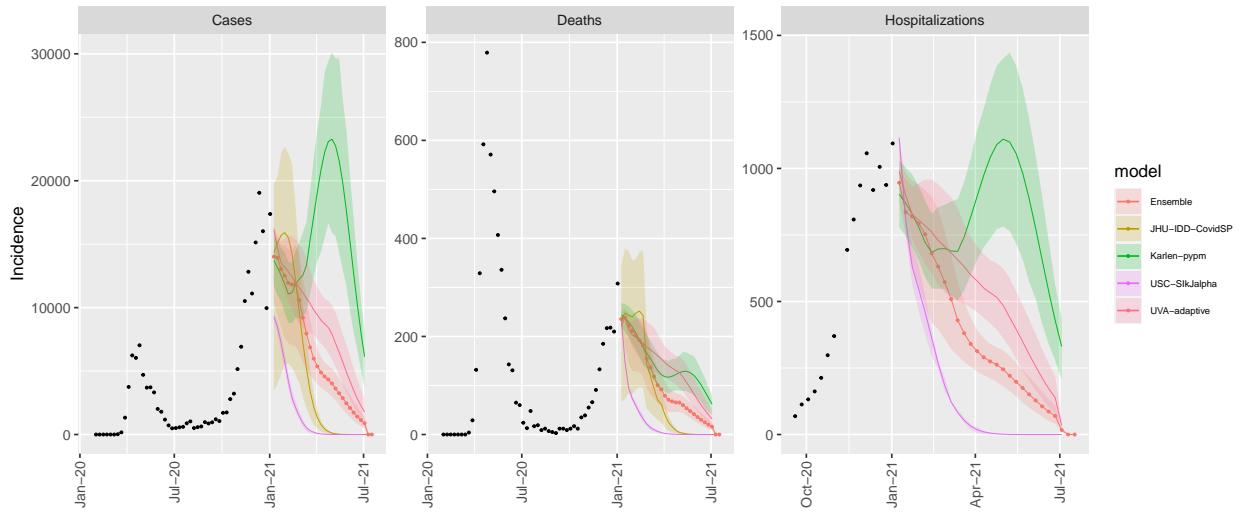
CA model variance & 50% projection intervals – optimistic



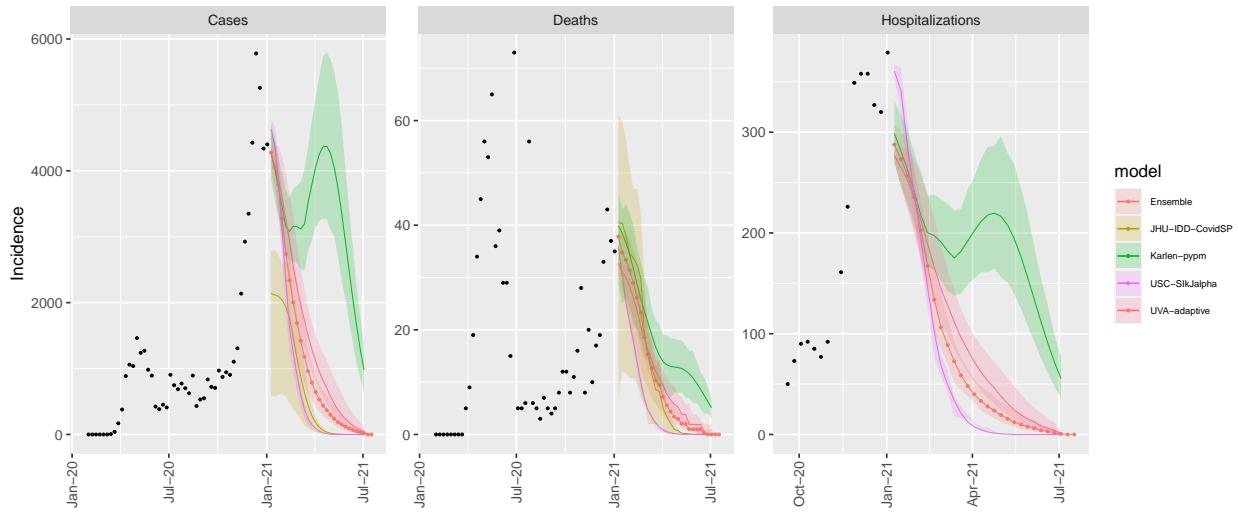
CO model variance & 50% projection intervals – optimistic



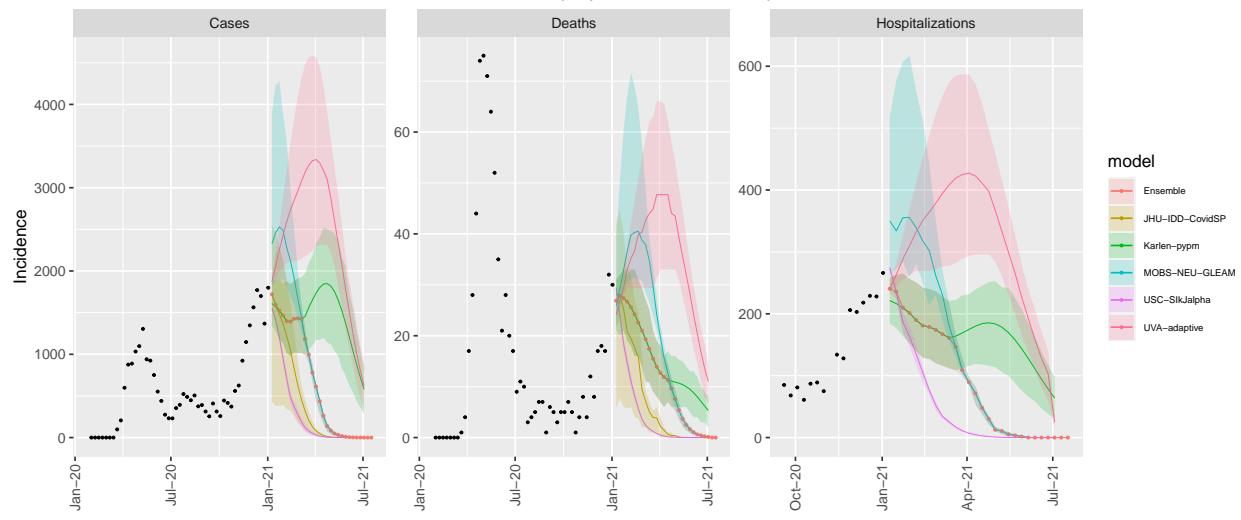
CT model variance & 50% projection intervals – optimistic



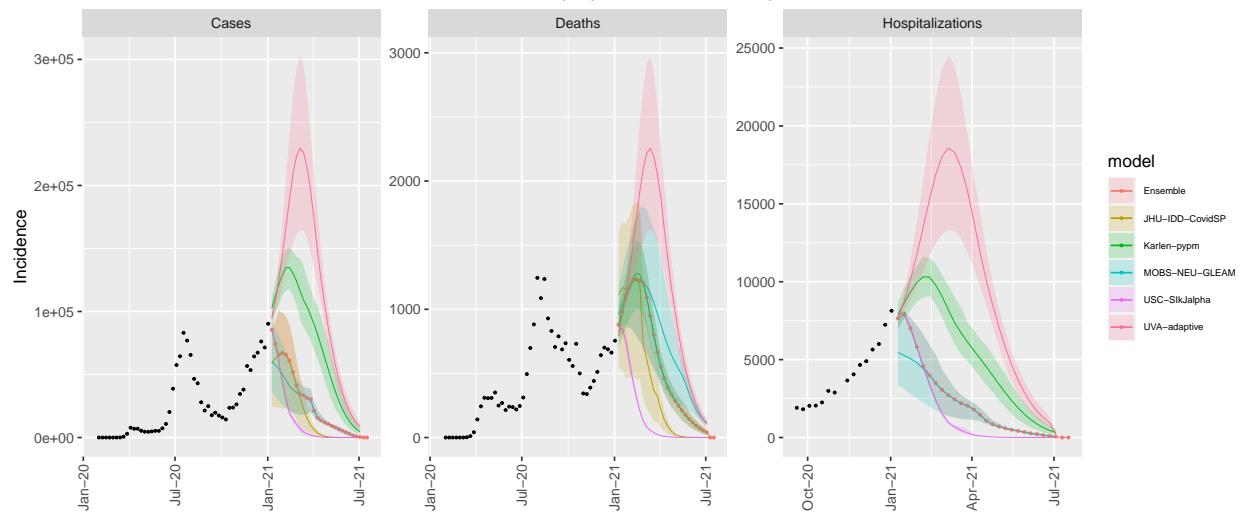
DE model variance & 50% projection intervals – optimistic



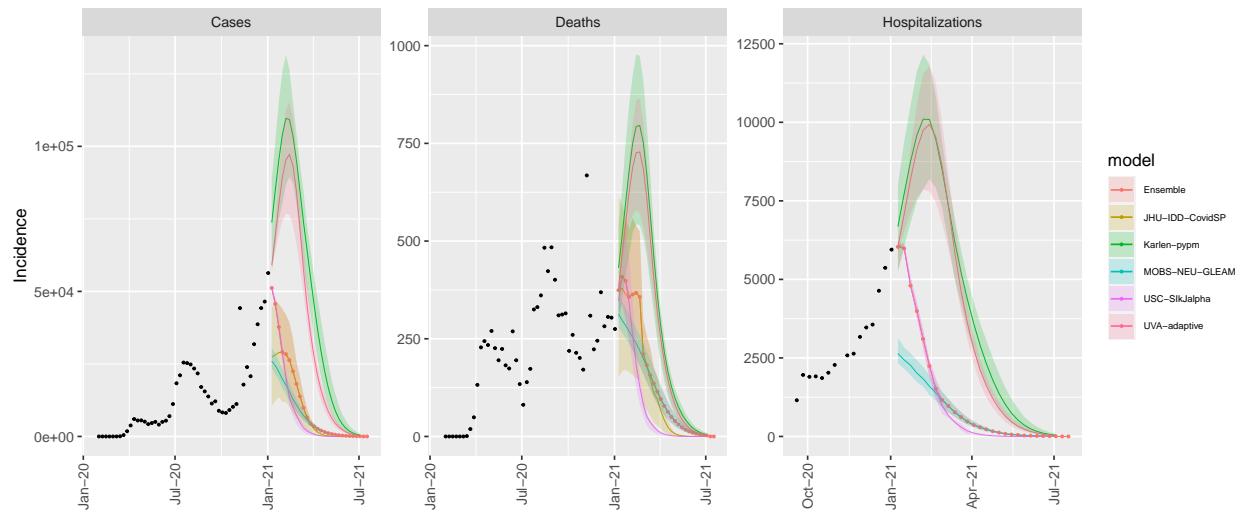
DC model variance & 50% projection intervals – optimistic



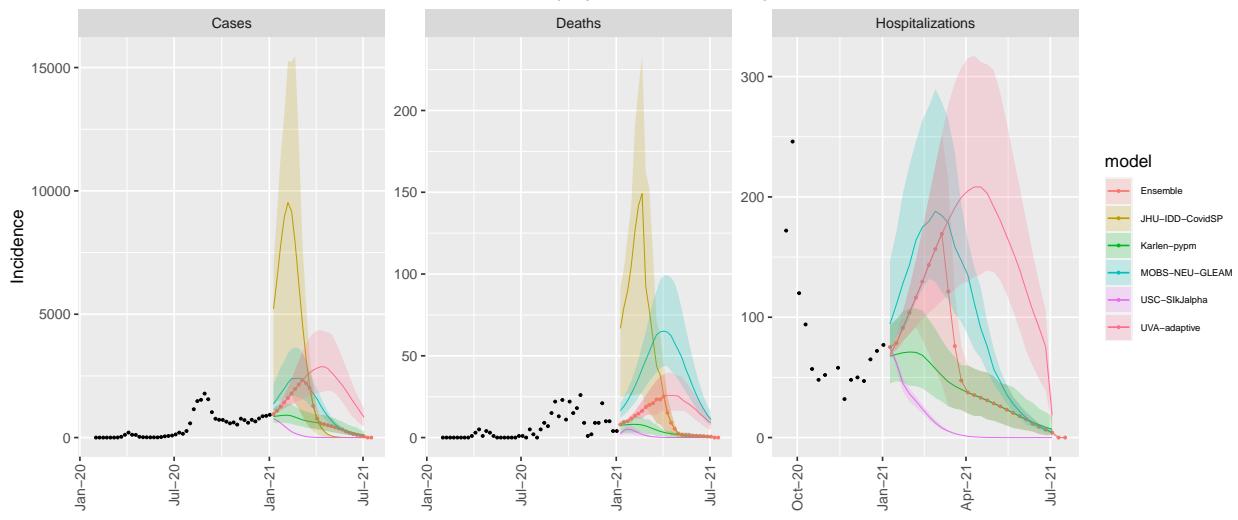
FL model variance & 50% projection intervals – optimistic



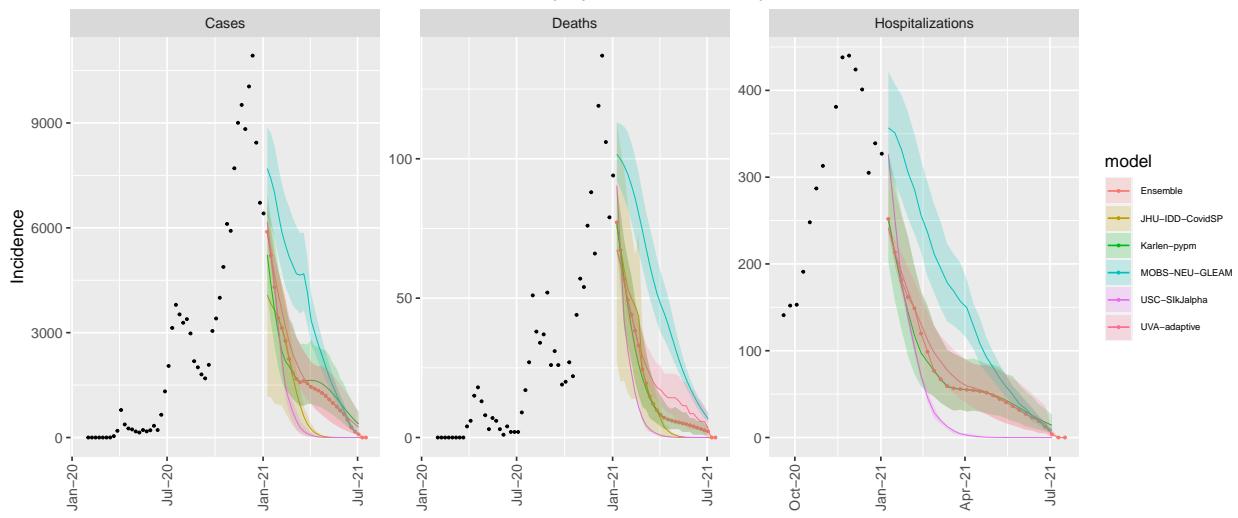
GA model variance & 50% projection intervals – optimistic



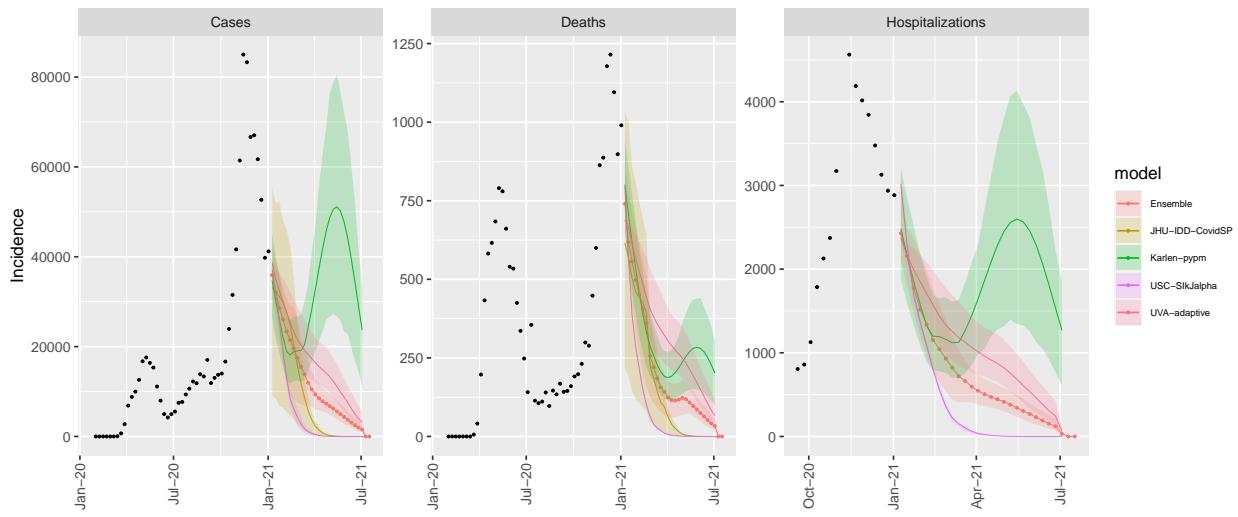
HI model variance & 50% projection intervals – optimistic



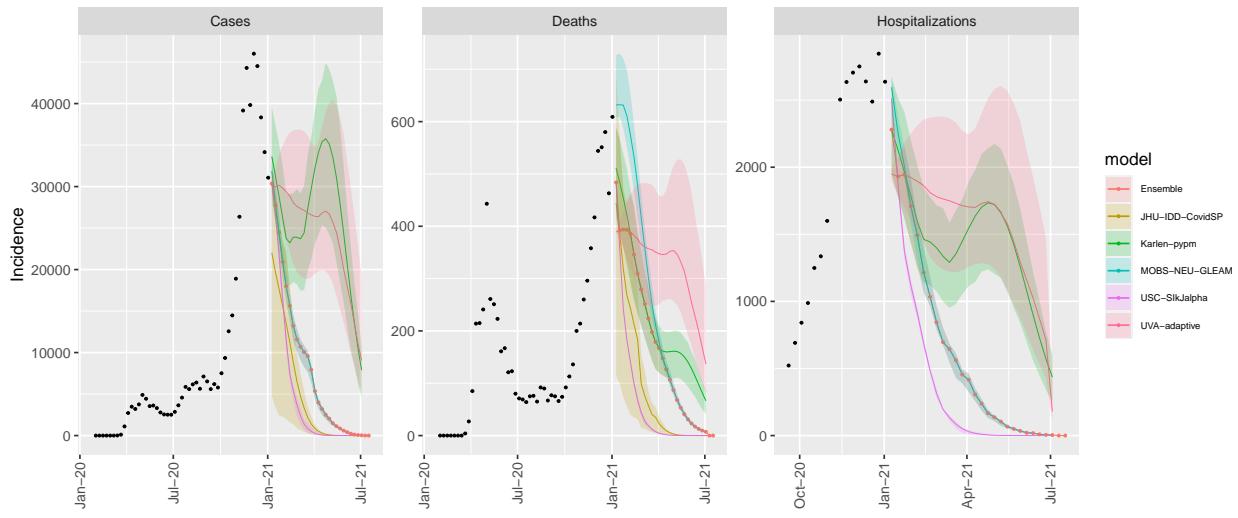
ID model variance & 50% projection intervals – optimistic



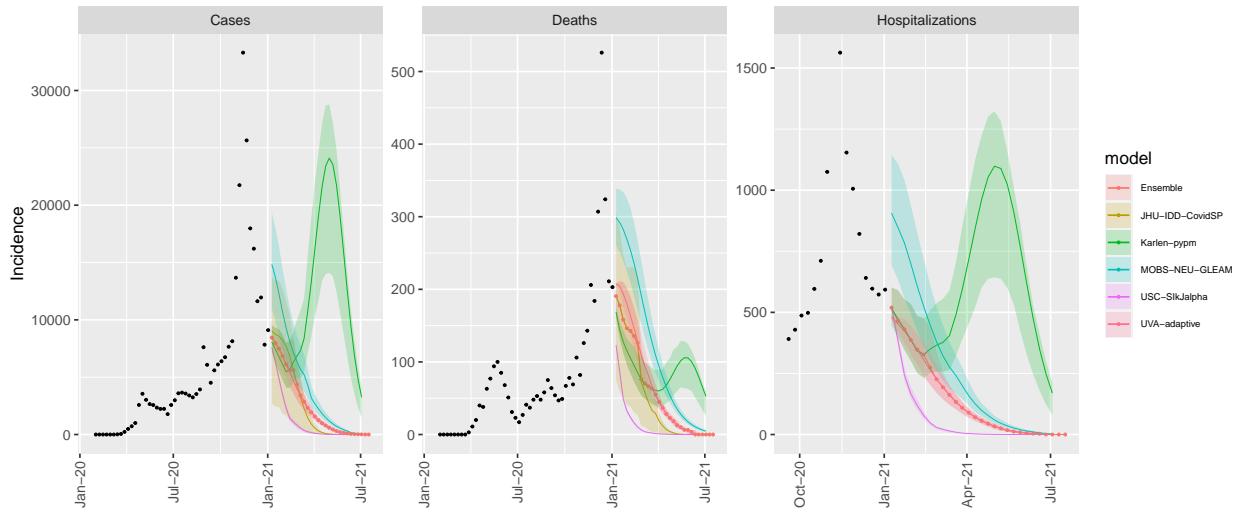
IL model variance & 50% projection intervals – optimistic



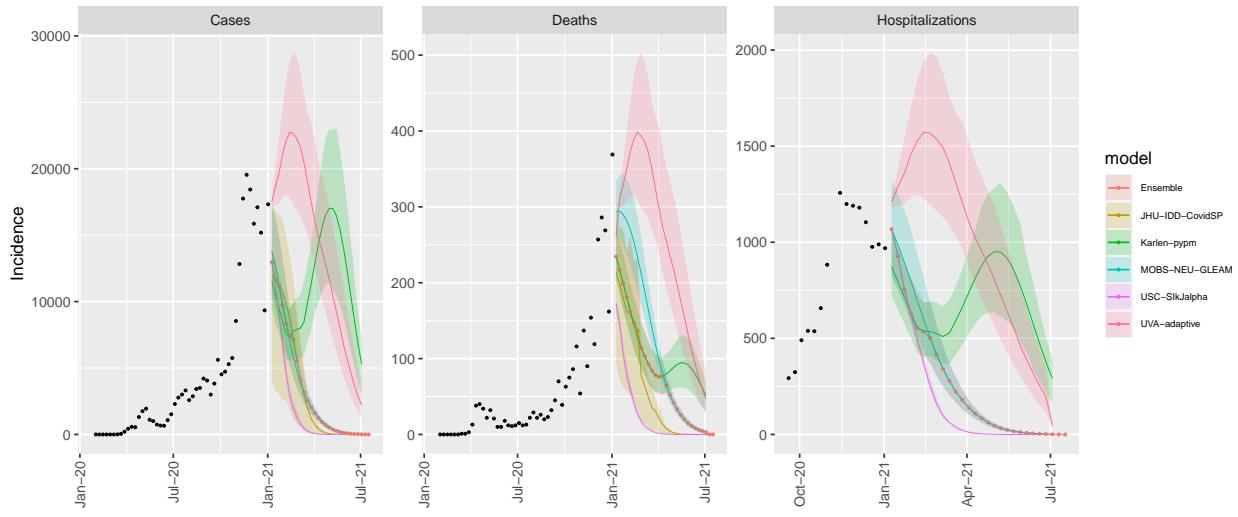
IN model variance & 50% projection intervals – optimistic



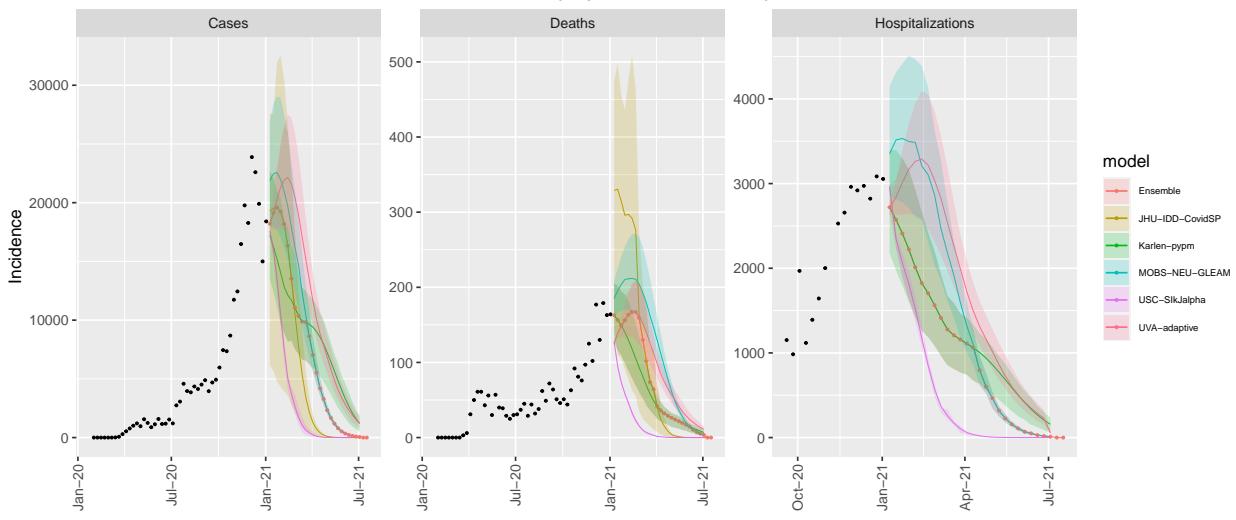
IA model variance & 50% projection intervals – optimistic



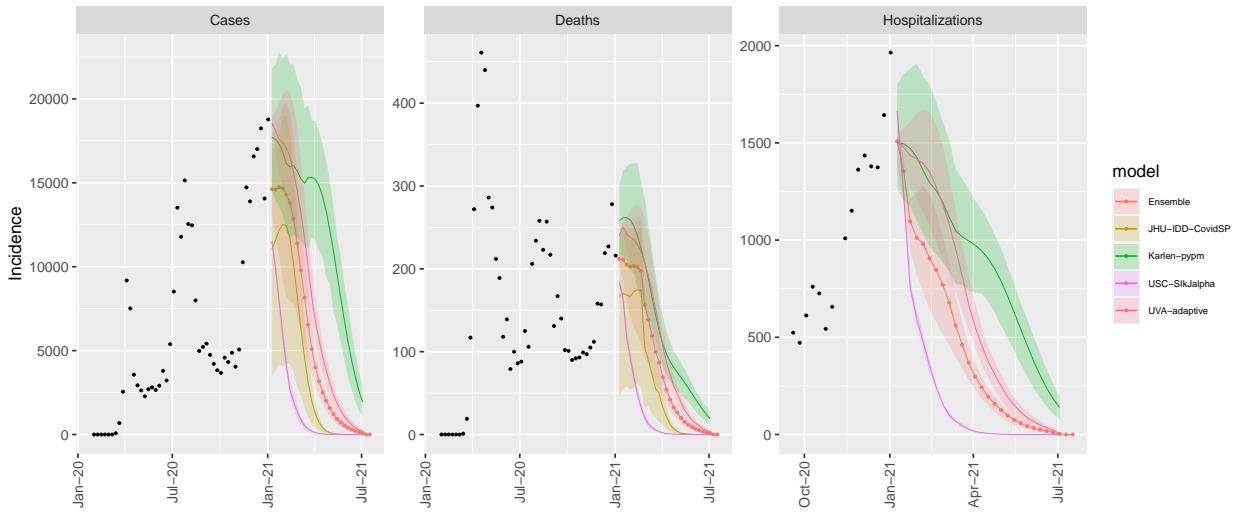
KS model variance & 50% projection intervals – optimistic



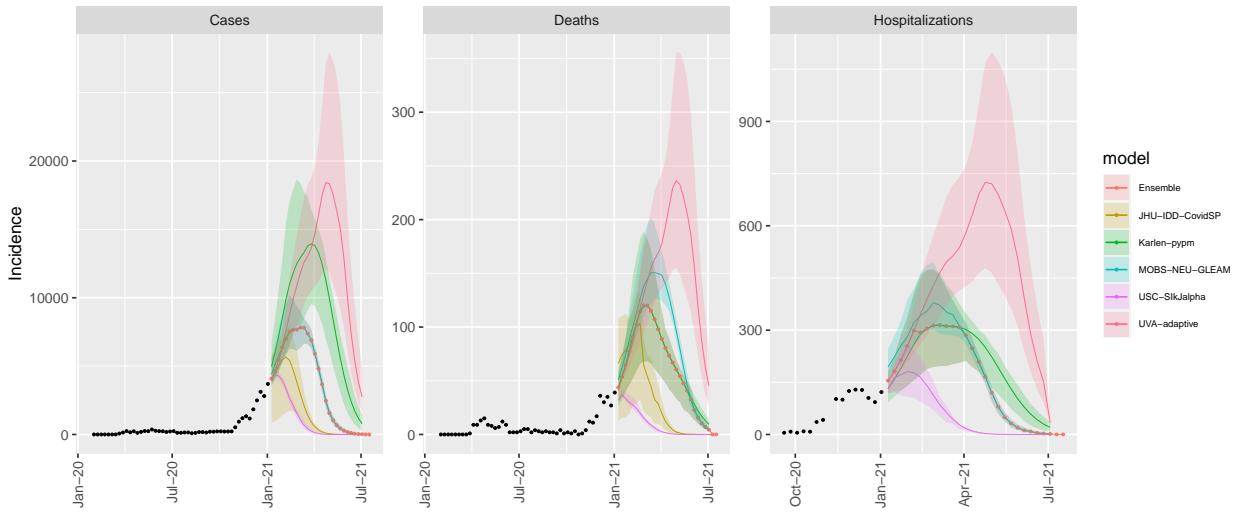
KY model variance & 50% projection intervals – optimistic



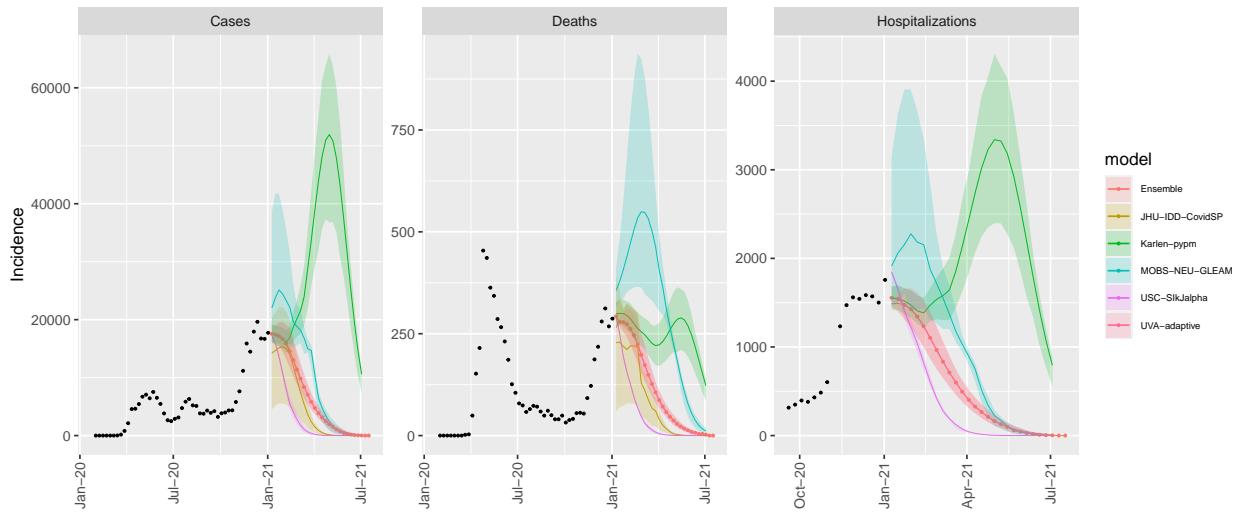
LA model variance & 50% projection intervals – optimistic



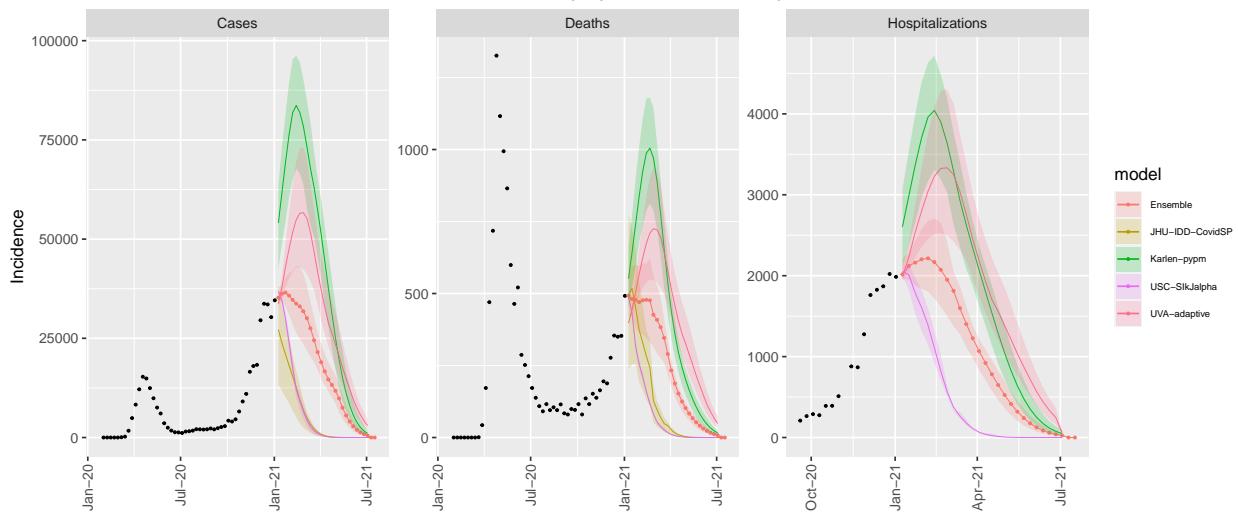
ME model variance & 50% projection intervals – optimistic



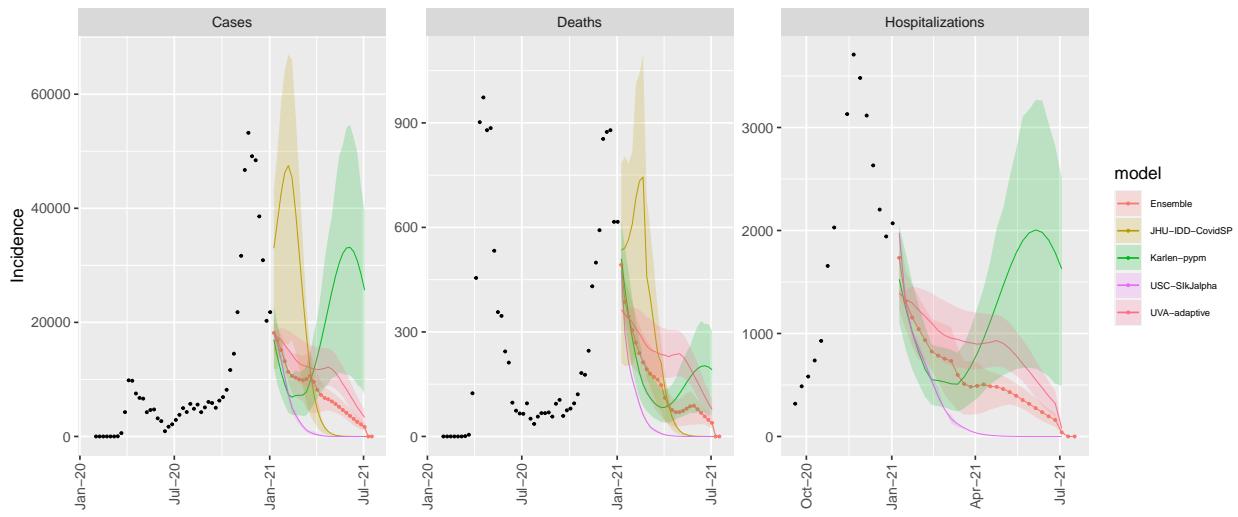
MD model variance & 50% projection intervals – optimistic



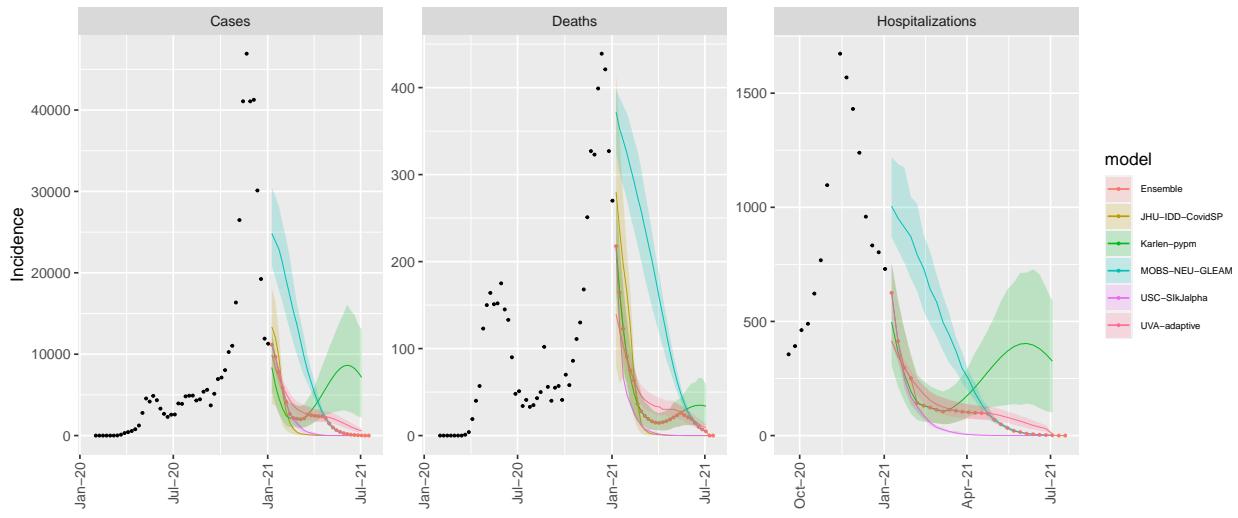
MA model variance & 50% projection intervals – optimistic



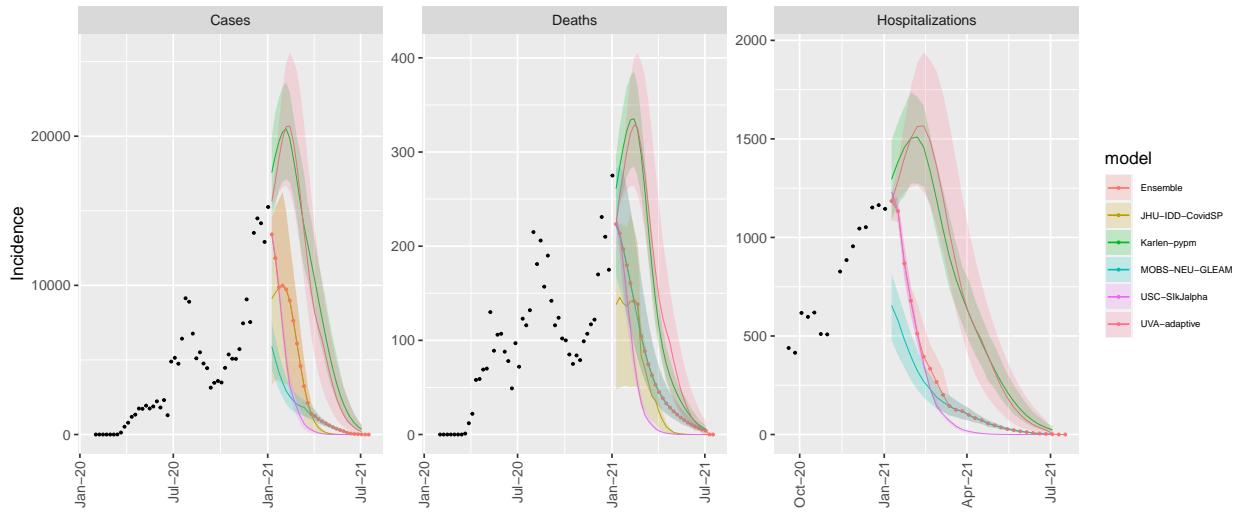
MI model variance & 50% projection intervals – optimistic



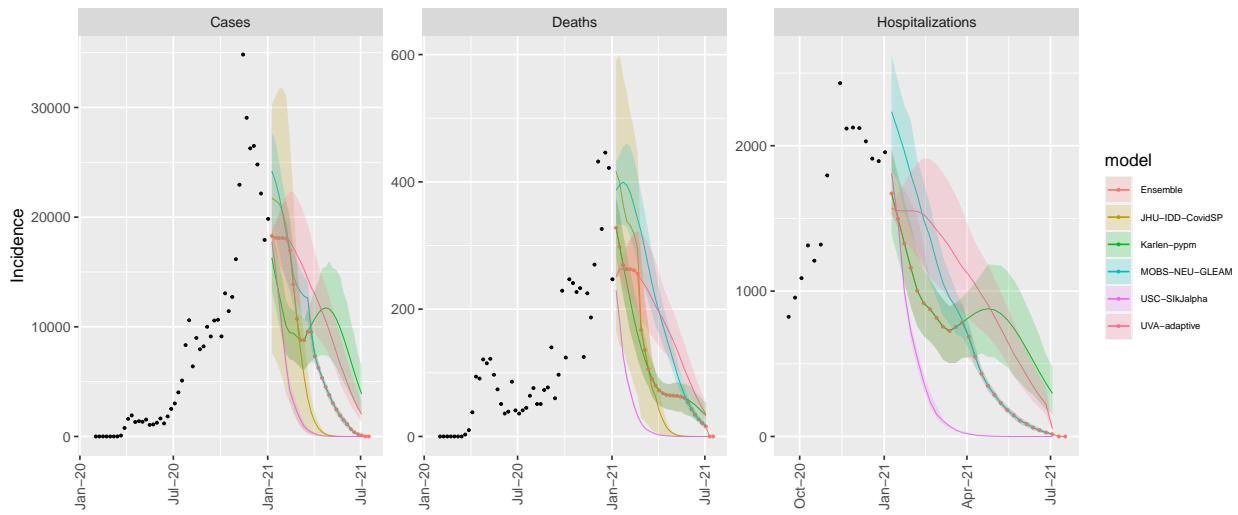
MN model variance & 50% projection intervals – optimistic



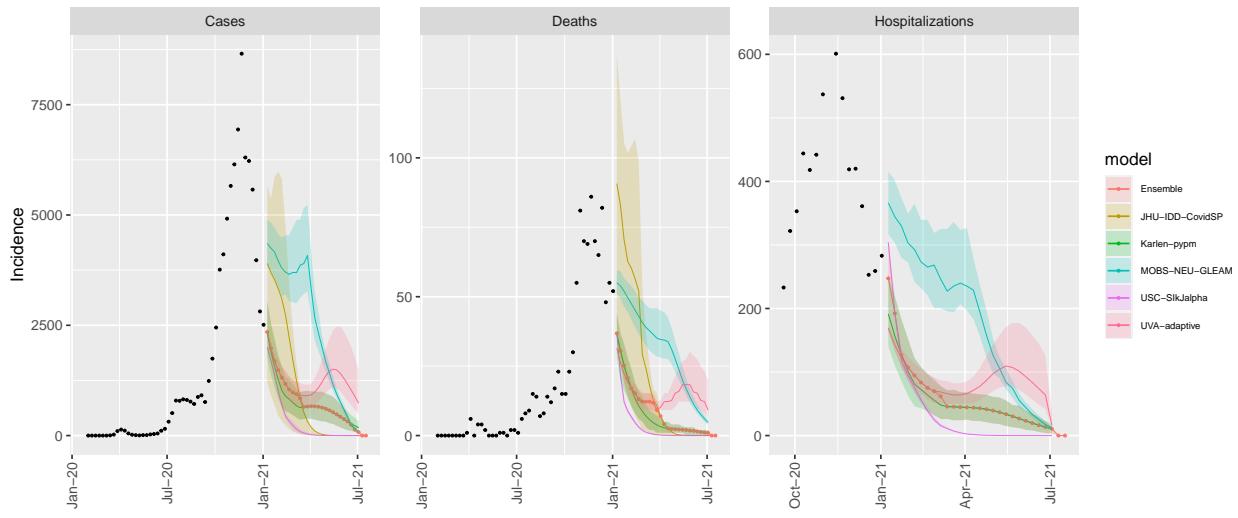
MS model variance & 50% projection intervals – optimistic



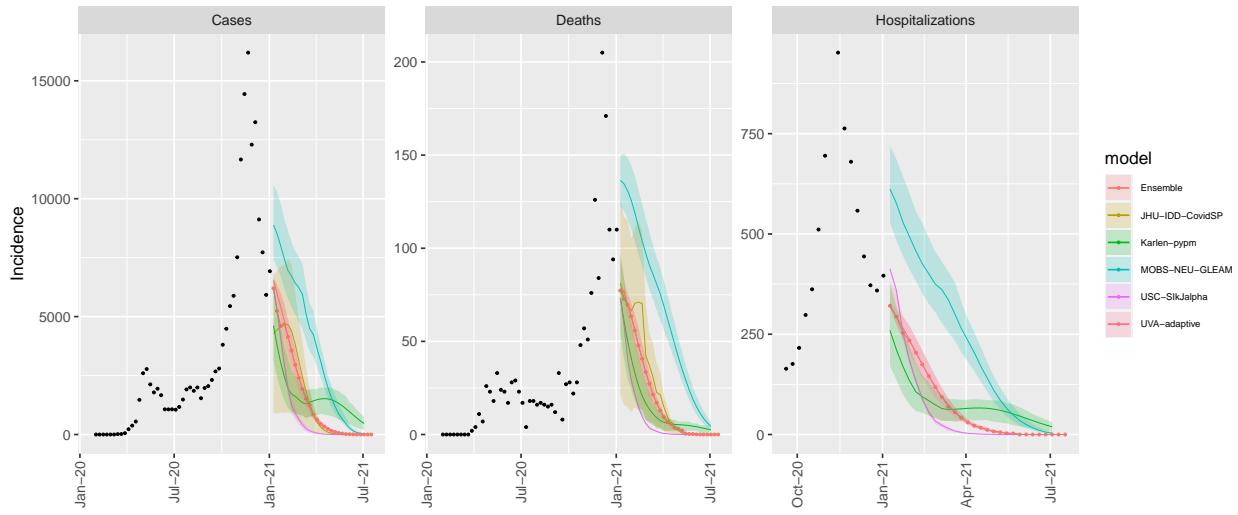
MO model variance & 50% projection intervals – optimistic



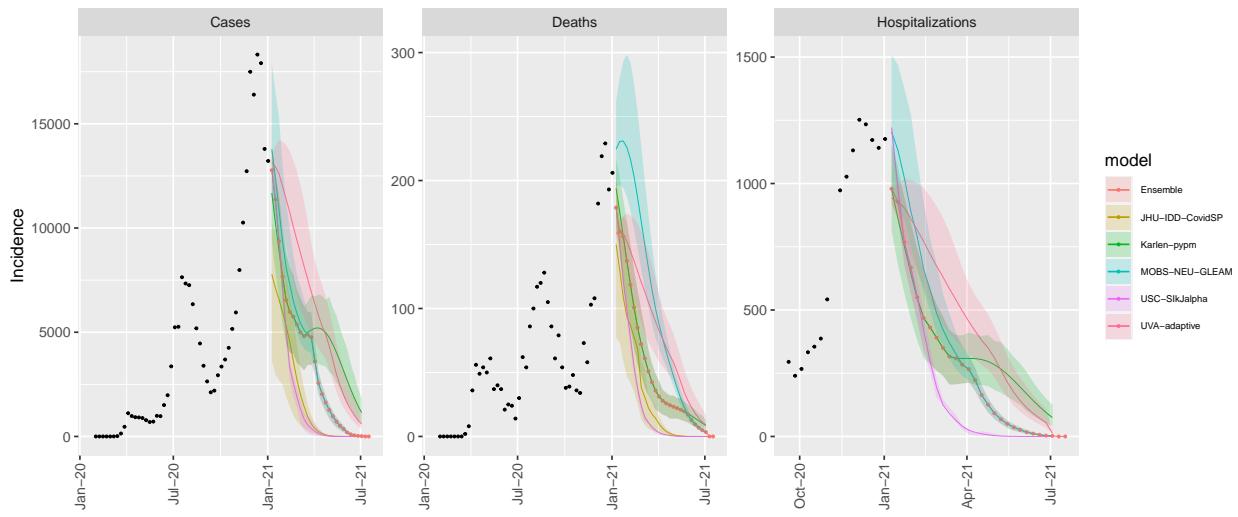
MT model variance & 50% projection intervals – optimistic



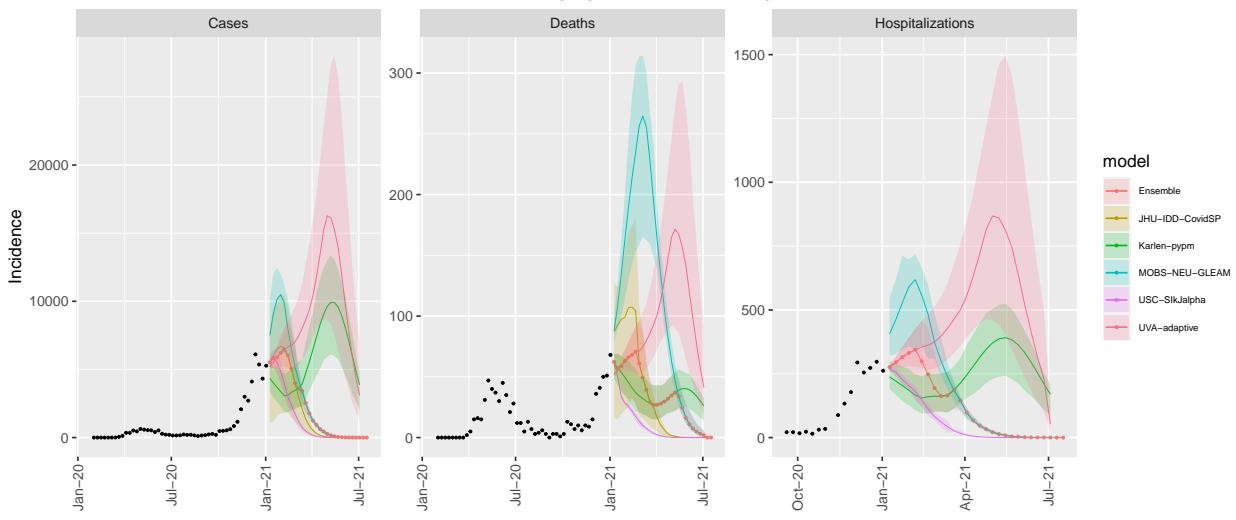
NE model variance & 50% projection intervals – optimistic



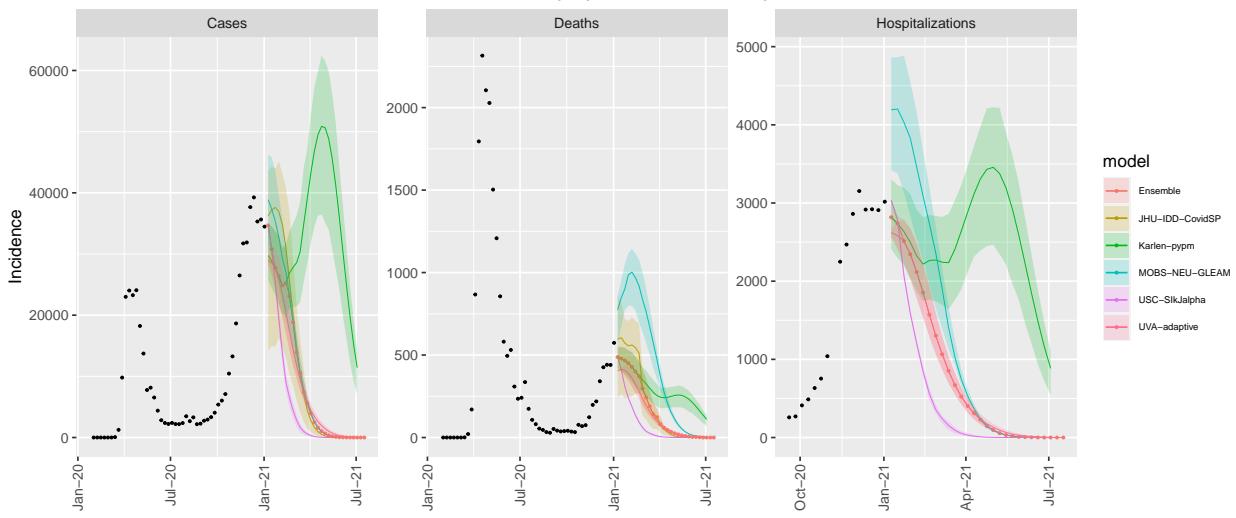
NV model variance & 50% projection intervals – optimistic



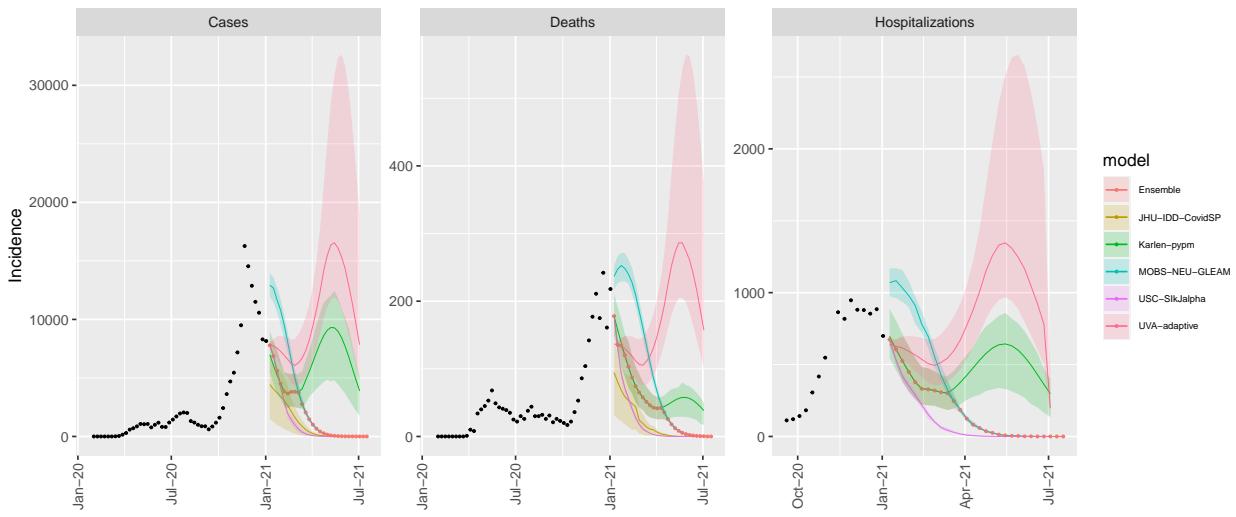
NH model variance & 50% projection intervals – optimistic



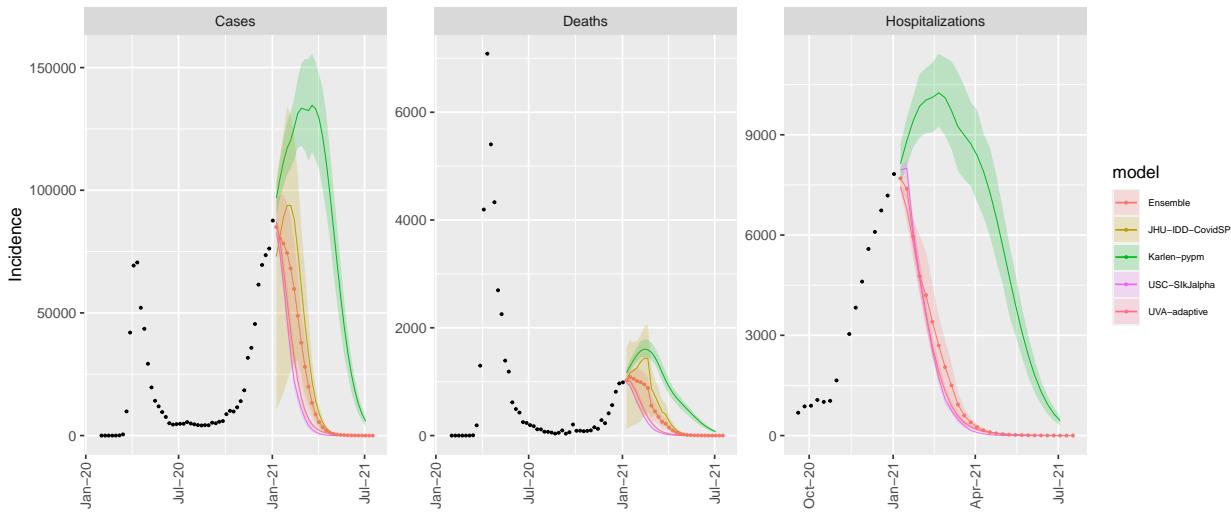
NJ model variance & 50% projection intervals – optimistic



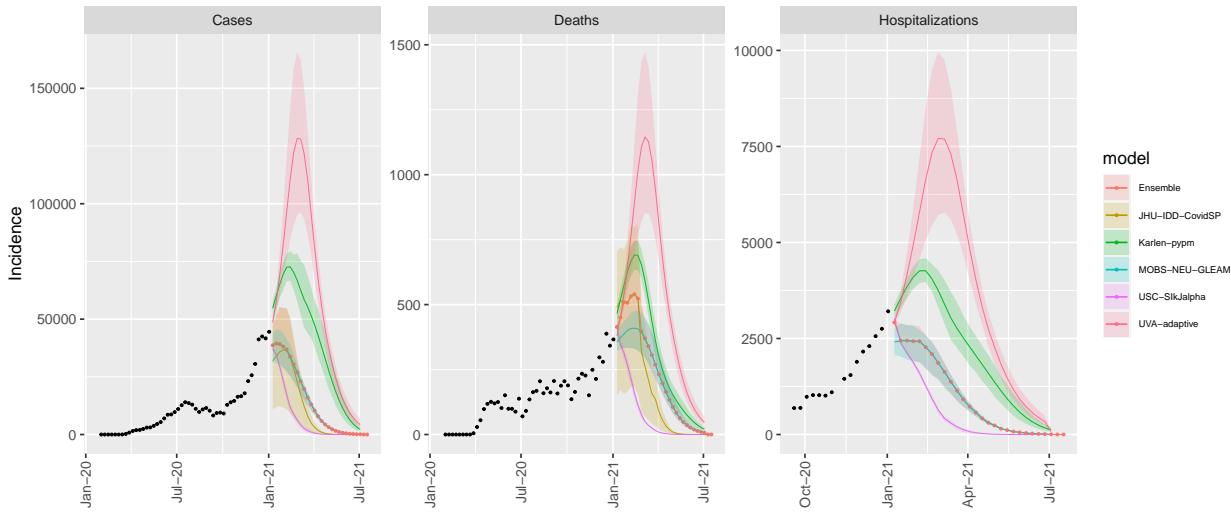
NM model variance & 50% projection intervals – optimistic



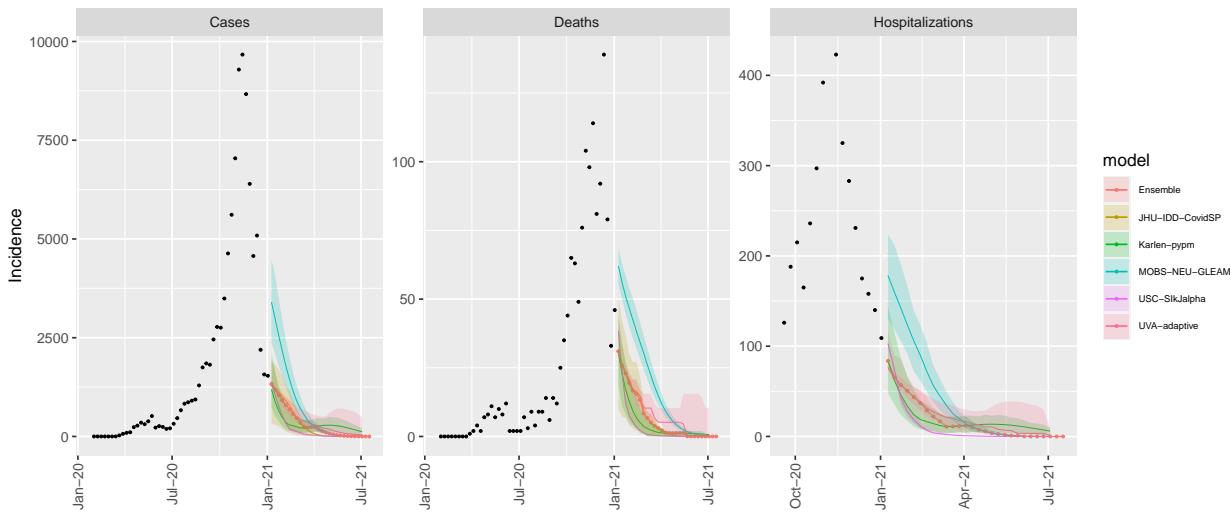
NY model variance & 50% projection intervals – optimistic



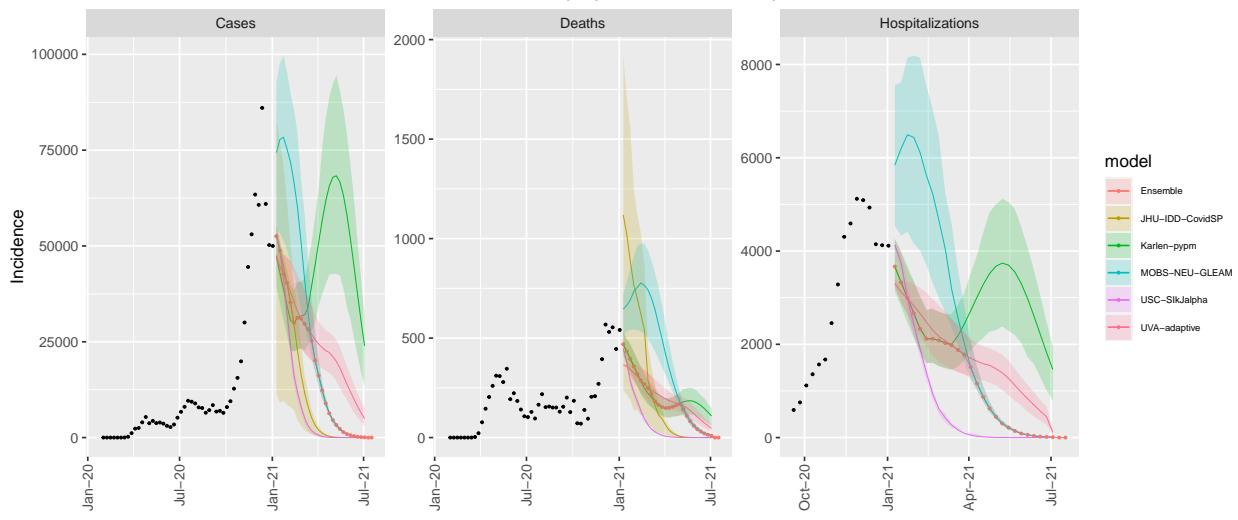
NC model variance & 50% projection intervals – optimistic



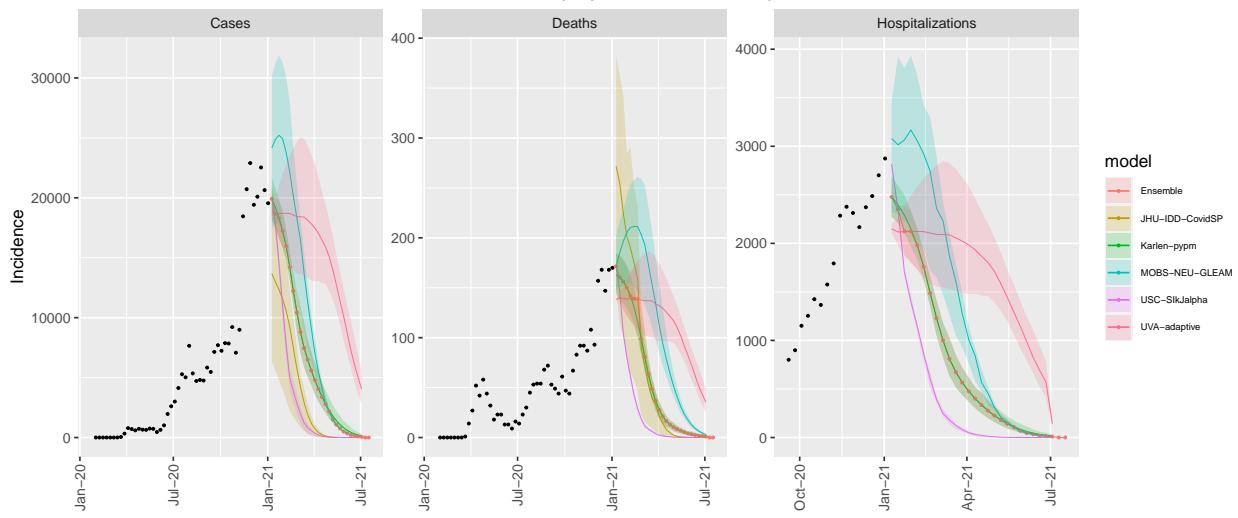
ND model variance & 50% projection intervals – optimistic



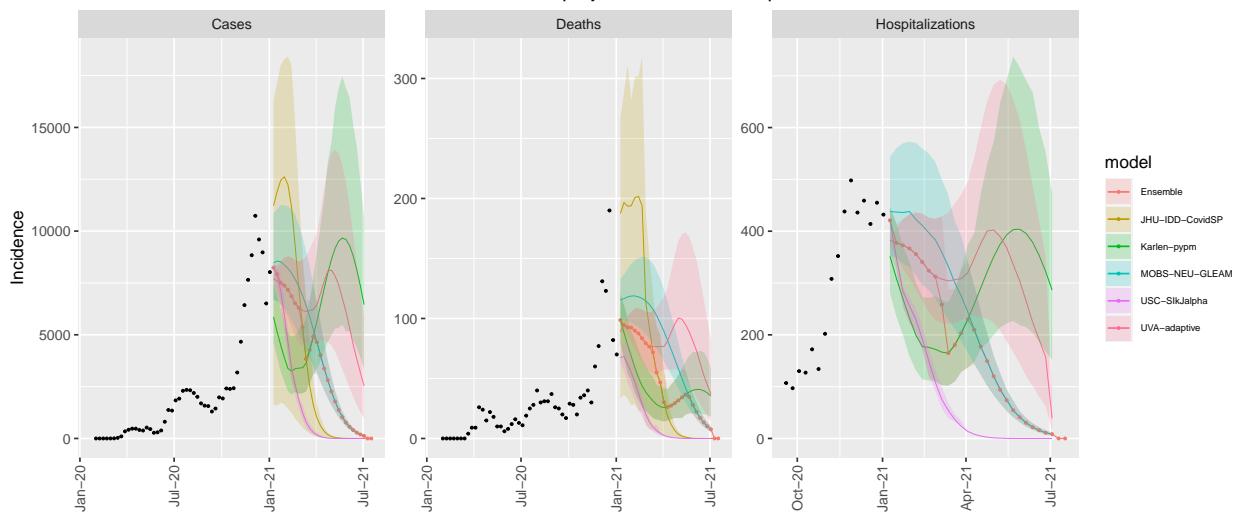
OH model variance & 50% projection intervals – optimistic



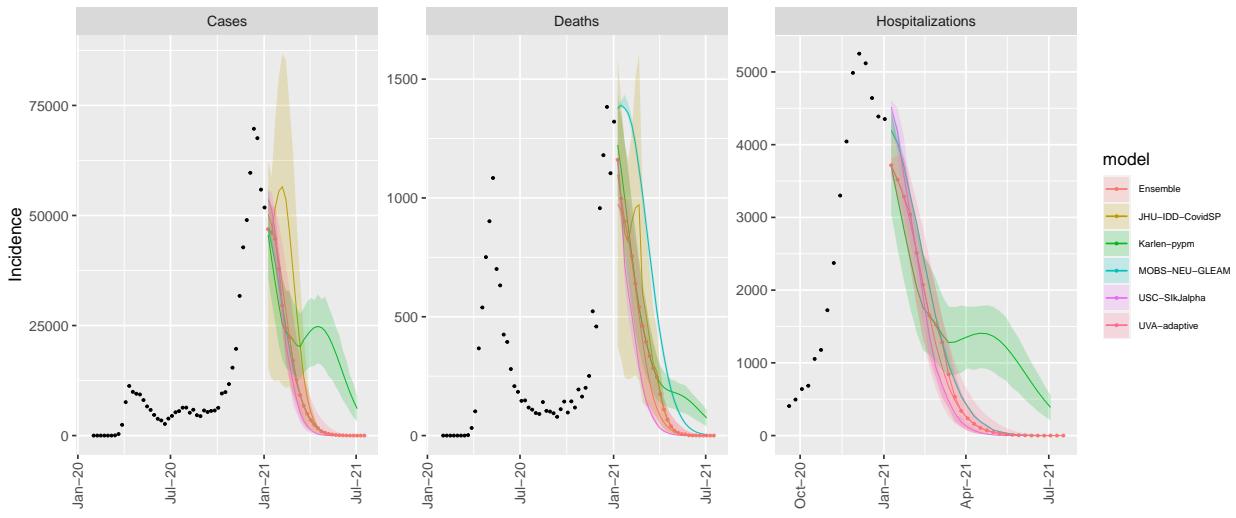
OK model variance & 50% projection intervals – optimistic



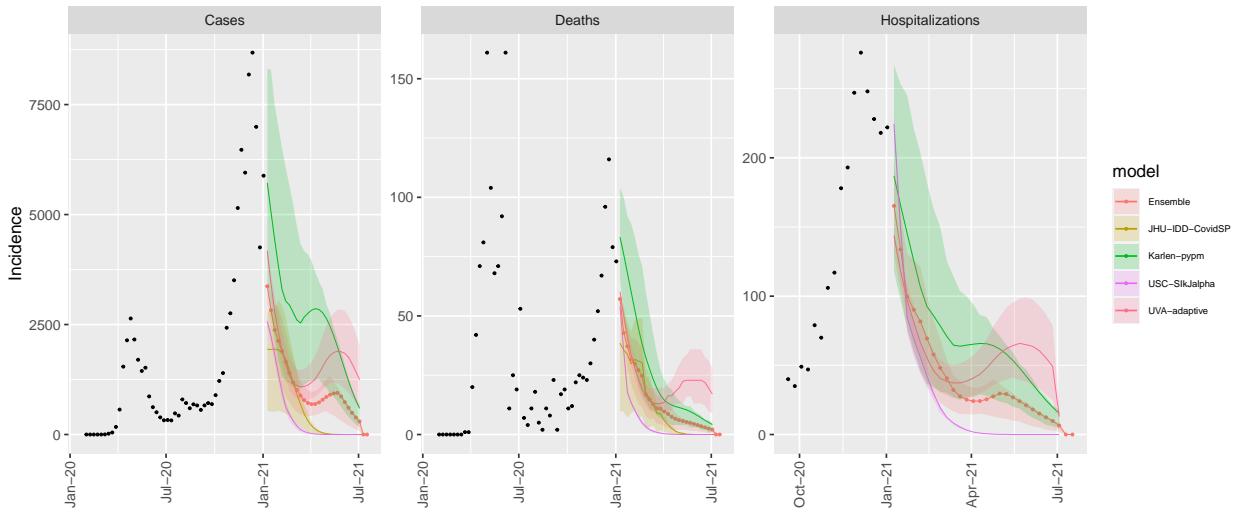
OR model variance & 50% projection intervals – optimistic



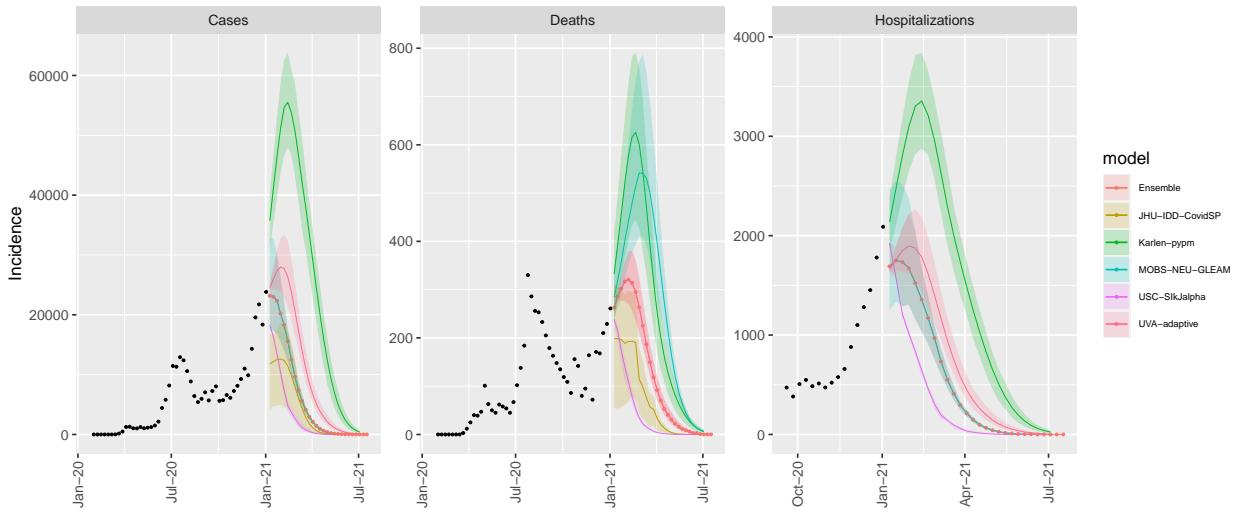
PA model variance & 50% projection intervals – optimistic



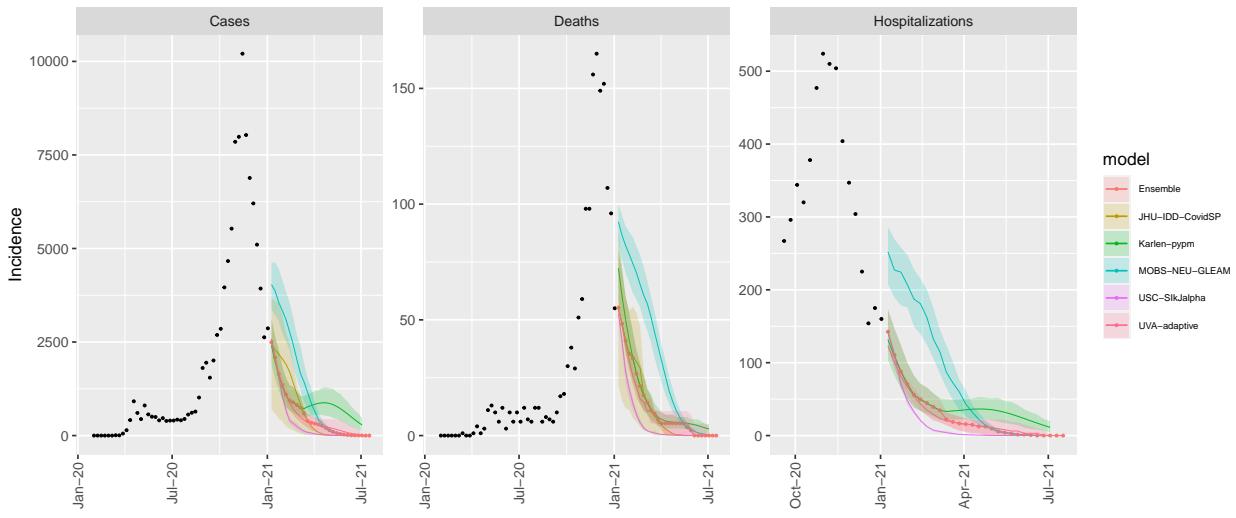
RI model variance & 50% projection intervals – optimistic



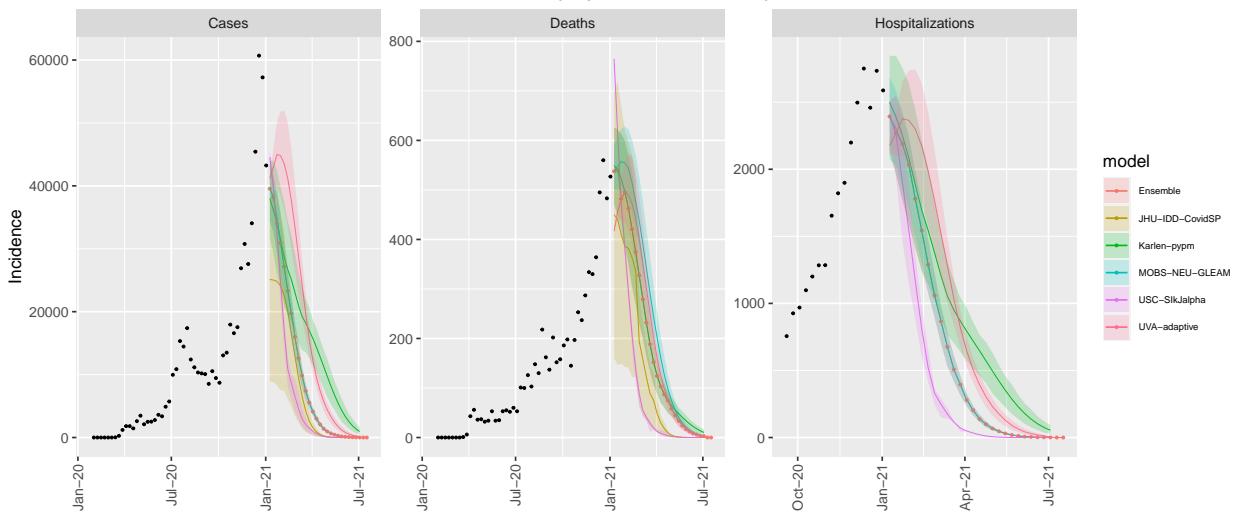
SC model variance & 50% projection intervals – optimistic



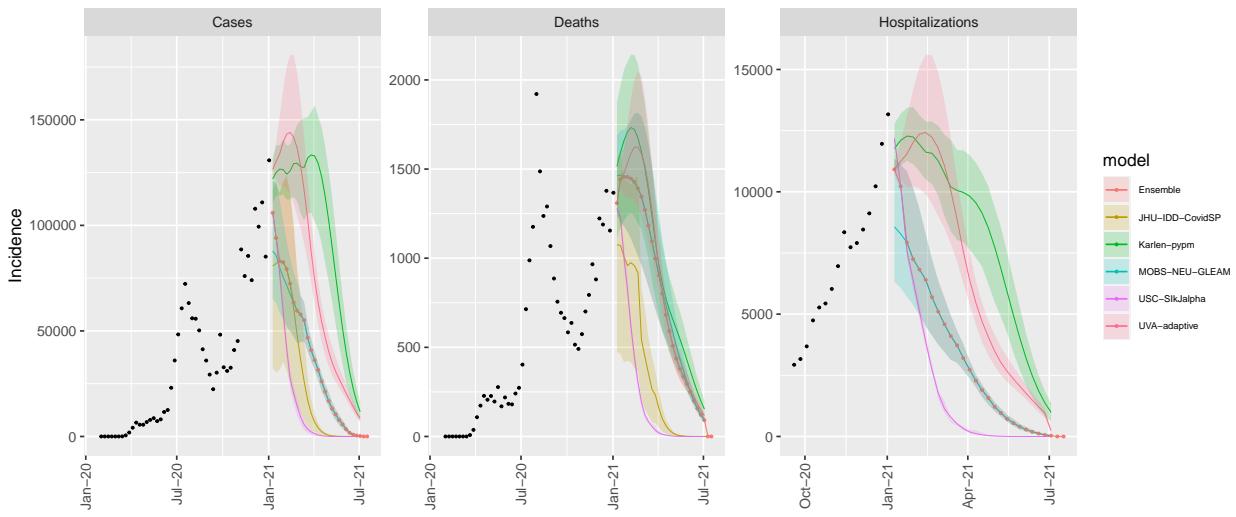
SD model variance & 50% projection intervals – optimistic



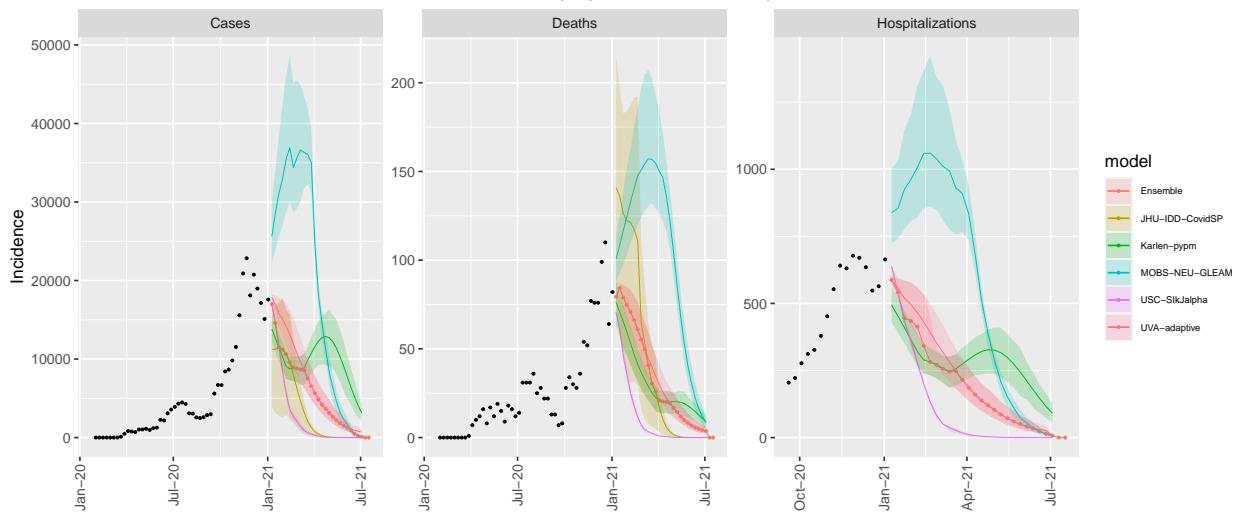
TN model variance & 50% projection intervals – optimistic



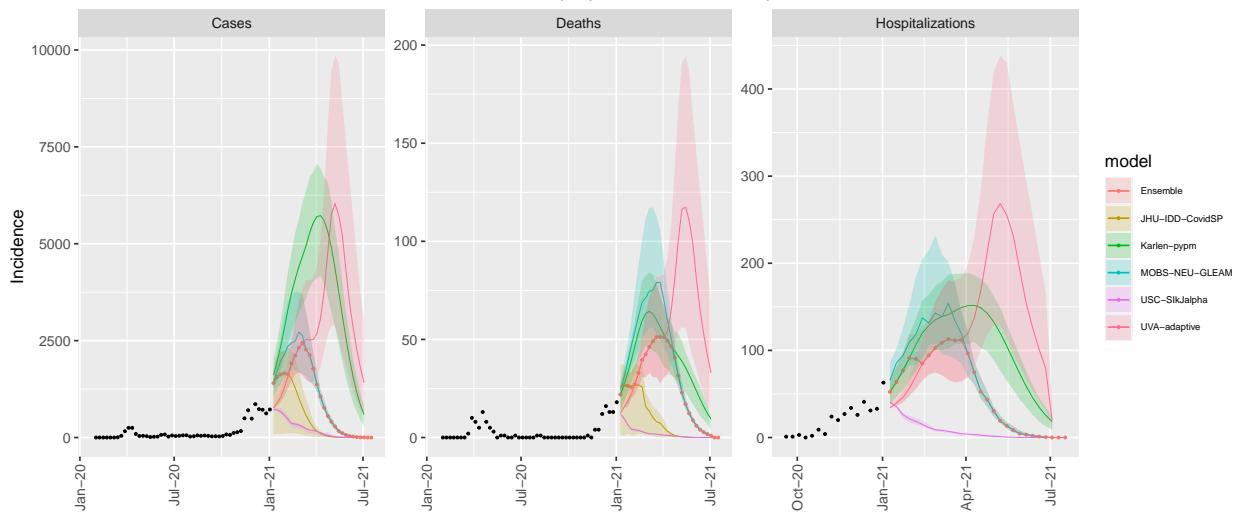
TX model variance & 50% projection intervals – optimistic



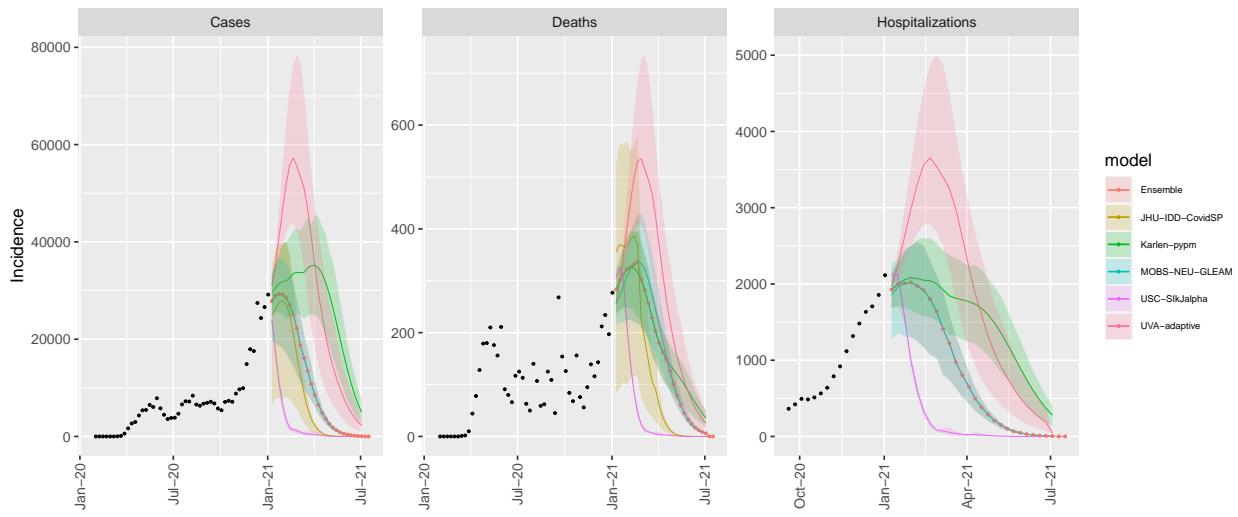
UT model variance & 50% projection intervals – optimistic



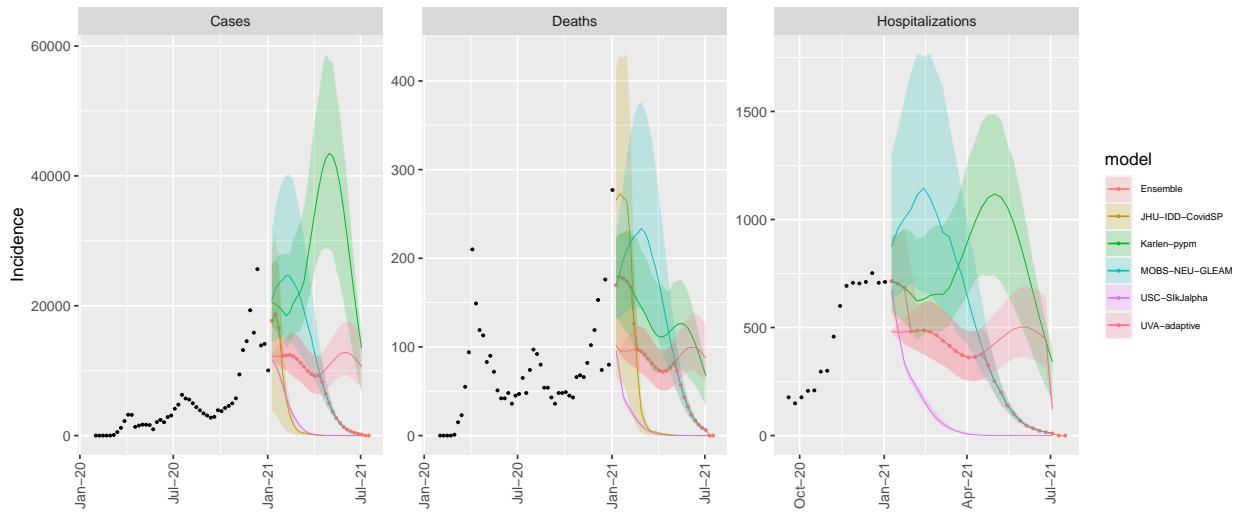
VT model variance & 50% projection intervals – optimistic



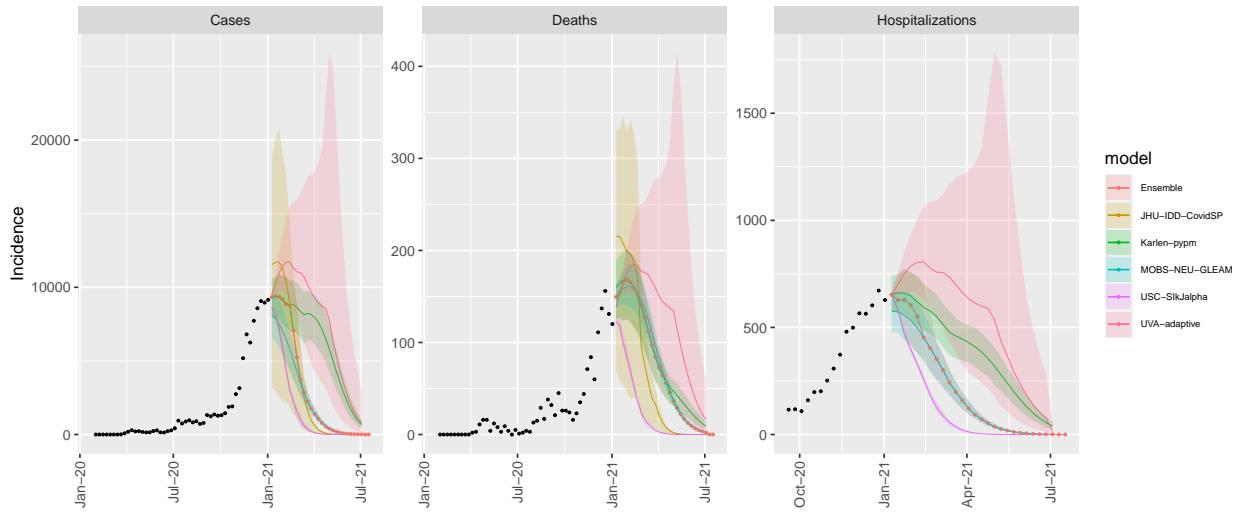
VA model variance & 50% projection intervals – optimistic



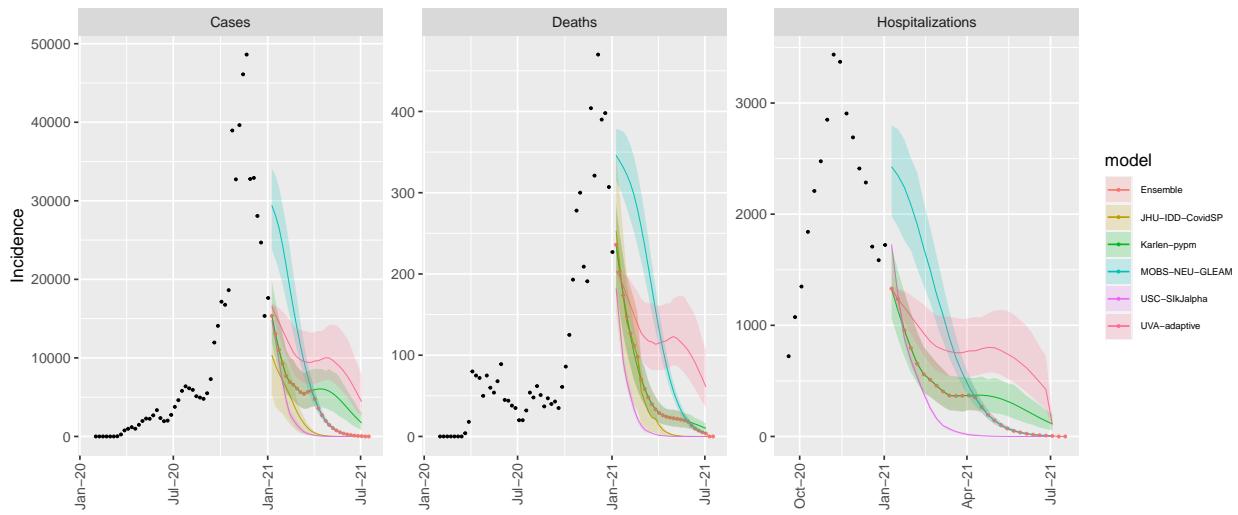
WA model variance & 50% projection intervals – optimistic



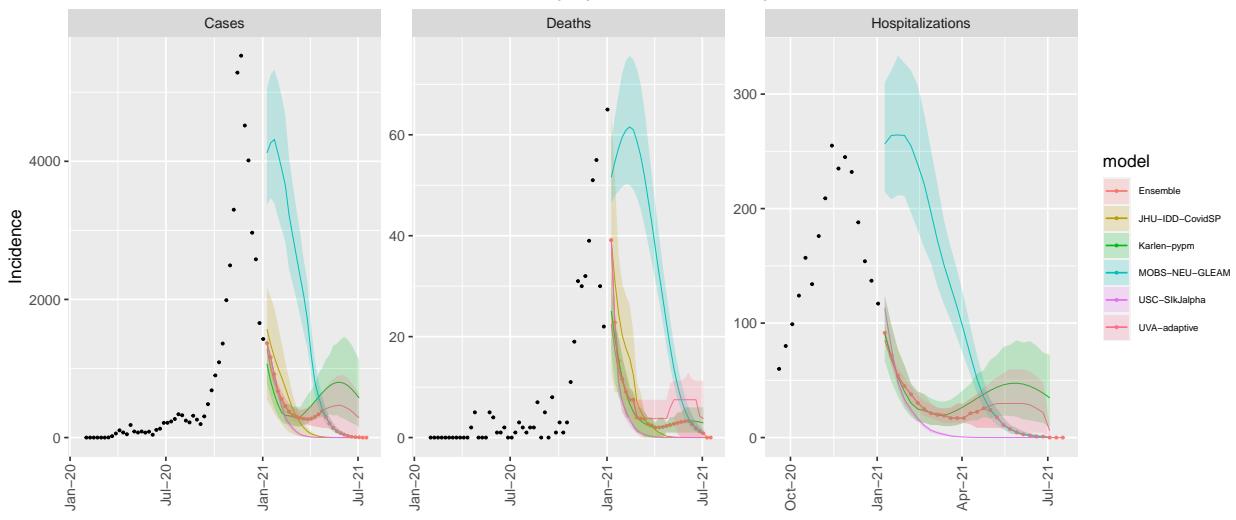
WV model variance & 50% projection intervals – optimistic



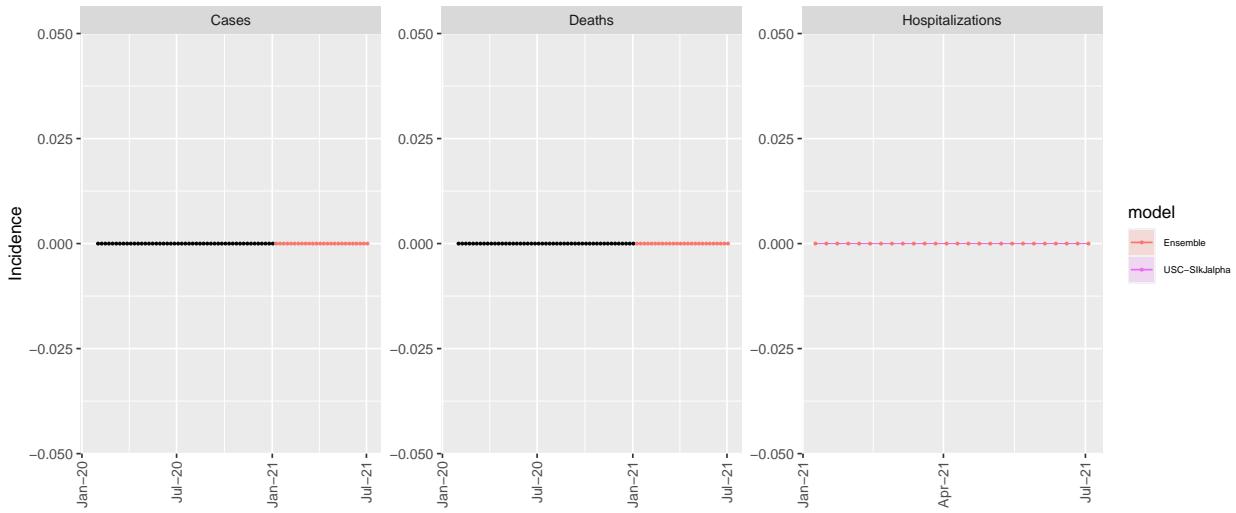
WI model variance & 50% projection intervals – optimistic



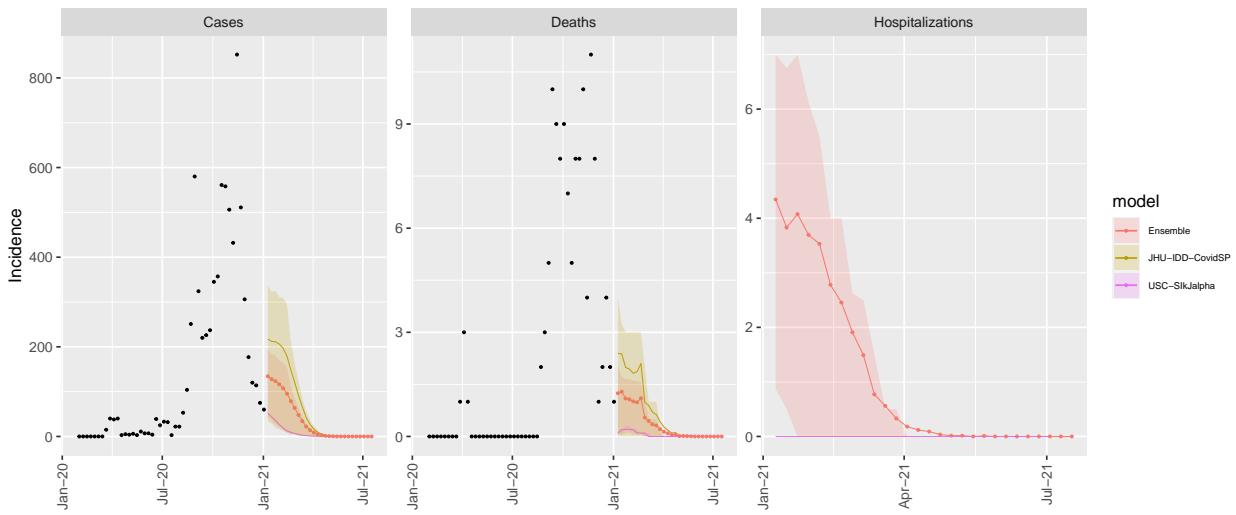
WY model variance & 50% projection intervals – optimistic



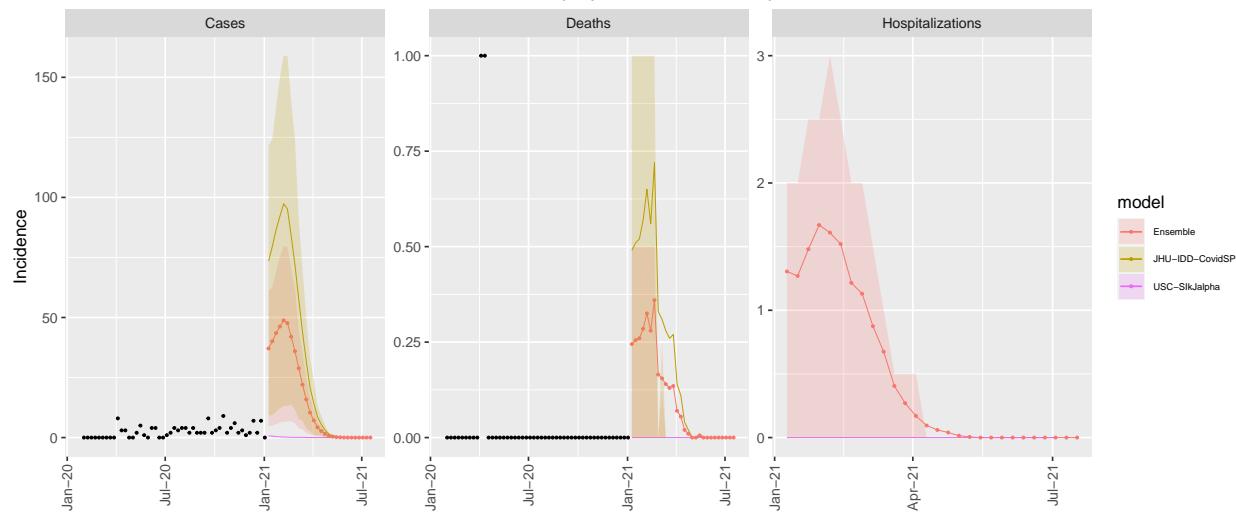
AS model variance & 50% projection intervals – optimistic



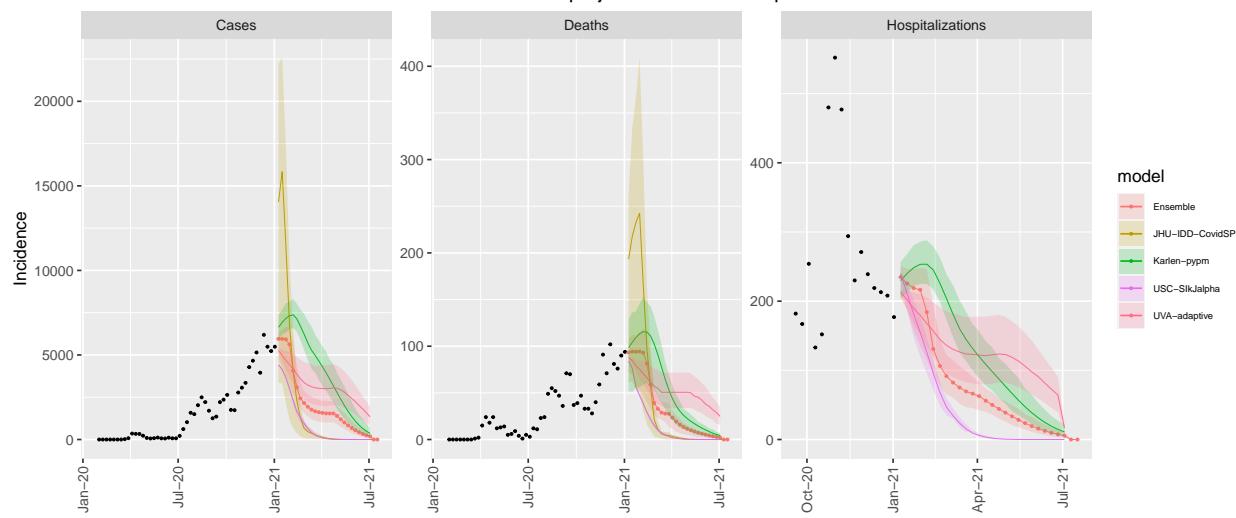
GU model variance & 50% projection intervals – optimistic



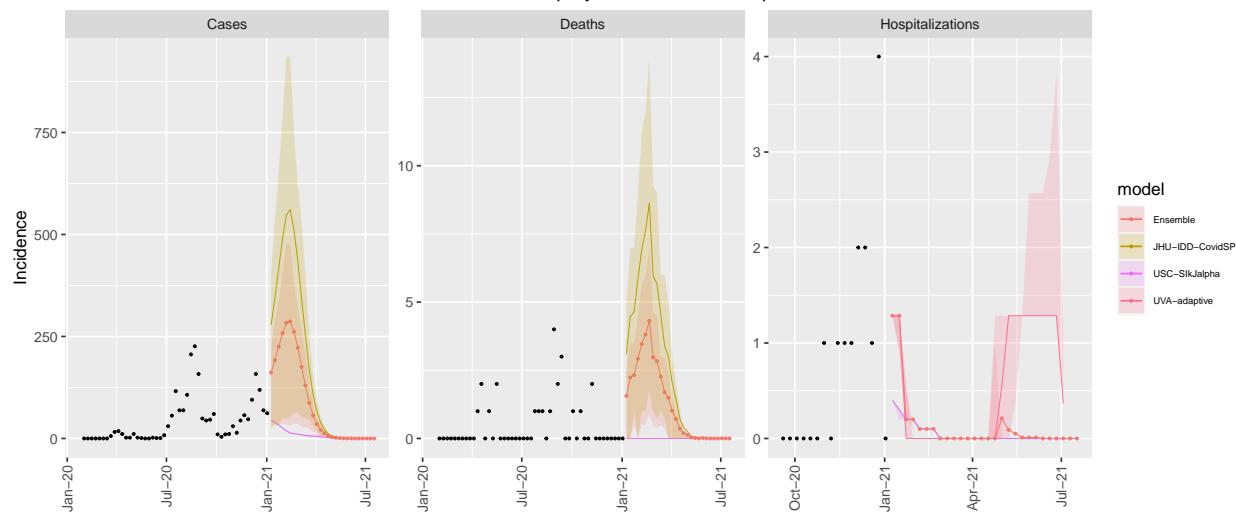
MP model variance & 50% projection intervals – optimistic



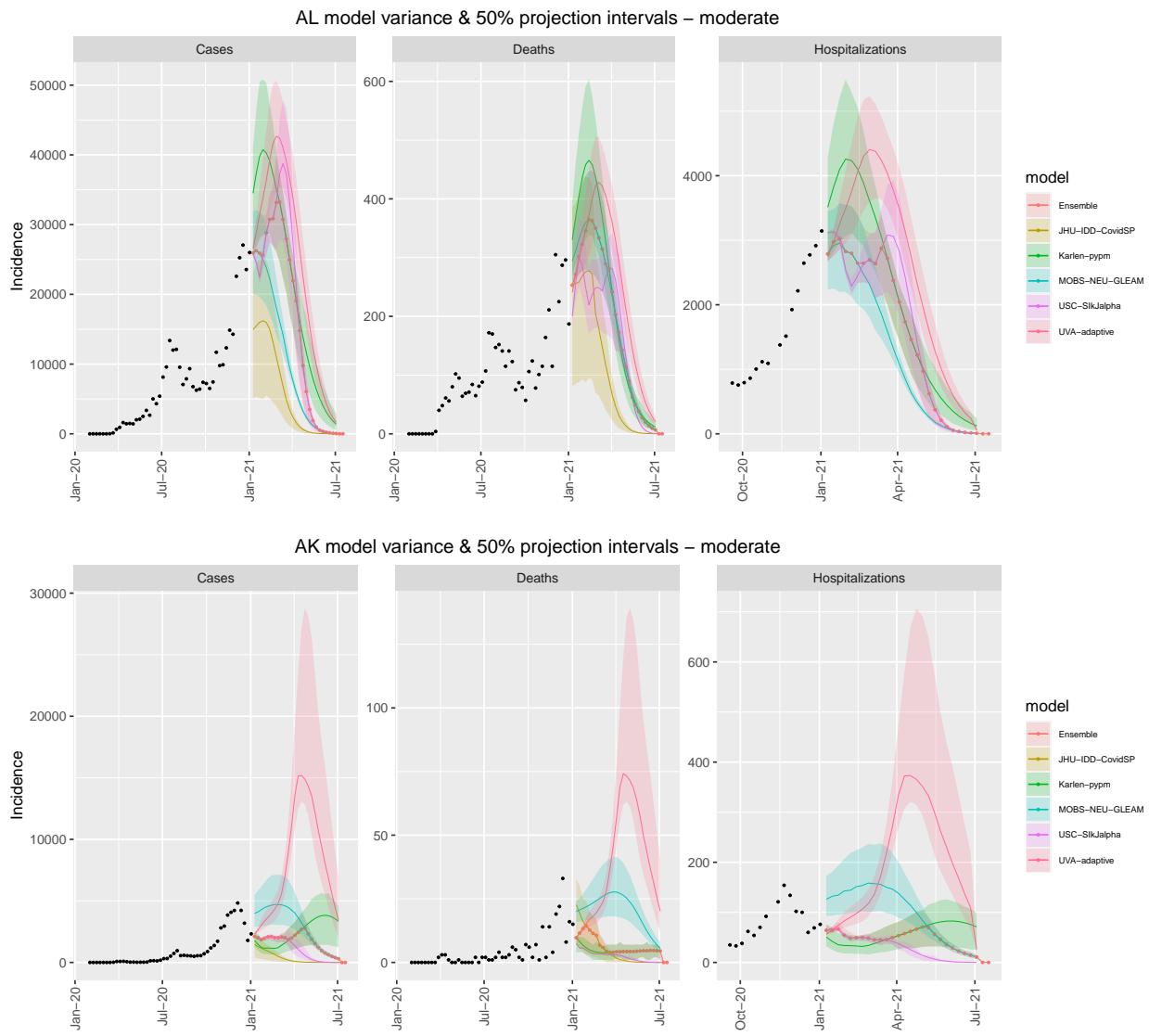
PR model variance & 50% projection intervals – optimistic



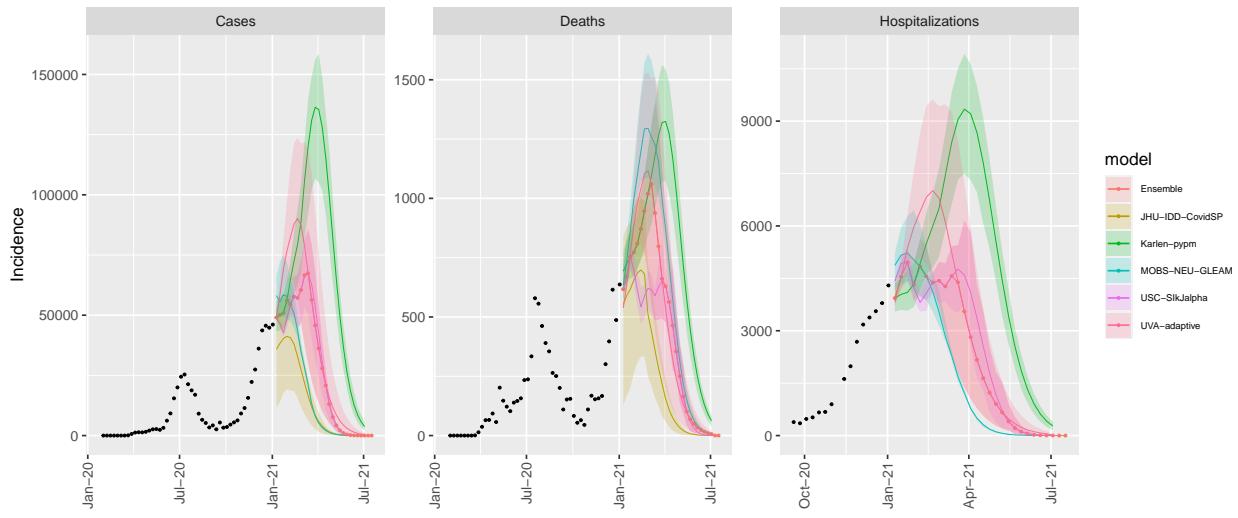
VI model variance & 50% projection intervals – optimistic



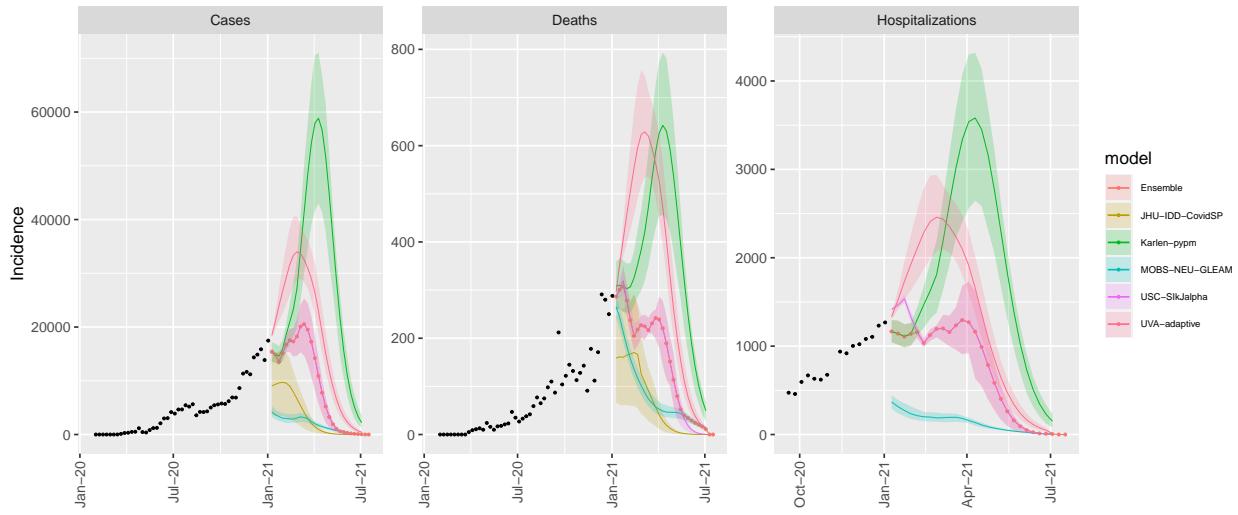
National model variation for the moderate scenario



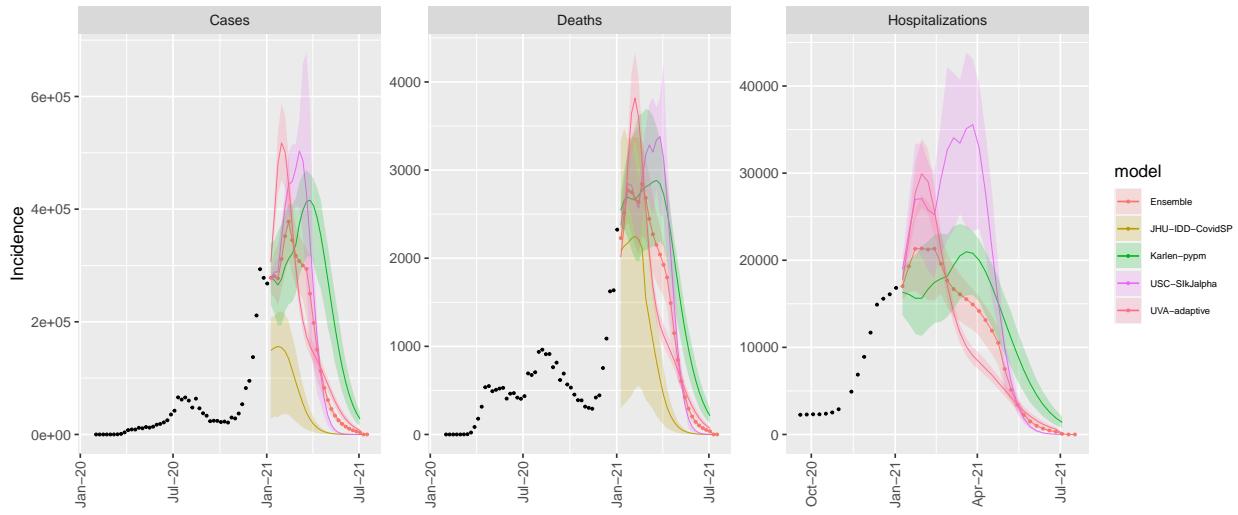
AZ model variance & 50% projection intervals – moderate



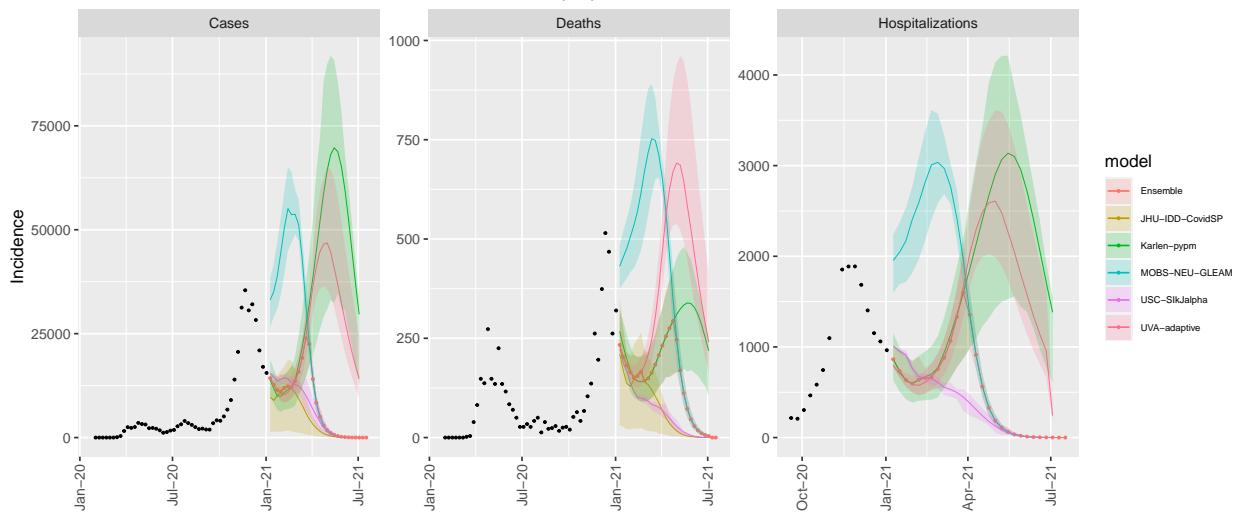
AR model variance & 50% projection intervals – moderate



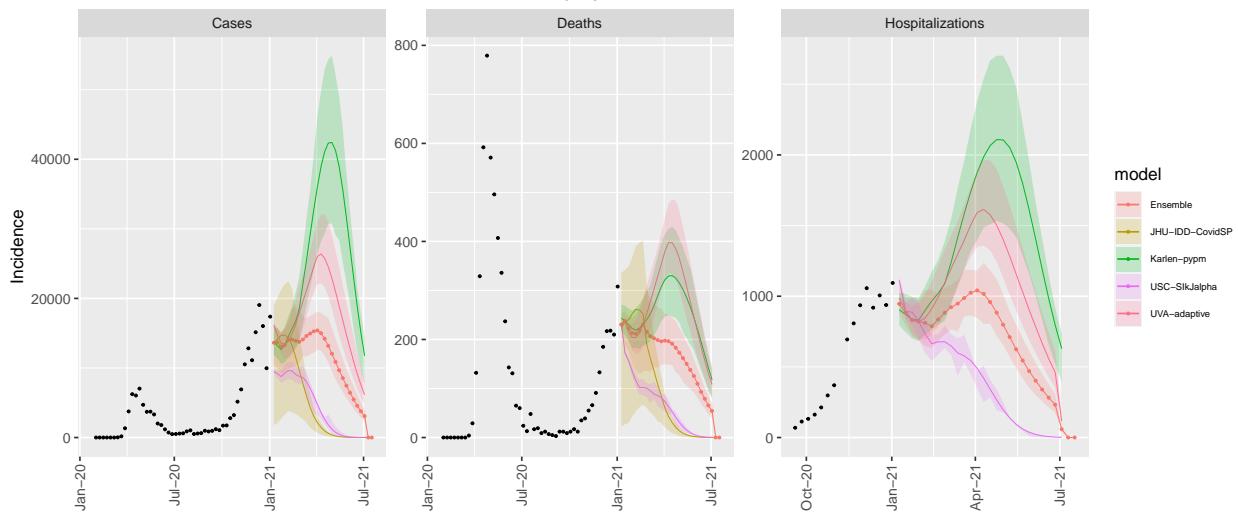
CA model variance & 50% projection intervals – moderate



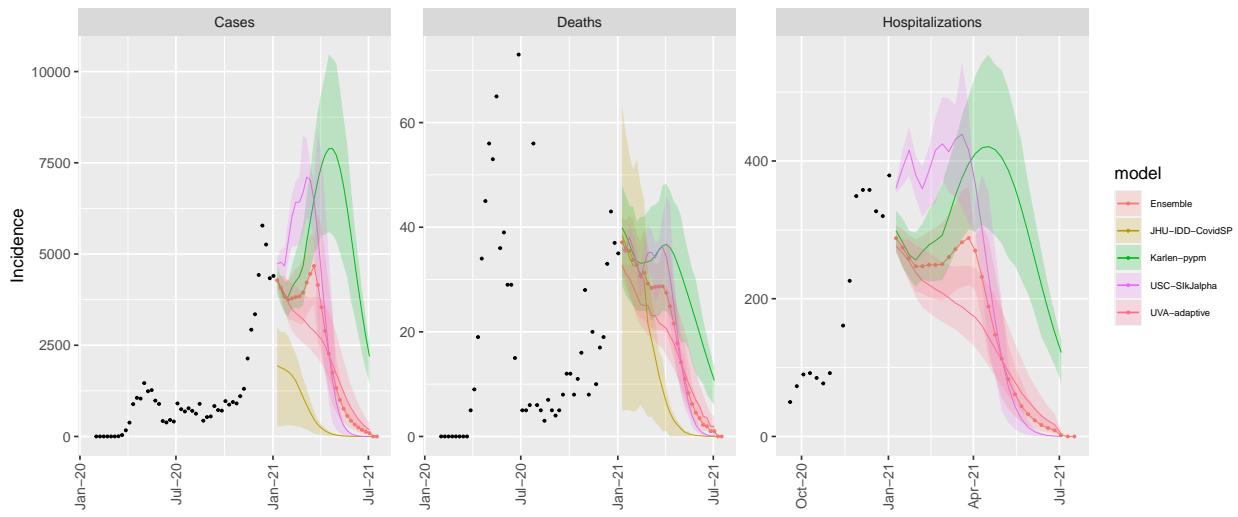
CO model variance & 50% projection intervals – moderate



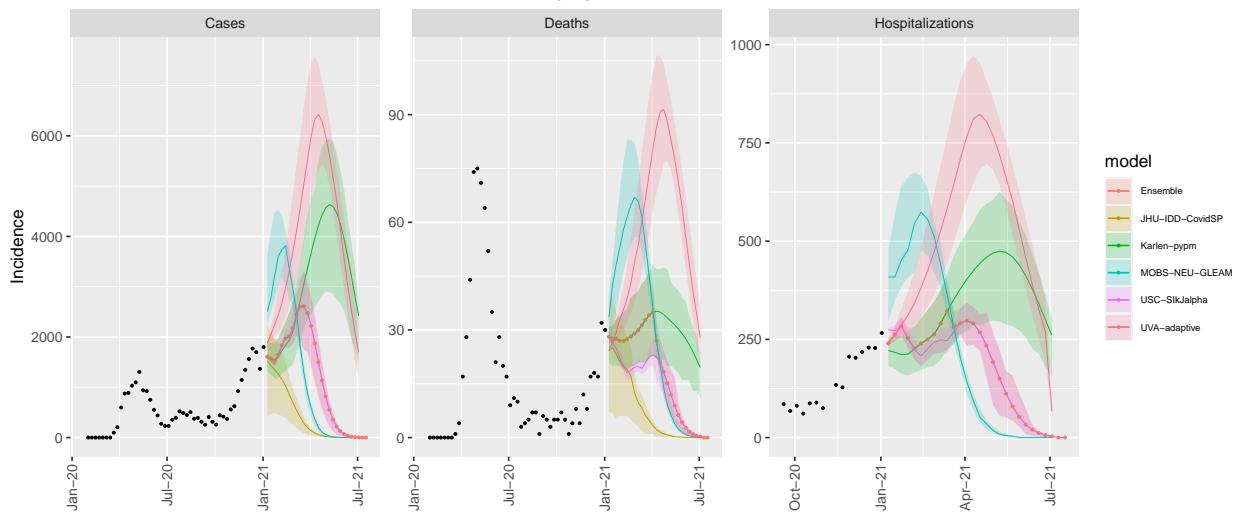
CT model variance & 50% projection intervals – moderate



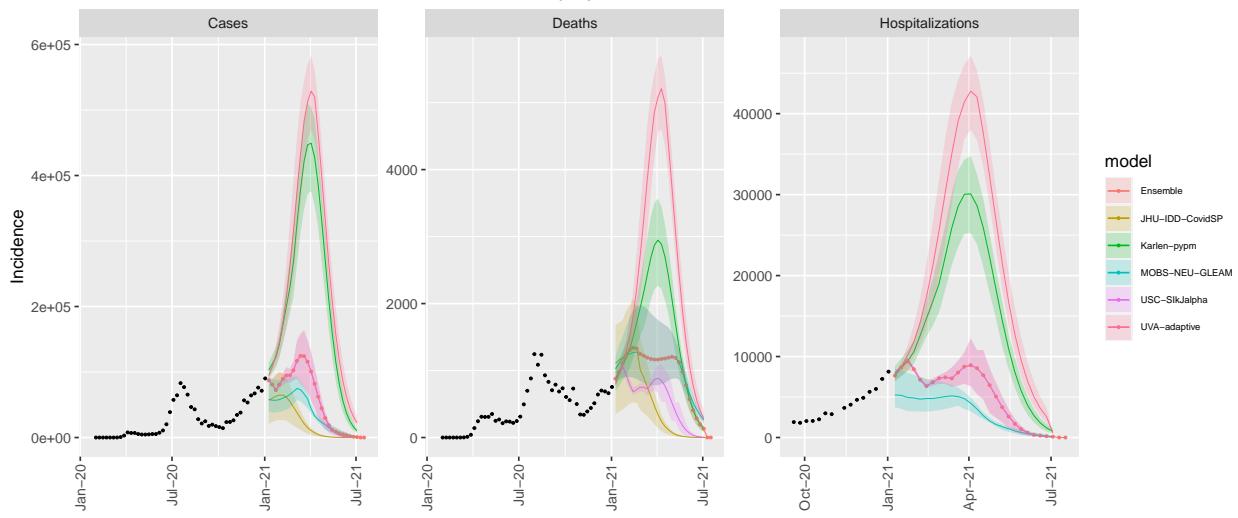
DE model variance & 50% projection intervals – moderate



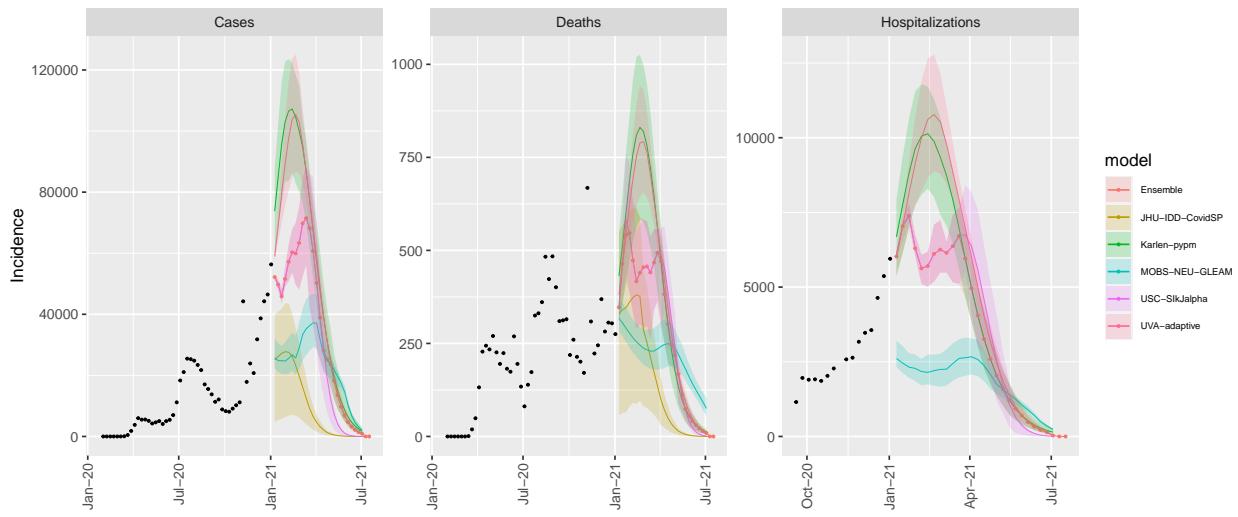
DC model variance & 50% projection intervals – moderate



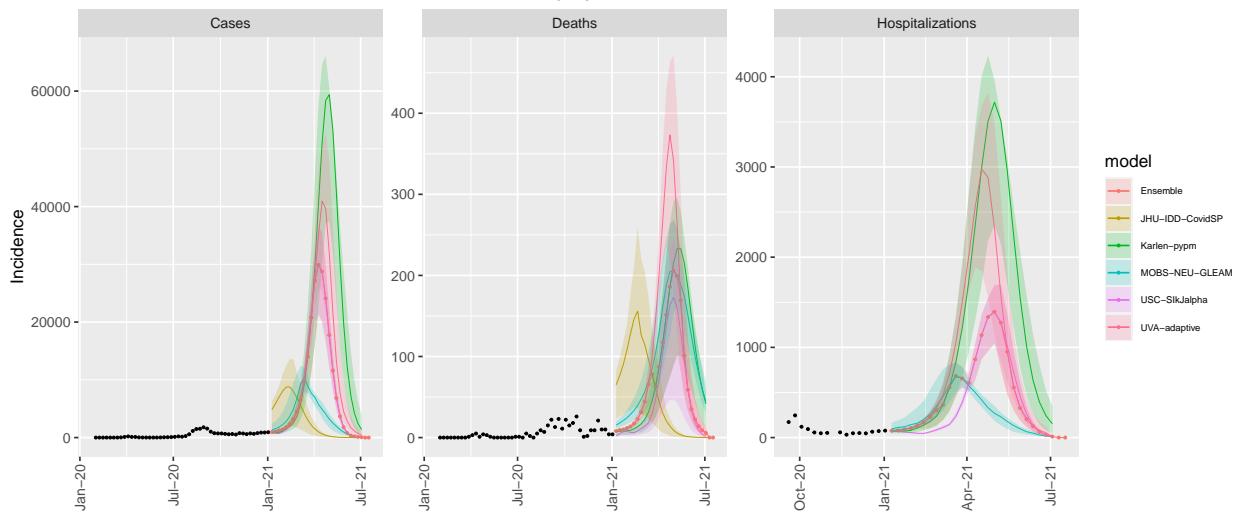
FL model variance & 50% projection intervals – moderate



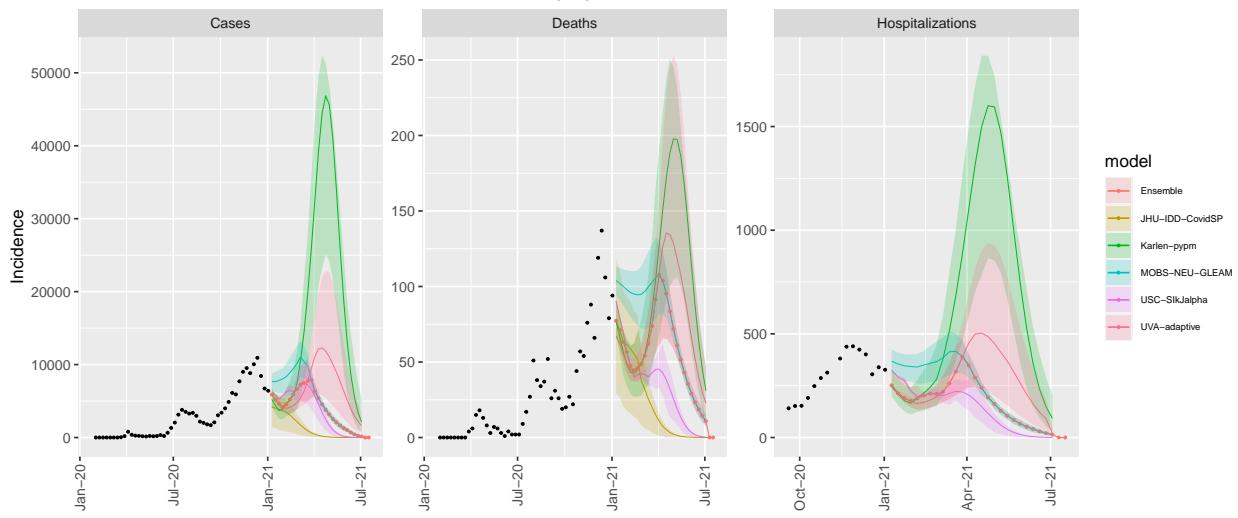
GA model variance & 50% projection intervals – moderate



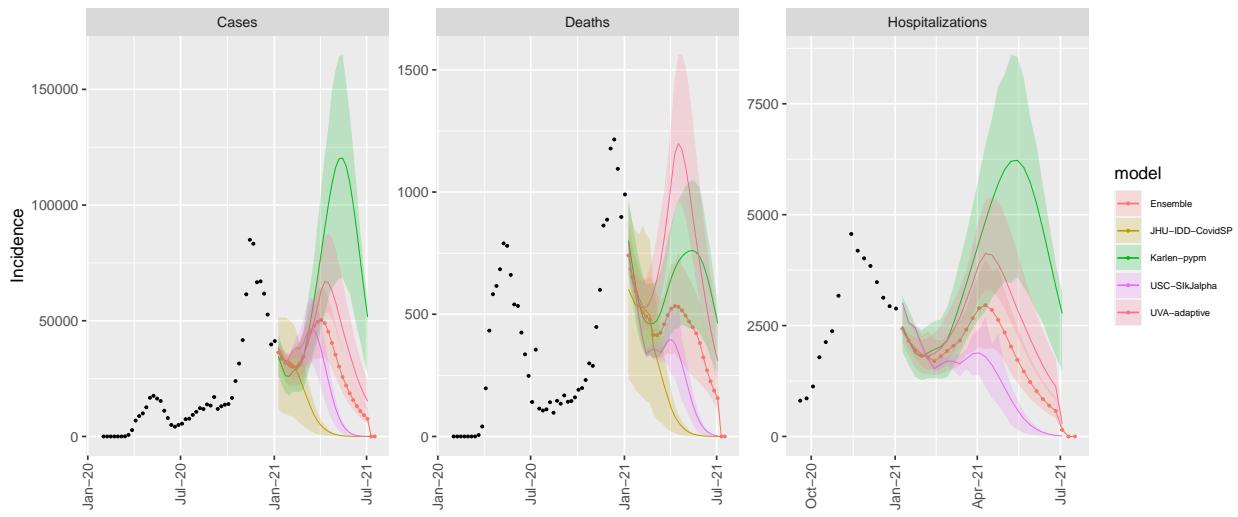
HI model variance & 50% projection intervals – moderate



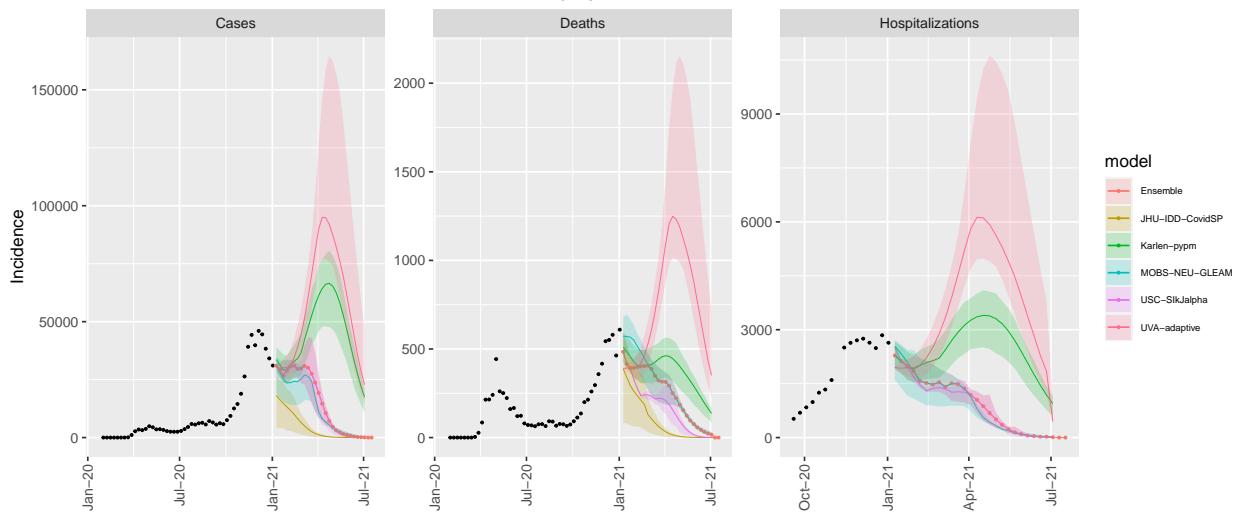
ID model variance & 50% projection intervals – moderate



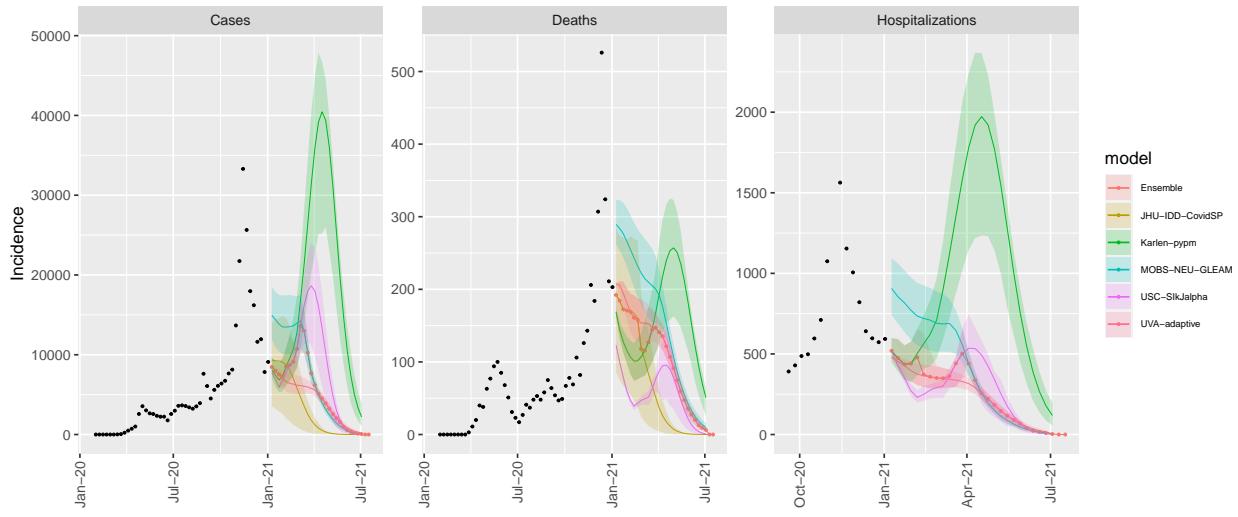
IL model variance & 50% projection intervals – moderate



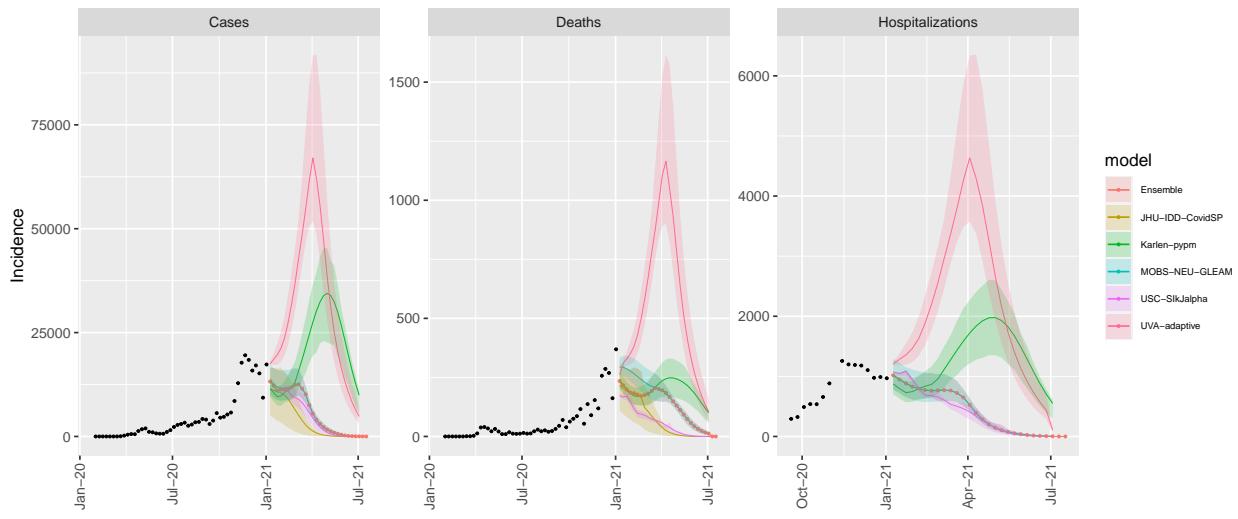
IN model variance & 50% projection intervals – moderate



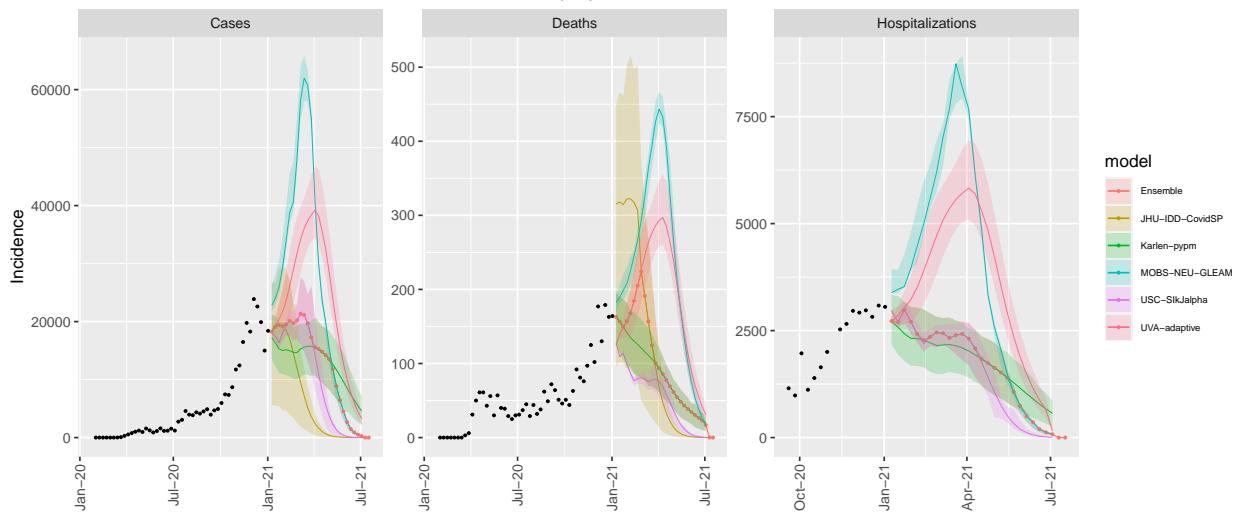
IA model variance & 50% projection intervals – moderate



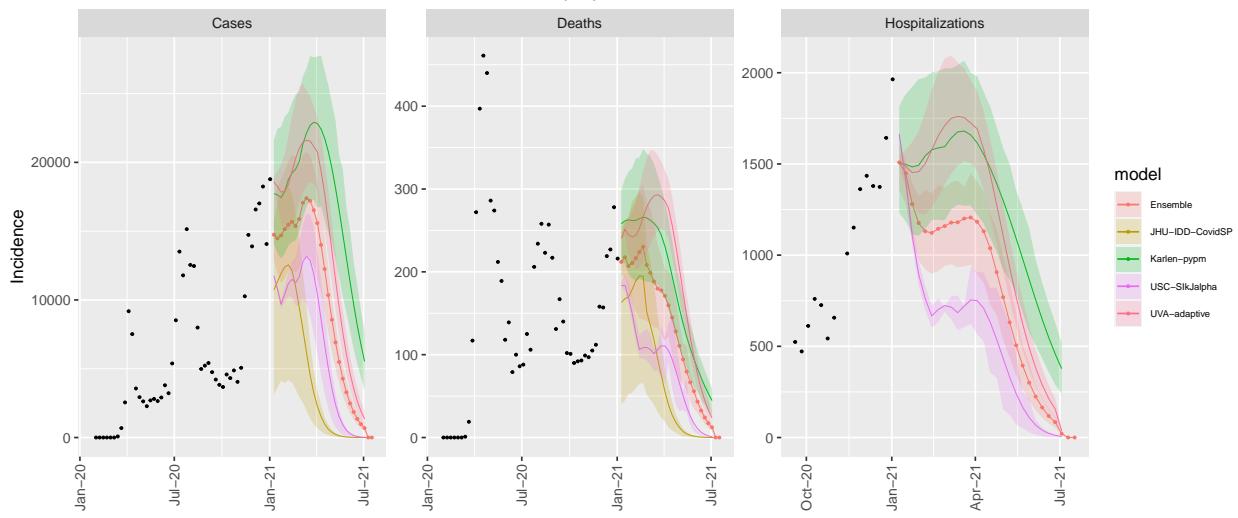
KS model variance & 50% projection intervals – moderate



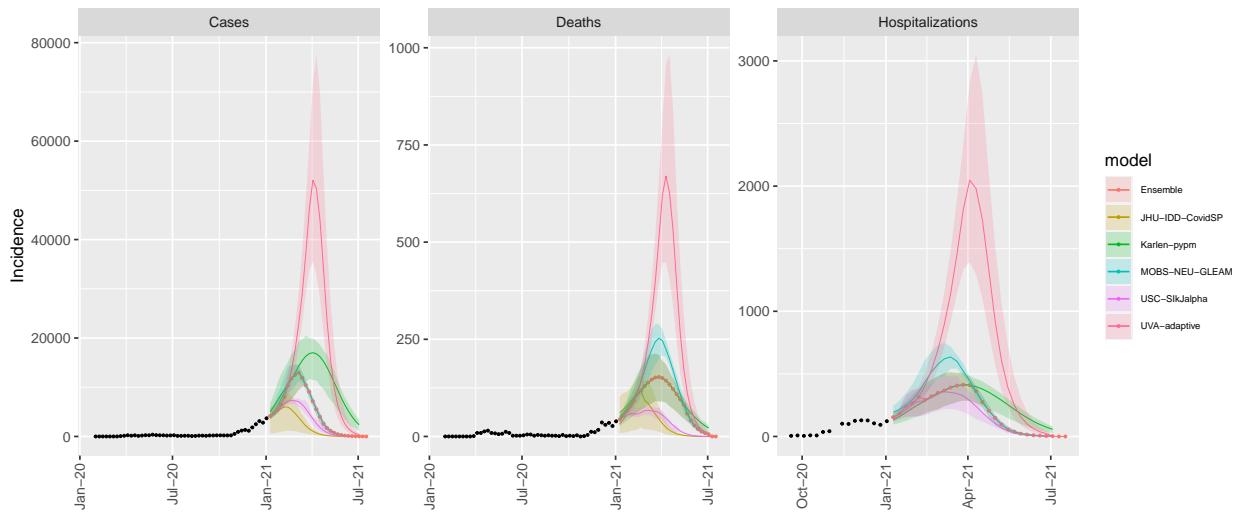
KY model variance & 50% projection intervals – moderate



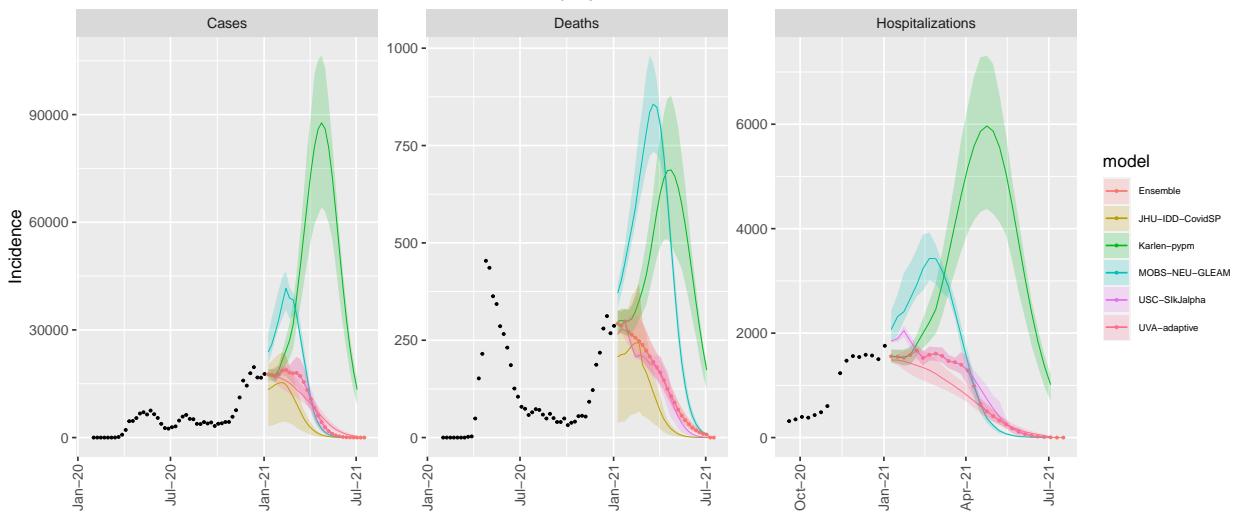
LA model variance & 50% projection intervals – moderate



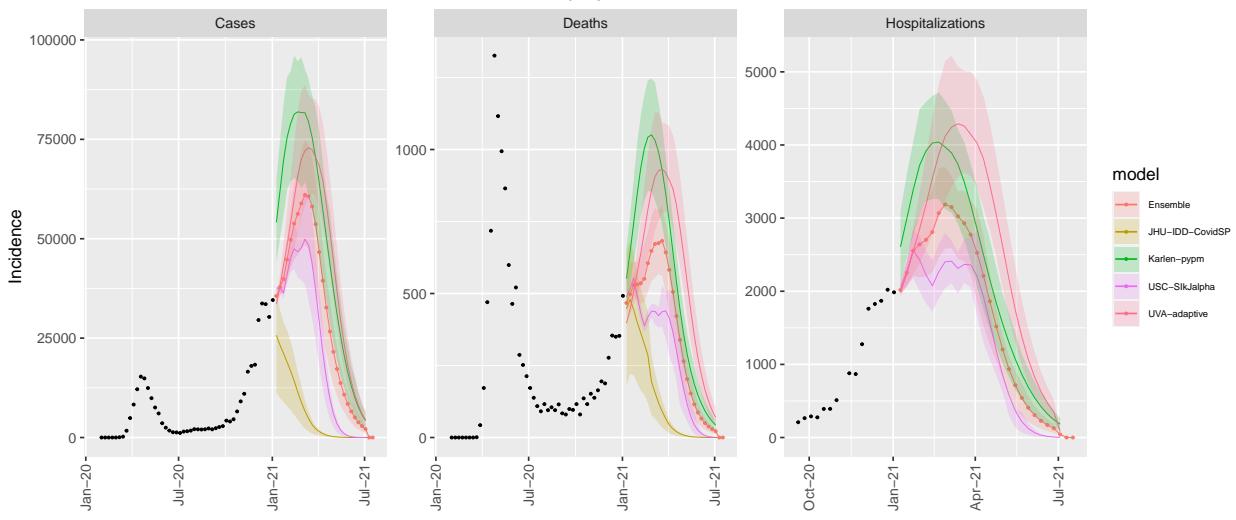
ME model variance & 50% projection intervals – moderate



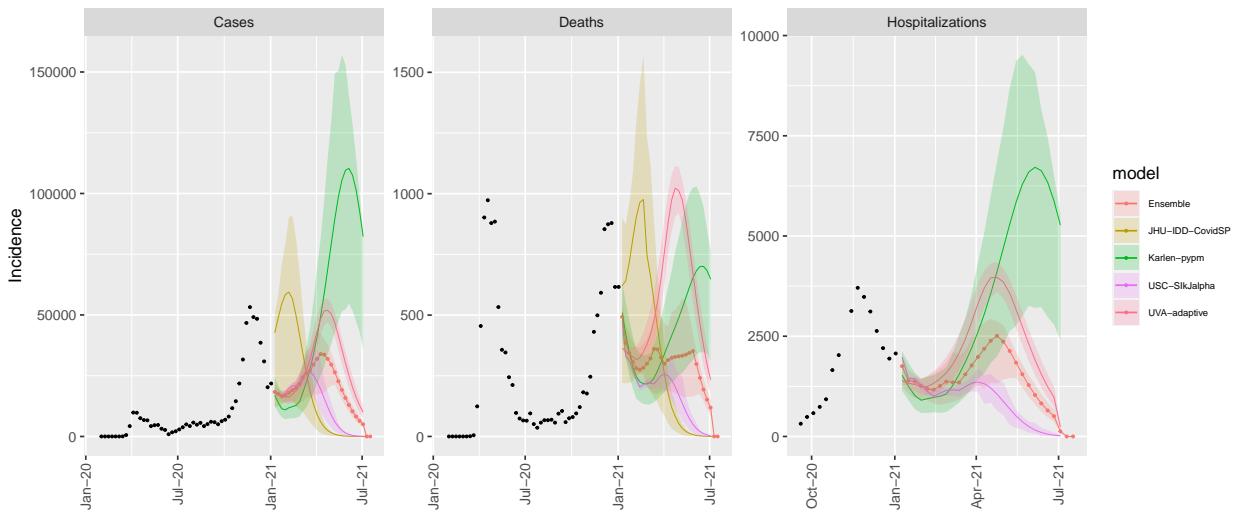
MD model variance & 50% projection intervals – moderate



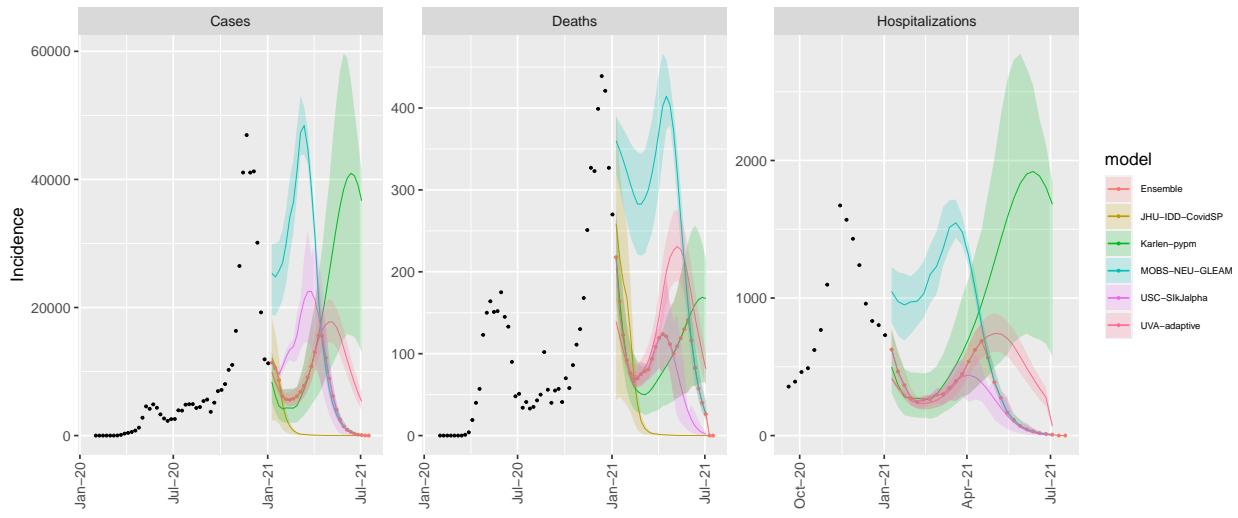
MA model variance & 50% projection intervals – moderate



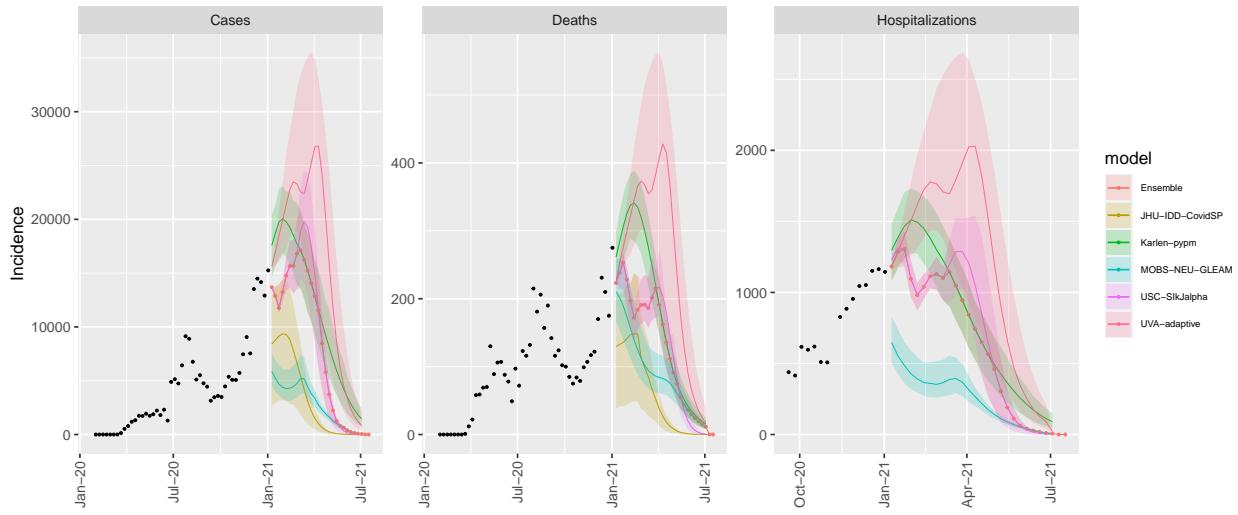
MI model variance & 50% projection intervals – moderate



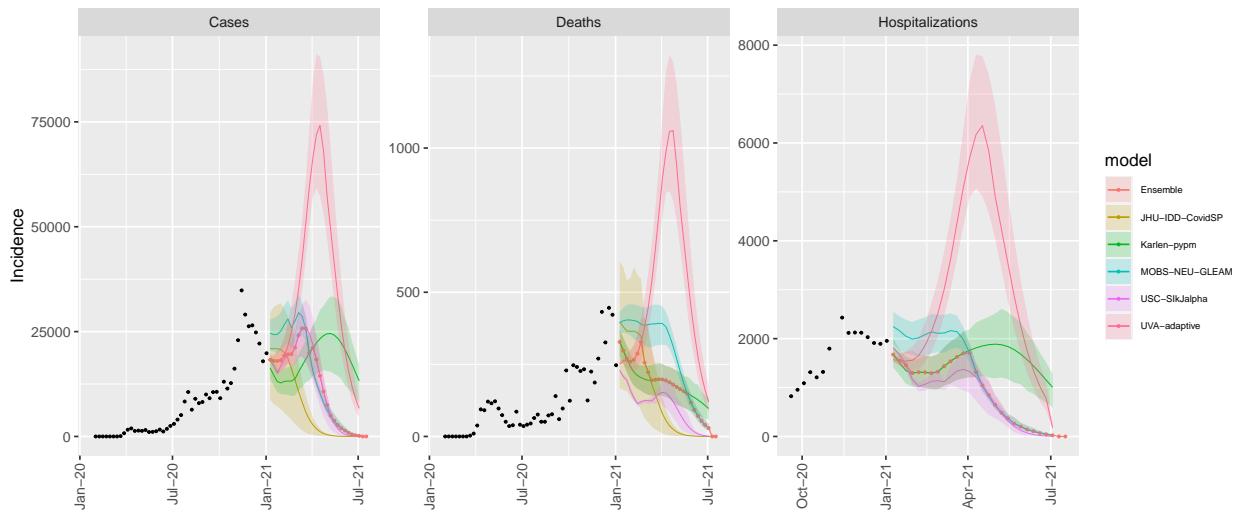
MN model variance & 50% projection intervals – moderate



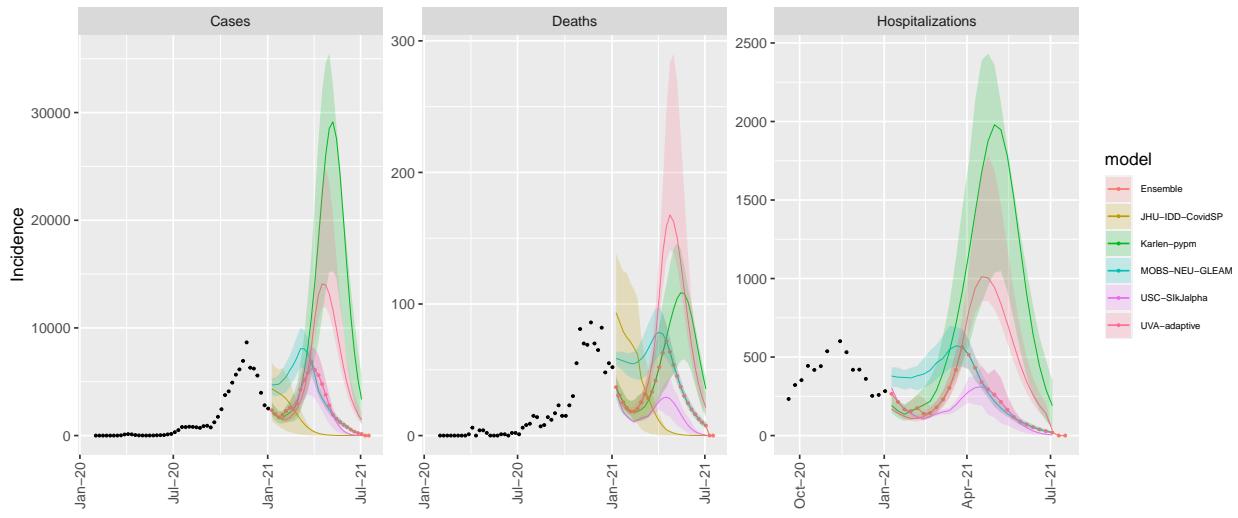
MS model variance & 50% projection intervals – moderate



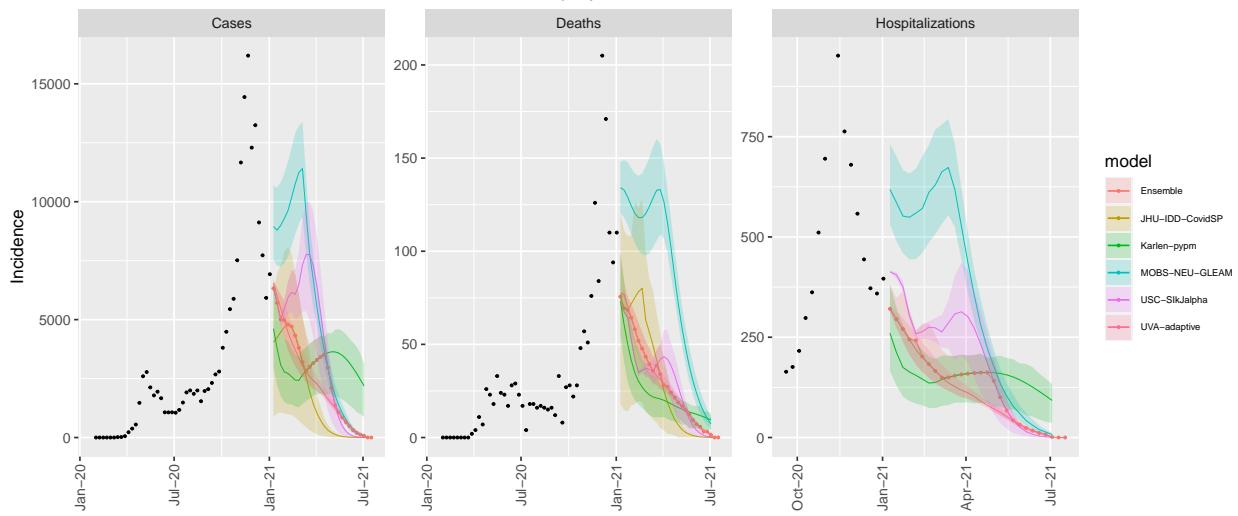
MO model variance & 50% projection intervals – moderate



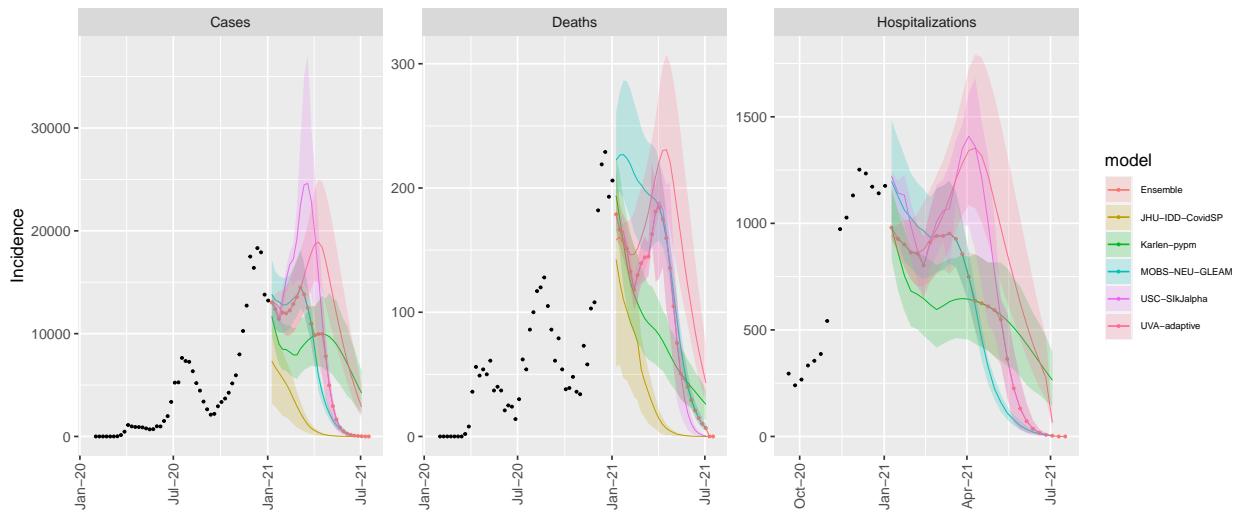
MT model variance & 50% projection intervals – moderate



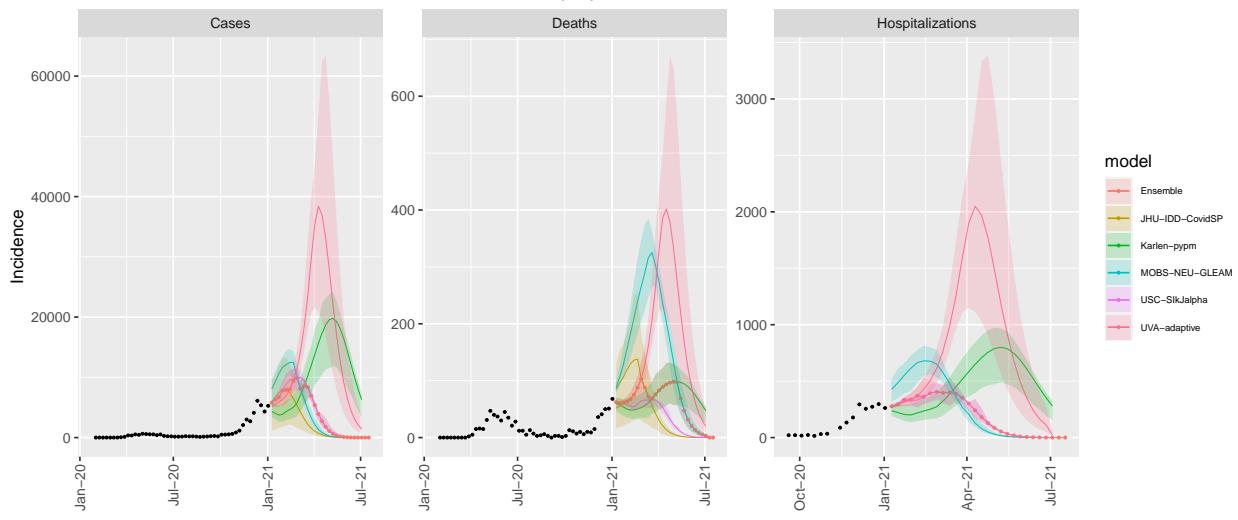
NE model variance & 50% projection intervals – moderate



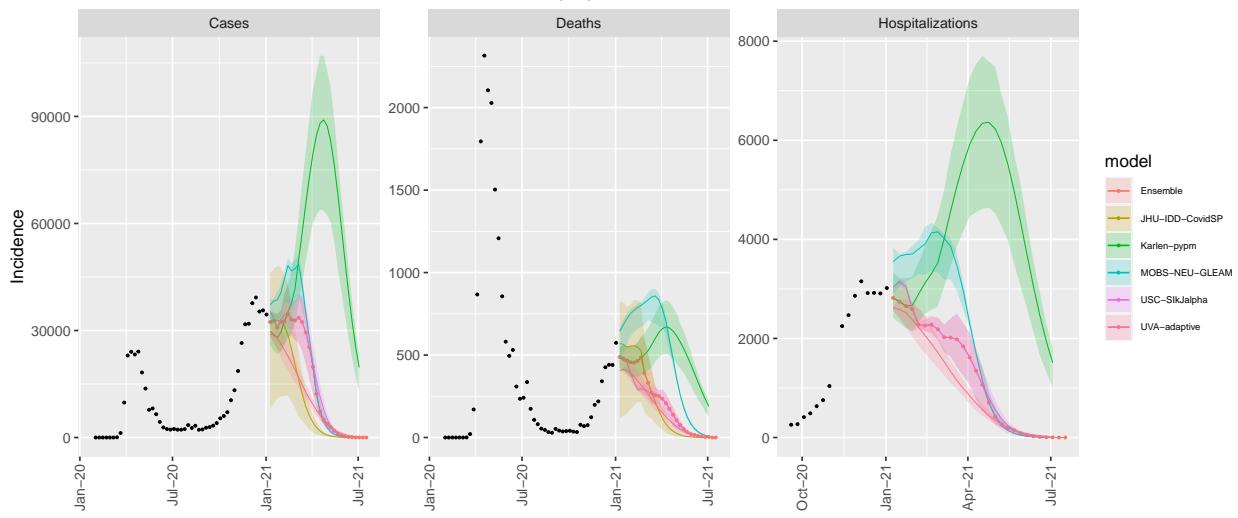
NV model variance & 50% projection intervals – moderate



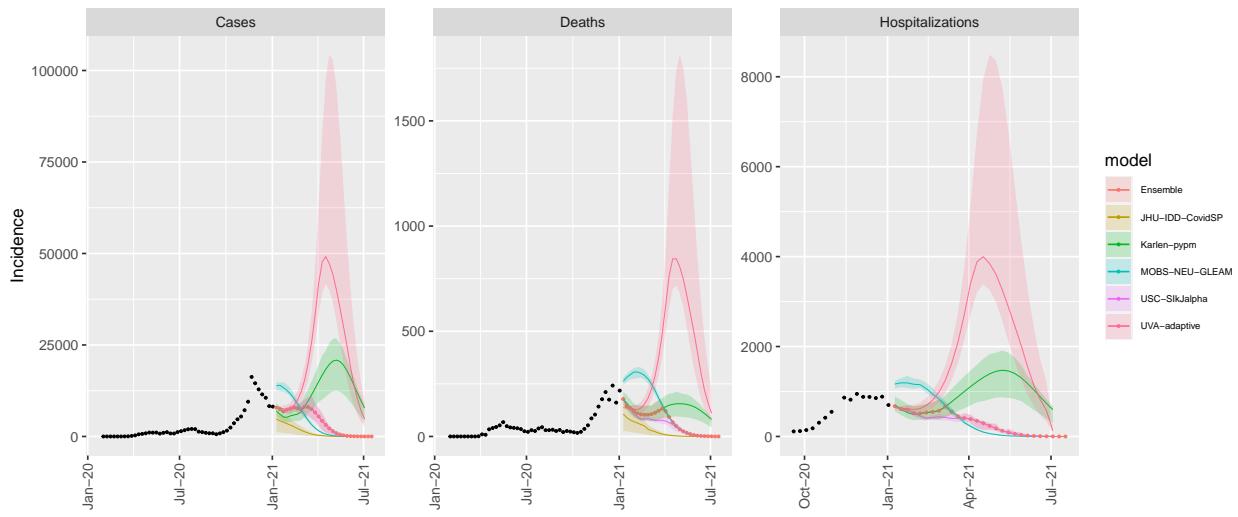
NH model variance & 50% projection intervals – moderate



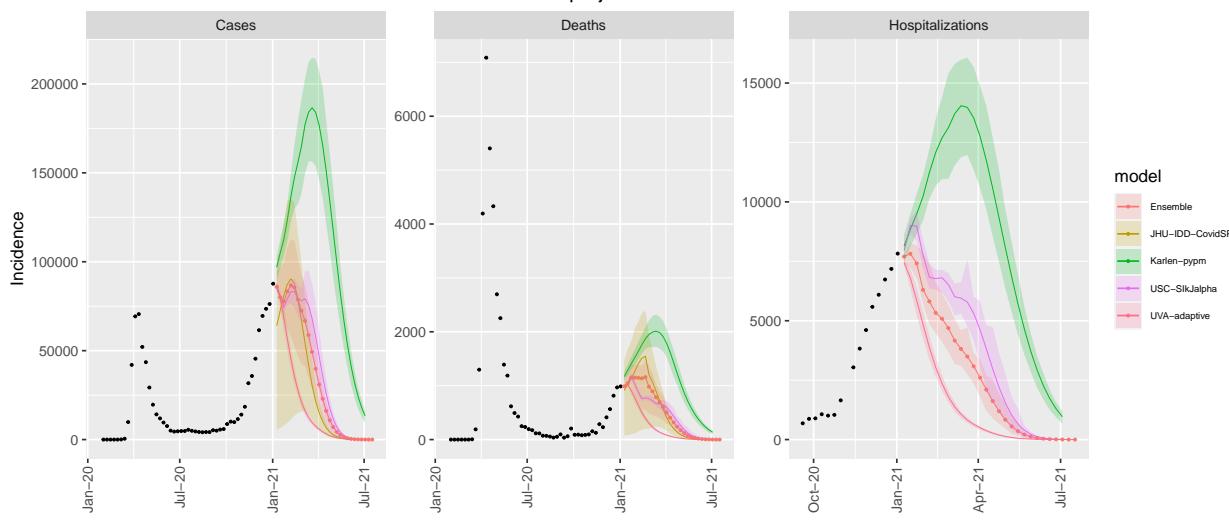
NJ model variance & 50% projection intervals – moderate



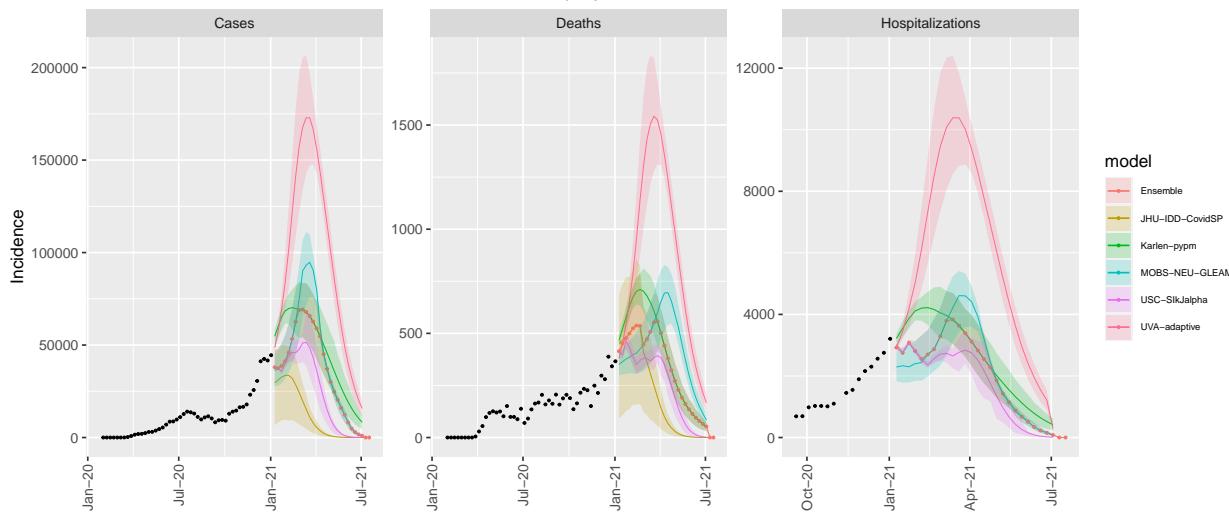
NM model variance & 50% projection intervals – moderate



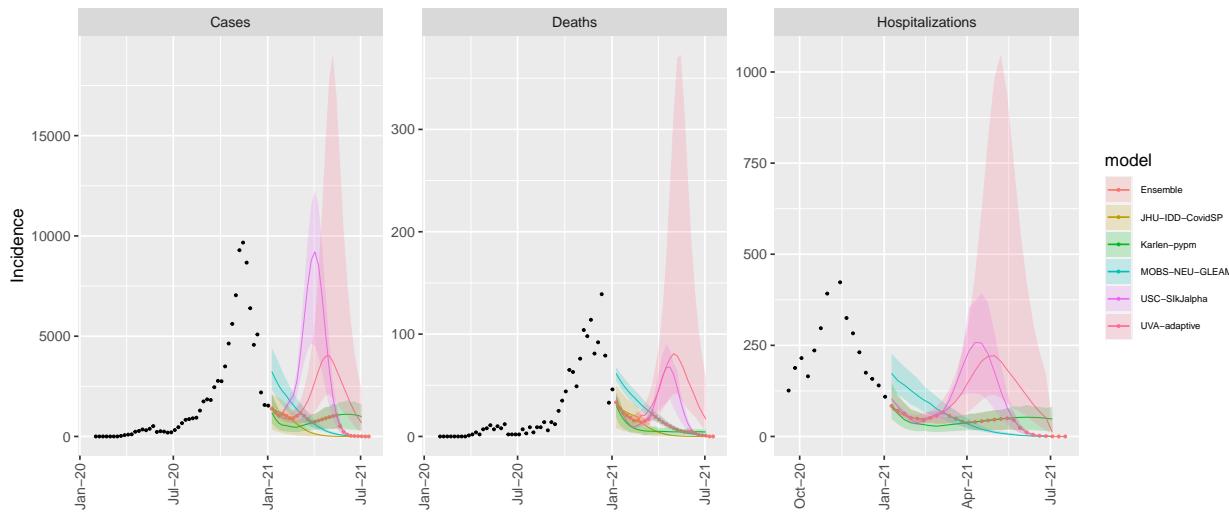
NY model variance & 50% projection intervals – moderate



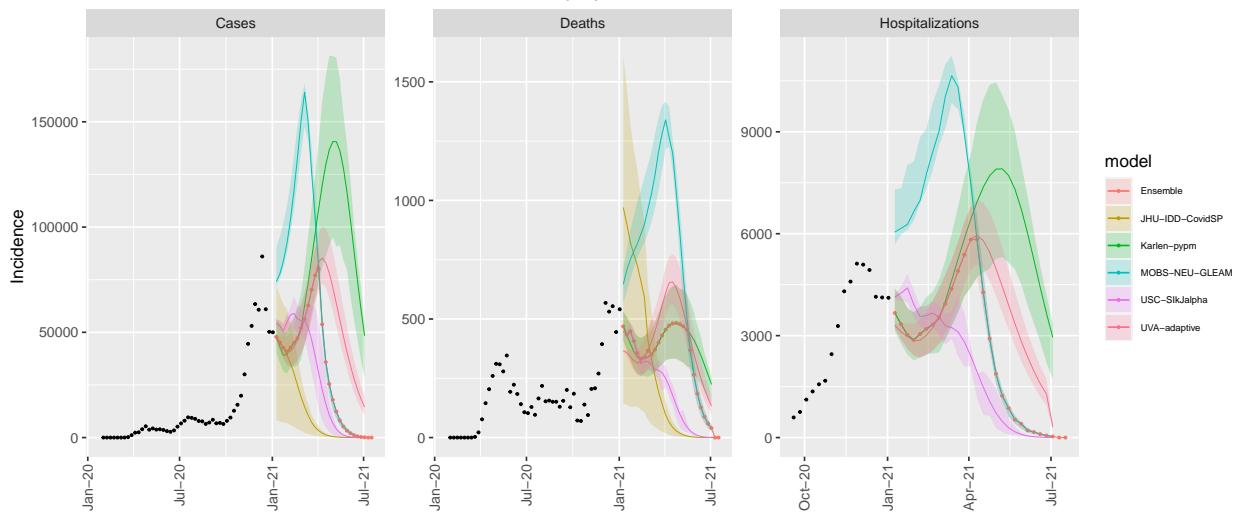
NC model variance & 50% projection intervals – moderate



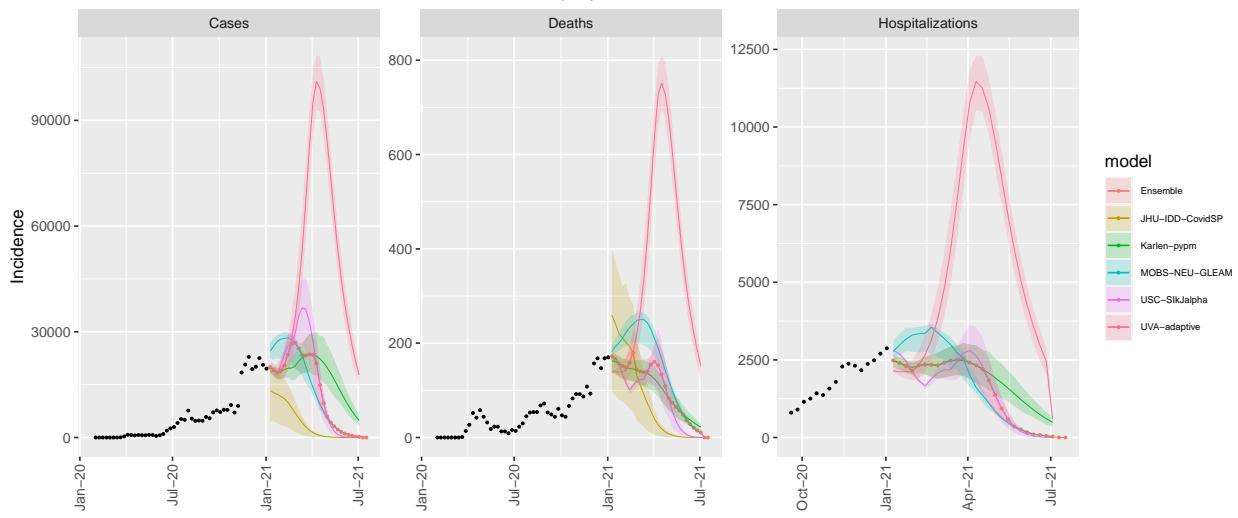
ND model variance & 50% projection intervals – moderate



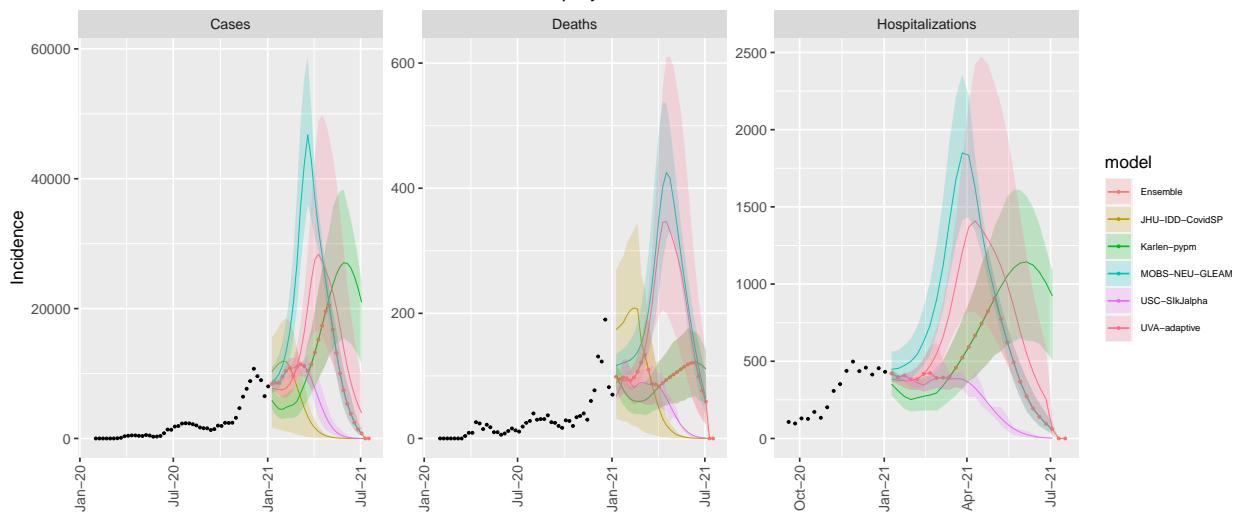
OH model variance & 50% projection intervals – moderate



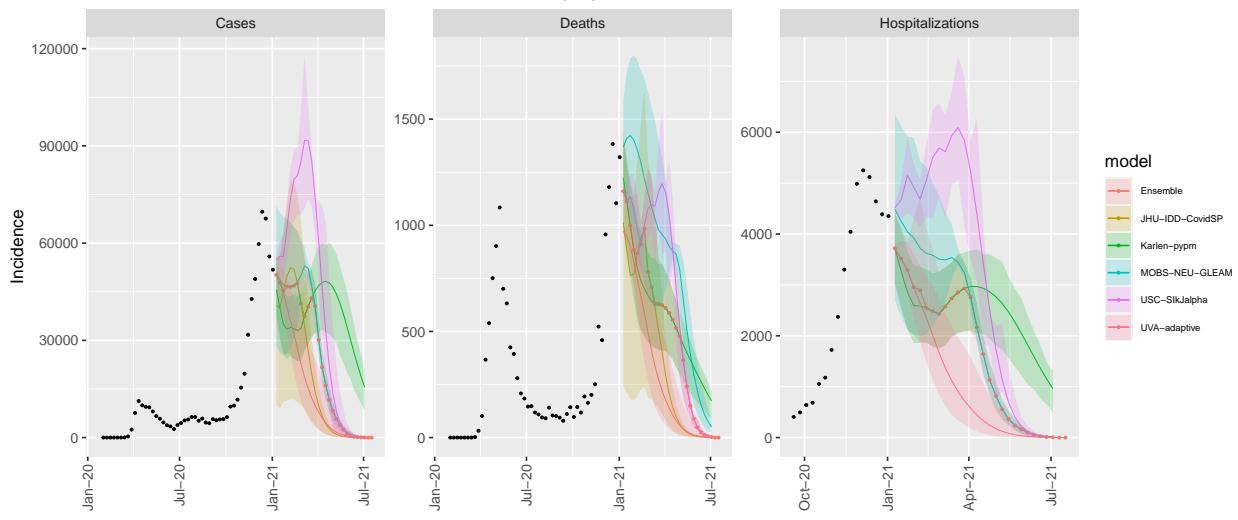
OK model variance & 50% projection intervals – moderate



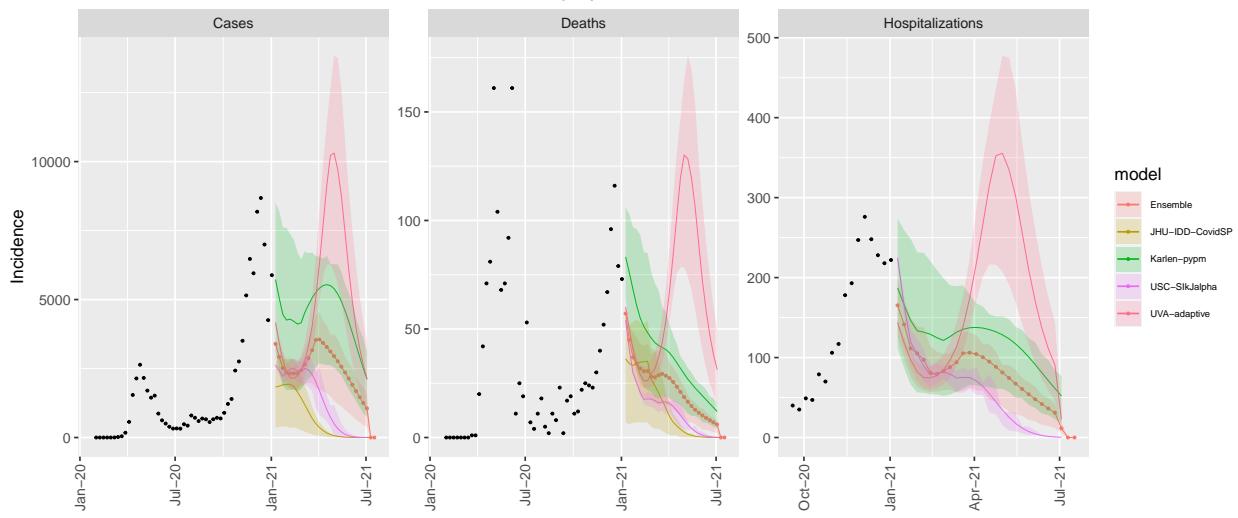
OR model variance & 50% projection intervals – moderate



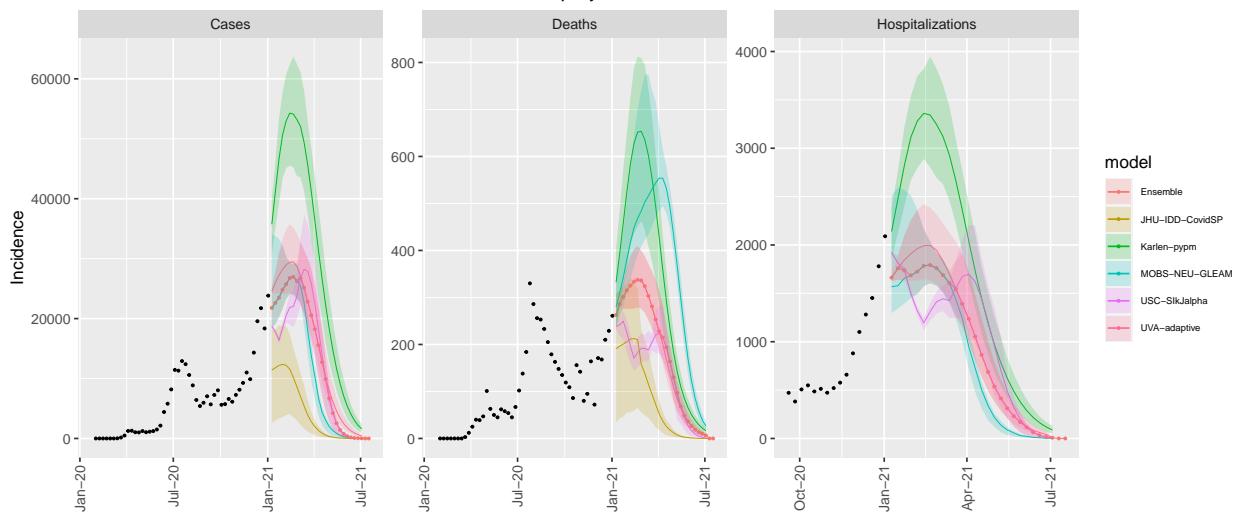
PA model variance & 50% projection intervals – moderate



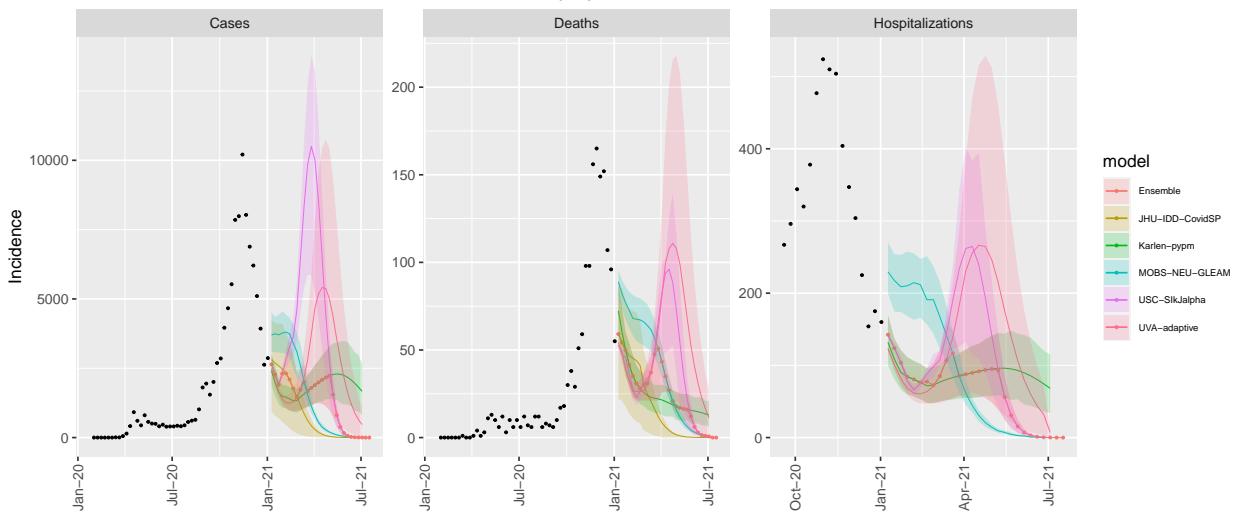
RI model variance & 50% projection intervals – moderate



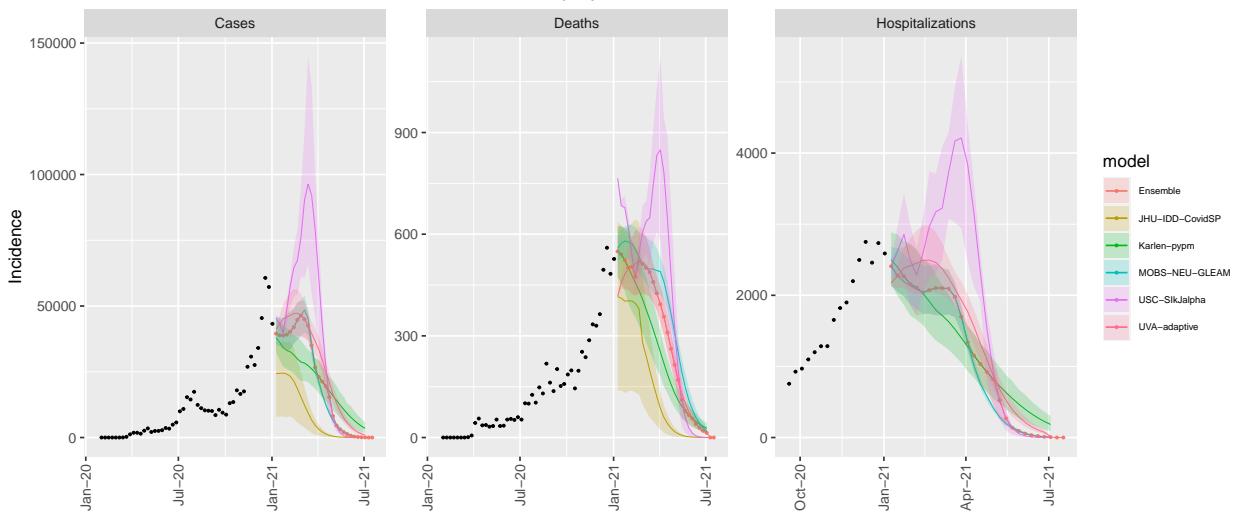
SC model variance & 50% projection intervals – moderate



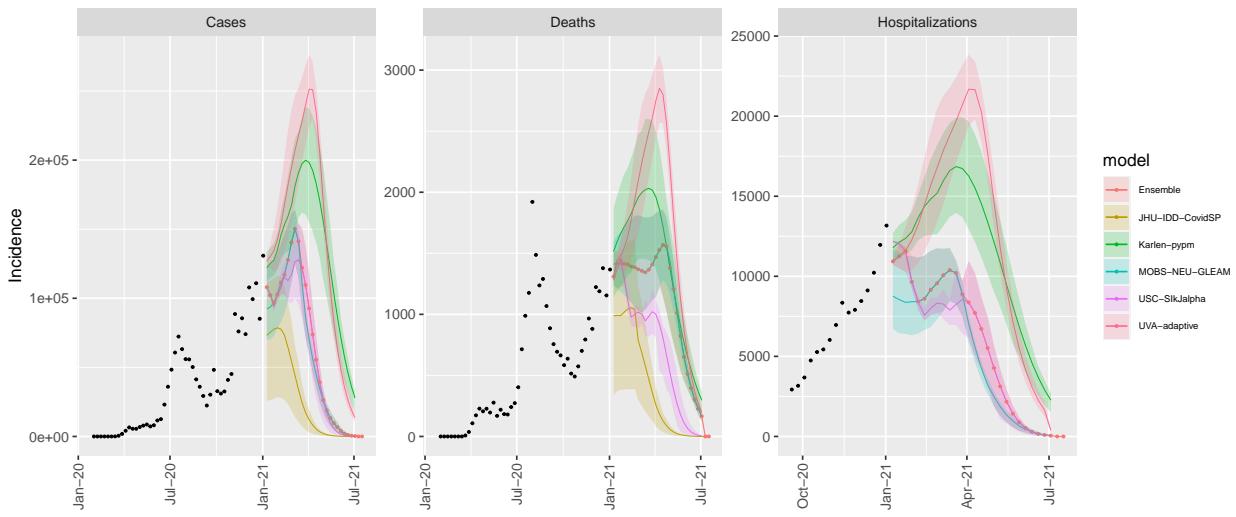
SD model variance & 50% projection intervals – moderate



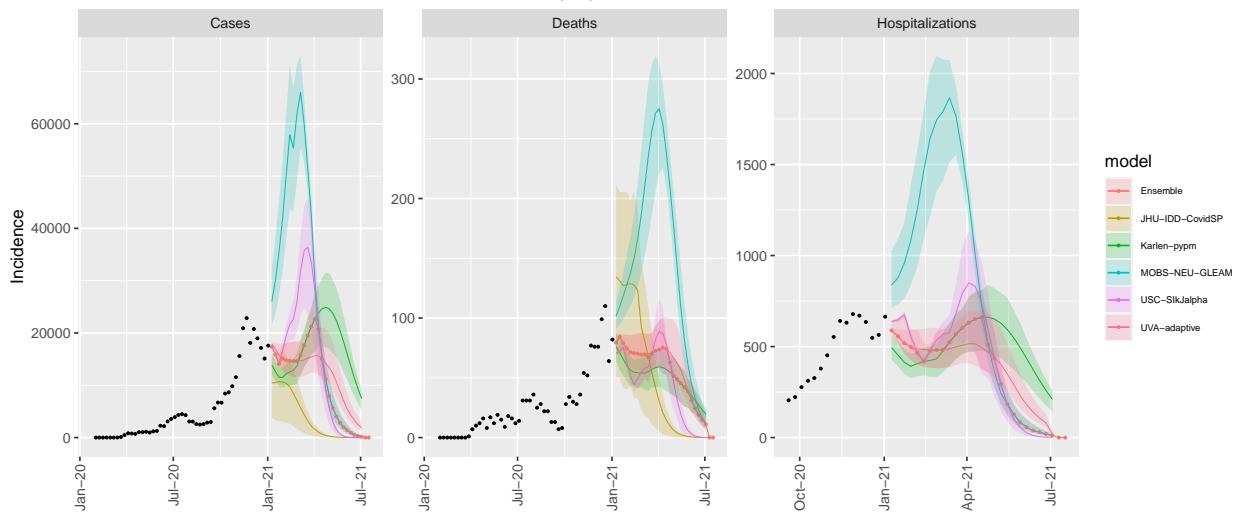
TN model variance & 50% projection intervals – moderate



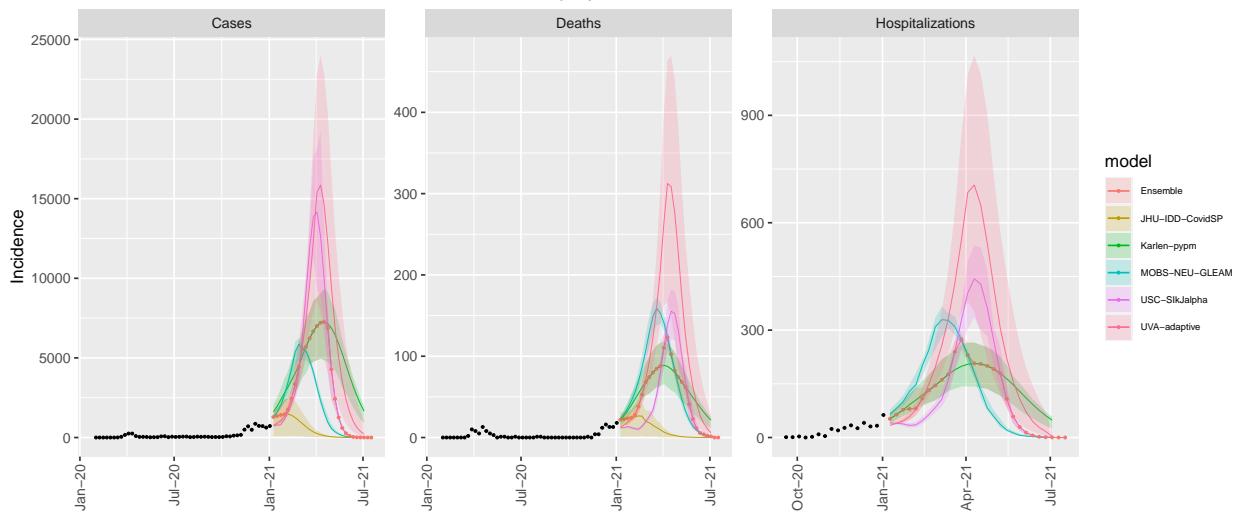
TX model variance & 50% projection intervals – moderate



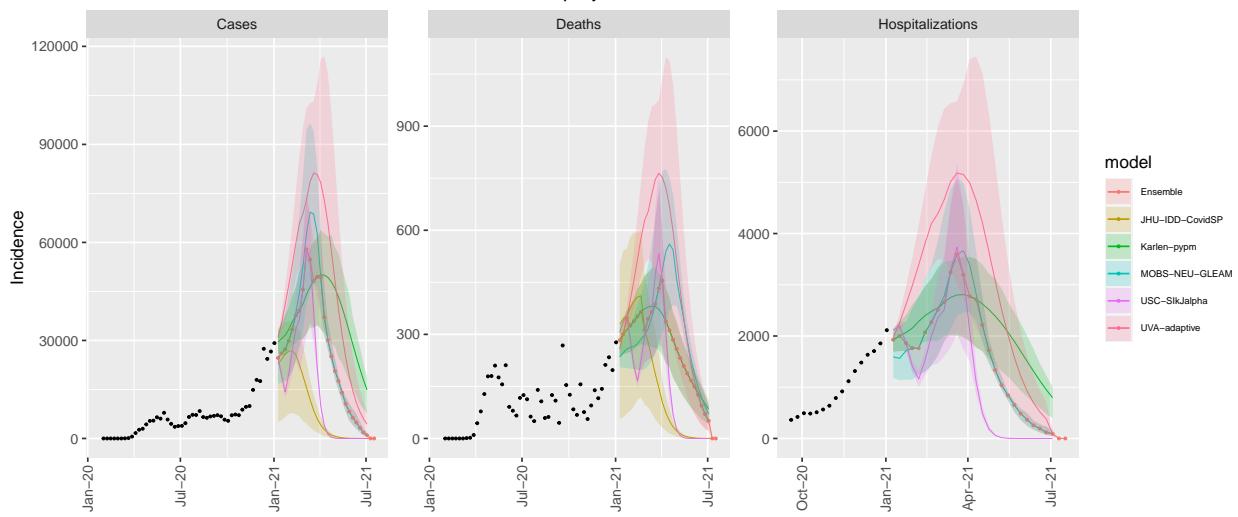
UT model variance & 50% projection intervals – moderate



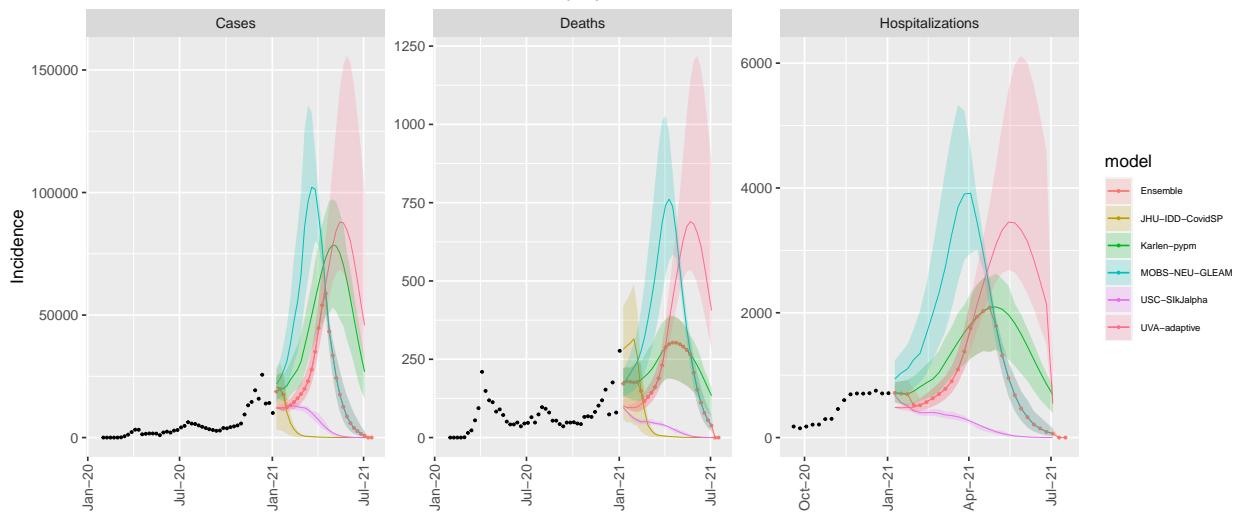
VT model variance & 50% projection intervals – moderate



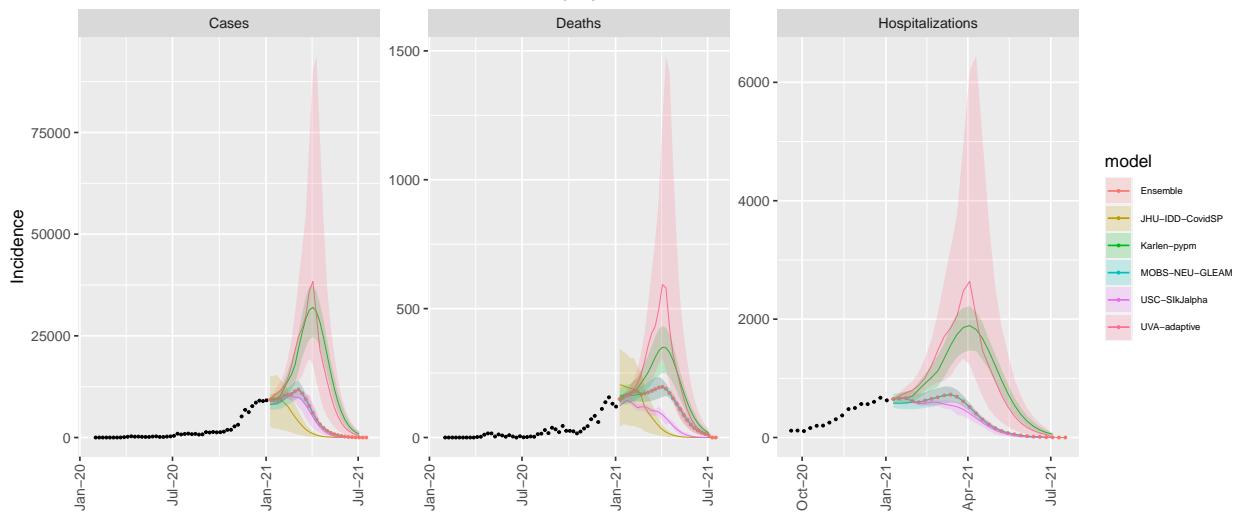
VA model variance & 50% projection intervals – moderate



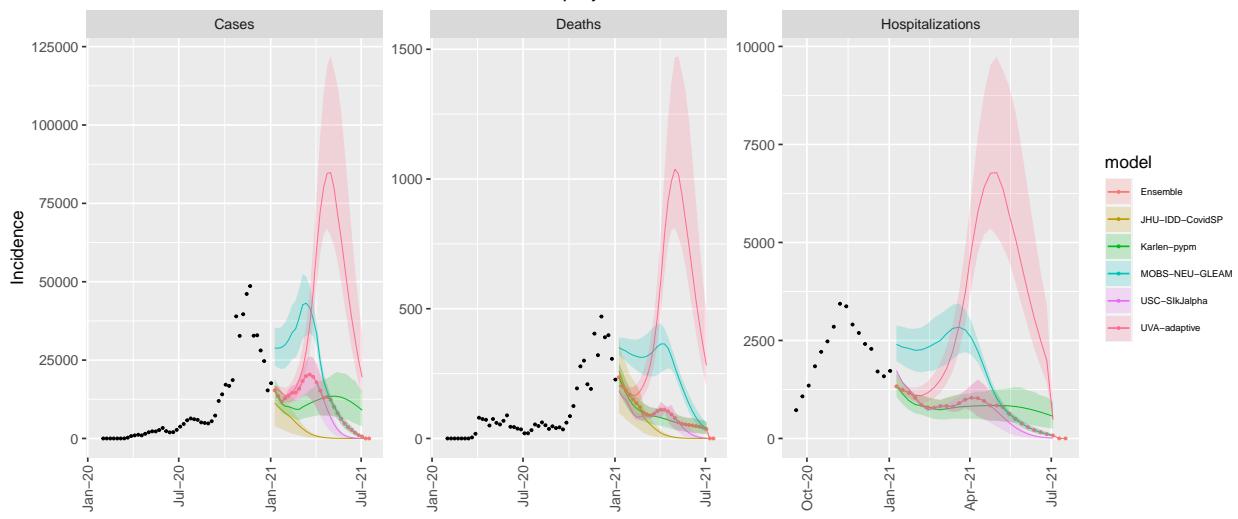
WA model variance & 50% projection intervals – moderate



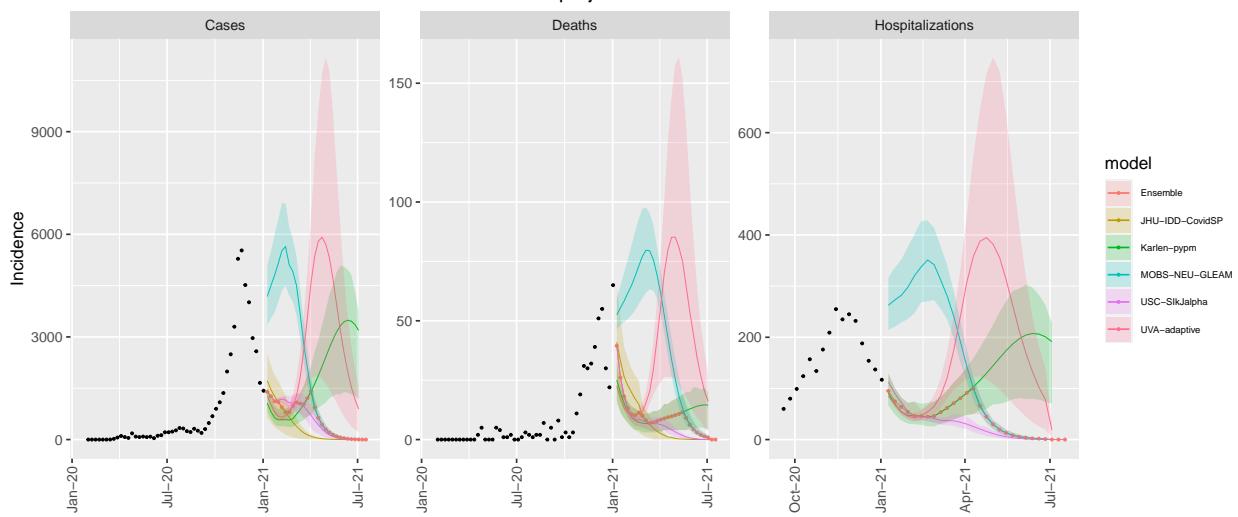
WV model variance & 50% projection intervals – moderate



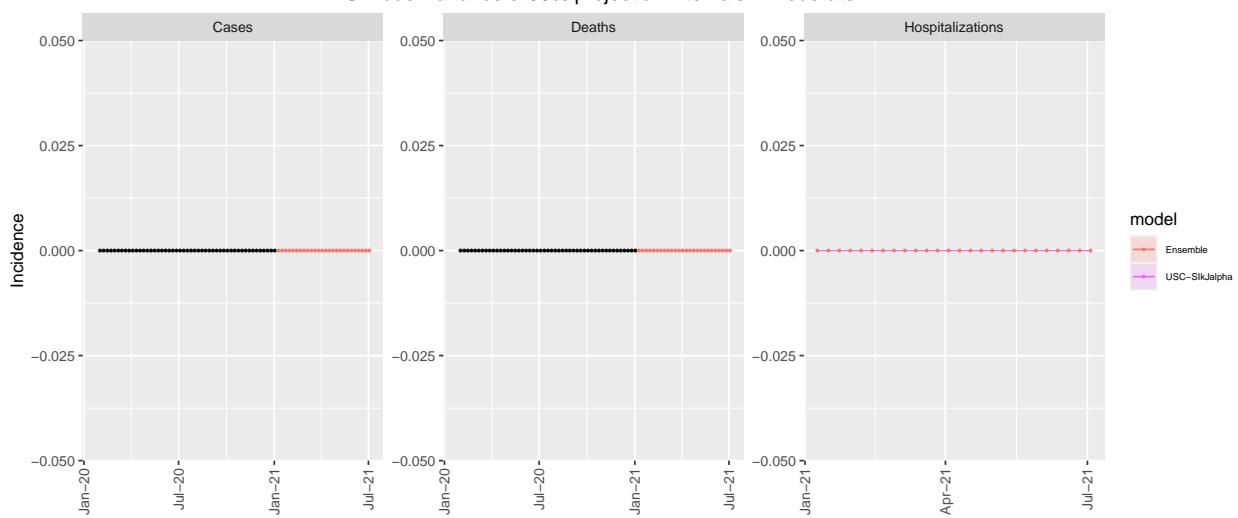
WI model variance & 50% projection intervals – moderate



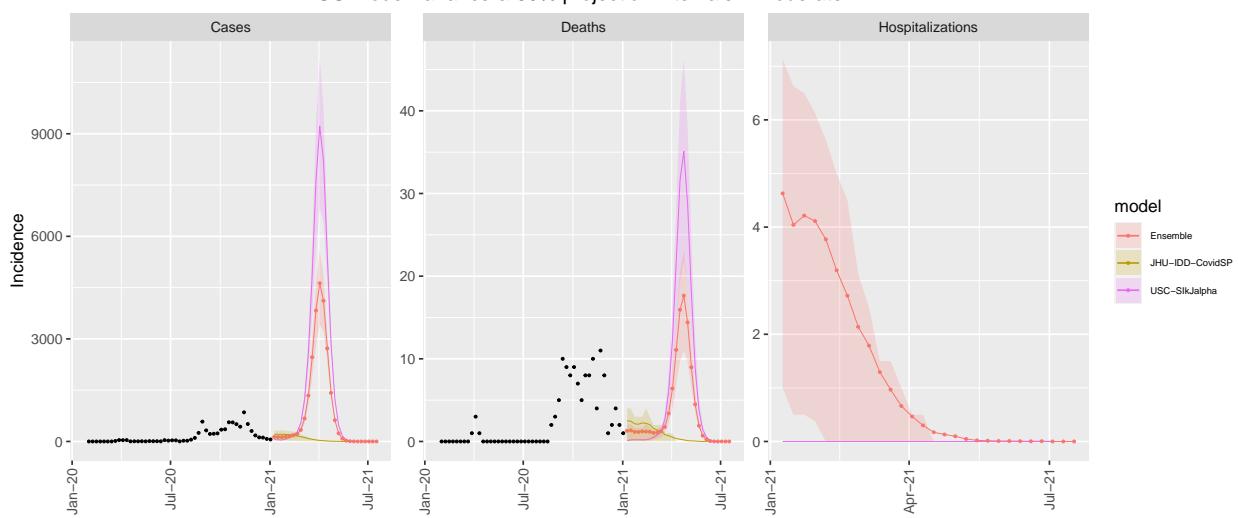
WY model variance & 50% projection intervals – moderate



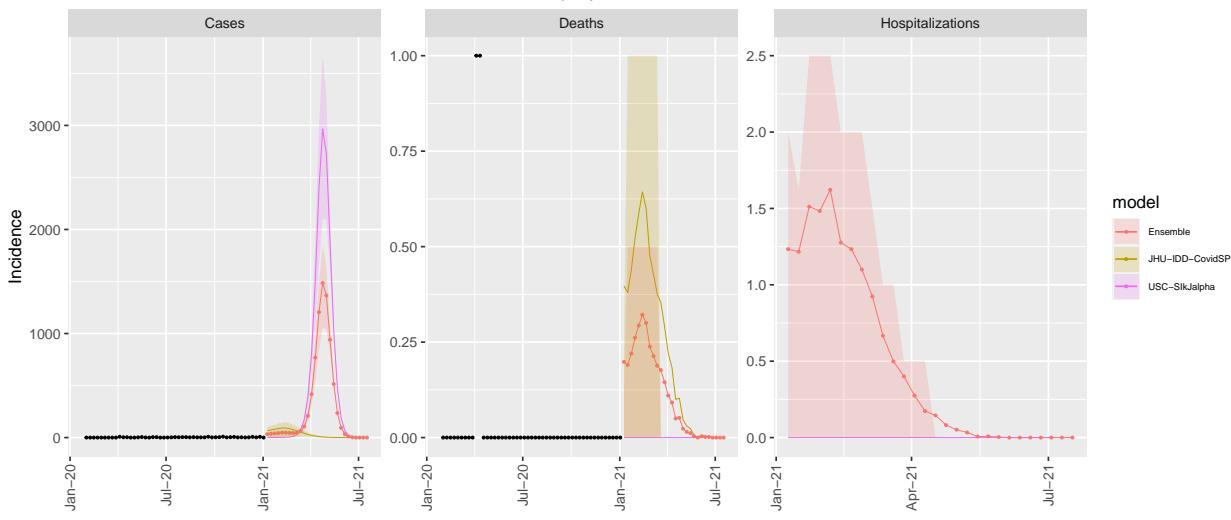
AS model variance & 50% projection intervals – moderate



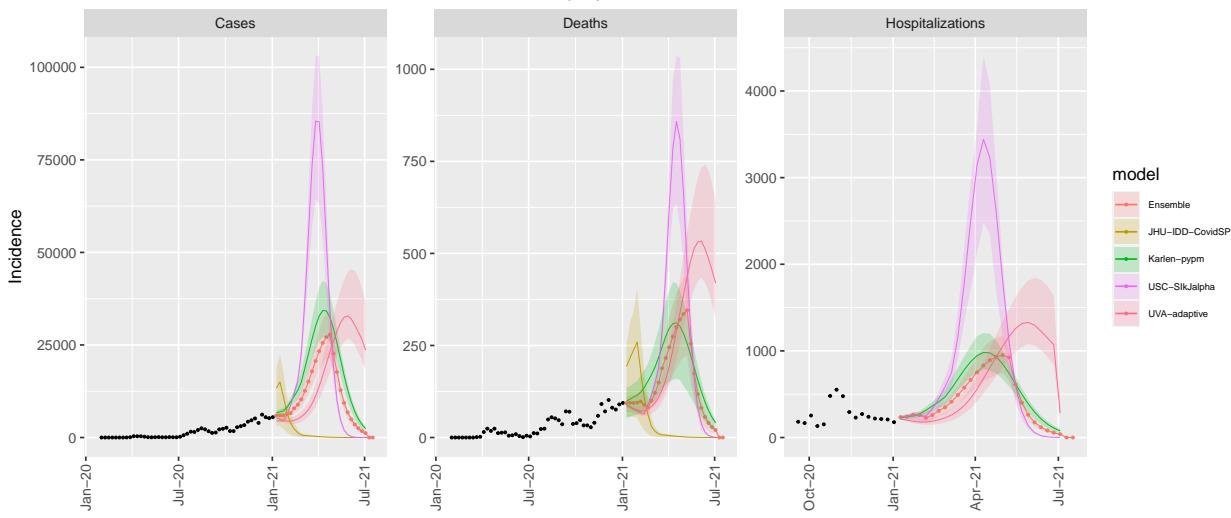
GU model variance & 50% projection intervals – moderate



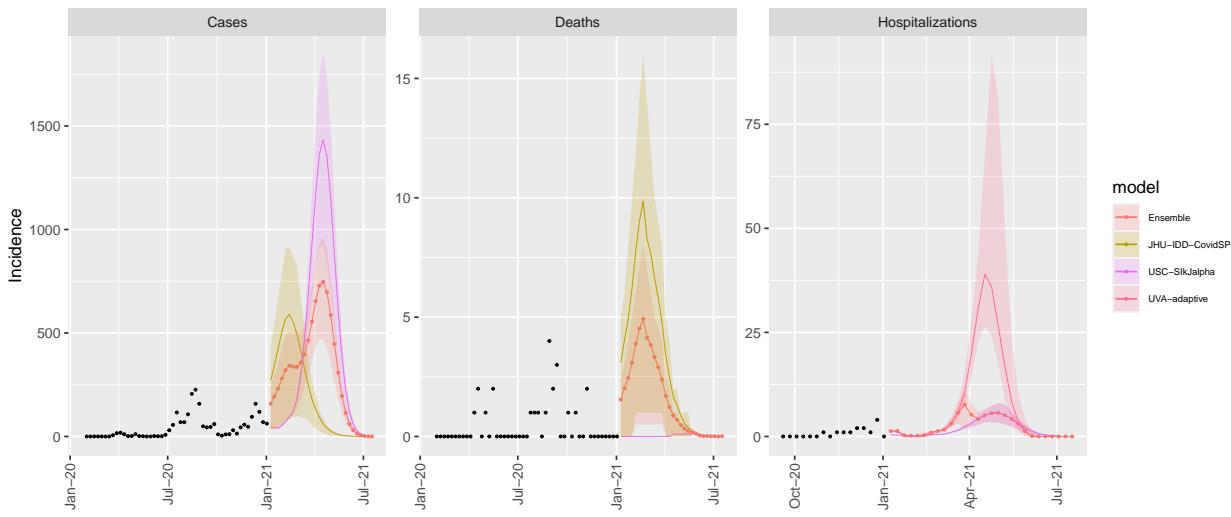
MP model variance & 50% projection intervals – moderate



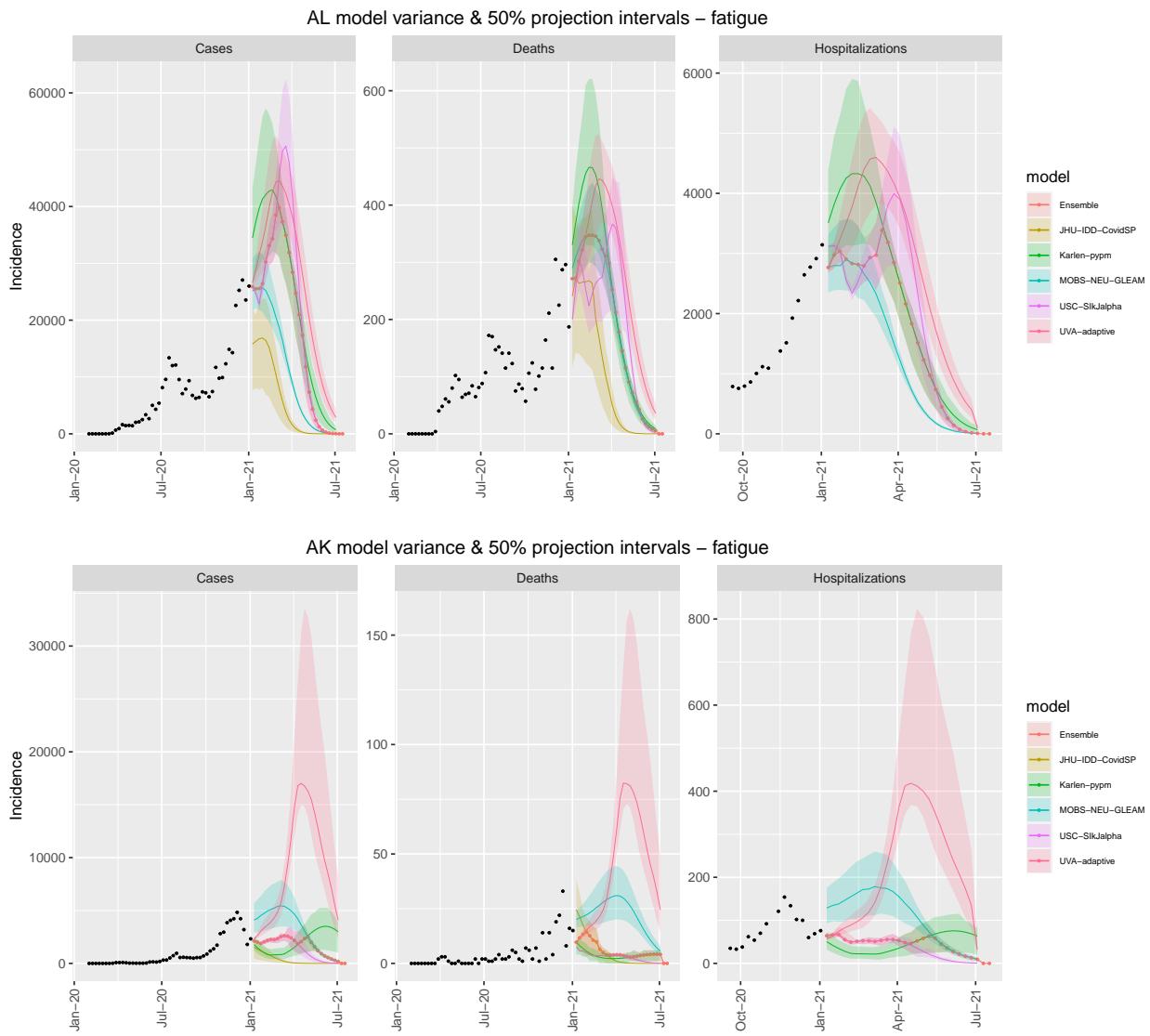
PR model variance & 50% projection intervals – moderate



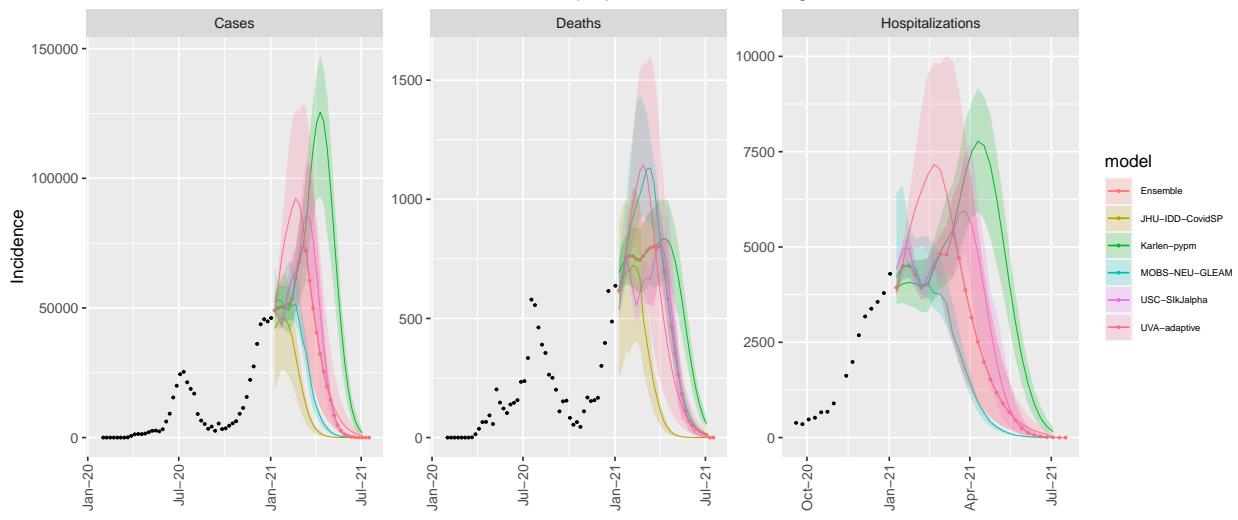
VI model variance & 50% projection intervals – moderate



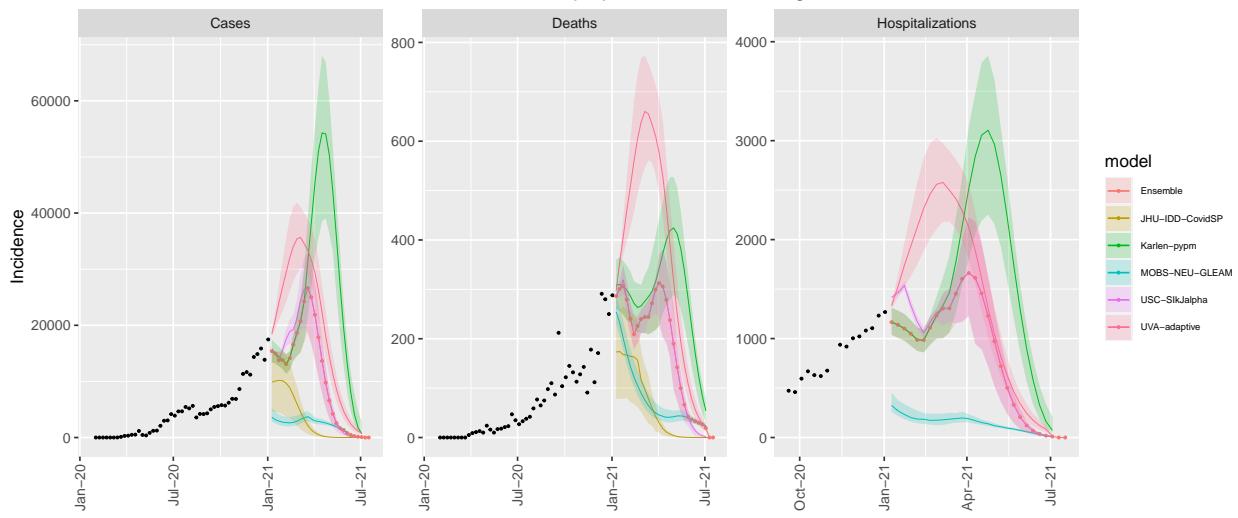
National model variation for the fatigue scenario



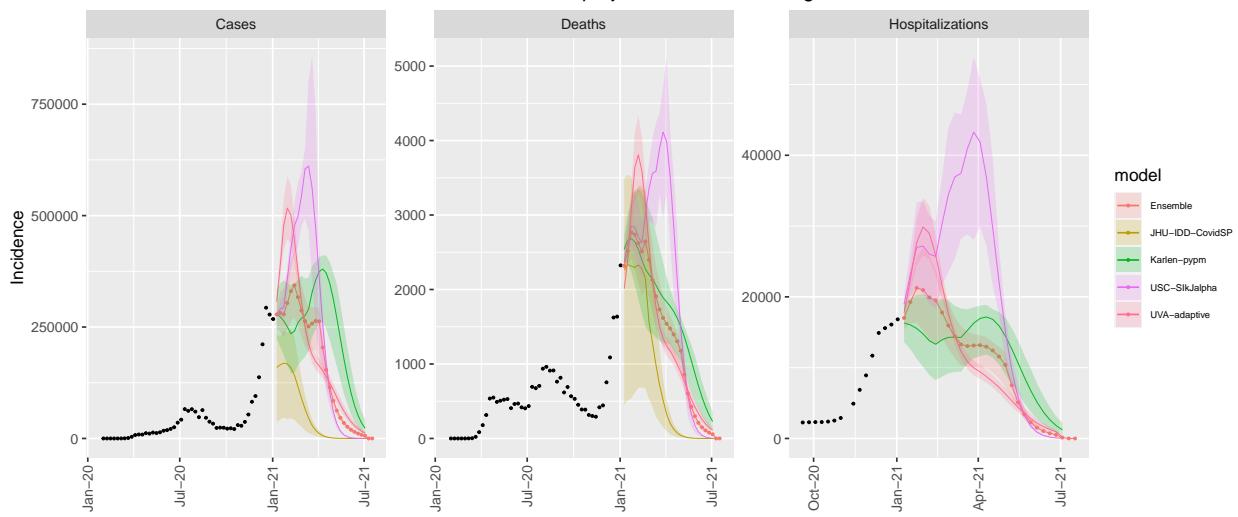
AZ model variance & 50% projection intervals – fatigue



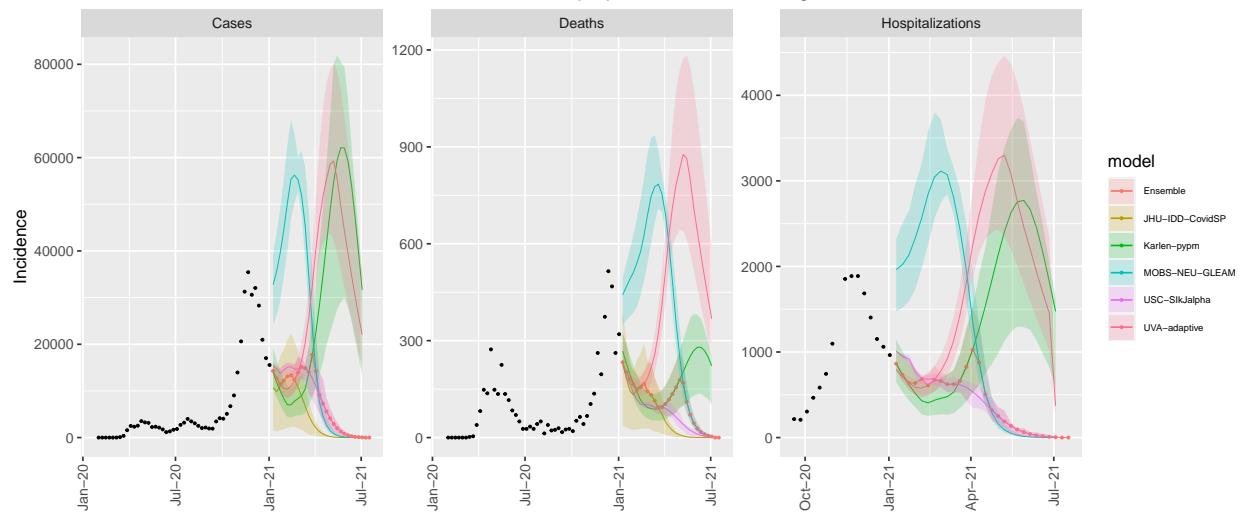
AR model variance & 50% projection intervals – fatigue



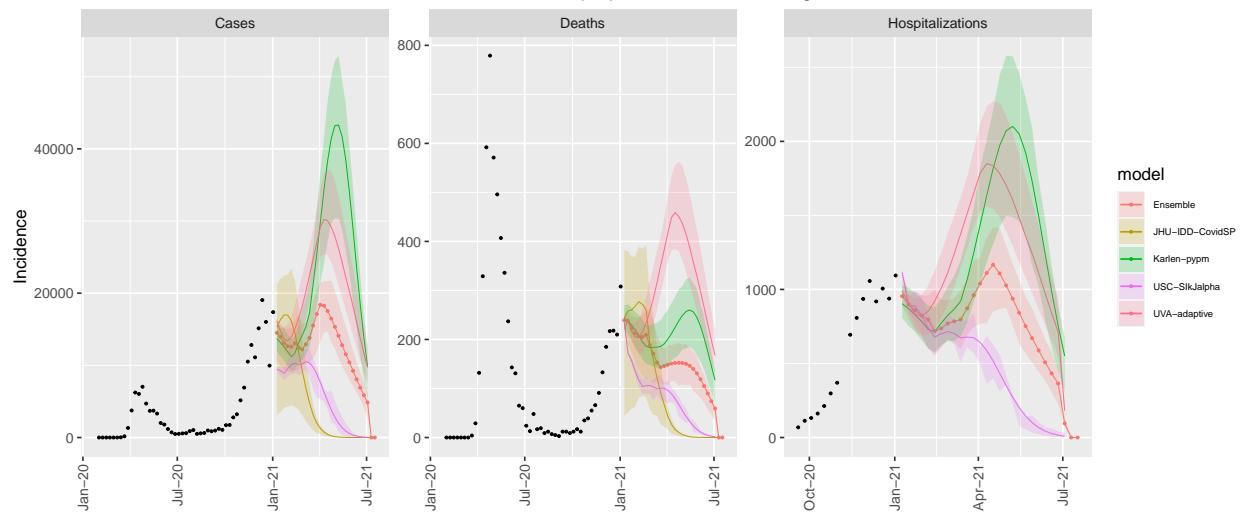
CA model variance & 50% projection intervals – fatigue



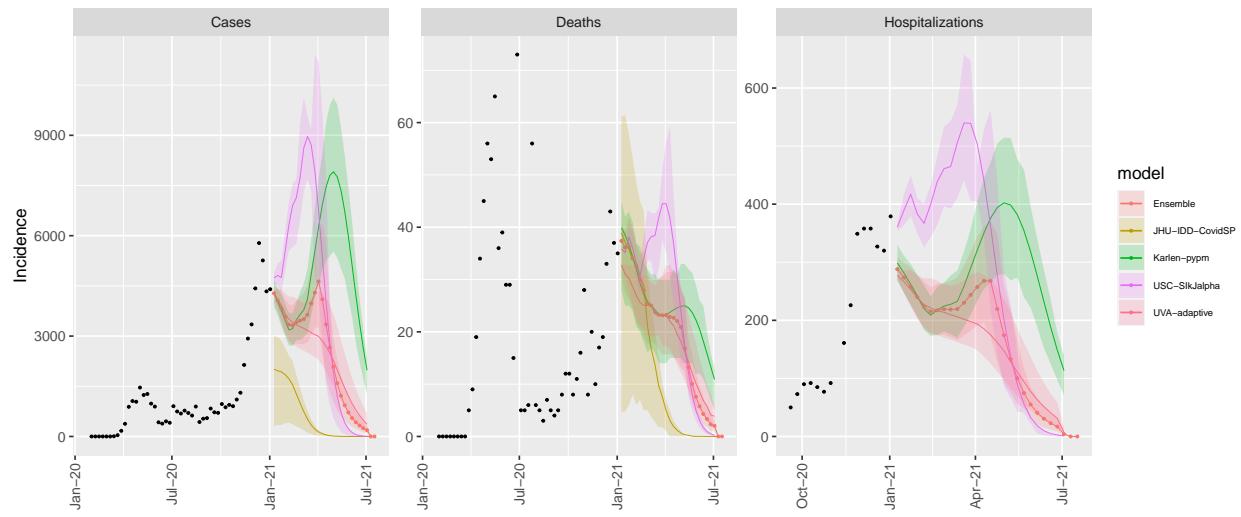
CO model variance & 50% projection intervals – fatigue



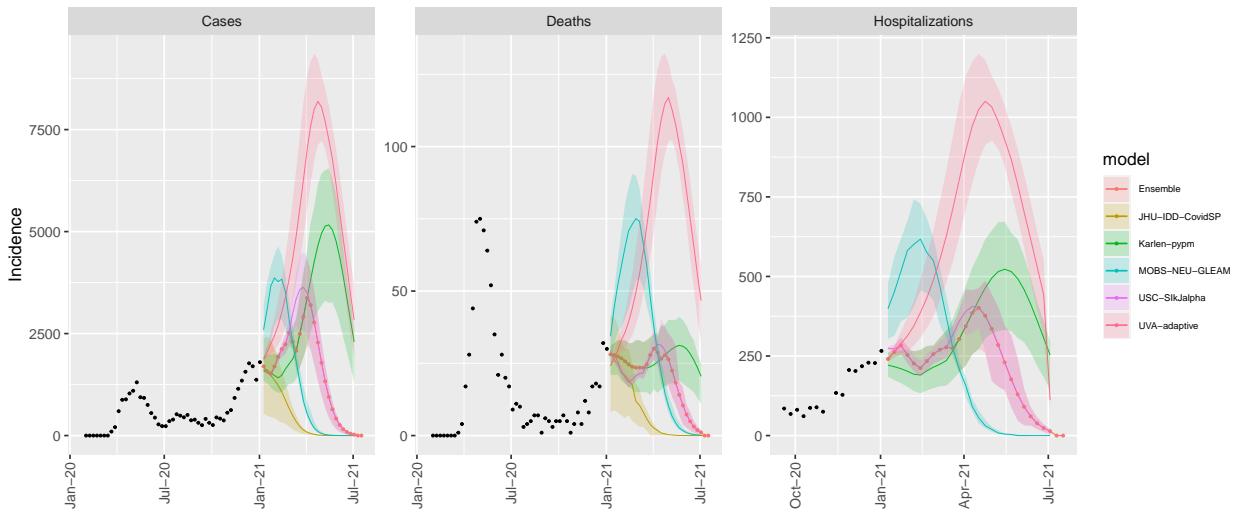
CT model variance & 50% projection intervals – fatigue



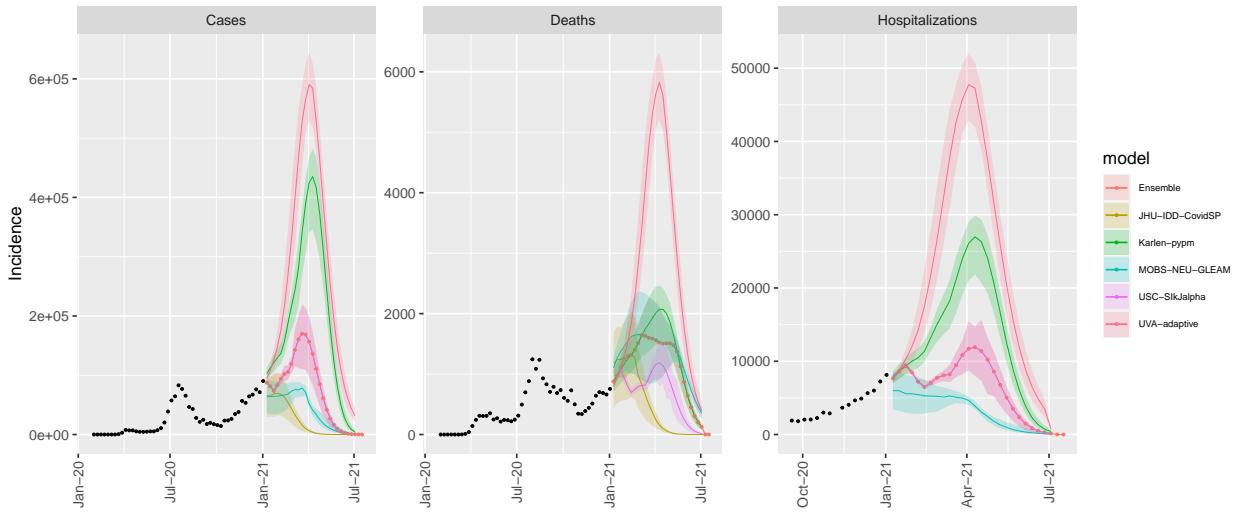
DE model variance & 50% projection intervals – fatigue



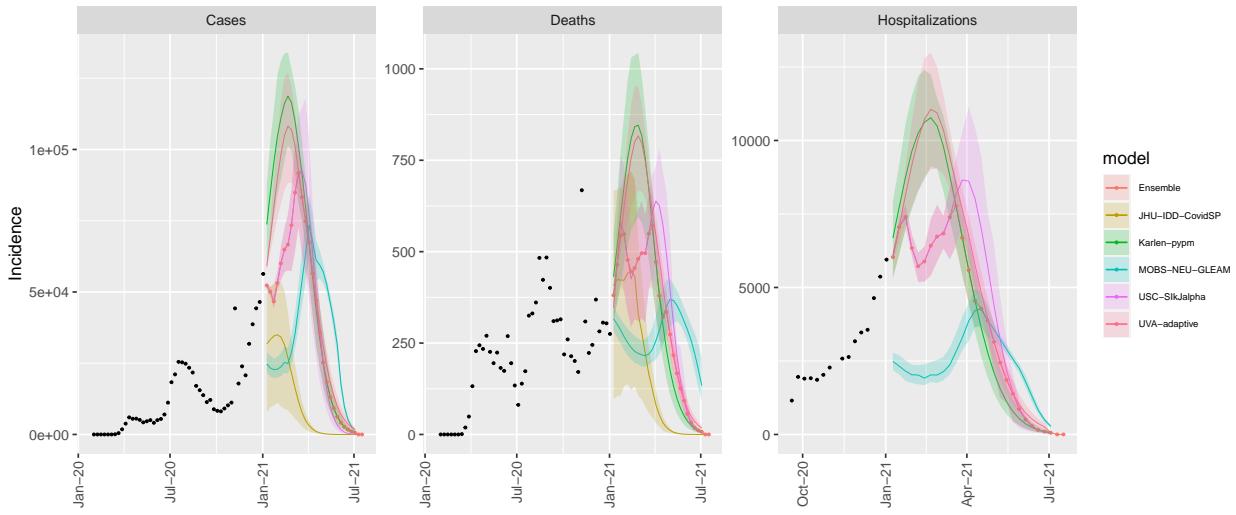
DC model variance & 50% projection intervals – fatigue



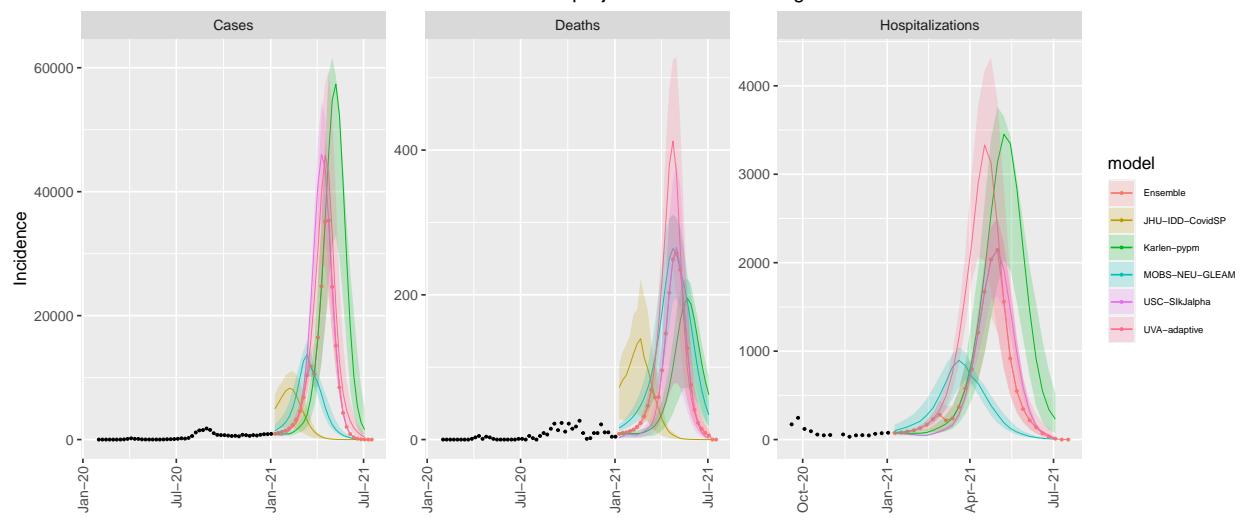
FL model variance & 50% projection intervals – fatigue



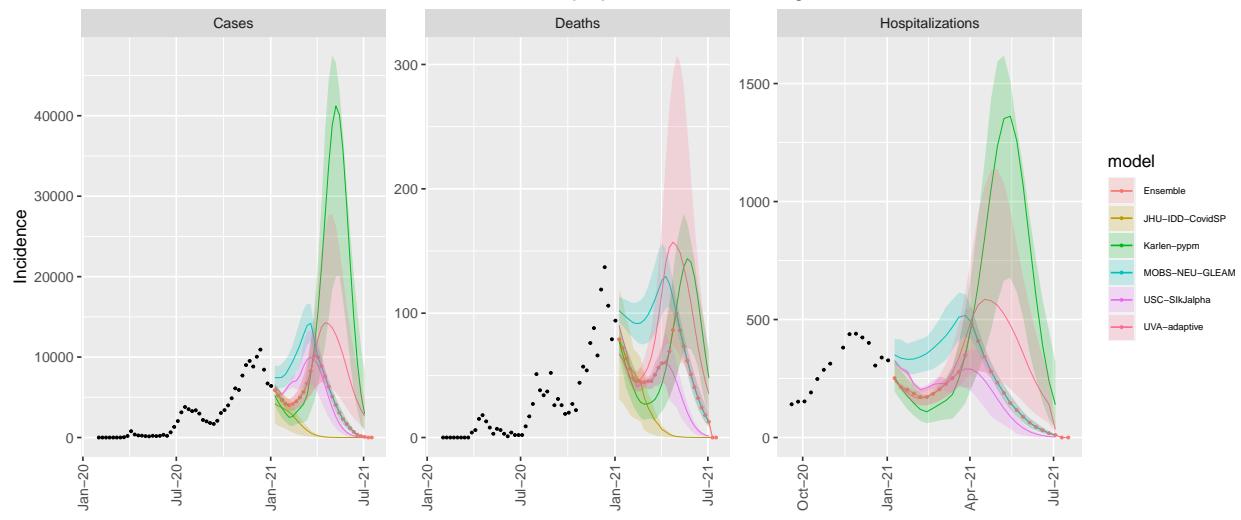
GA model variance & 50% projection intervals – fatigue



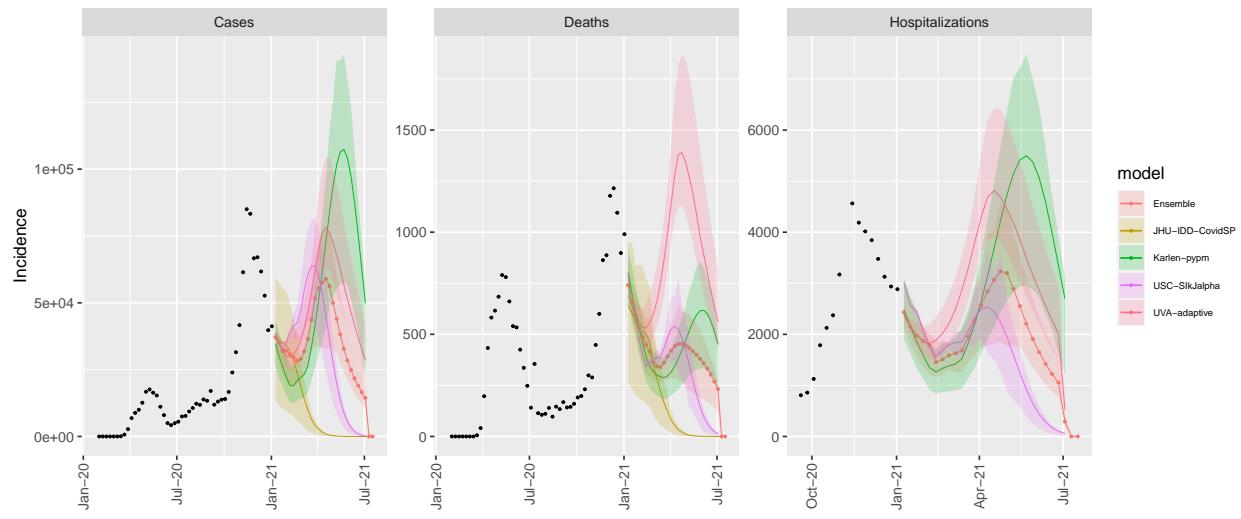
HI model variance & 50% projection intervals – fatigue



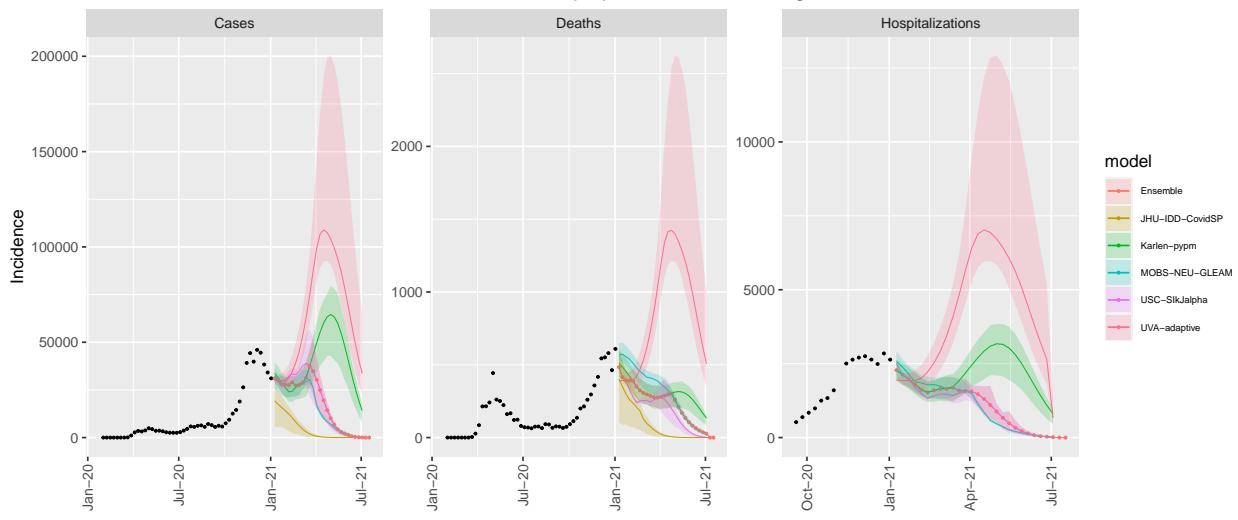
ID model variance & 50% projection intervals – fatigue



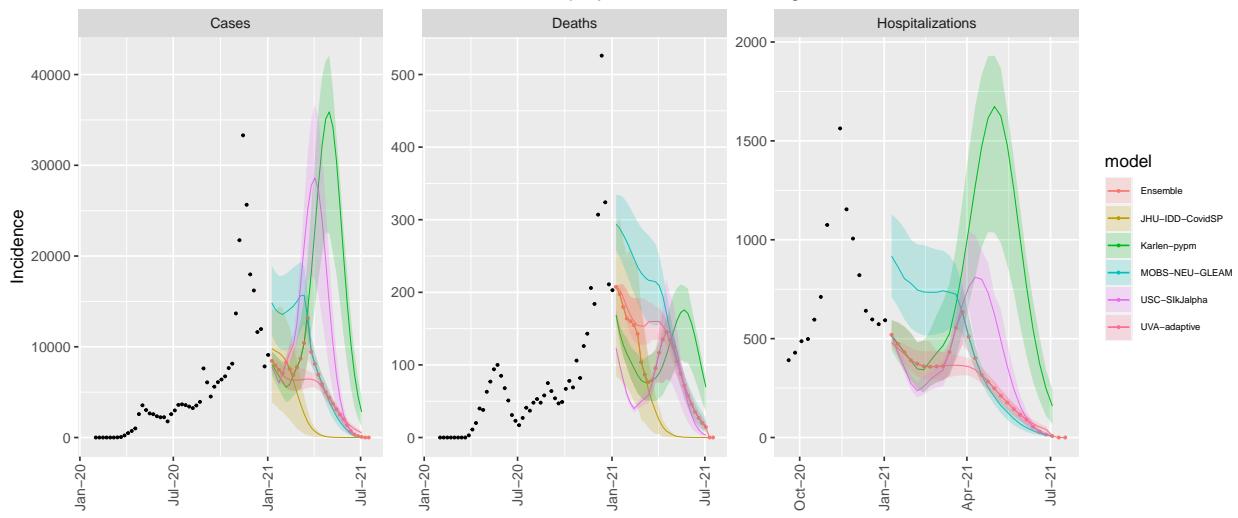
IL model variance & 50% projection intervals – fatigue



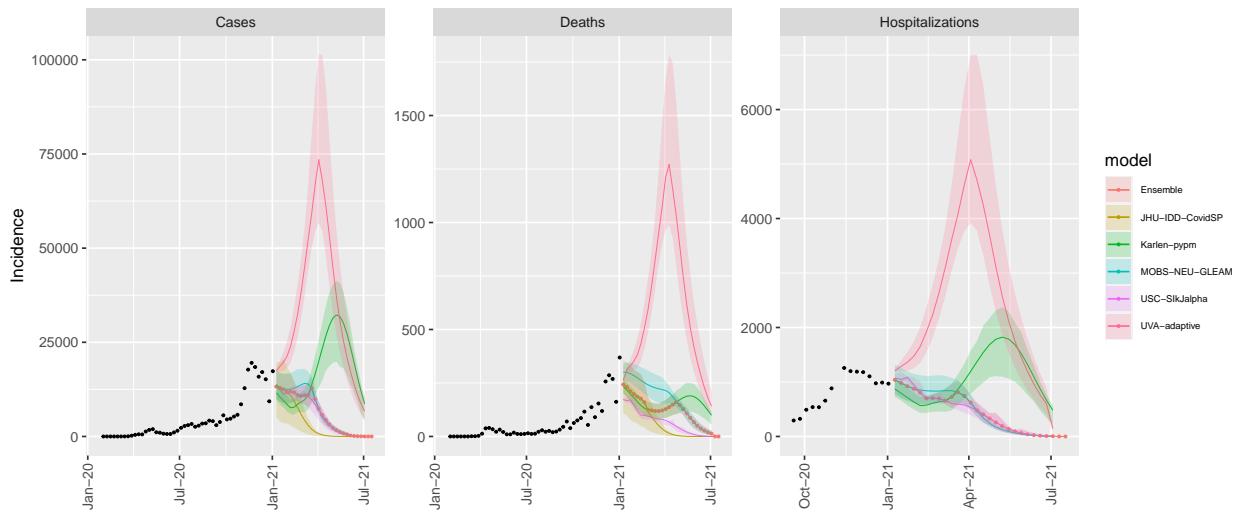
IN model variance & 50% projection intervals – fatigue



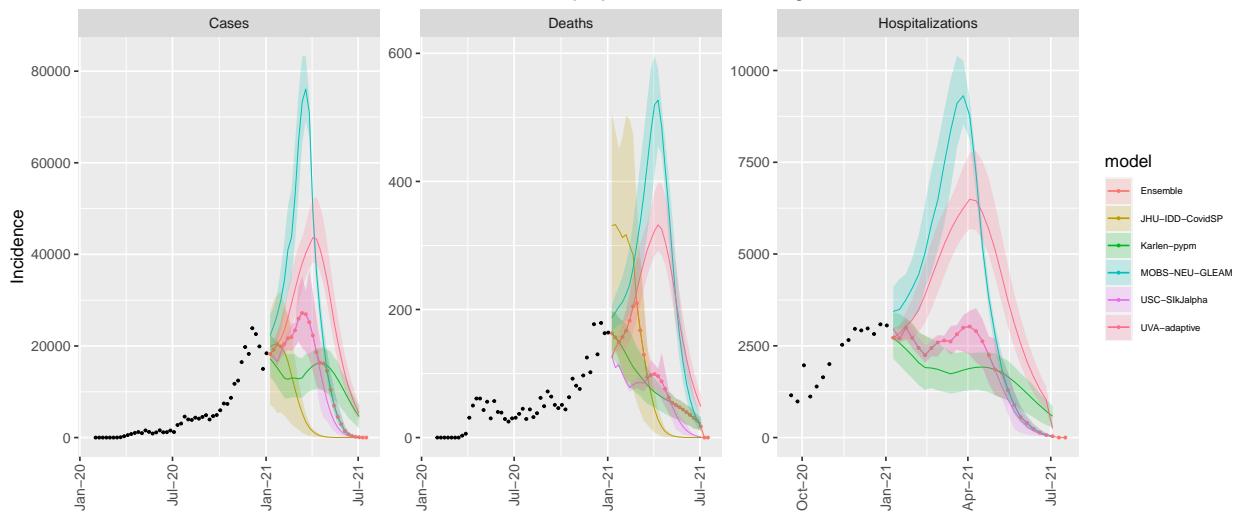
IA model variance & 50% projection intervals – fatigue



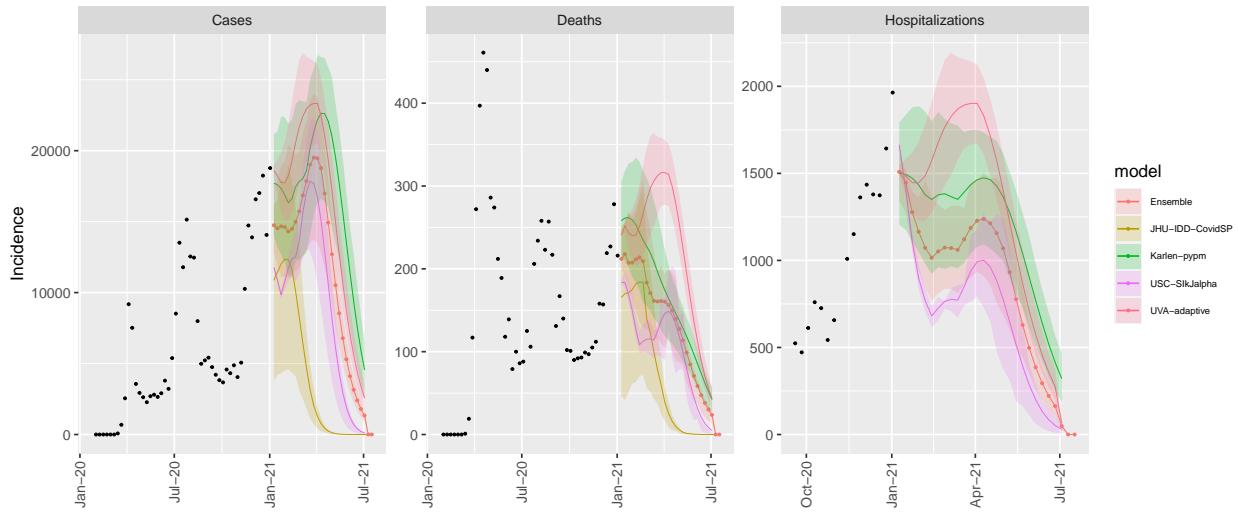
KS model variance & 50% projection intervals – fatigue



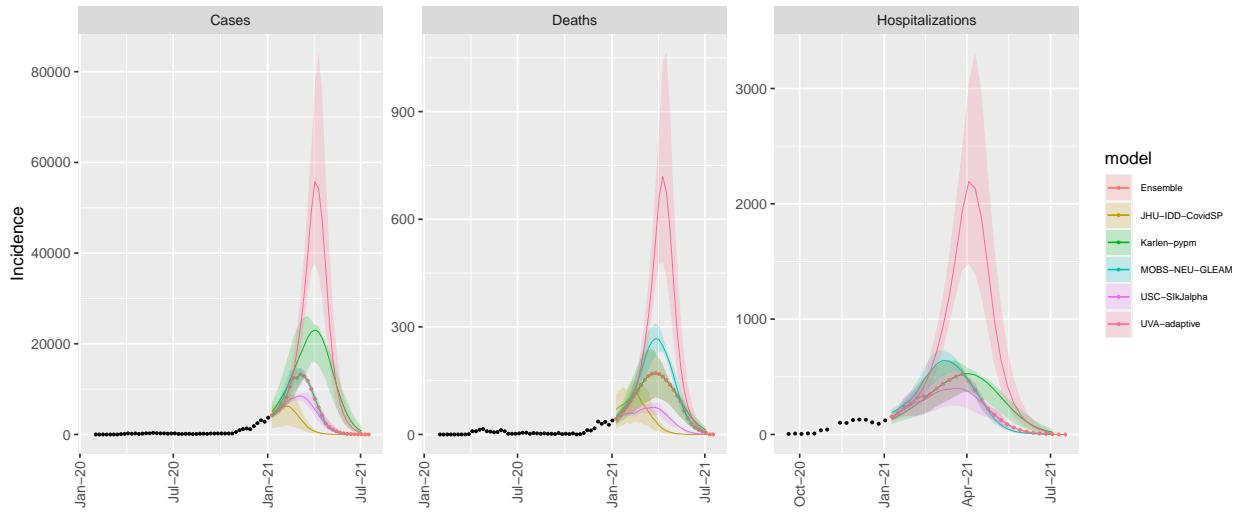
KY model variance & 50% projection intervals – fatigue



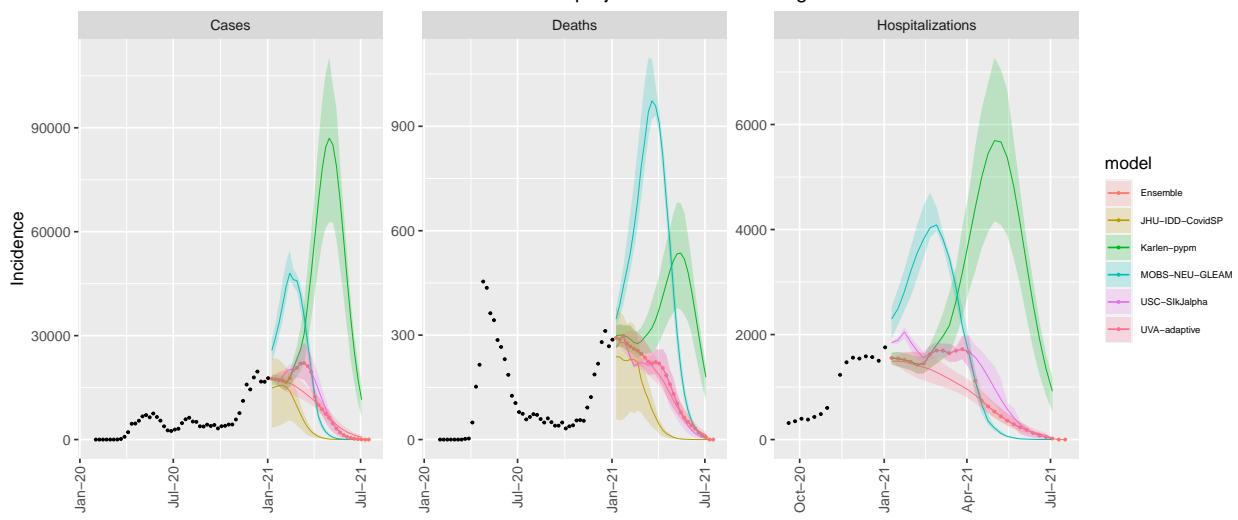
LA model variance & 50% projection intervals – fatigue



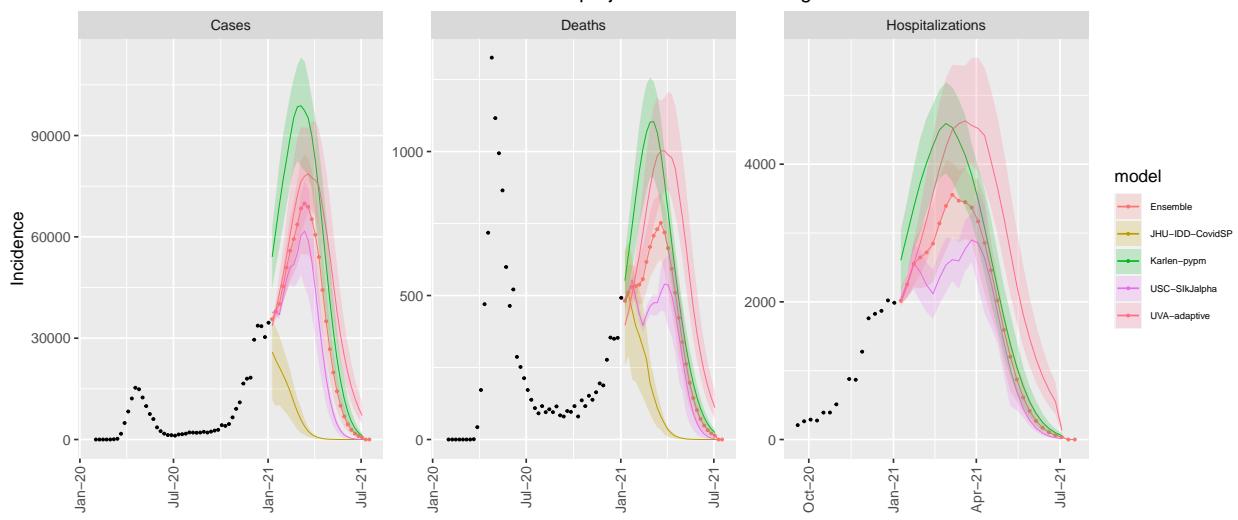
ME model variance & 50% projection intervals – fatigue



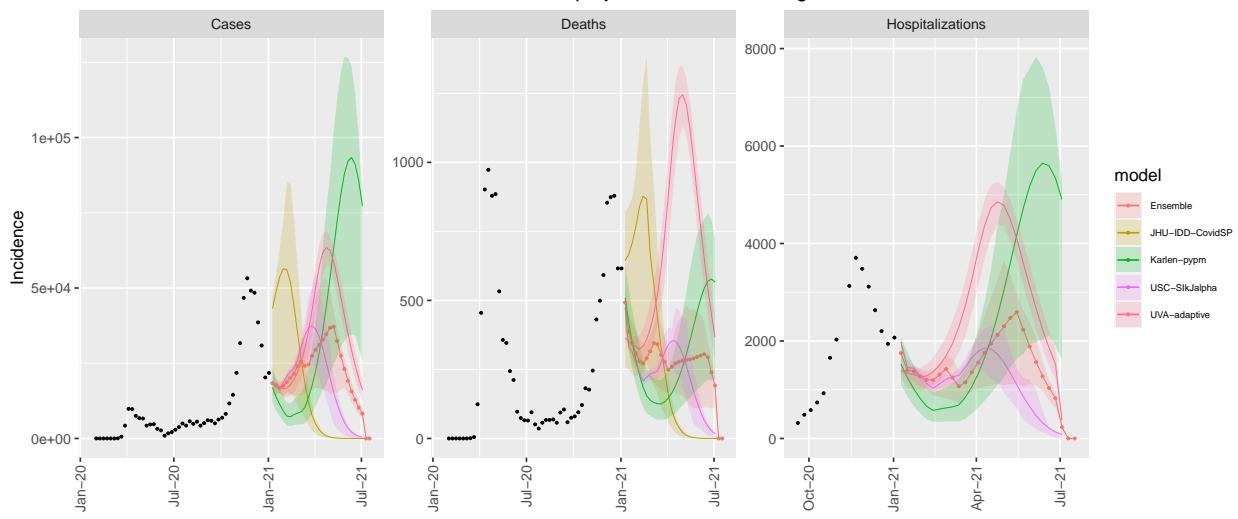
MD model variance & 50% projection intervals – fatigue



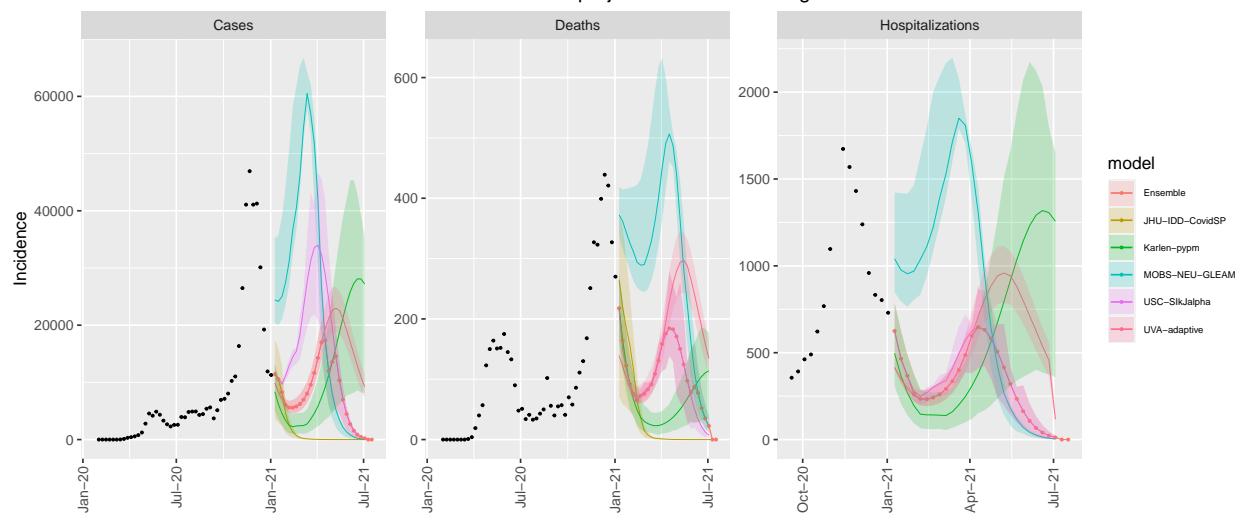
MA model variance & 50% projection intervals – fatigue



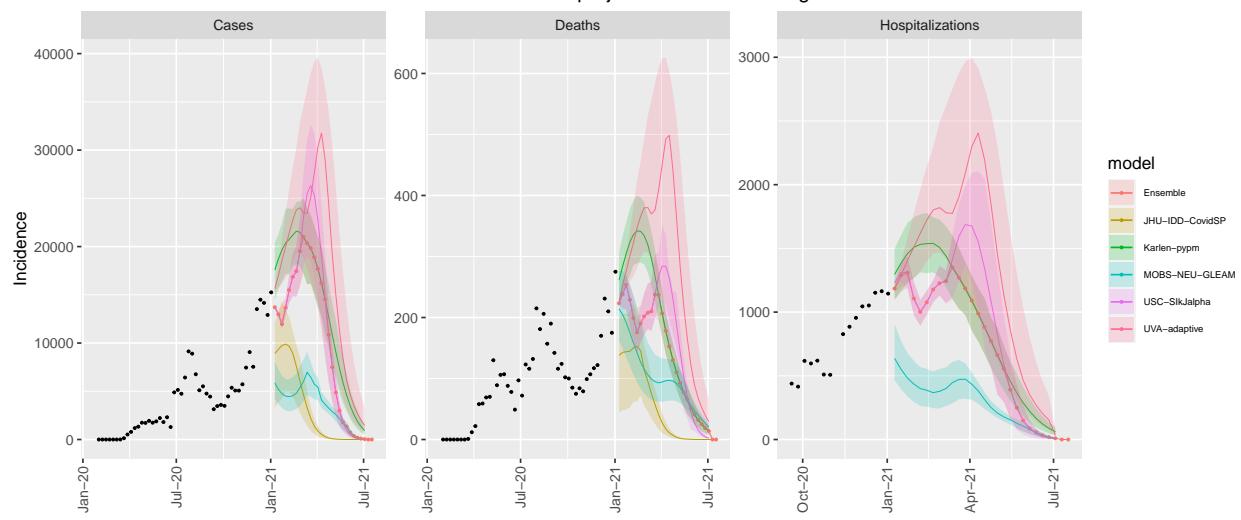
MI model variance & 50% projection intervals – fatigue



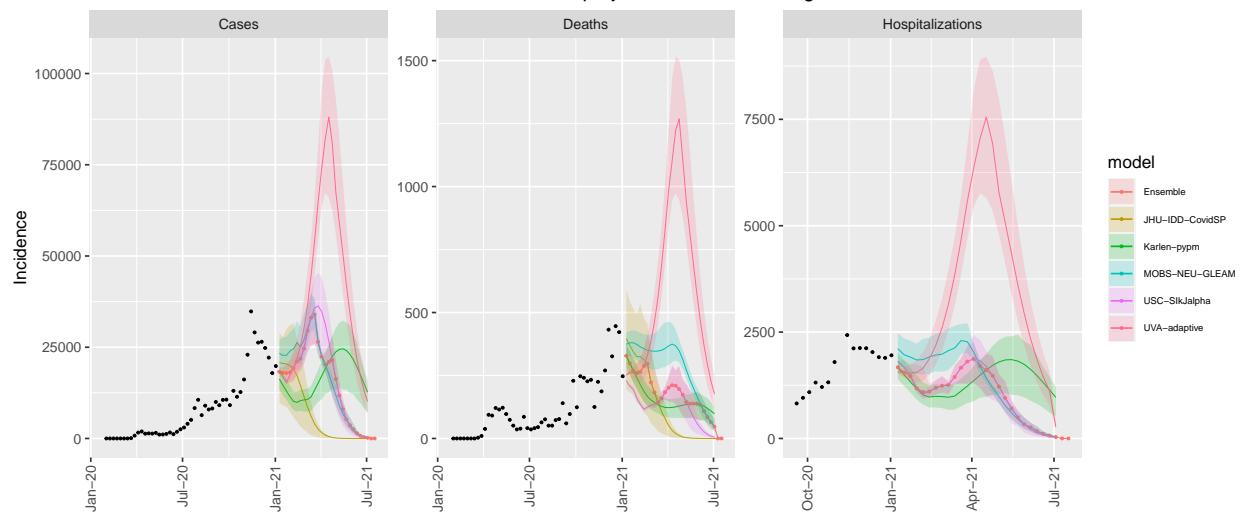
MN model variance & 50% projection intervals – fatigue



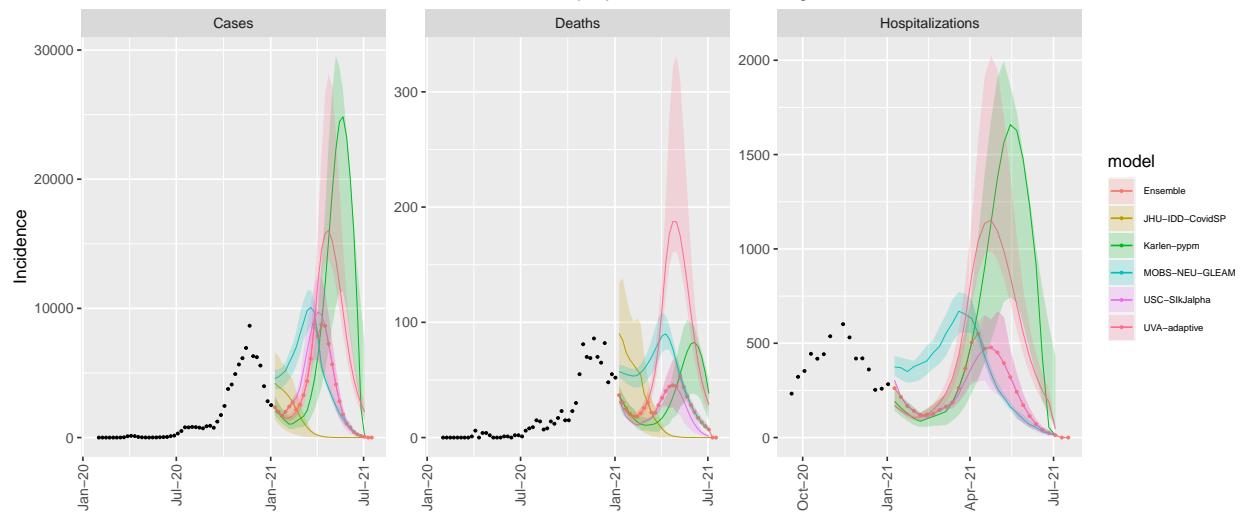
MS model variance & 50% projection intervals – fatigue



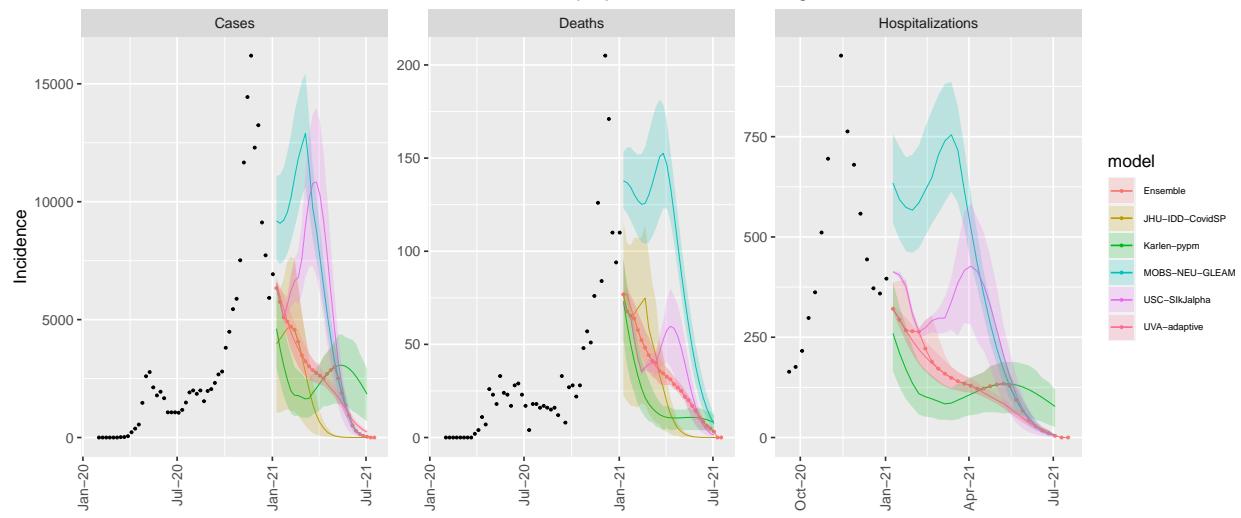
MO model variance & 50% projection intervals – fatigue



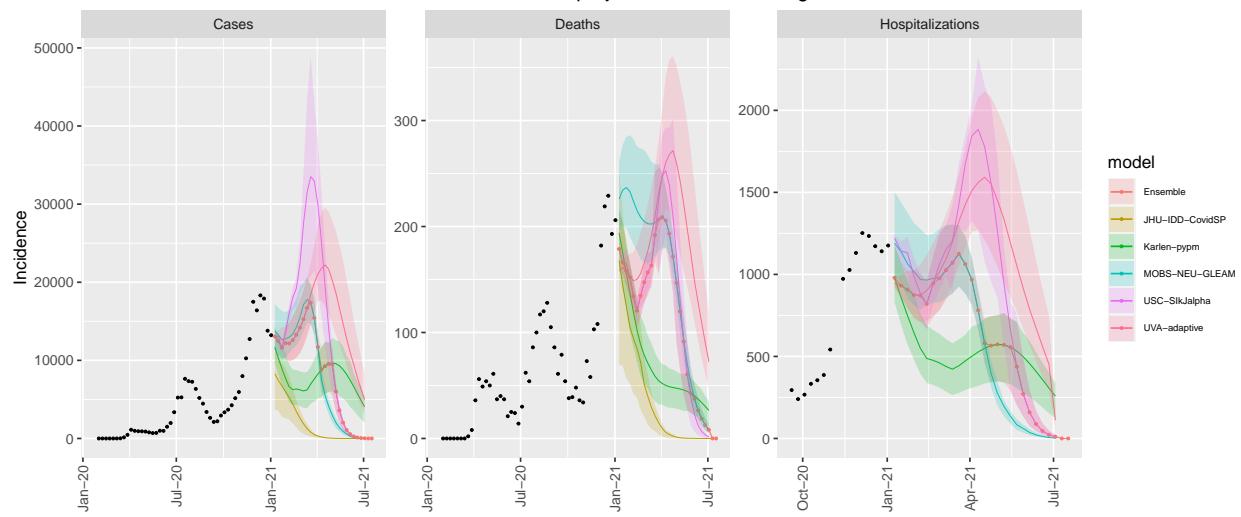
MT model variance & 50% projection intervals – fatigue



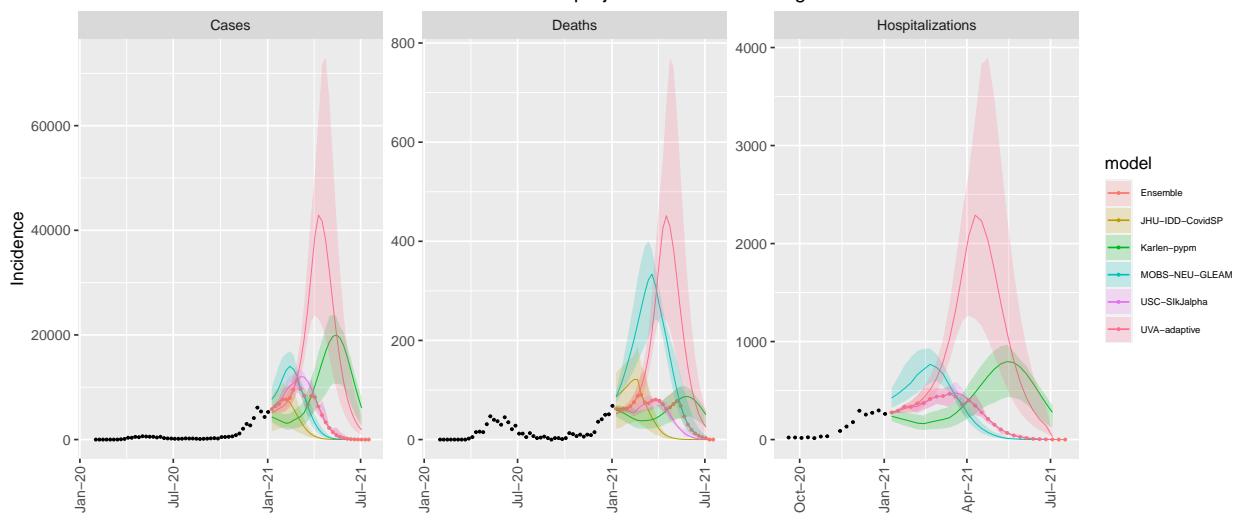
NE model variance & 50% projection intervals – fatigue



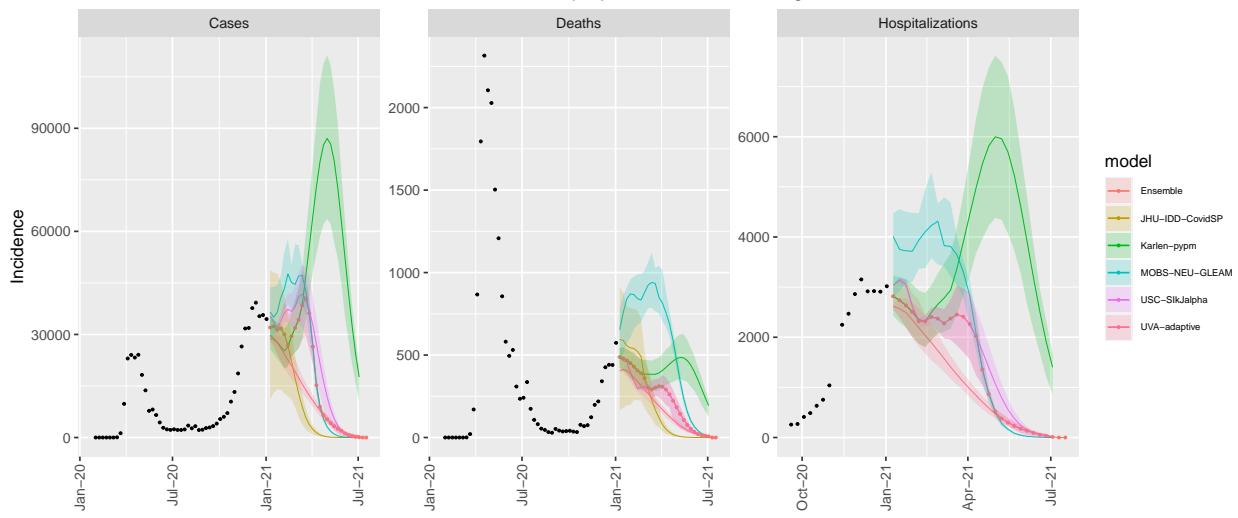
NV model variance & 50% projection intervals – fatigue



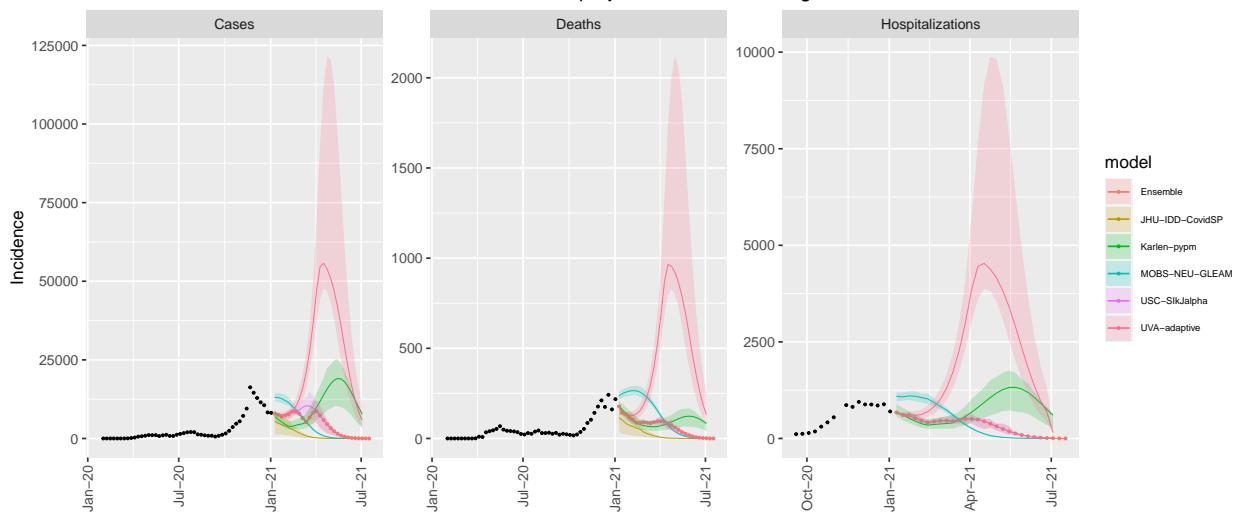
NH model variance & 50% projection intervals – fatigue



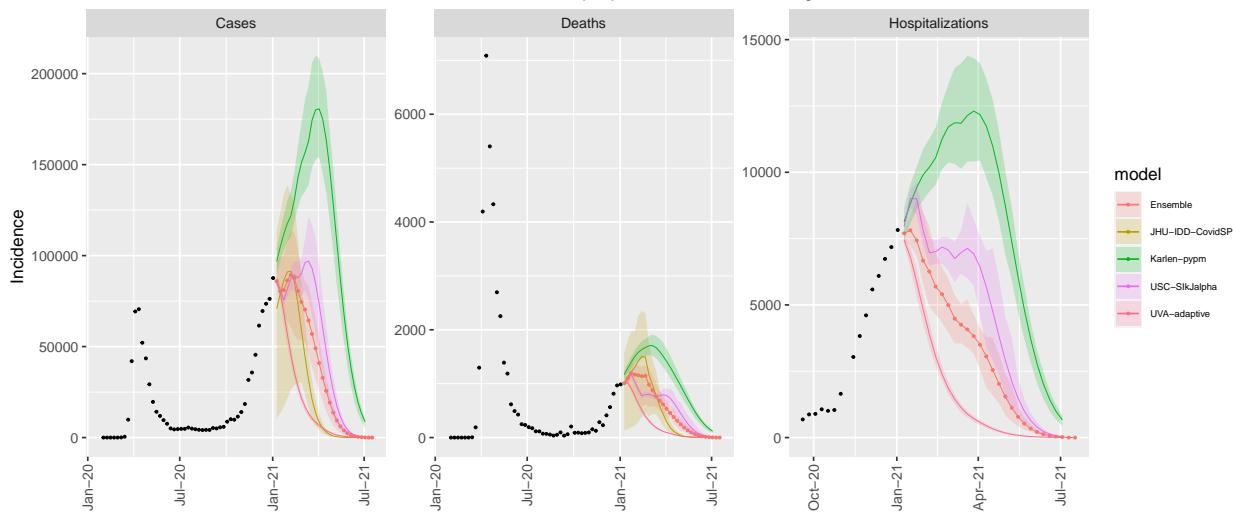
NJ model variance & 50% projection intervals – fatigue



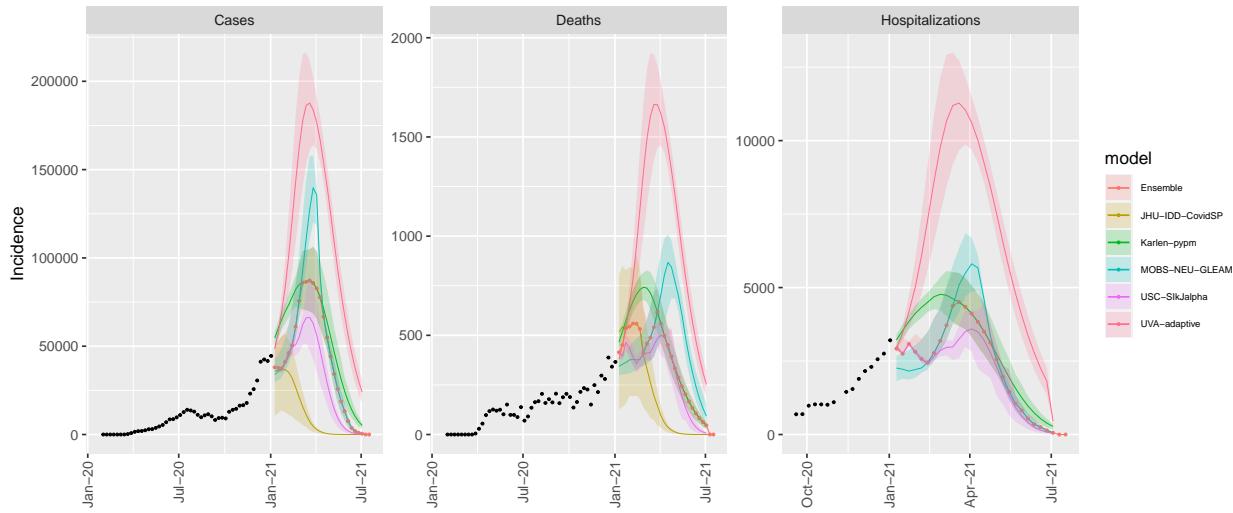
NM model variance & 50% projection intervals – fatigue



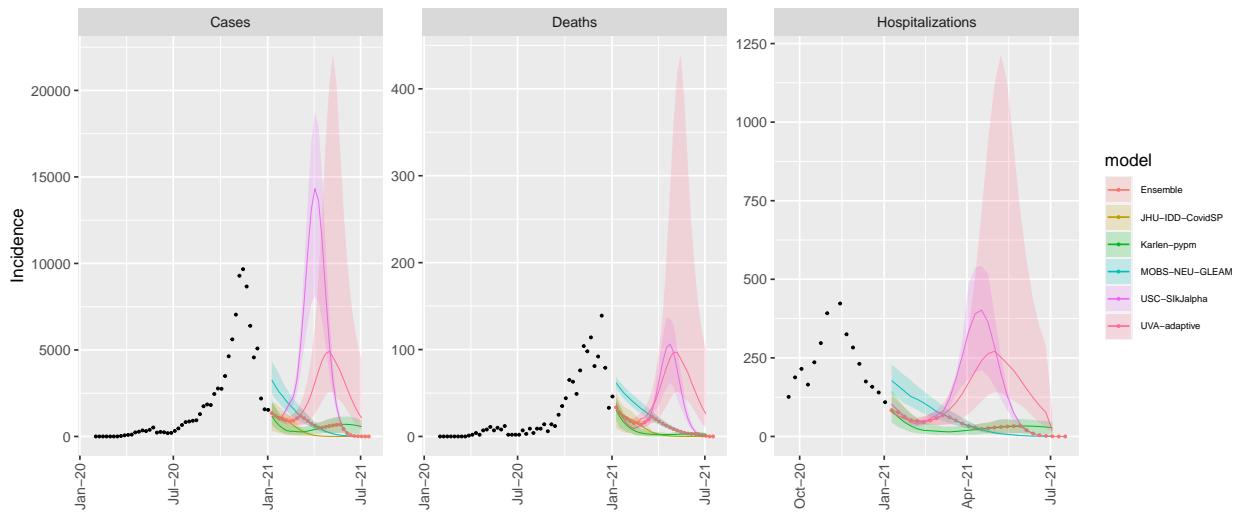
NY model variance & 50% projection intervals – fatigue



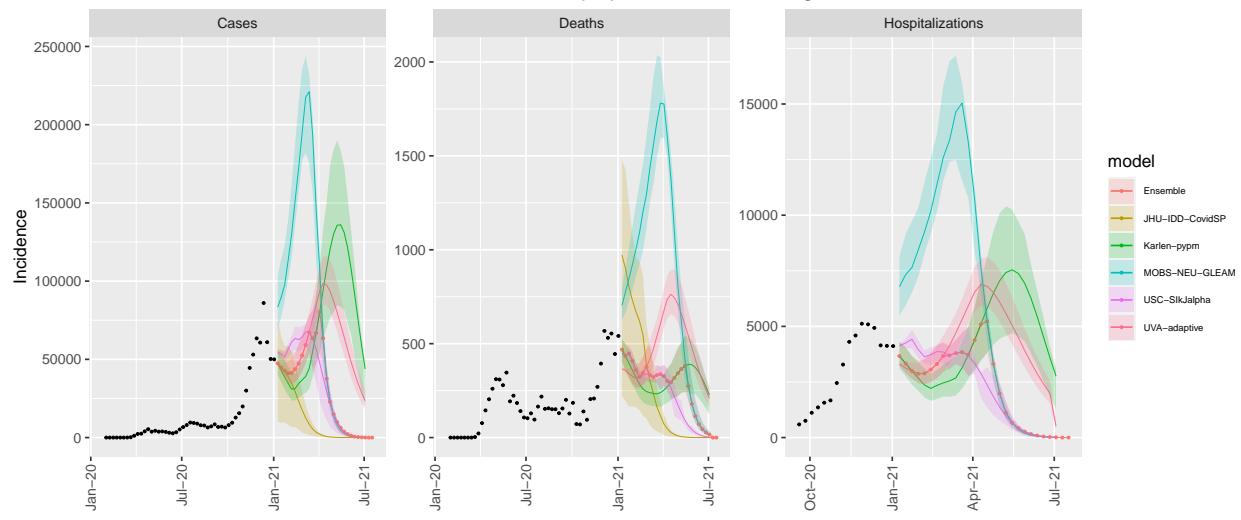
NC model variance & 50% projection intervals – fatigue



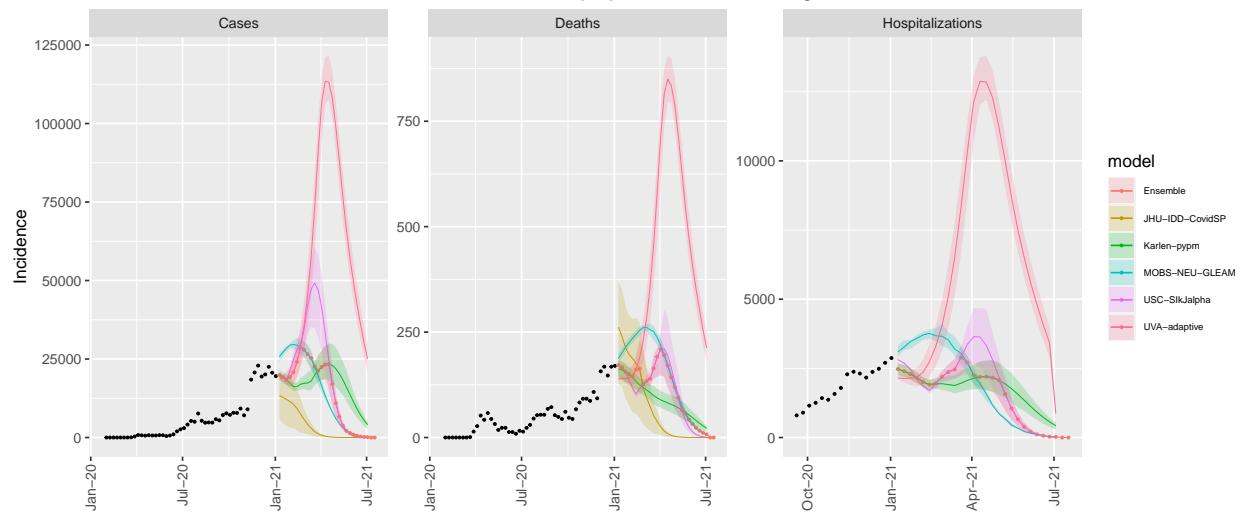
ND model variance & 50% projection intervals – fatigue



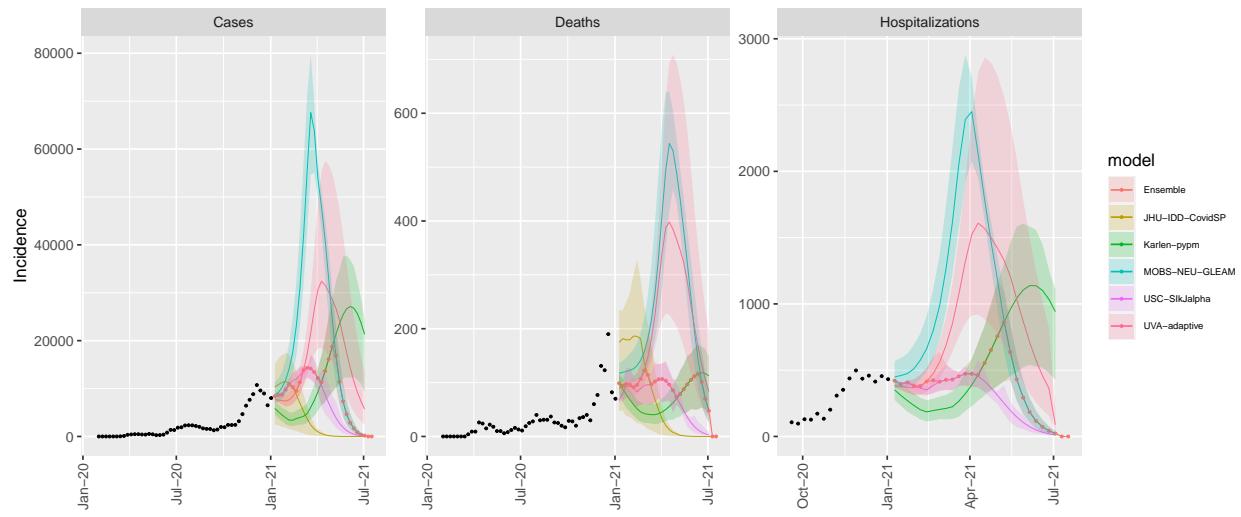
OH model variance & 50% projection intervals – fatigue



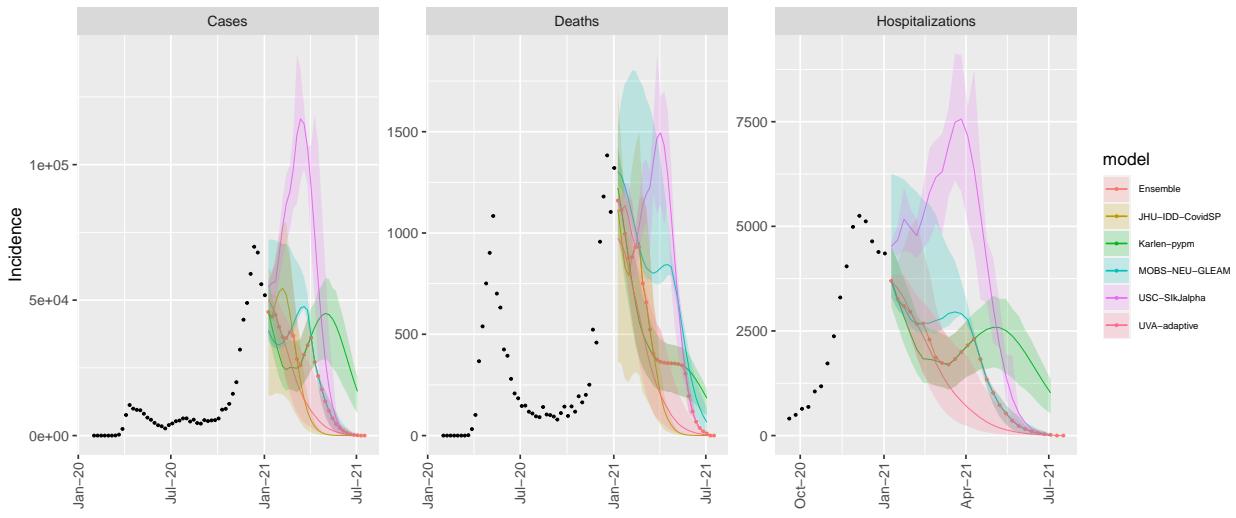
OK model variance & 50% projection intervals – fatigue



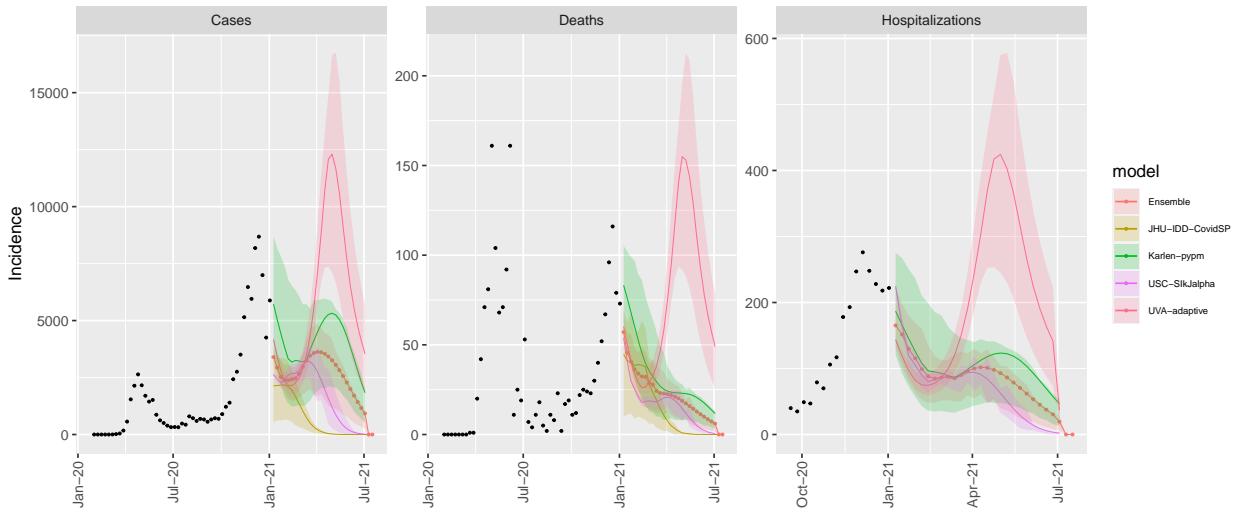
OR model variance & 50% projection intervals – fatigue



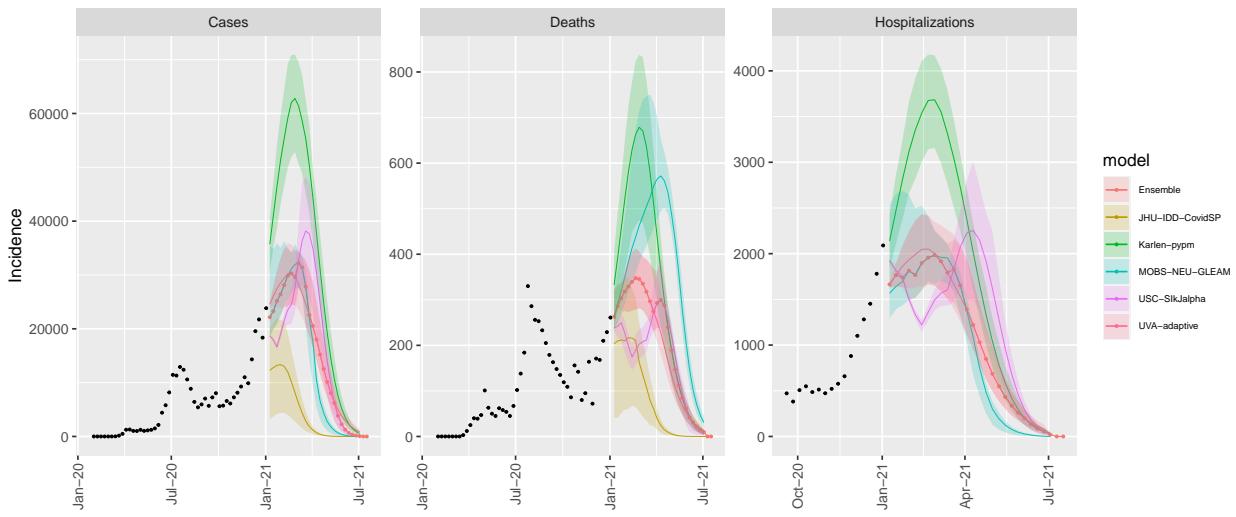
PA model variance & 50% projection intervals – fatigue



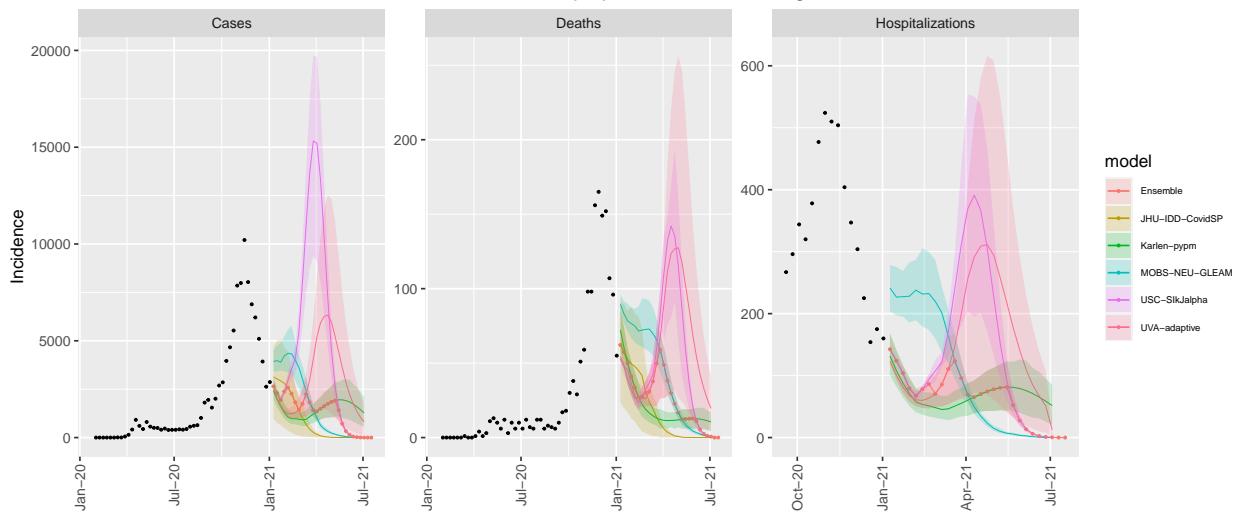
RI model variance & 50% projection intervals – fatigue



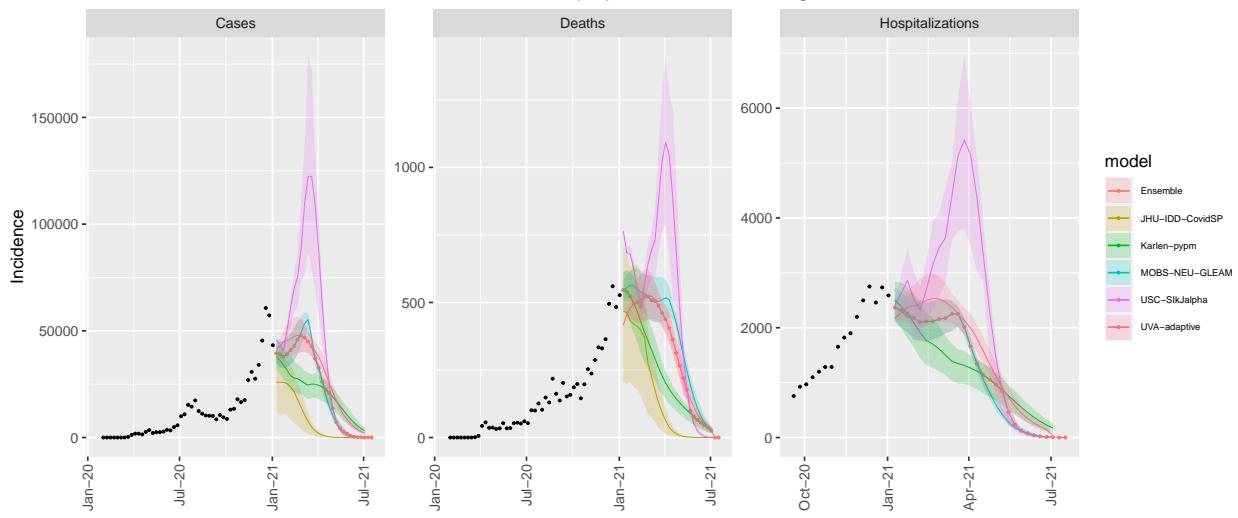
SC model variance & 50% projection intervals – fatigue



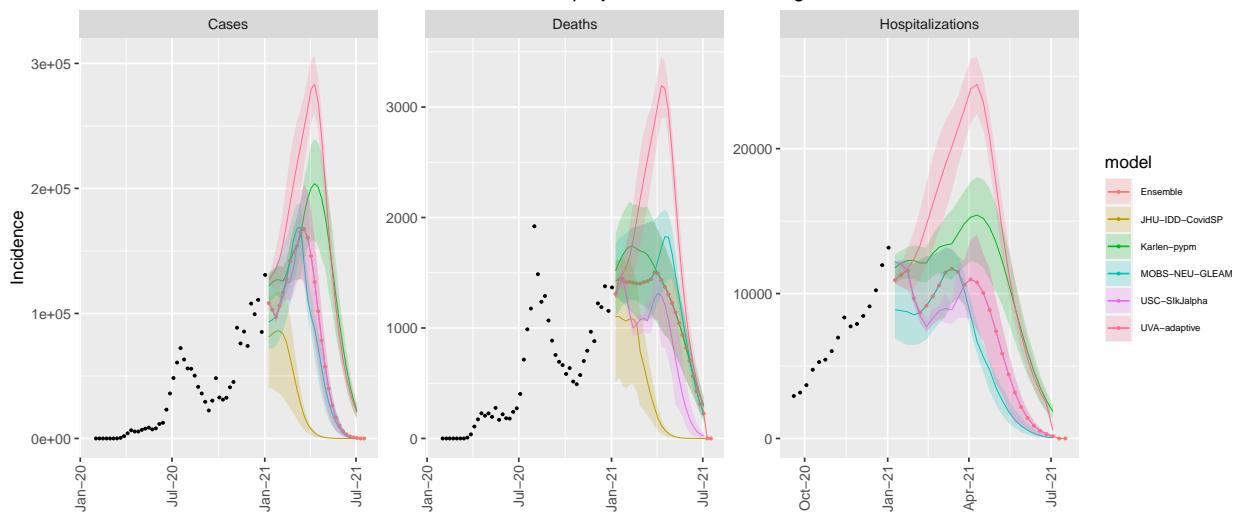
SD model variance & 50% projection intervals – fatigue



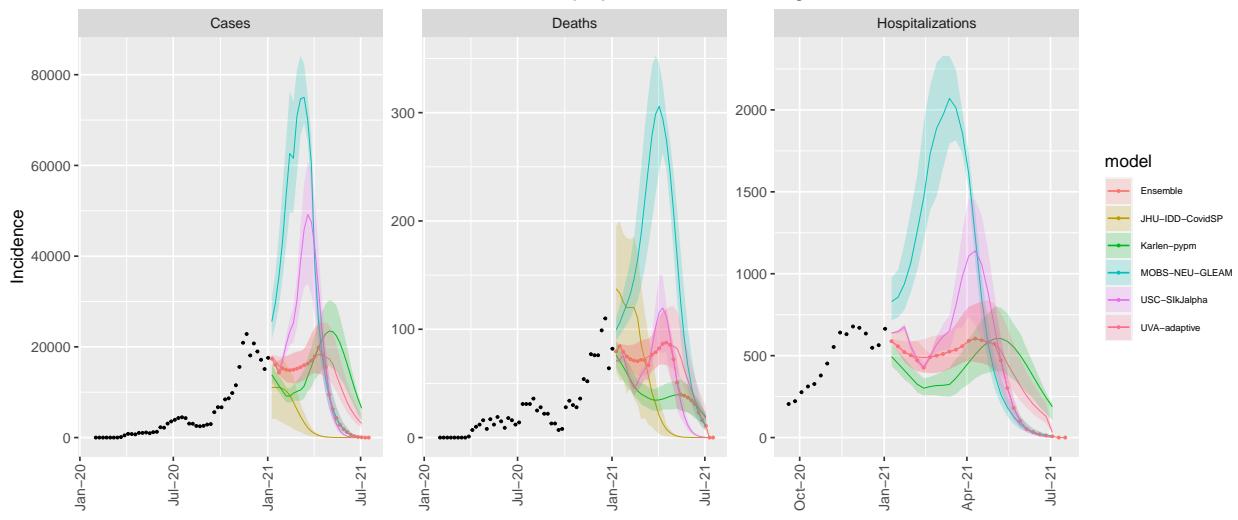
TN model variance & 50% projection intervals – fatigue



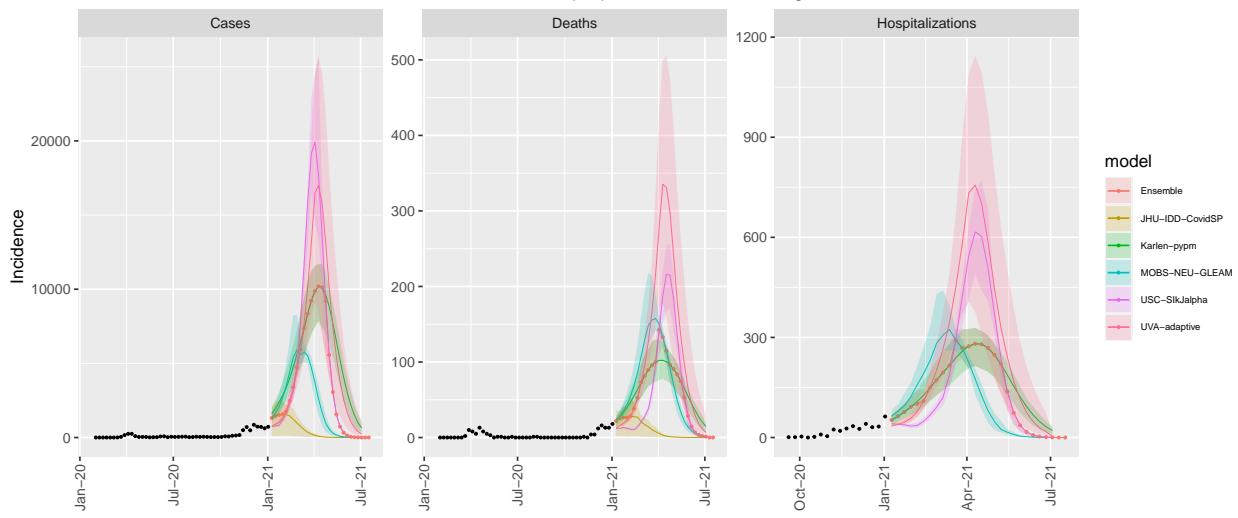
TX model variance & 50% projection intervals – fatigue



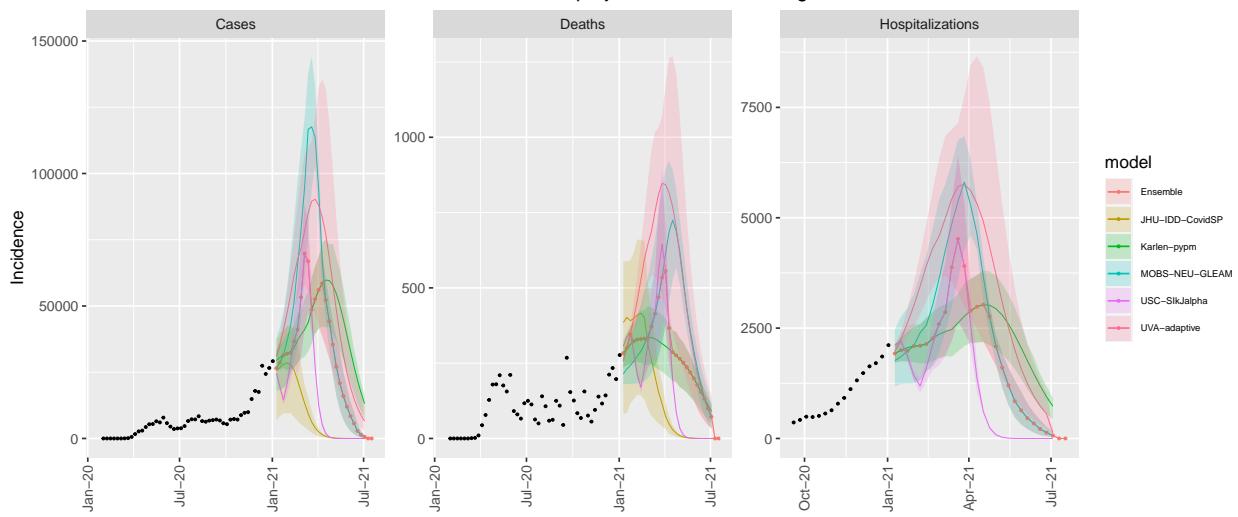
UT model variance & 50% projection intervals – fatigue



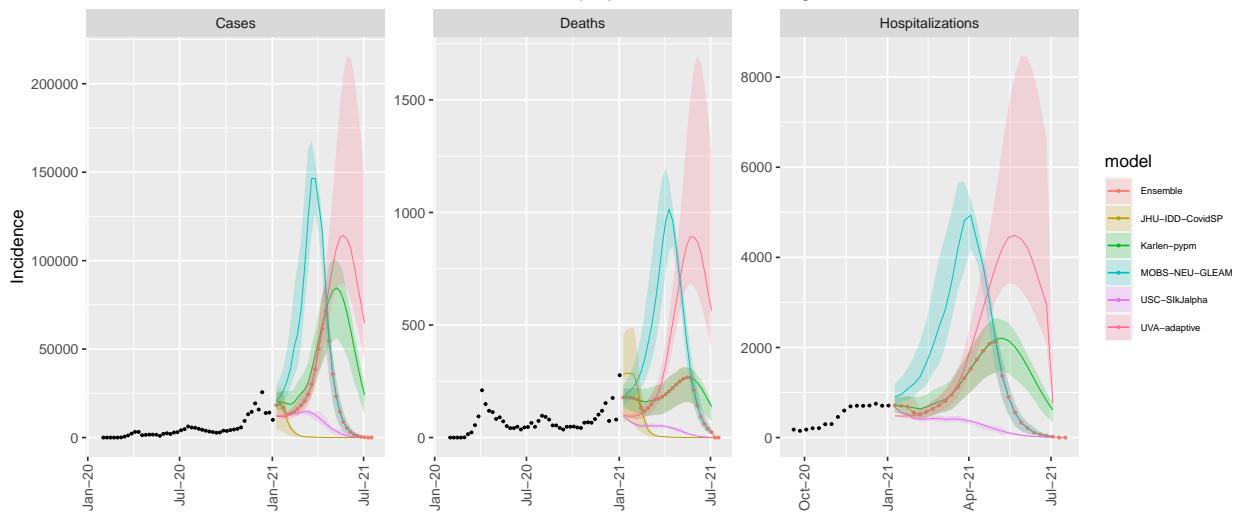
VT model variance & 50% projection intervals – fatigue



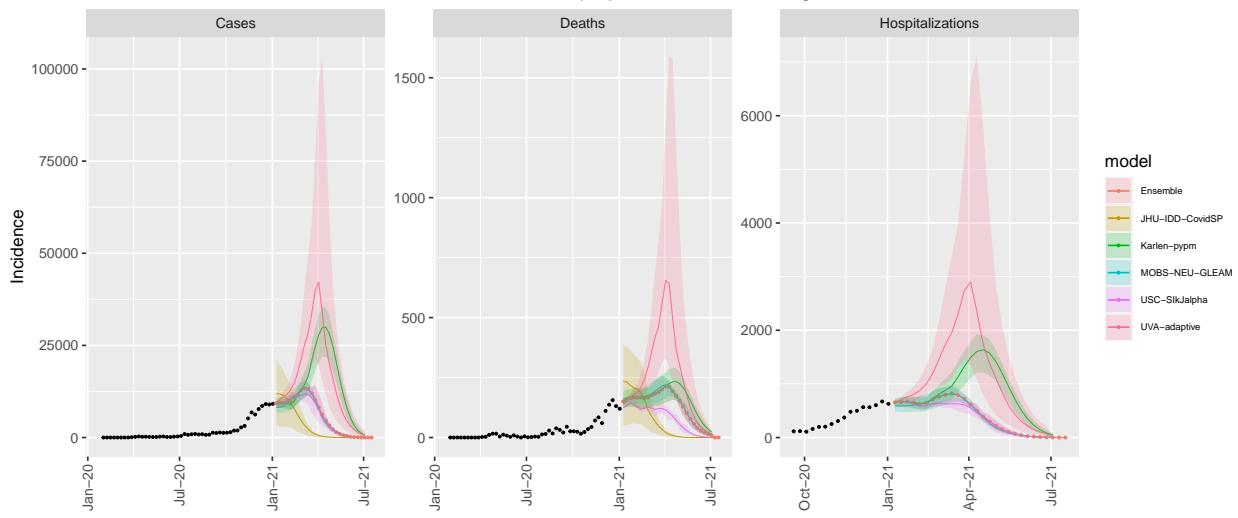
VA model variance & 50% projection intervals – fatigue



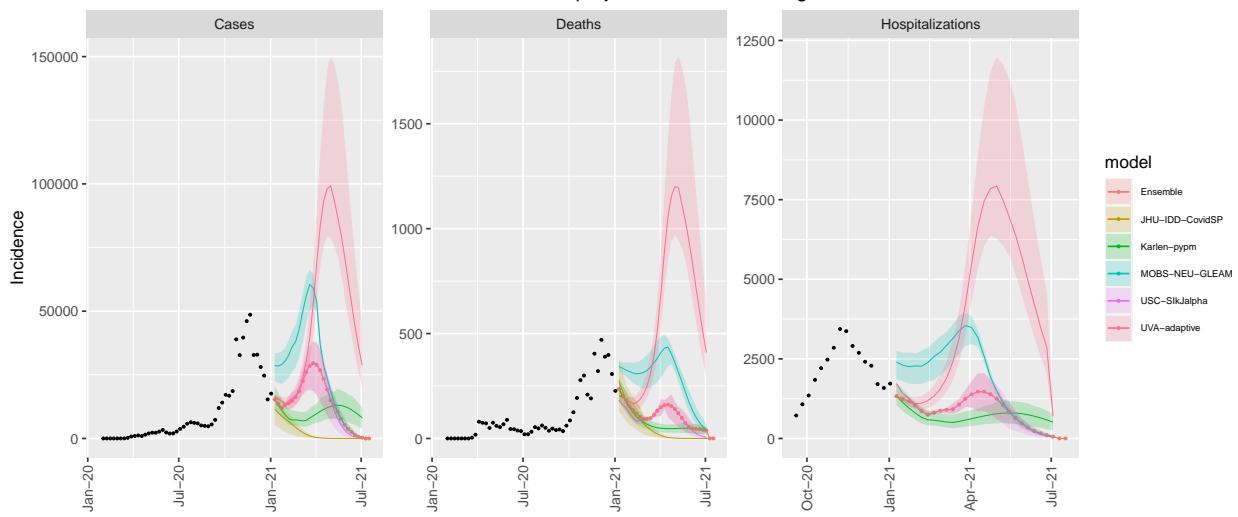
WA model variance & 50% projection intervals – fatigue



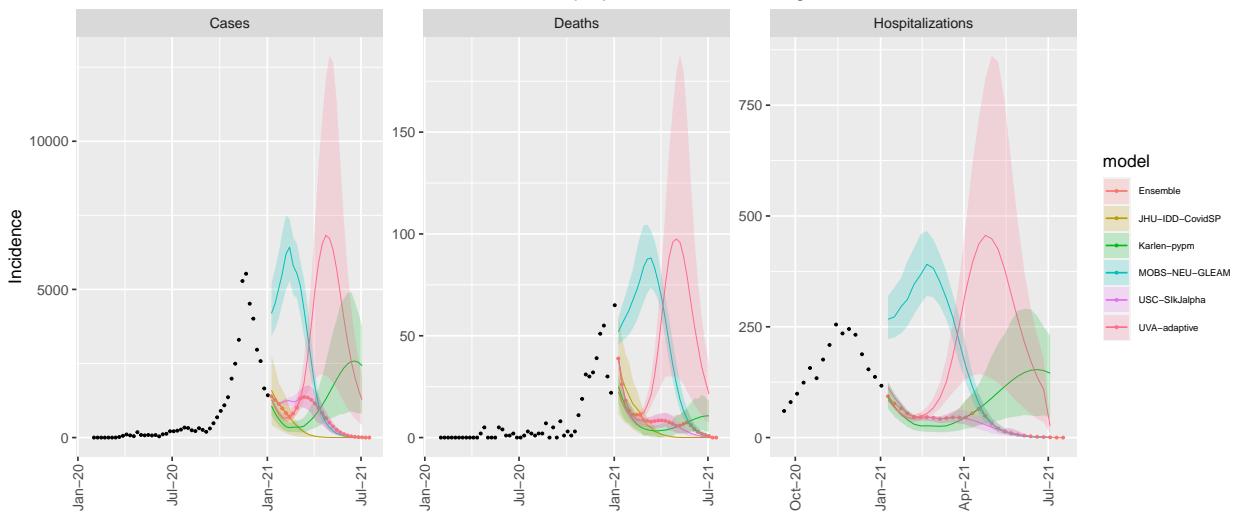
WV model variance & 50% projection intervals – fatigue



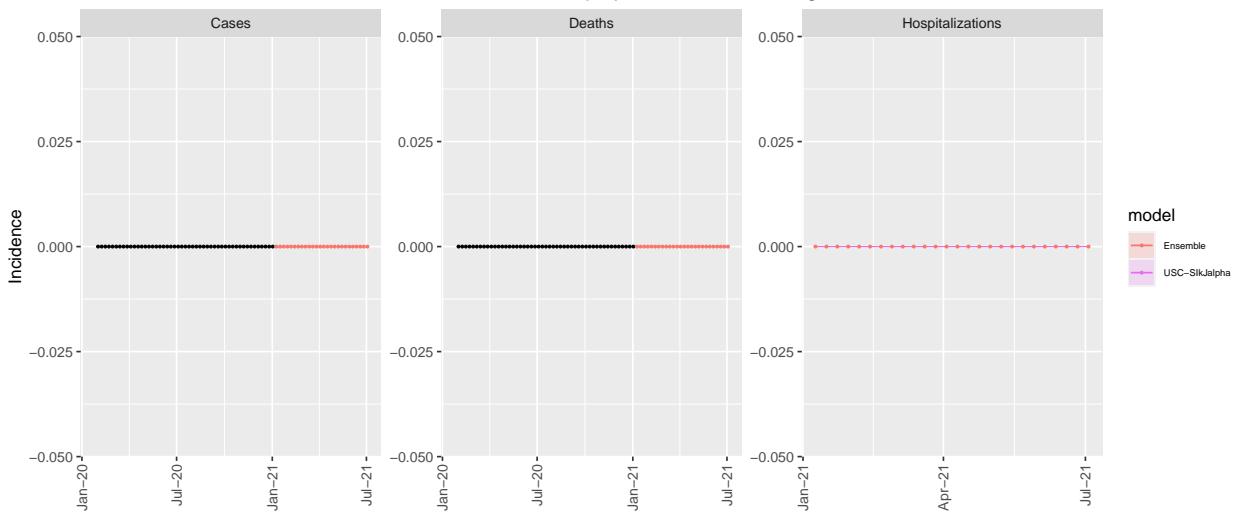
WI model variance & 50% projection intervals – fatigue



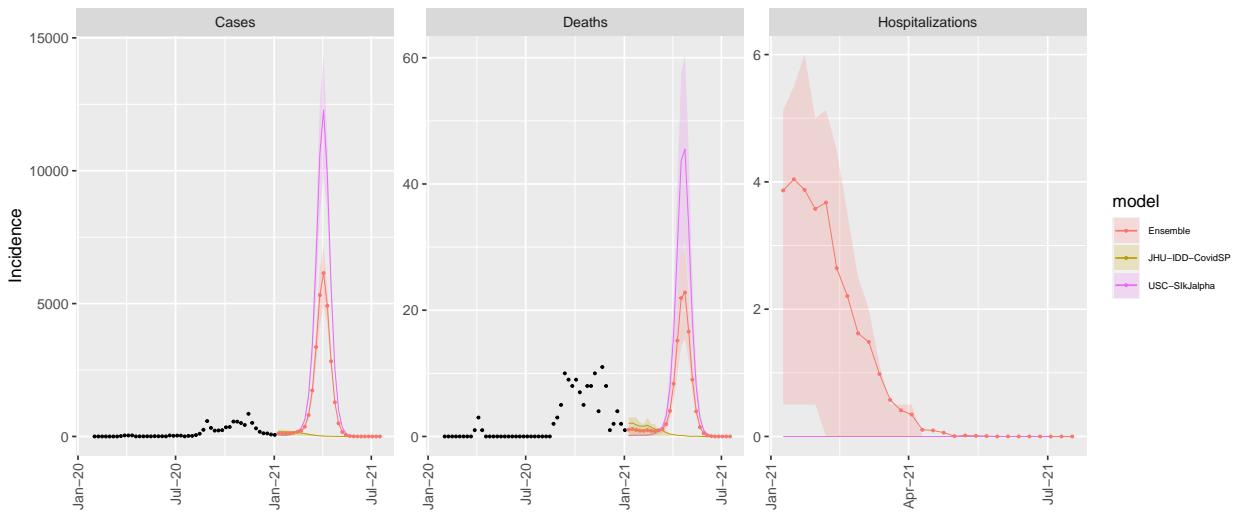
WY model variance & 50% projection intervals – fatigue



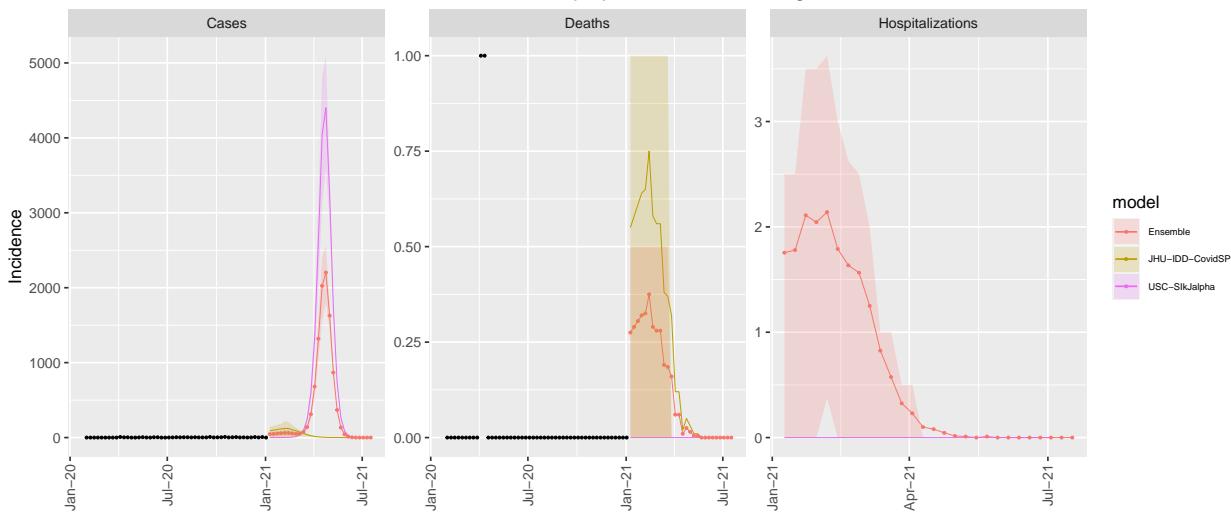
AS model variance & 50% projection intervals – fatigue



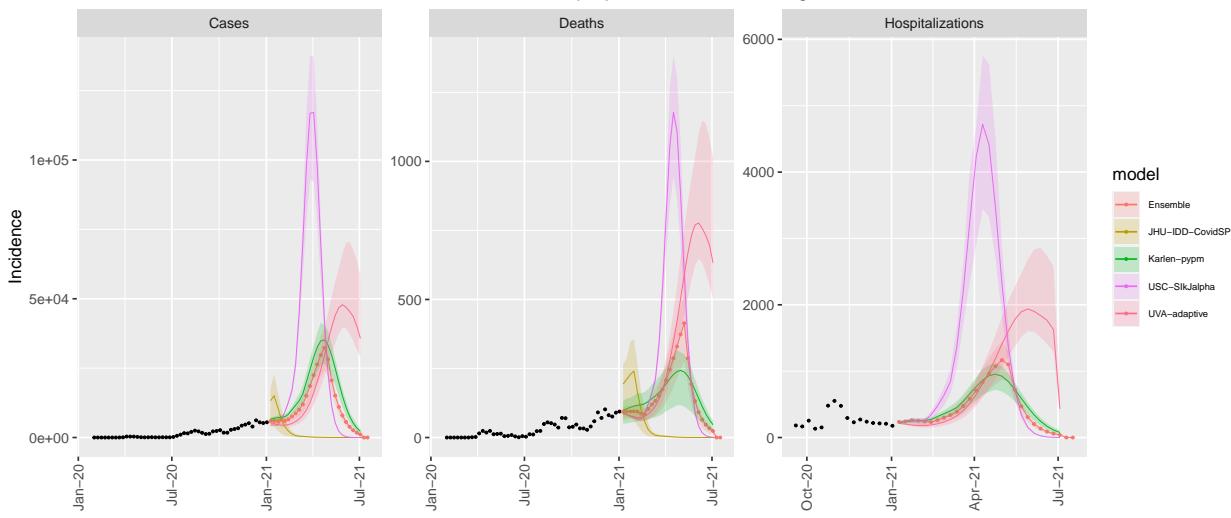
GU model variance & 50% projection intervals – fatigue



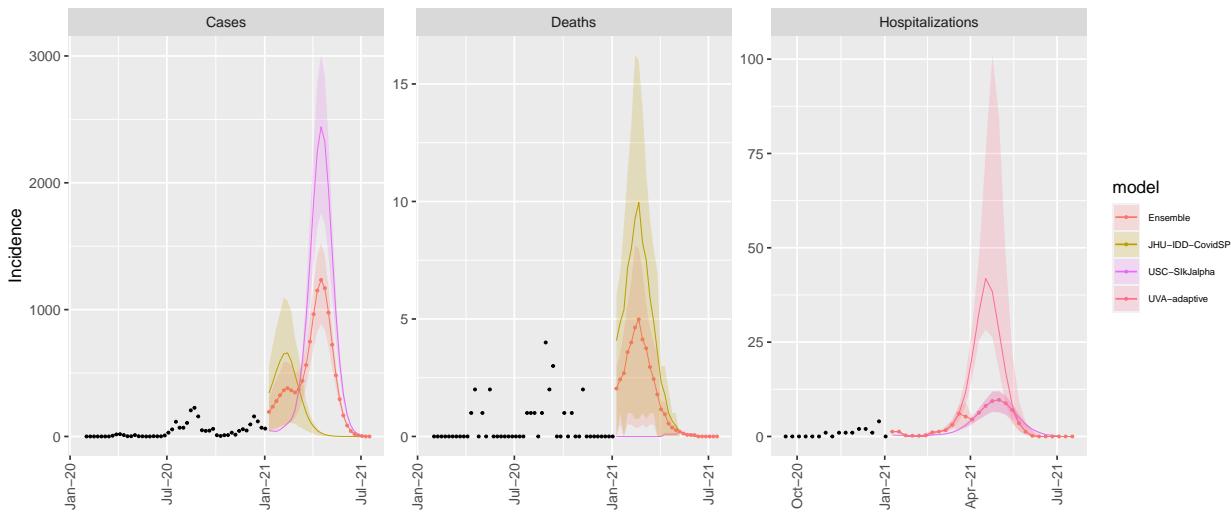
MP model variance & 50% projection intervals – fatigue



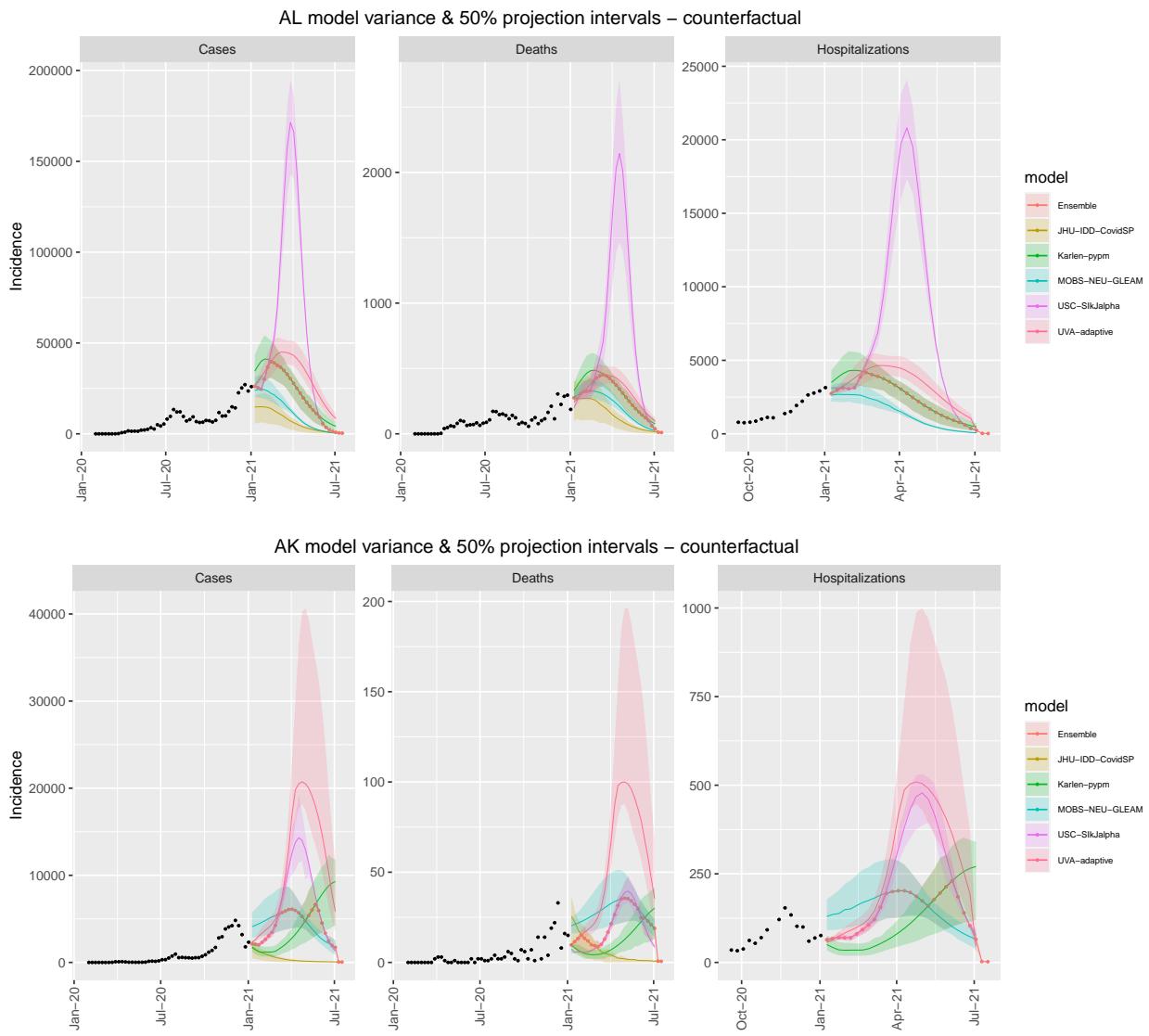
PR model variance & 50% projection intervals – fatigue



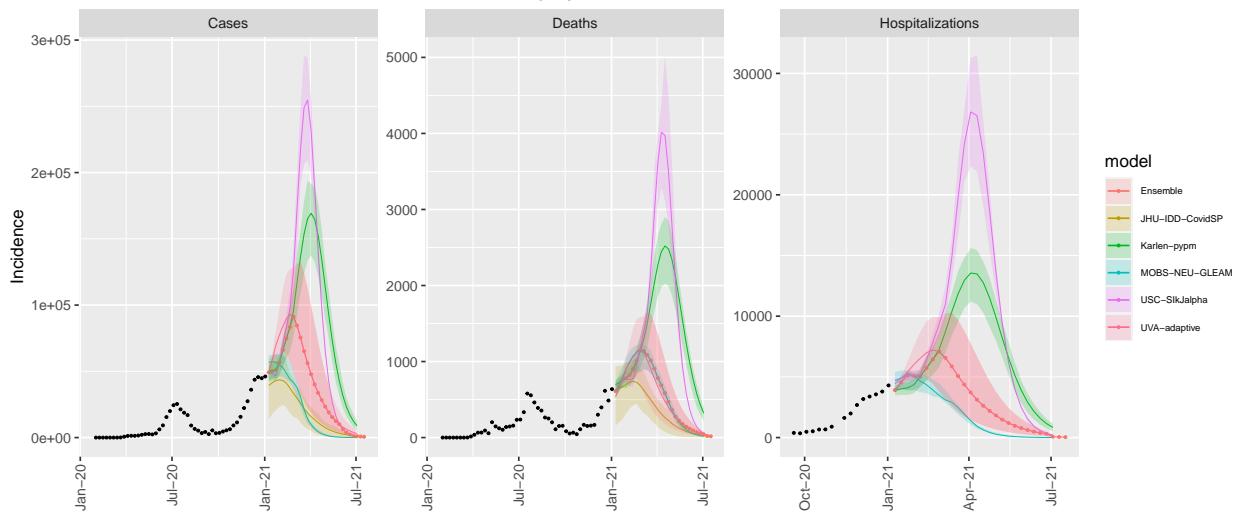
VI model variance & 50% projection intervals – fatigue



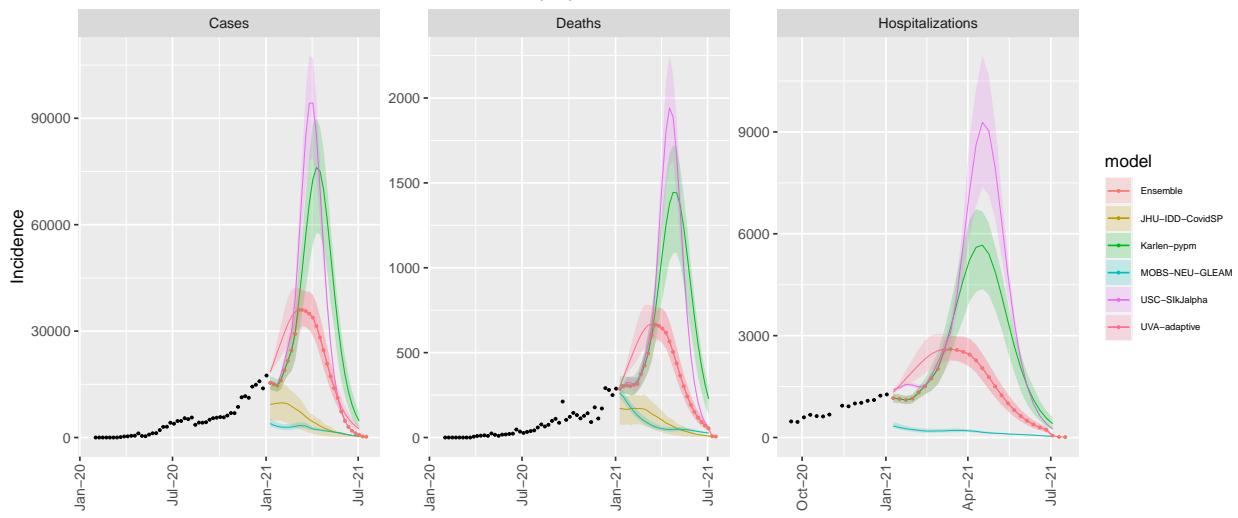
National model variation for the counterfactual scenario



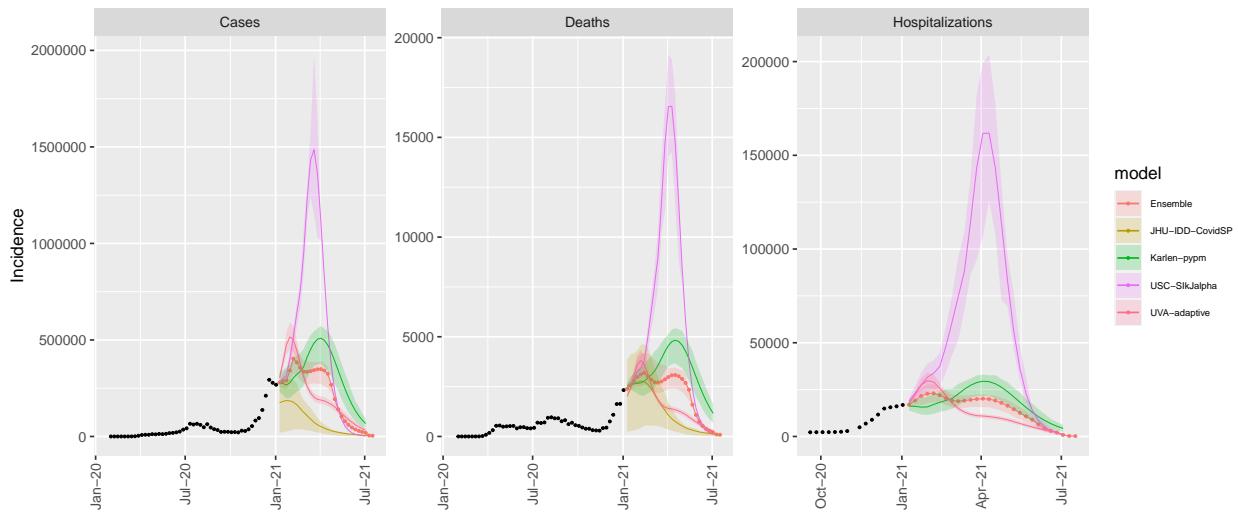
AZ model variance & 50% projection intervals – counterfactual



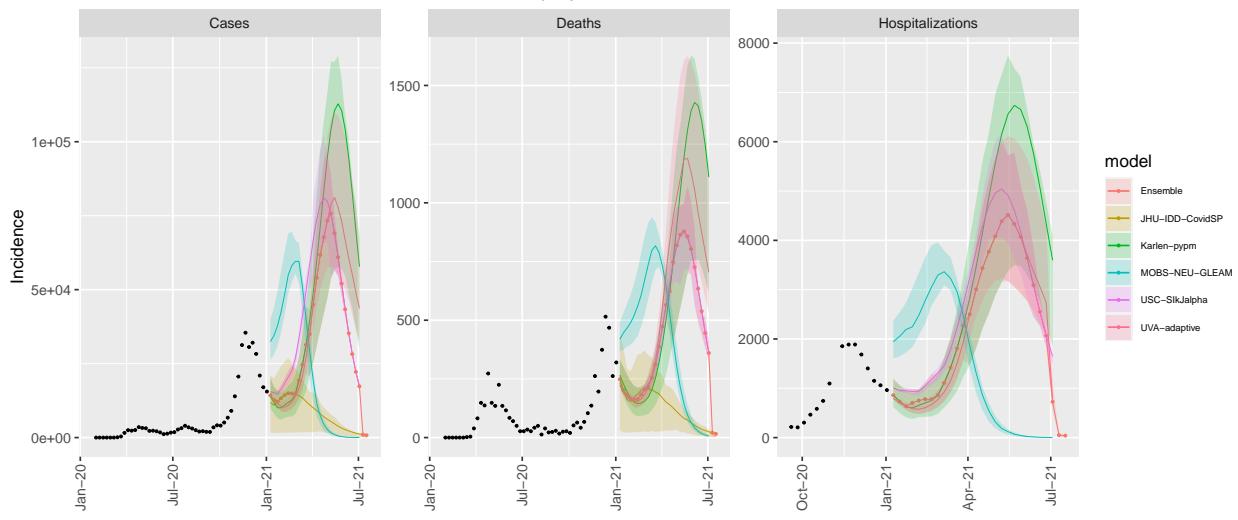
AR model variance & 50% projection intervals – counterfactual



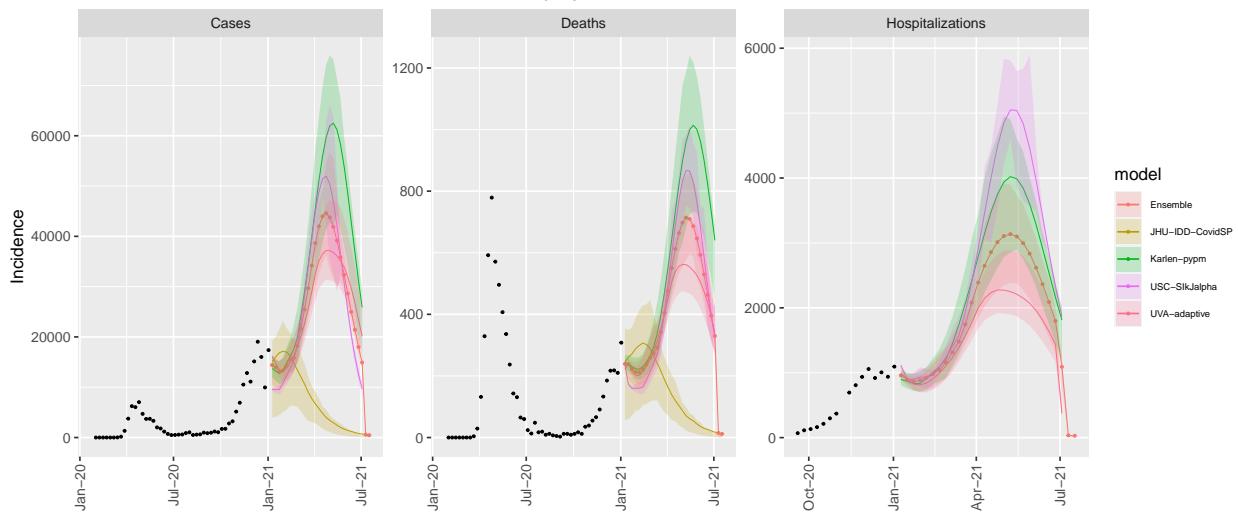
CA model variance & 50% projection intervals – counterfactual



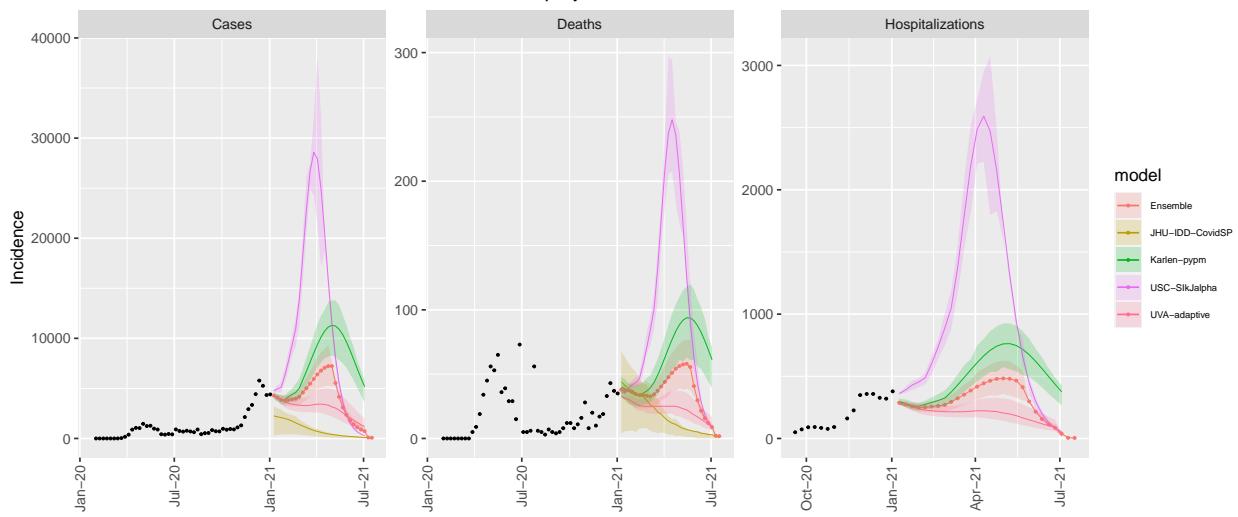
CO model variance & 50% projection intervals – counterfactual



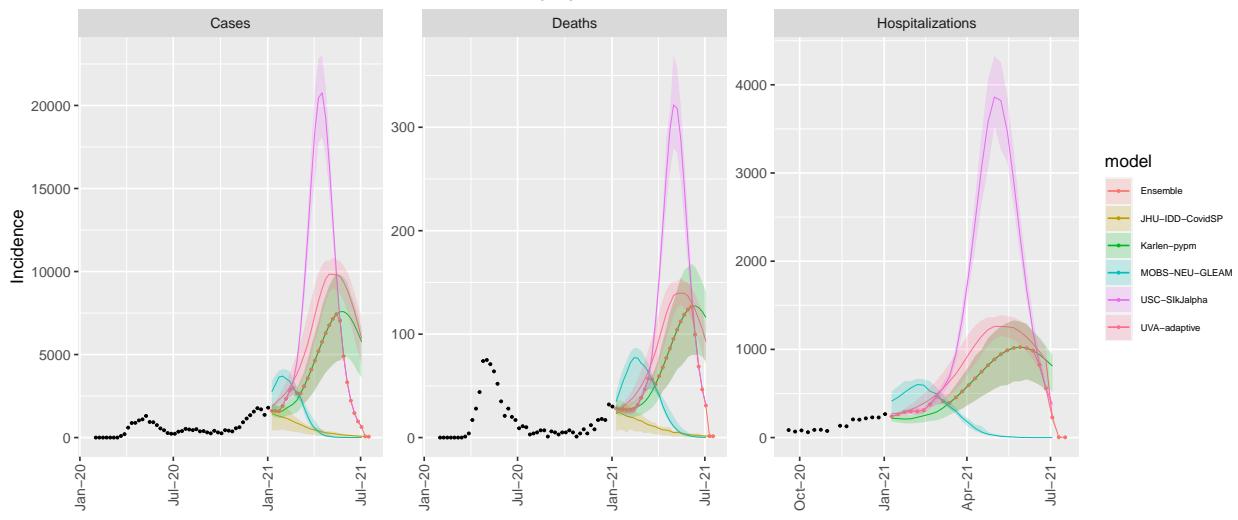
CT model variance & 50% projection intervals – counterfactual



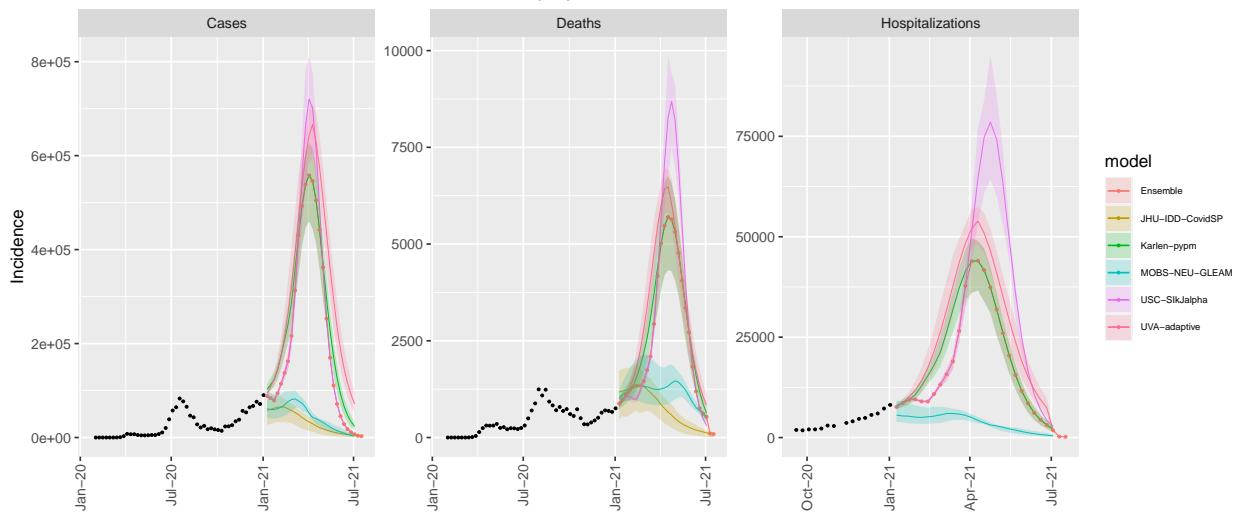
DE model variance & 50% projection intervals – counterfactual



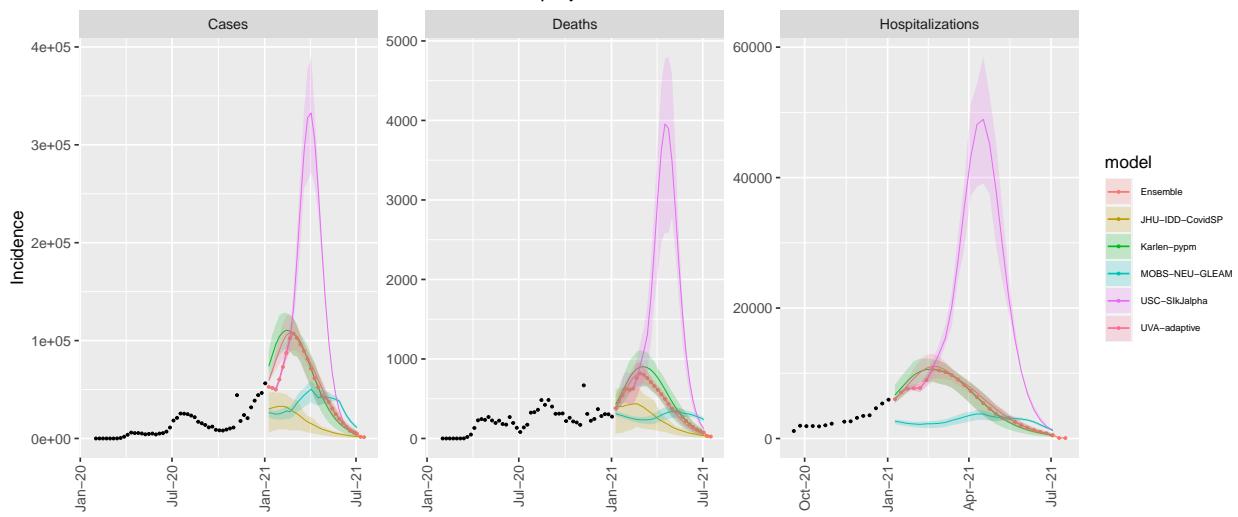
DC model variance & 50% projection intervals – counterfactual



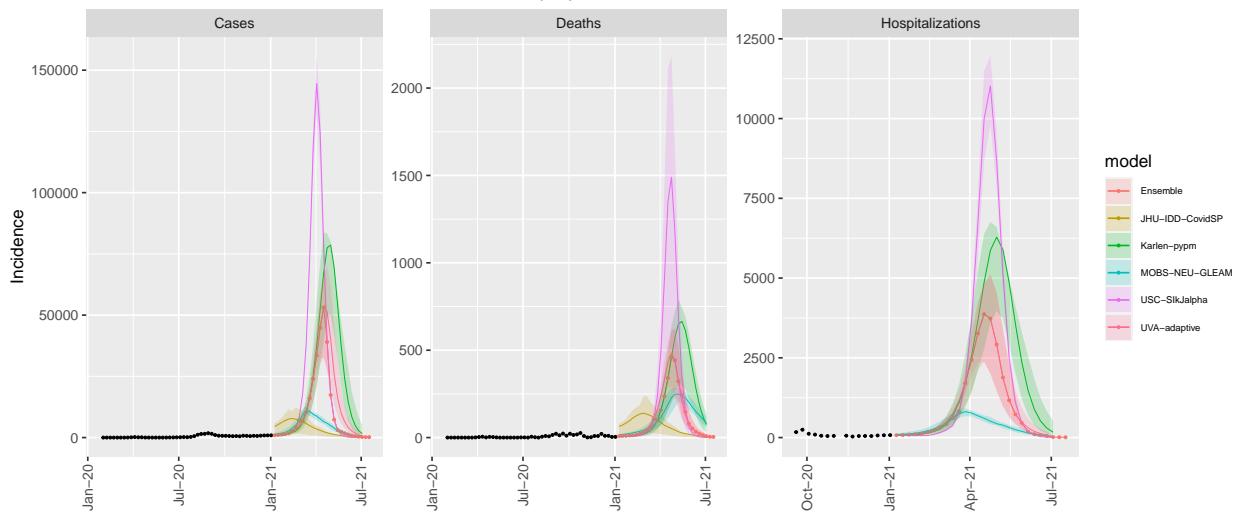
FL model variance & 50% projection intervals – counterfactual



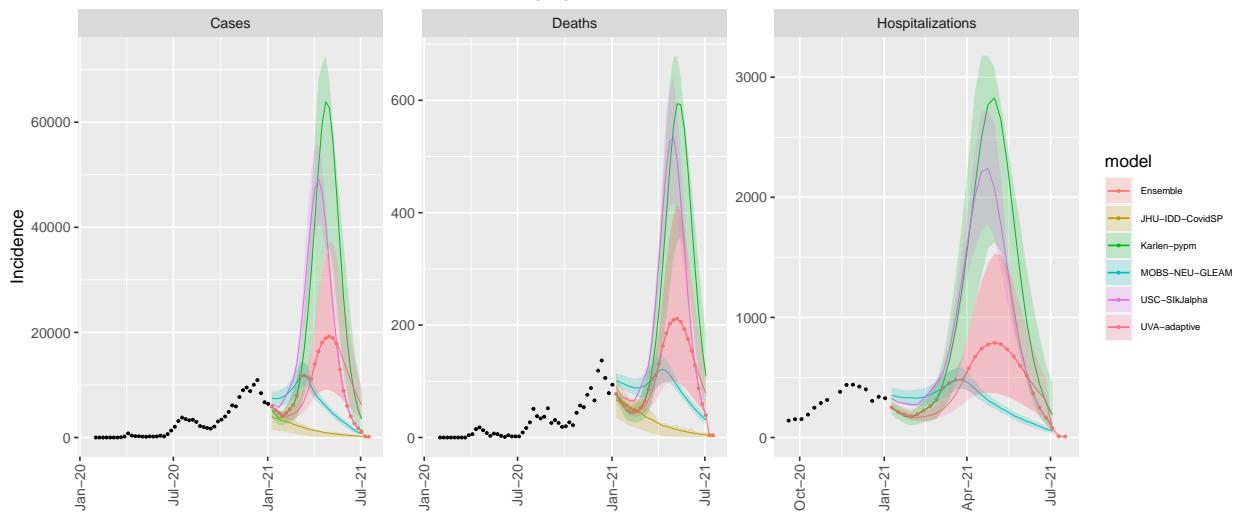
GA model variance & 50% projection intervals – counterfactual



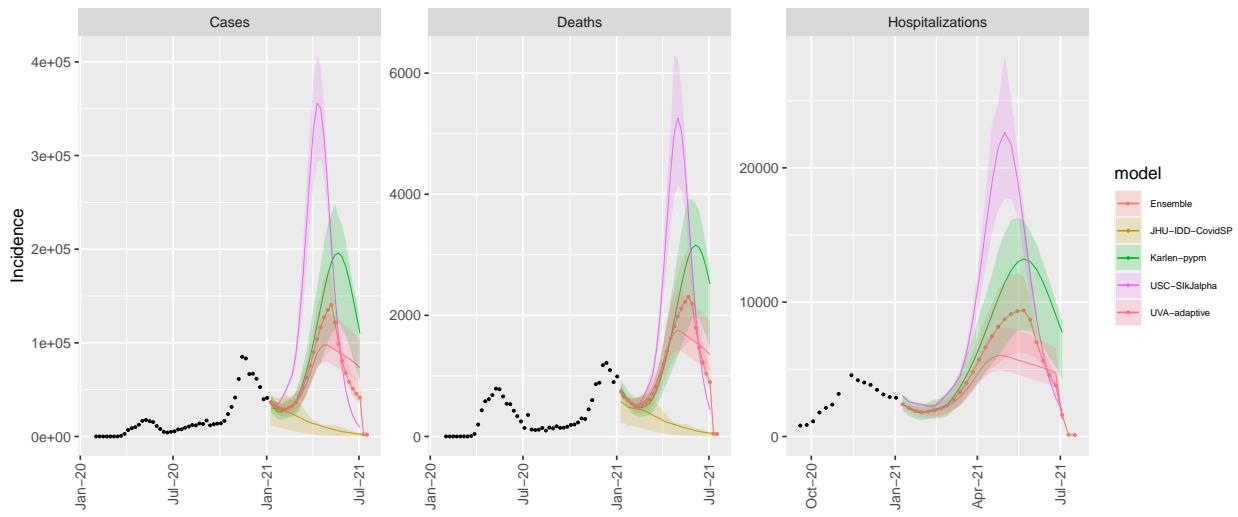
HI model variance & 50% projection intervals – counterfactual



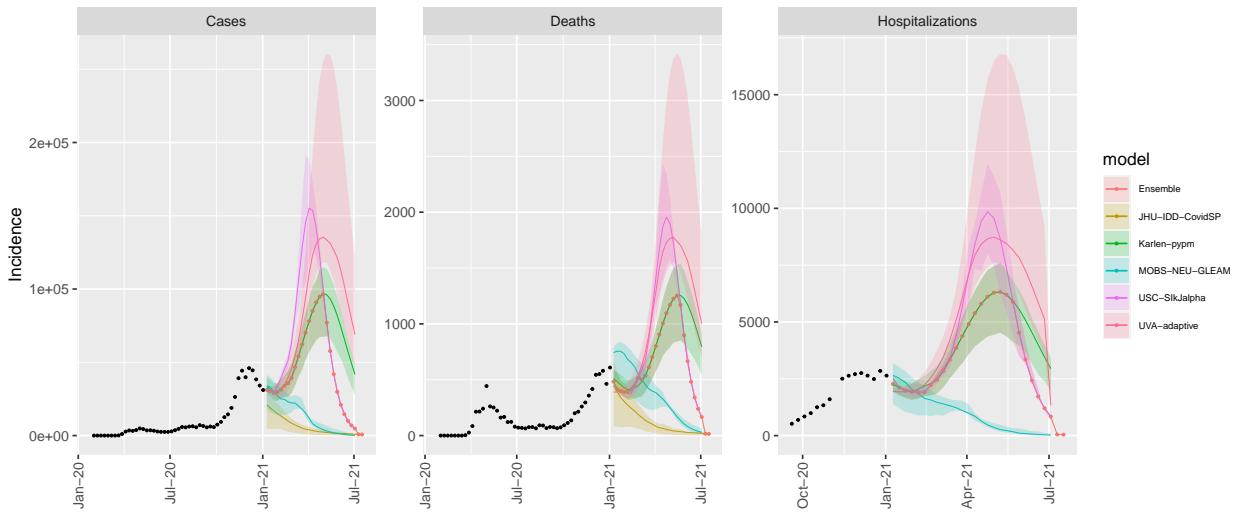
ID model variance & 50% projection intervals – counterfactual



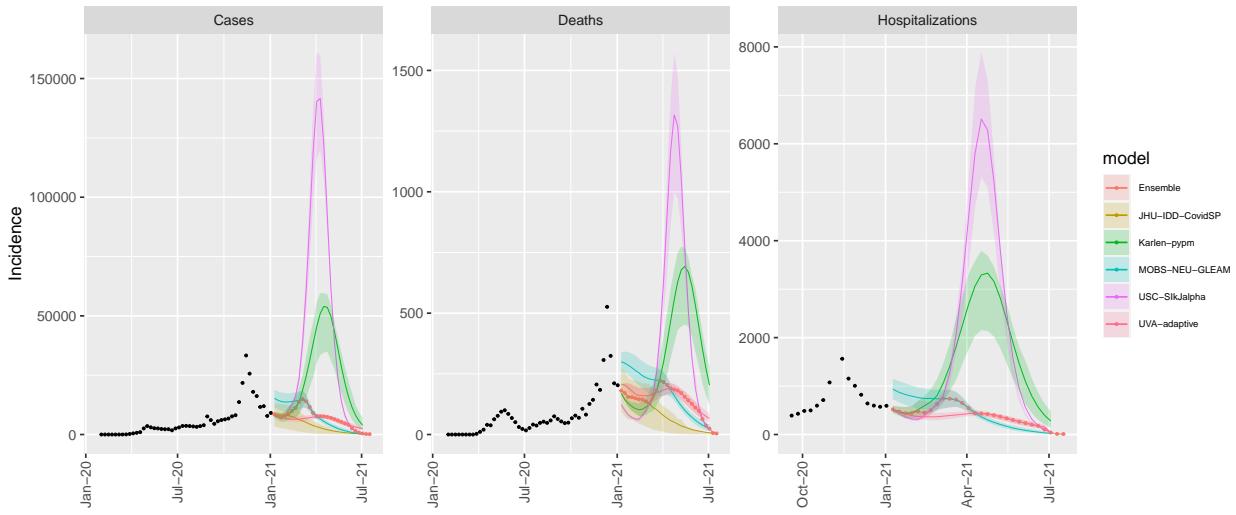
IL model variance & 50% projection intervals – counterfactual



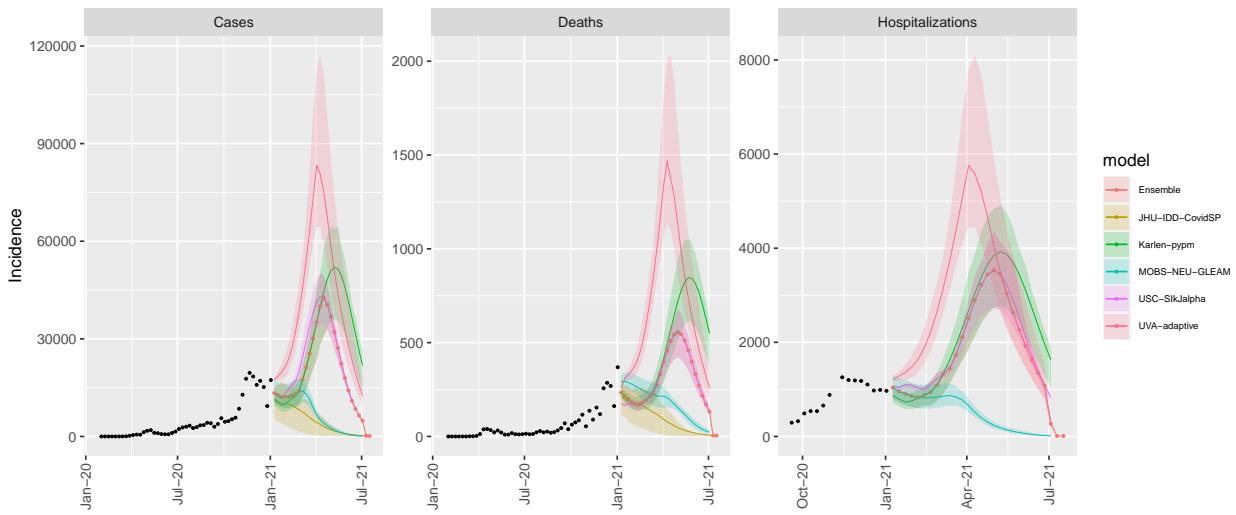
IN model variance & 50% projection intervals – counterfactual



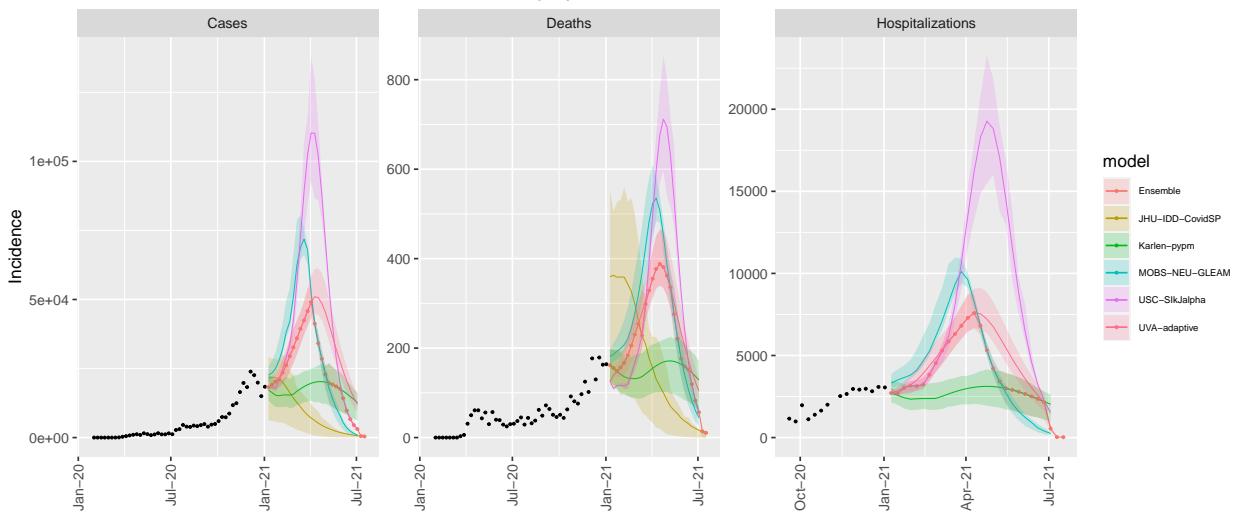
IA model variance & 50% projection intervals – counterfactual



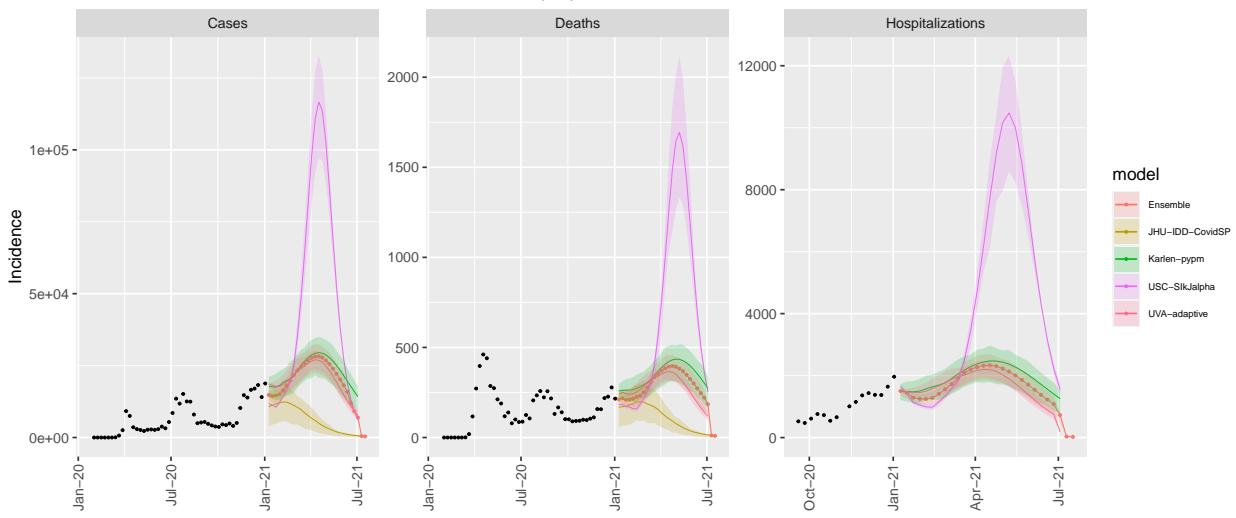
KS model variance & 50% projection intervals – counterfactual



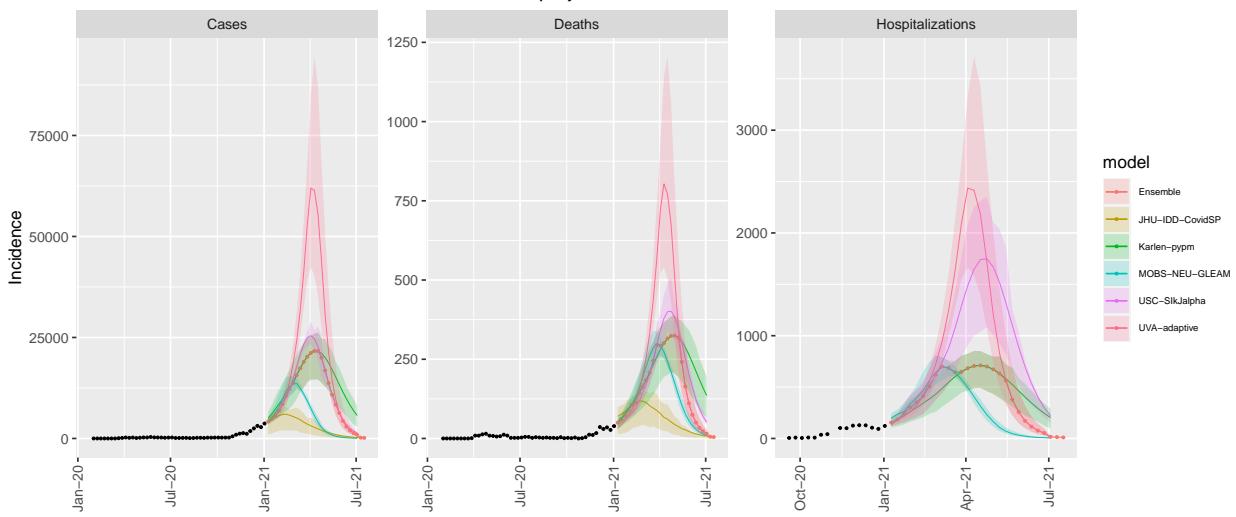
KY model variance & 50% projection intervals – counterfactual



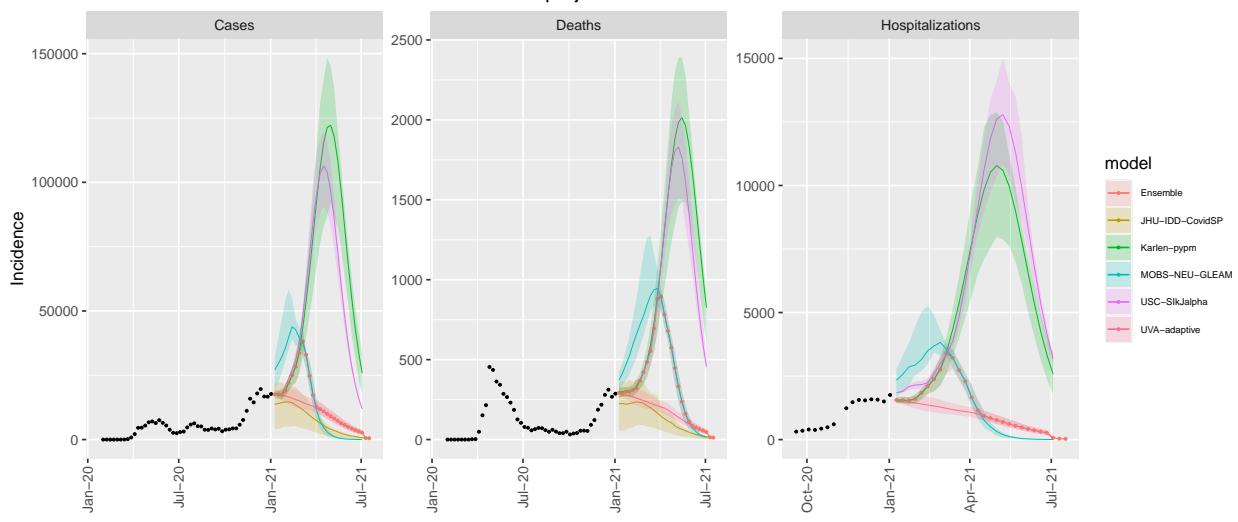
LA model variance & 50% projection intervals – counterfactual



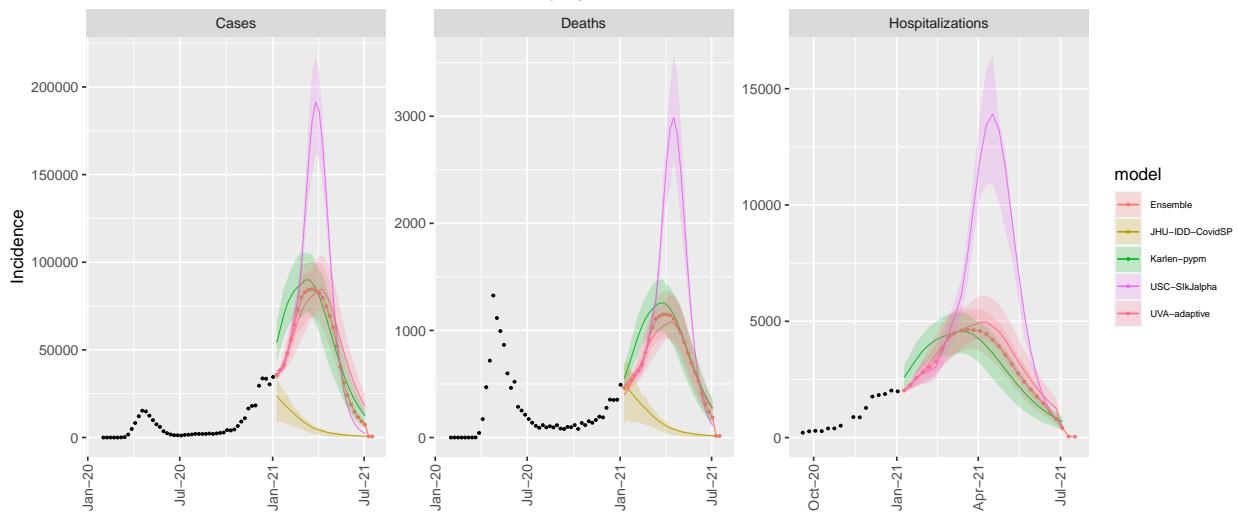
ME model variance & 50% projection intervals – counterfactual



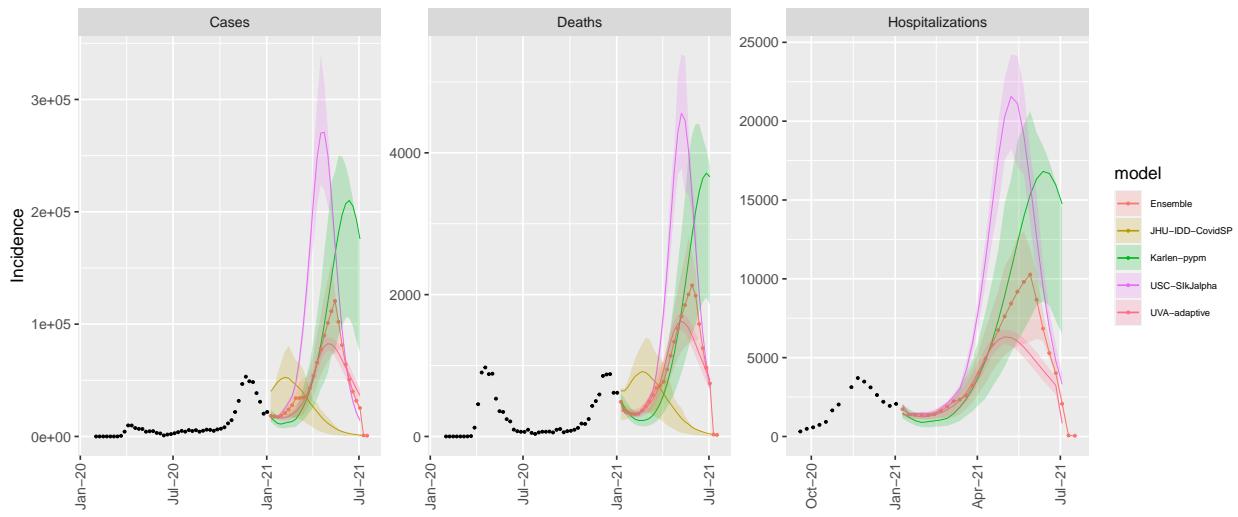
MD model variance & 50% projection intervals – counterfactual



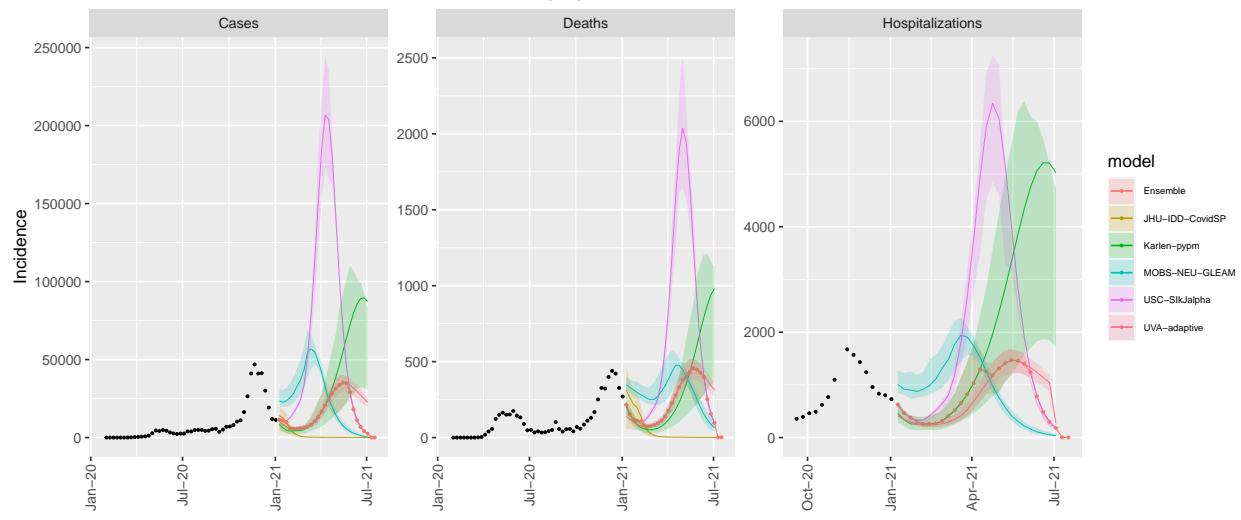
MA model variance & 50% projection intervals – counterfactual



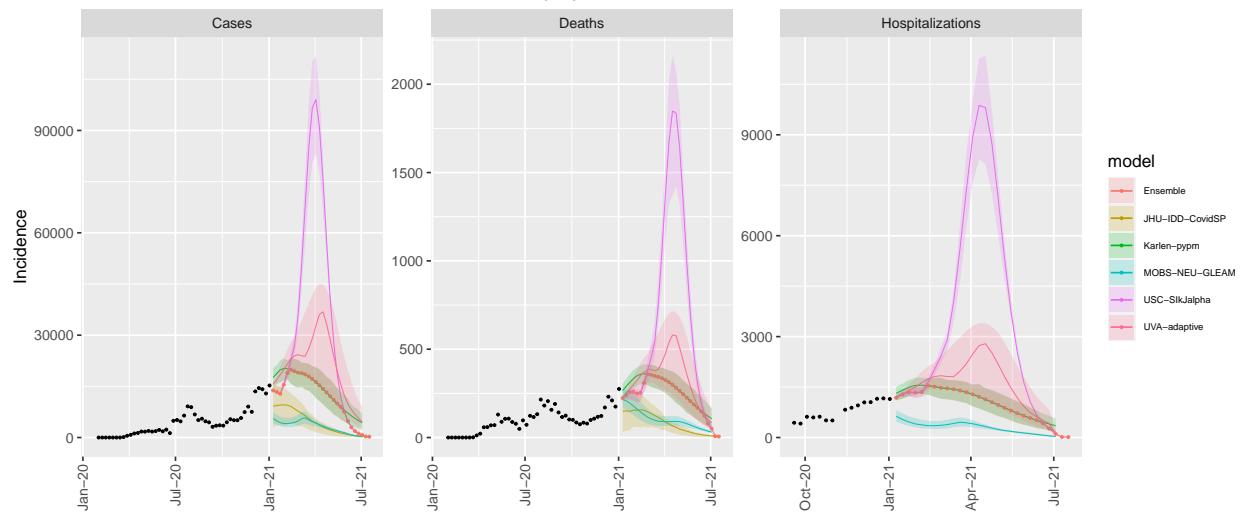
MI model variance & 50% projection intervals – counterfactual



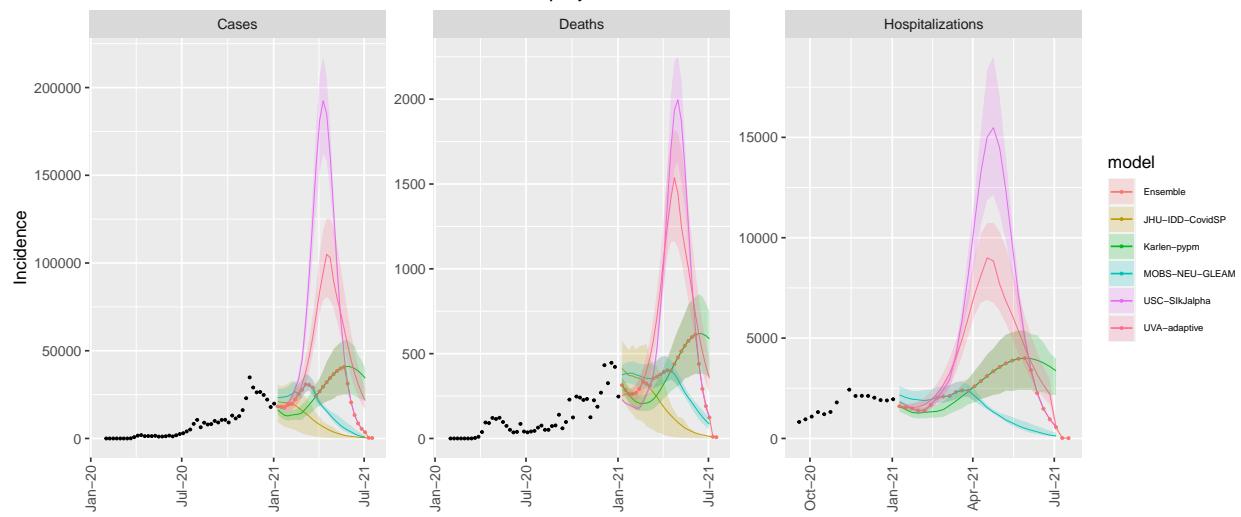
MN model variance & 50% projection intervals – counterfactual



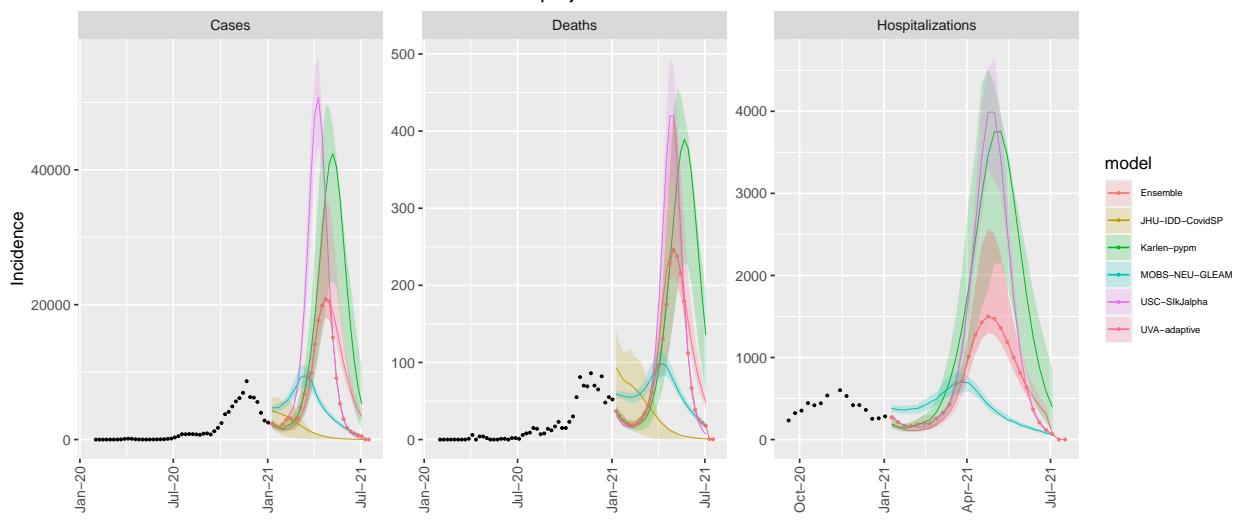
MS model variance & 50% projection intervals – counterfactual



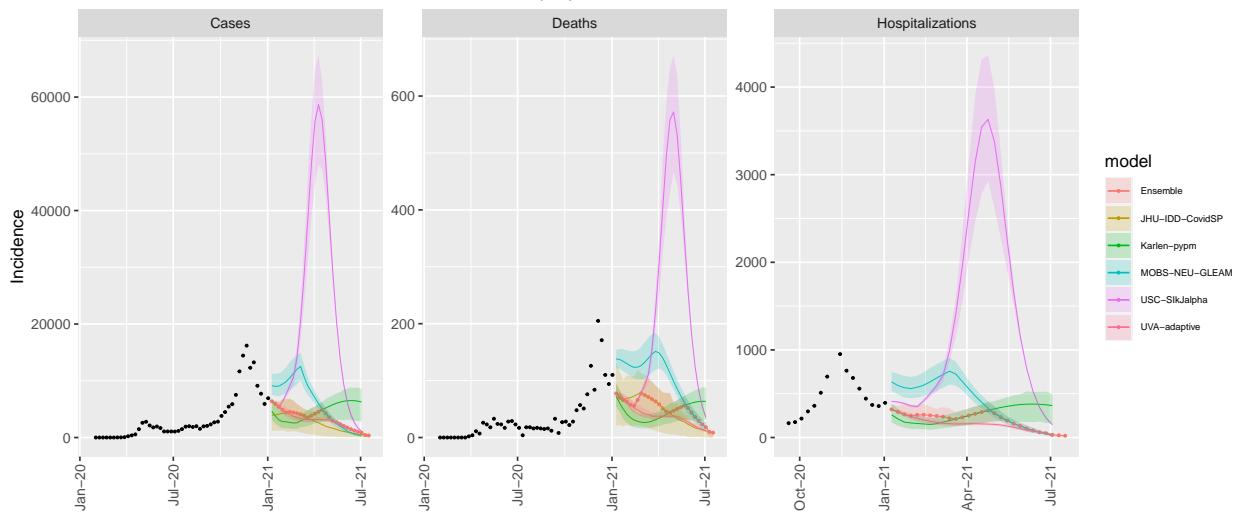
MO model variance & 50% projection intervals – counterfactual



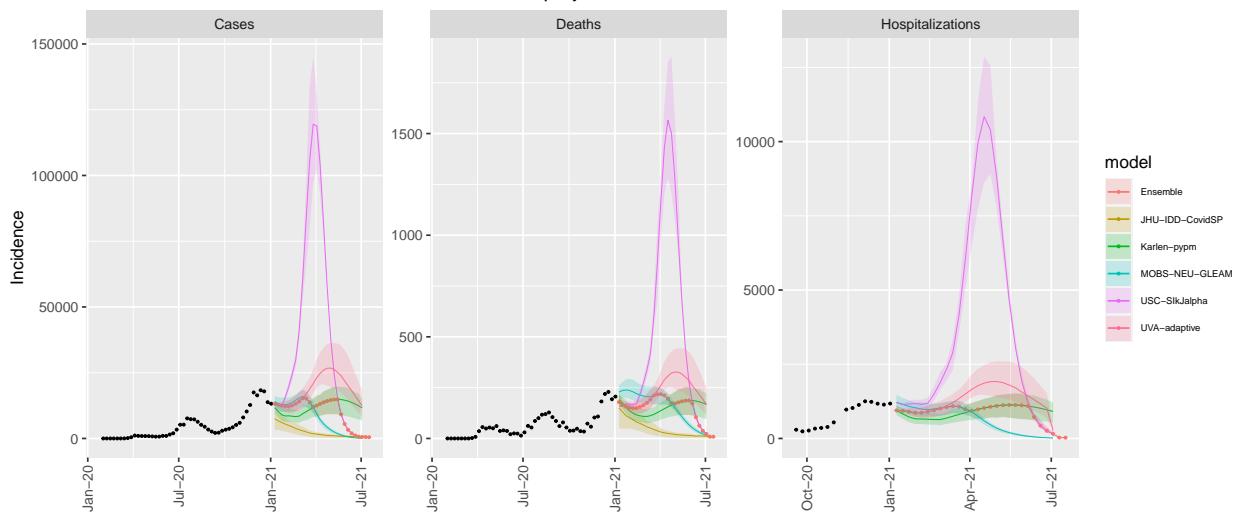
MT model variance & 50% projection intervals – counterfactual



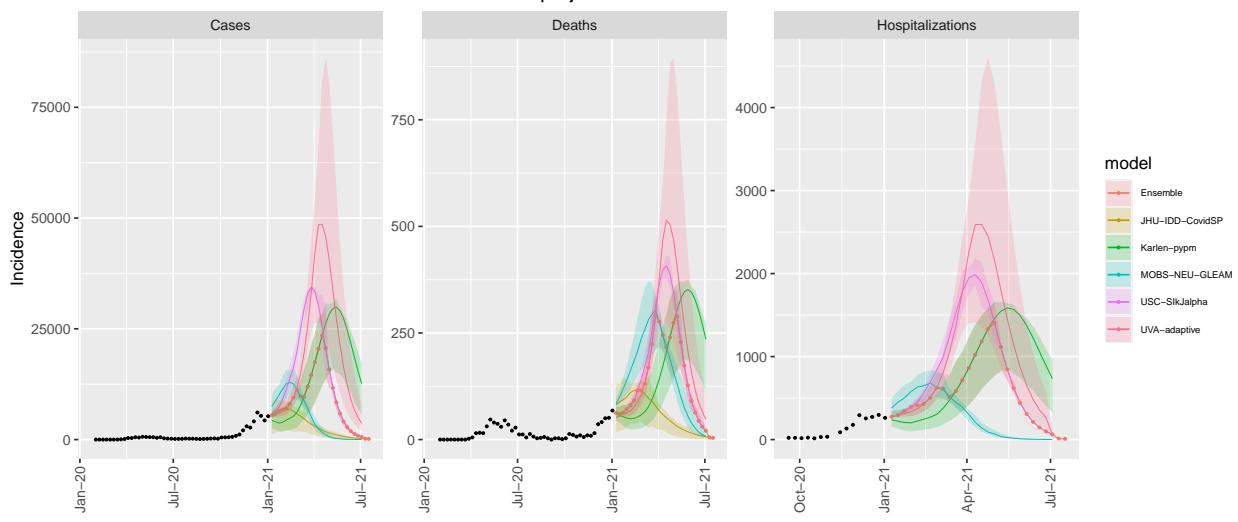
NE model variance & 50% projection intervals – counterfactual



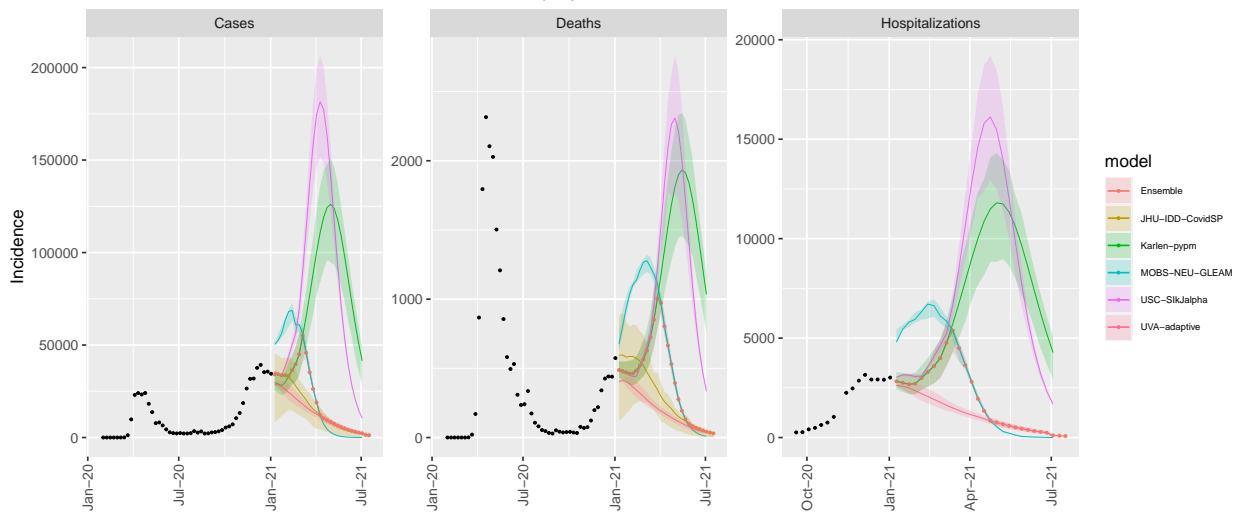
NV model variance & 50% projection intervals – counterfactual



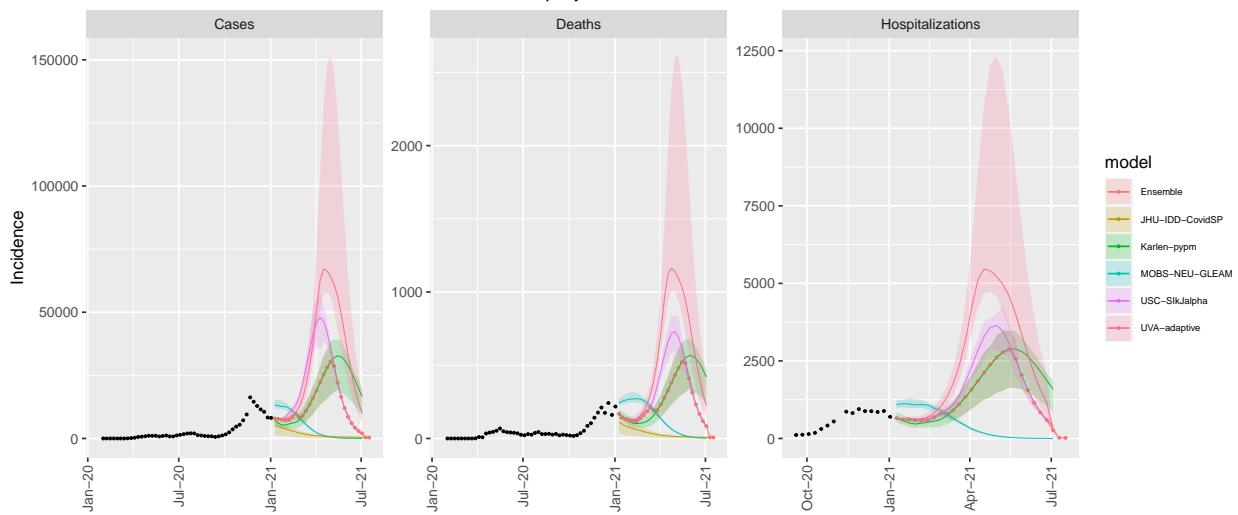
NH model variance & 50% projection intervals – counterfactual



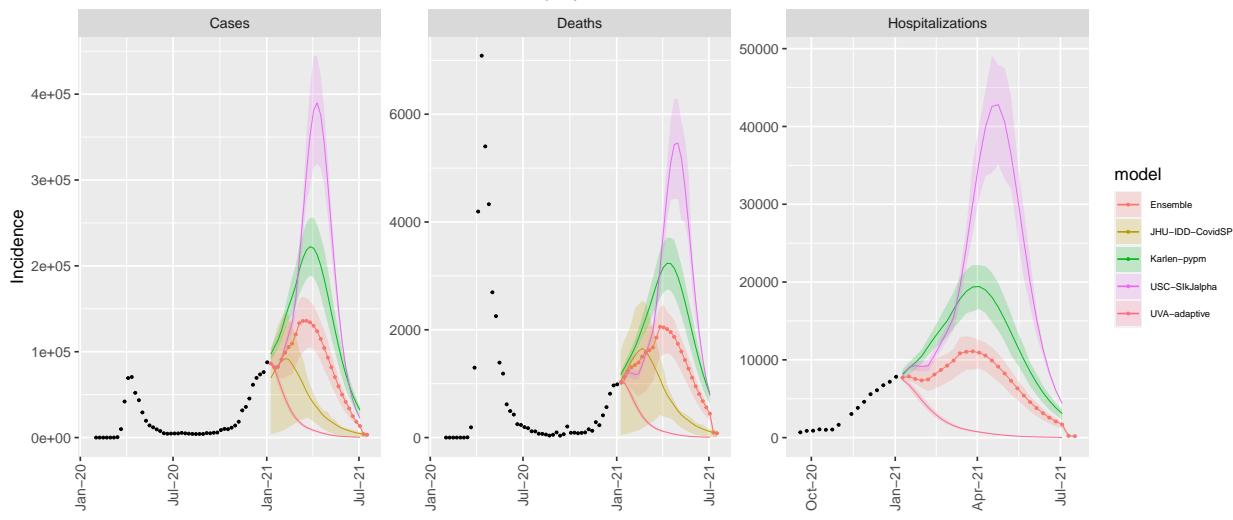
NJ model variance & 50% projection intervals – counterfactual



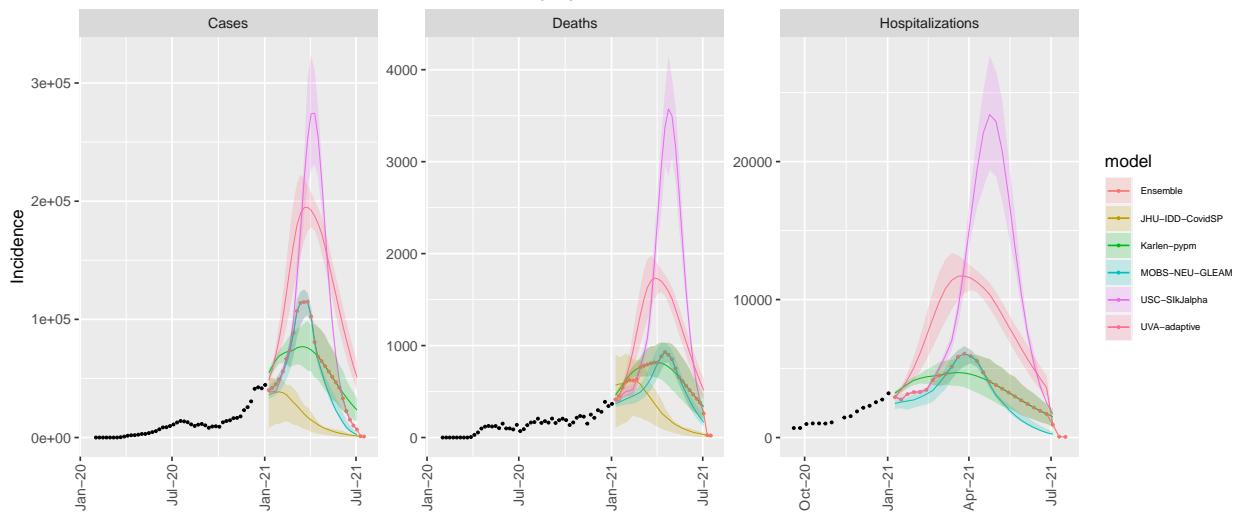
NM model variance & 50% projection intervals – counterfactual



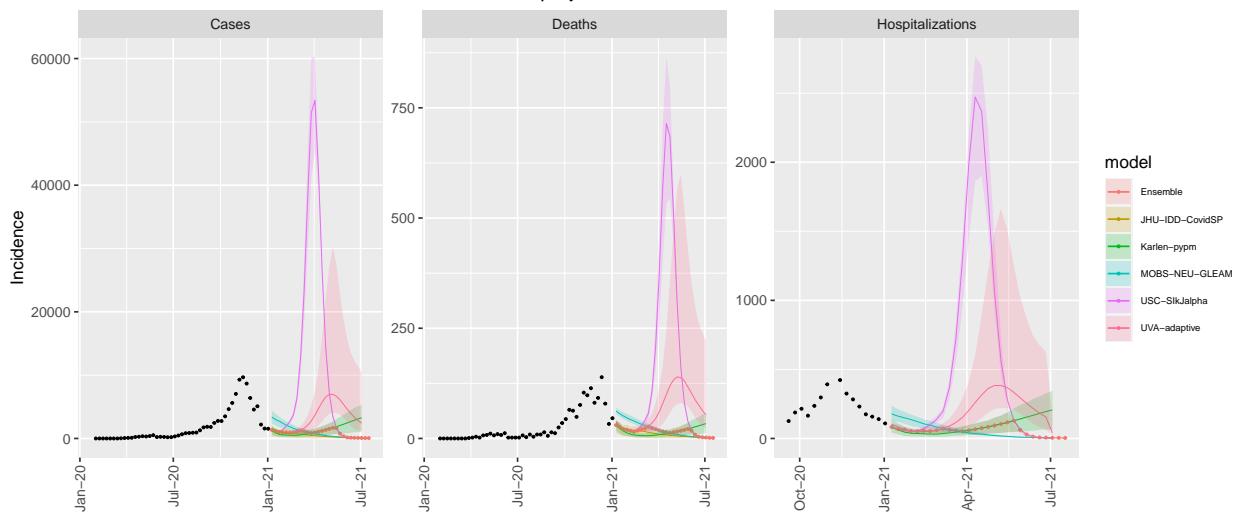
NY model variance & 50% projection intervals – counterfactual



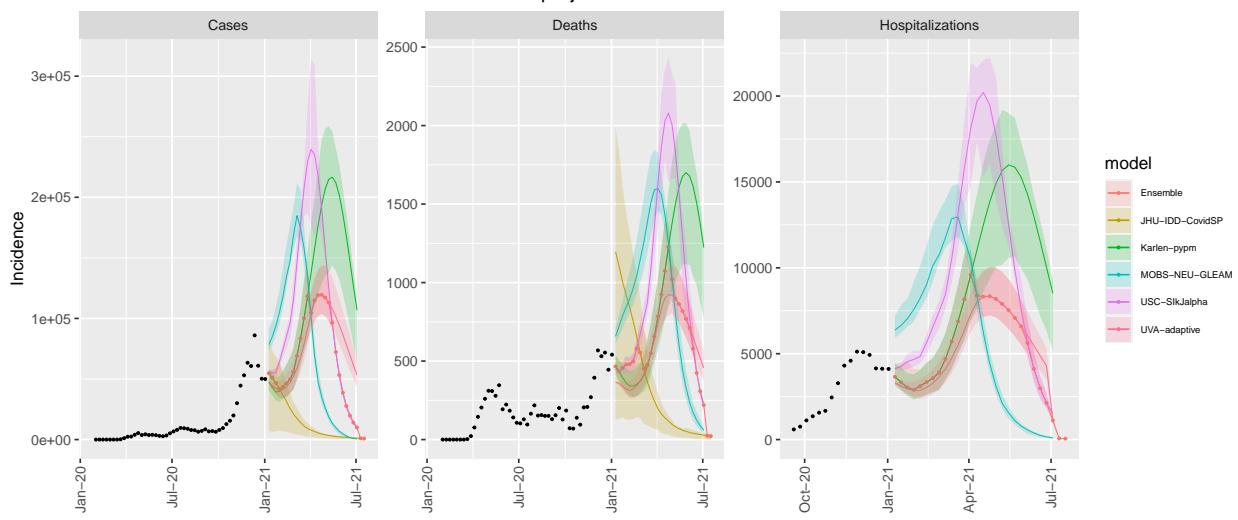
NC model variance & 50% projection intervals – counterfactual



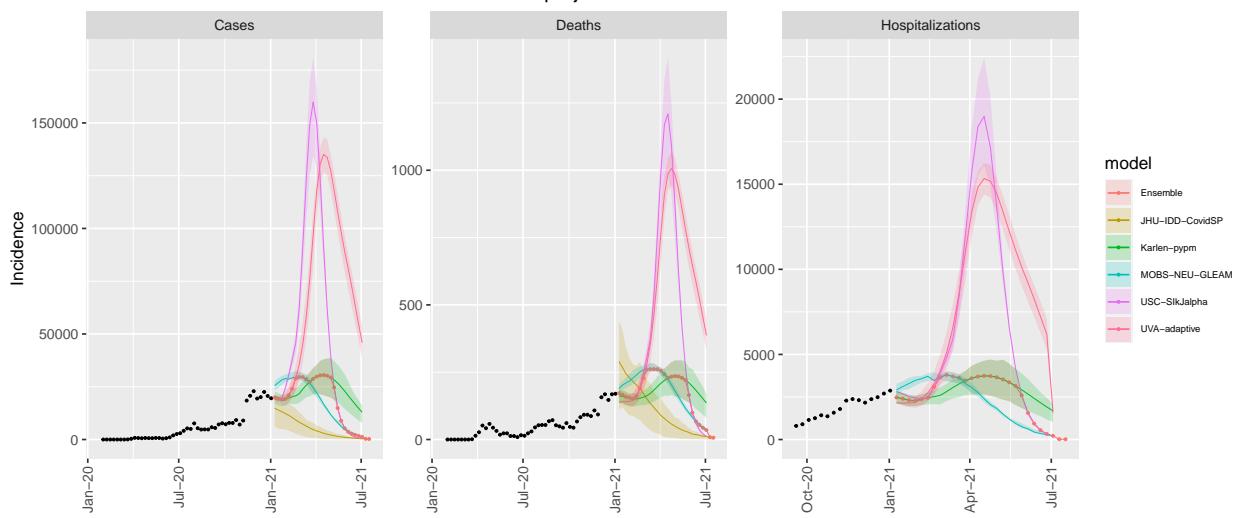
ND model variance & 50% projection intervals – counterfactual



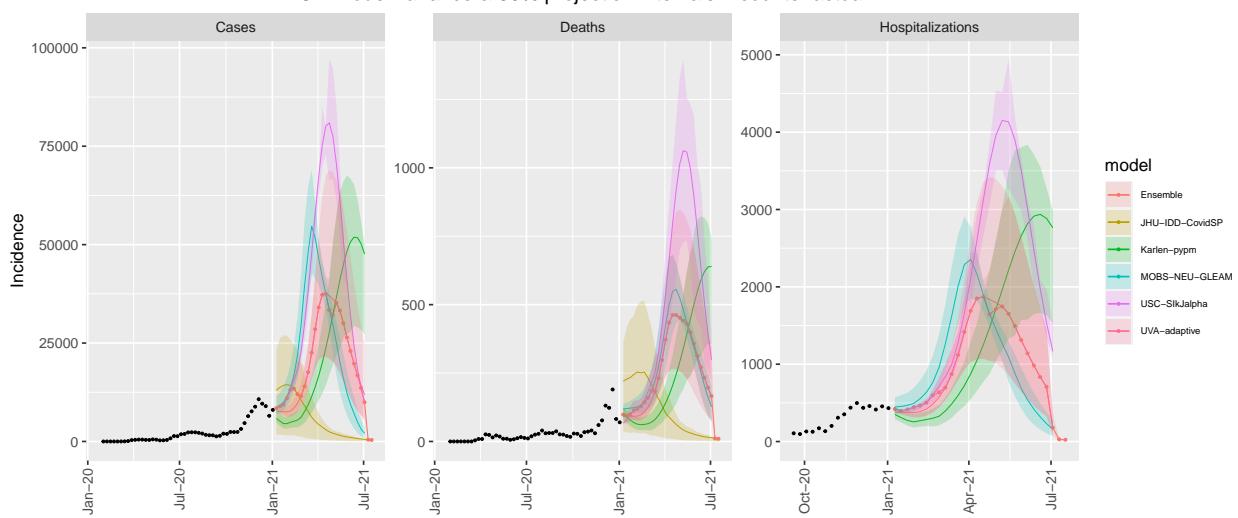
OH model variance & 50% projection intervals – counterfactual



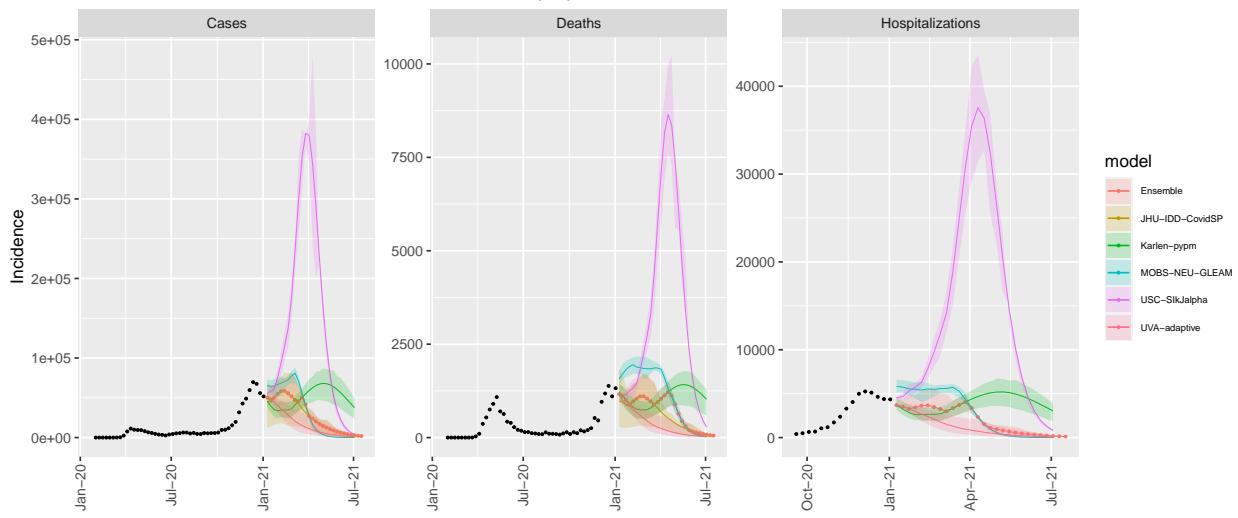
OK model variance & 50% projection intervals – counterfactual



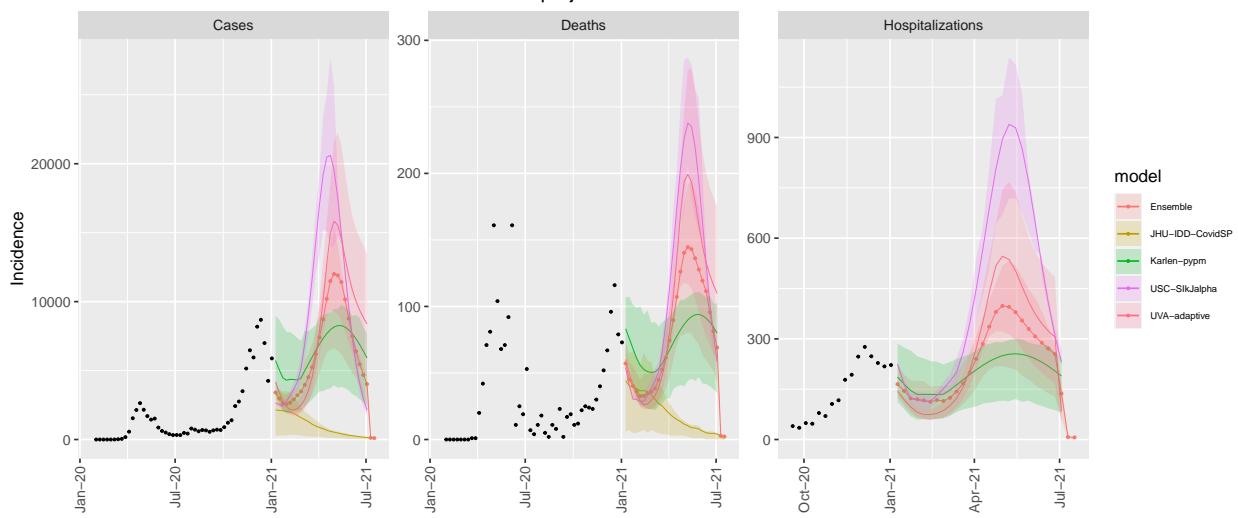
OR model variance & 50% projection intervals – counterfactual



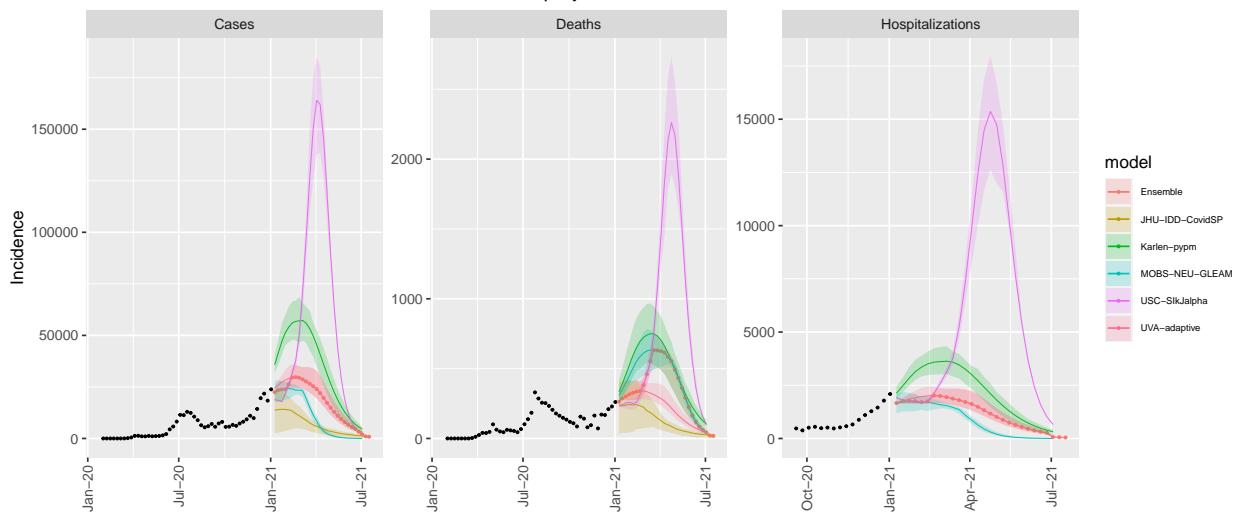
PA model variance & 50% projection intervals – counterfactual



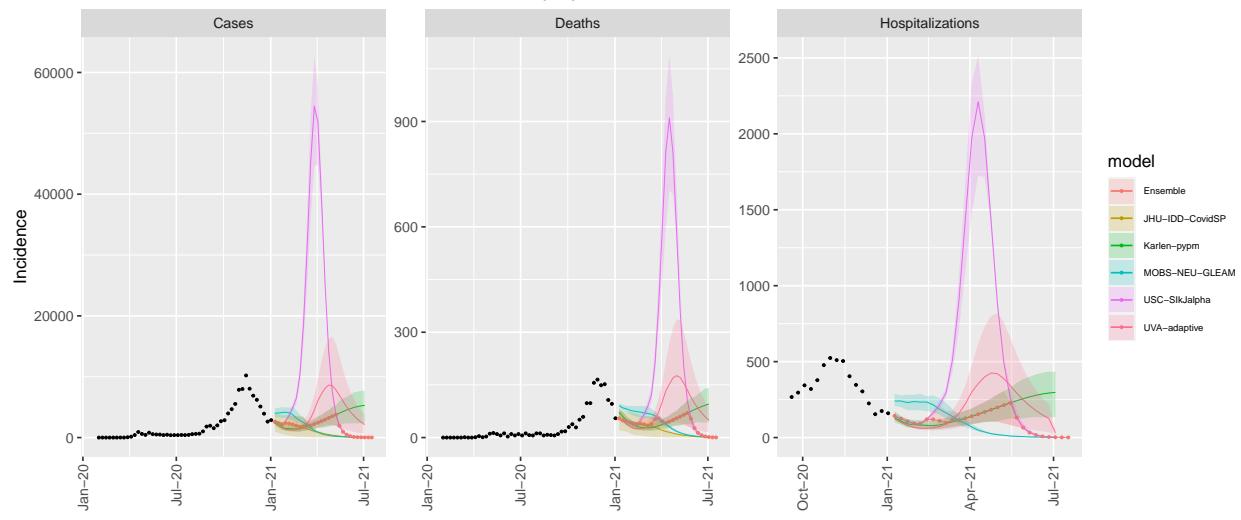
RI model variance & 50% projection intervals – counterfactual



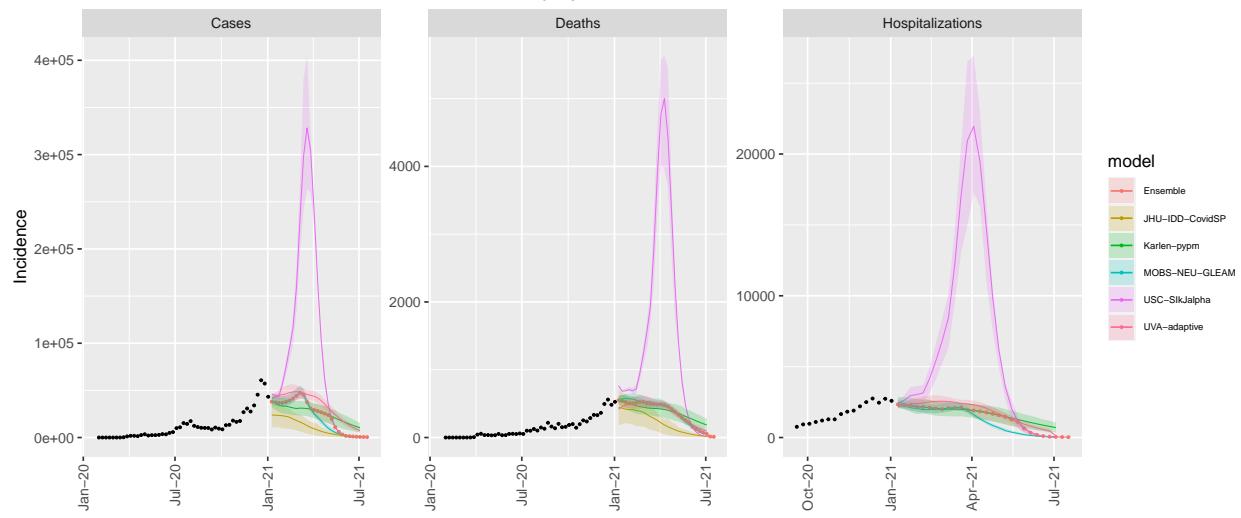
SC model variance & 50% projection intervals – counterfactual



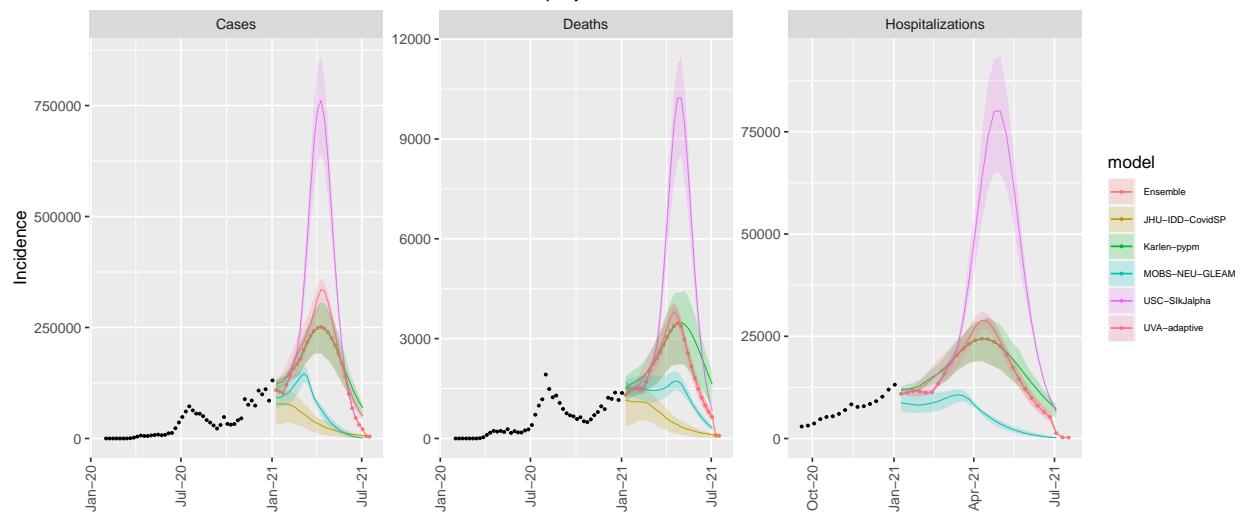
SD model variance & 50% projection intervals – counterfactual



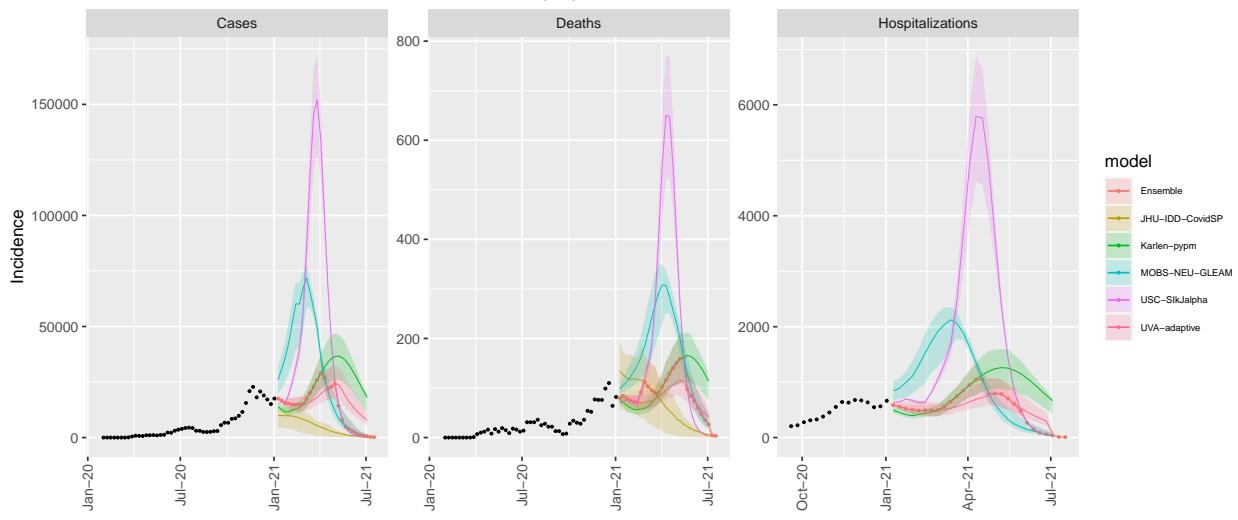
TN model variance & 50% projection intervals – counterfactual



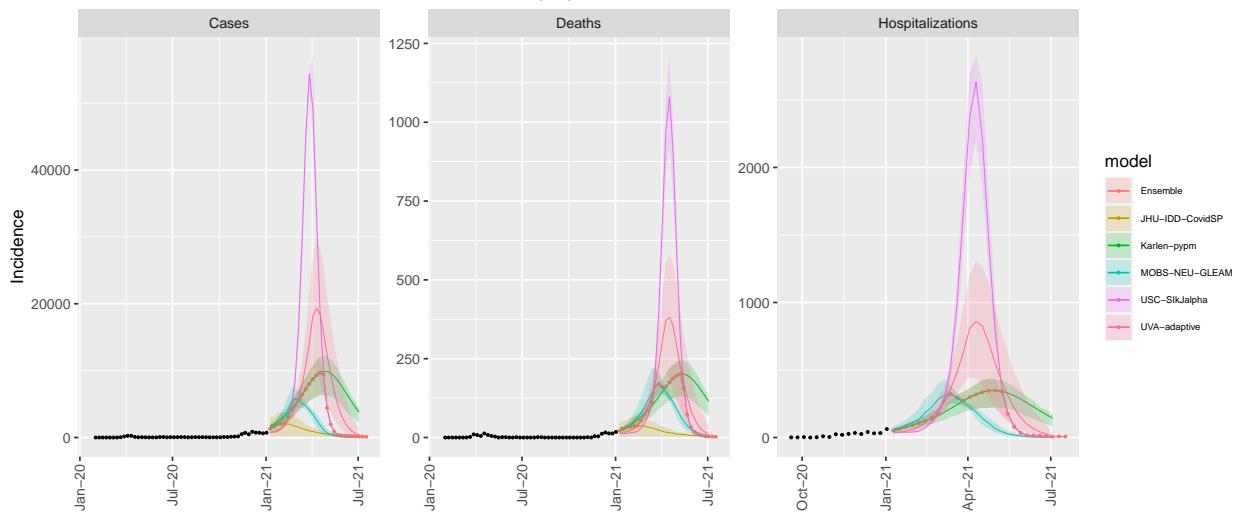
TX model variance & 50% projection intervals – counterfactual



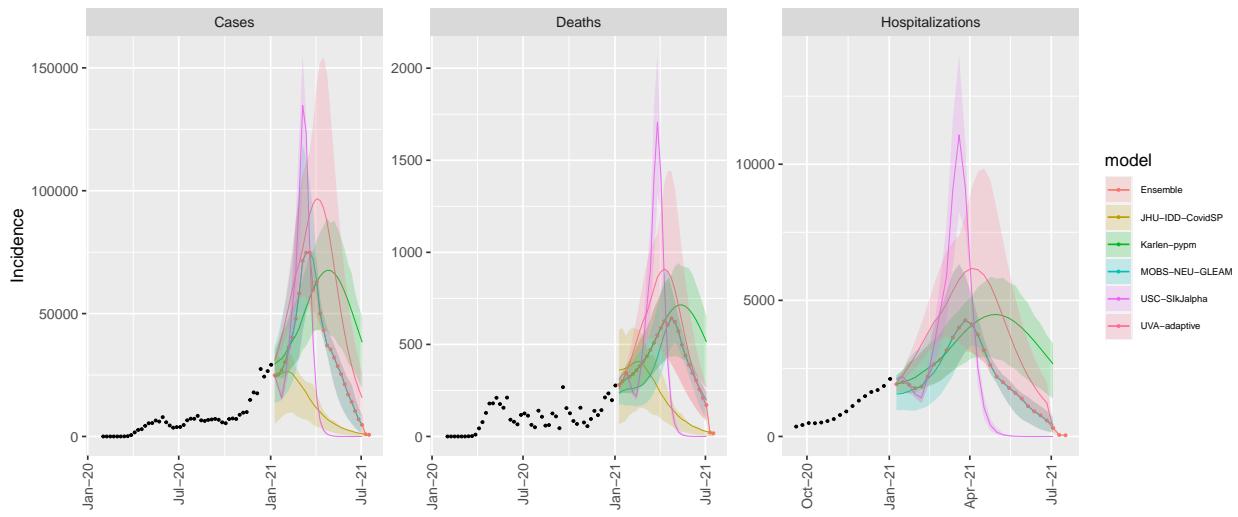
UT model variance & 50% projection intervals – counterfactual



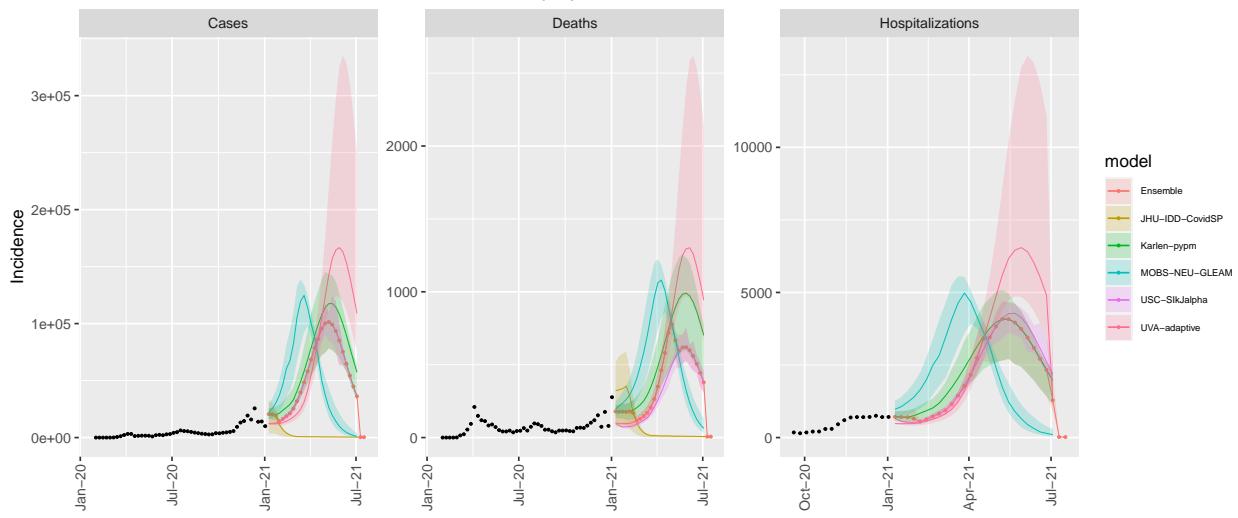
VT model variance & 50% projection intervals – counterfactual



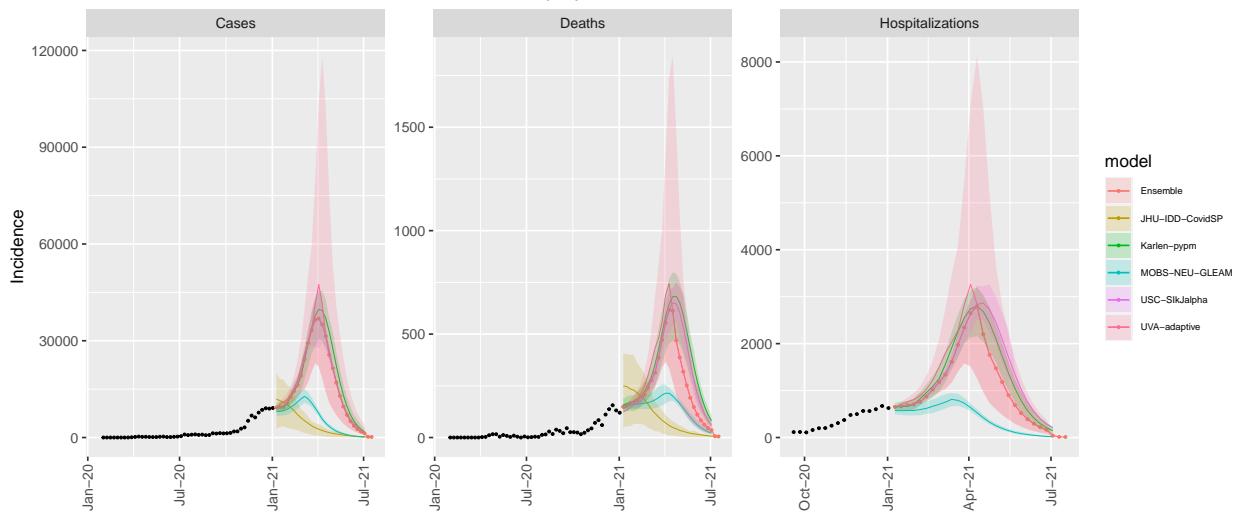
VA model variance & 50% projection intervals – counterfactual



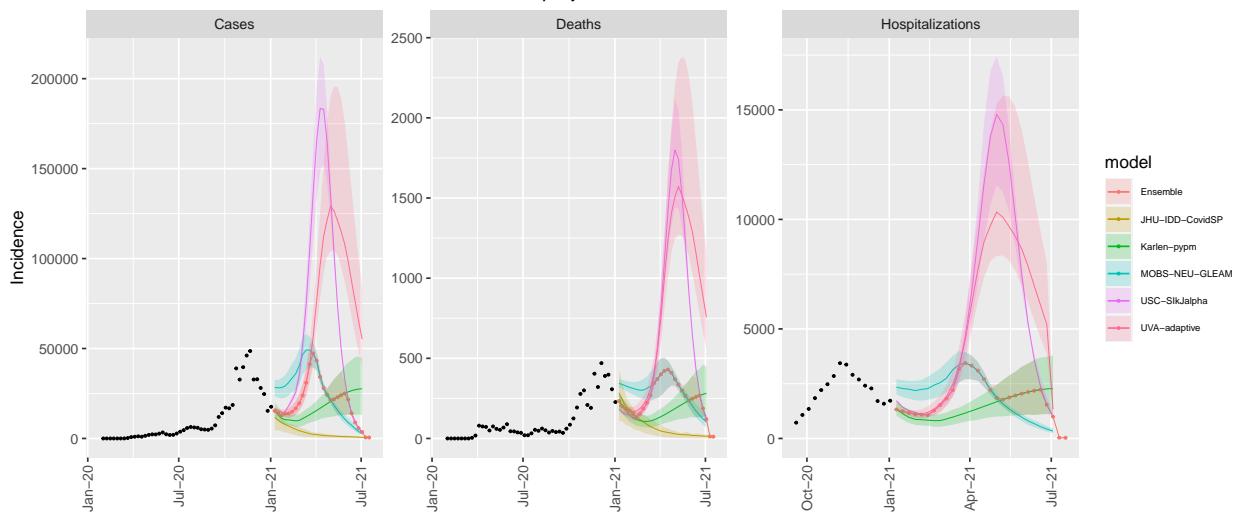
WA model variance & 50% projection intervals – counterfactual



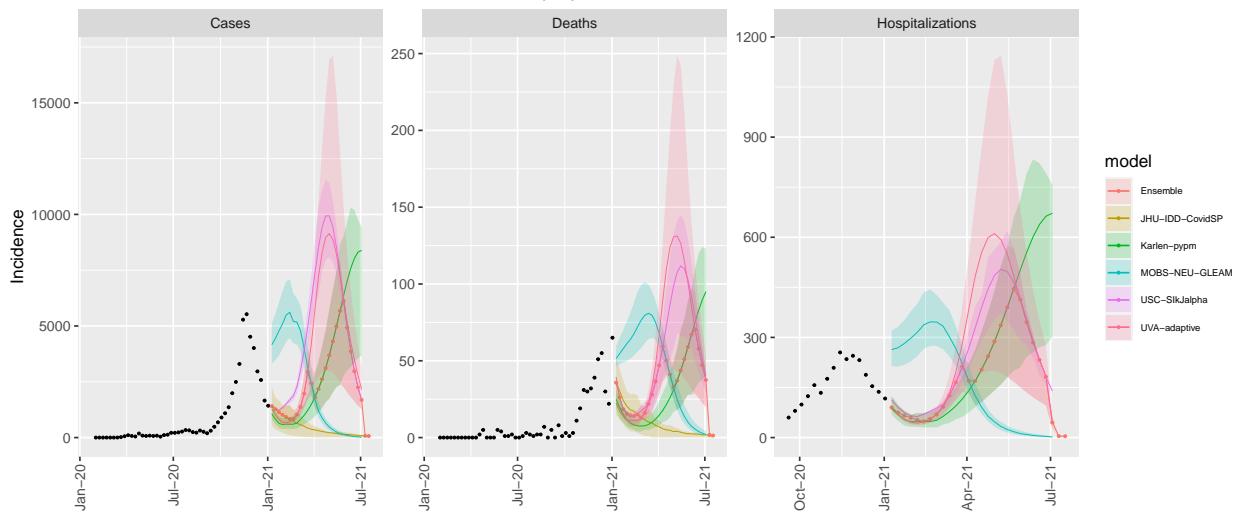
WV model variance & 50% projection intervals – counterfactual



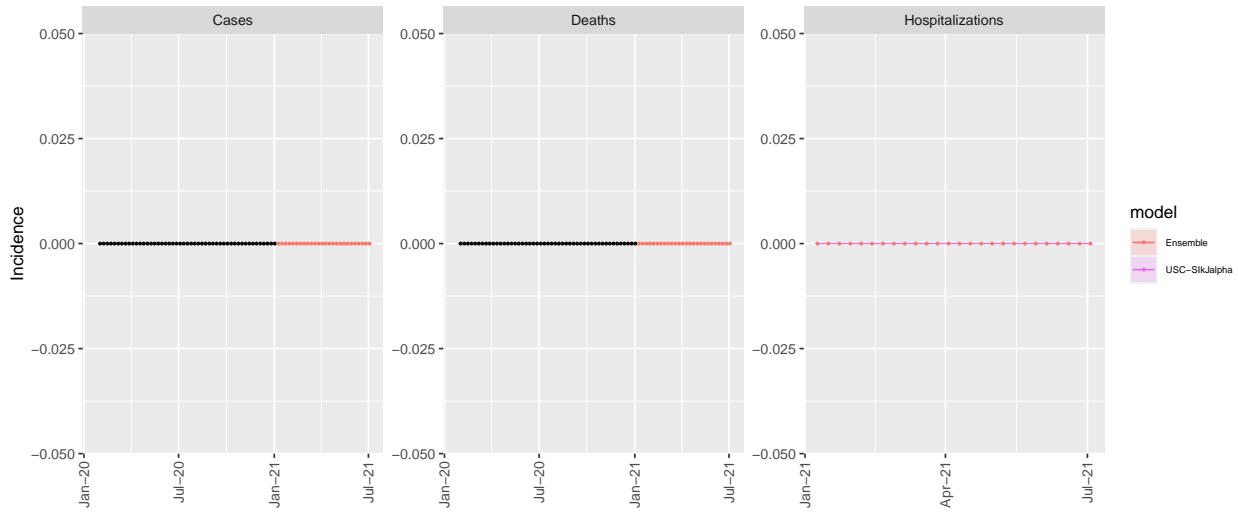
WI model variance & 50% projection intervals – counterfactual



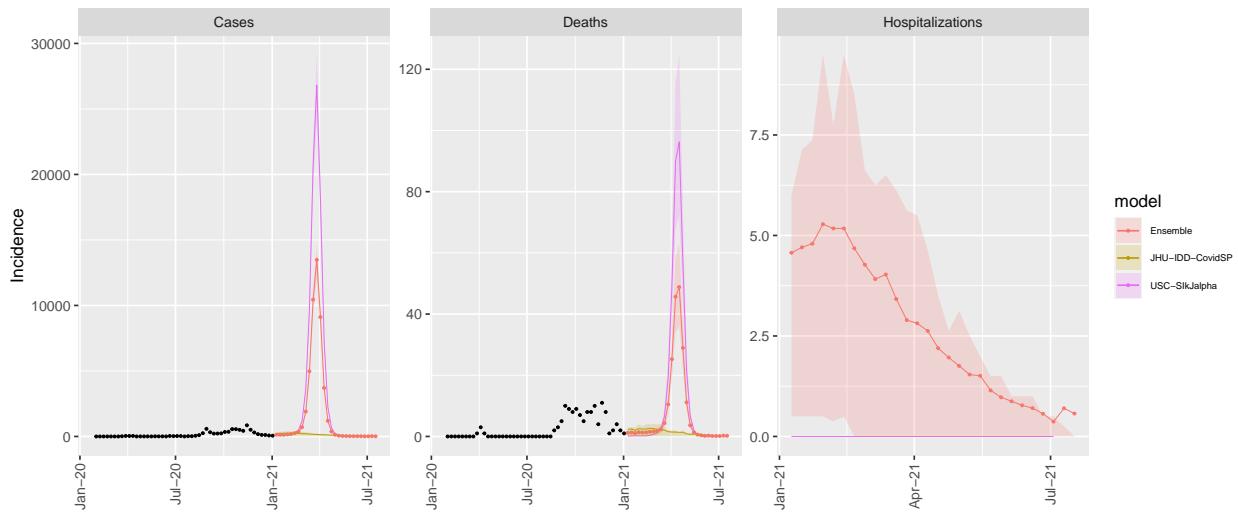
WY model variance & 50% projection intervals – counterfactual



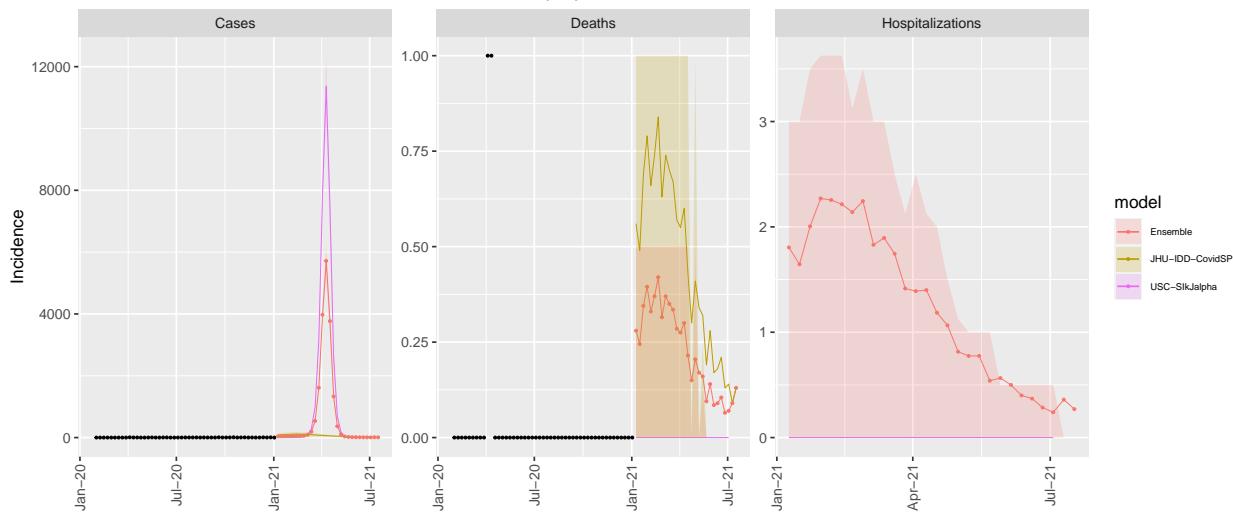
AS model variance & 50% projection intervals – counterfactual



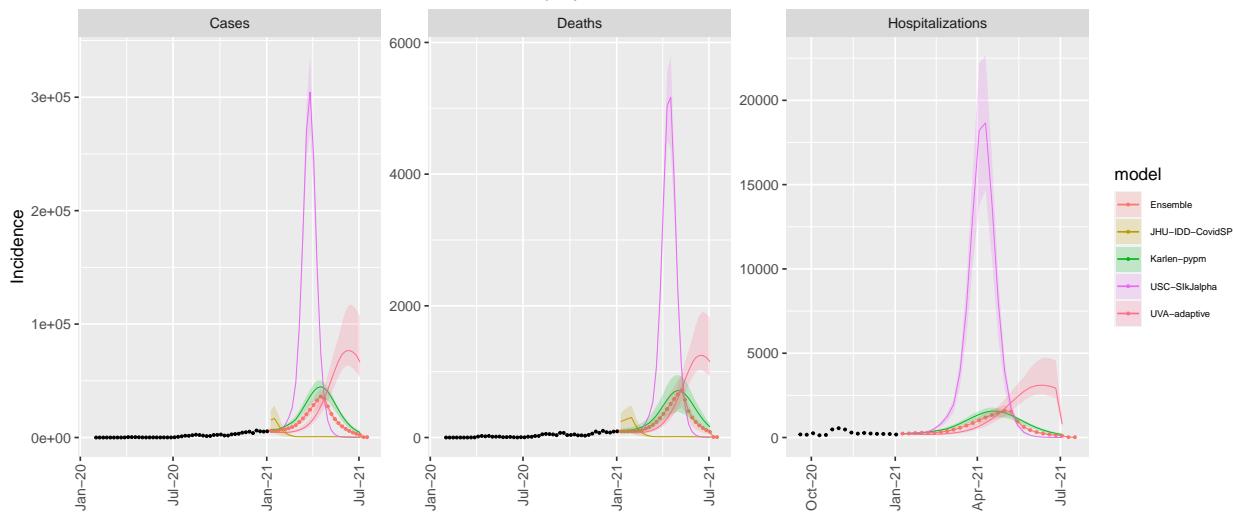
GU model variance & 50% projection intervals – counterfactual



MP model variance & 50% projection intervals – counterfactual



PR model variance & 50% projection intervals – counterfactual



VI model variance & 50% projection intervals – counterfactual

