

COVID-19 Scenario Modeling Hub Report

11 February, 2021

Scenario Modeling Hub Team¹

Executive Summary

This report presents the results of the second round of projections from the COVID-19 Scenario Modeling Hub. A consortium of five 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](#).

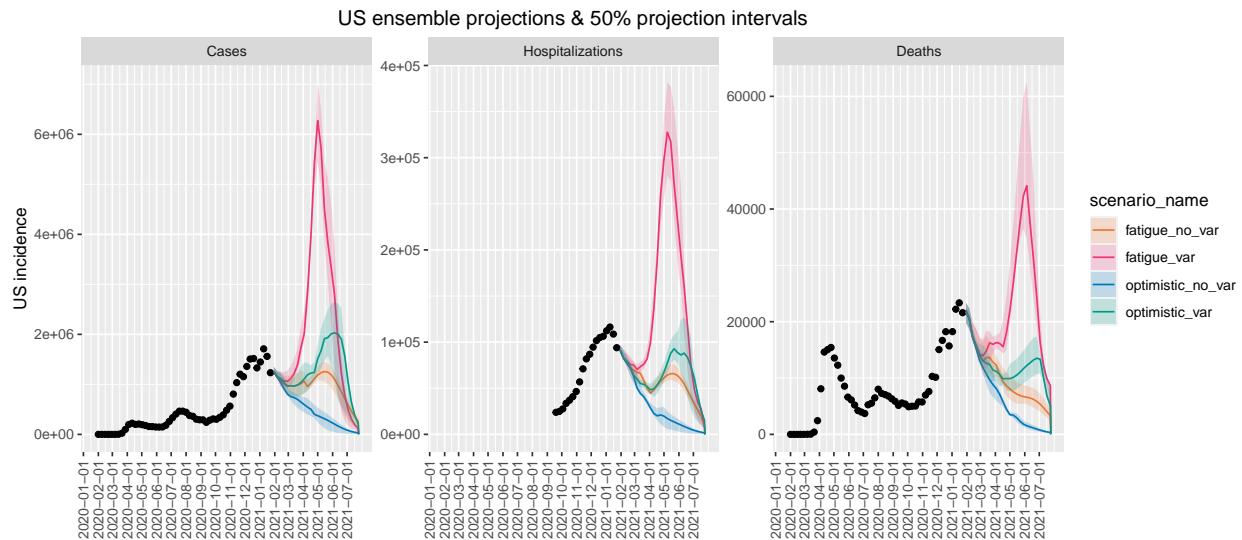
Key Takeaways From Second Round

- For each scenario, we see initial decreases in ensemble projections for cases and hospitalizations through February. We see increases in projections during March and April for both scenarios accounting for a variant with increased transmissibility. Meanwhile, we observe increases in deaths for both of scenarios accounting for fatigue, with a sharper increase observed in novel variant projections. This increase is less pronounced and delayed for the optimistic scenario with increased transmissibility.
- We observe consensus across model projections for decreases in cases, hospitalizations, and deaths for the optimistic scenario without a novel variant. Large differences are apparent for scenarios incorporating a more transmissible variant.
- While individual models tend to roughly agree on the timing of resurgence within each scenario, the magnitude of the corresponding peaks vary greatly. Differences are most apparent for hospitalizations and deaths.
- Some disagreement between individual model projections of fatigue scenarios is due to differing interpretations of the timing and magnitude of intervention effectiveness. We are working with teams to ensure a consensus in interpretation of each scenario.

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

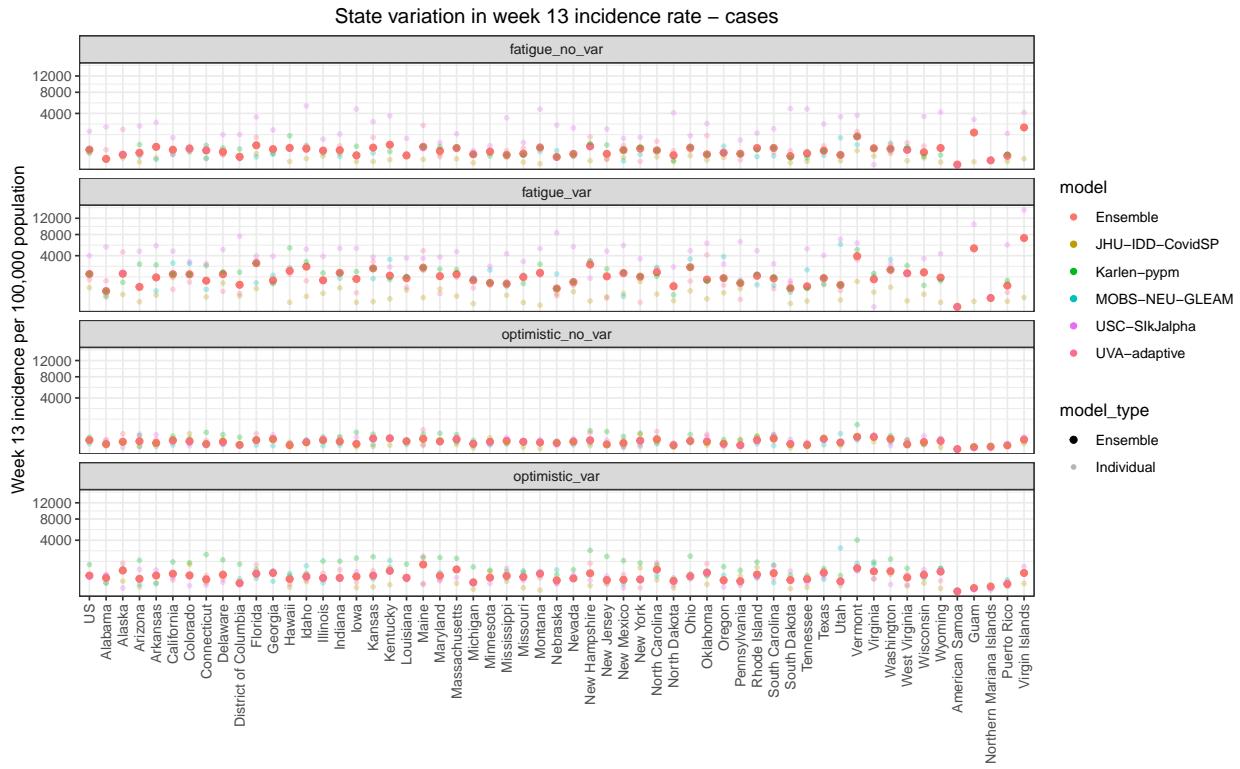
National ensemble projections

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

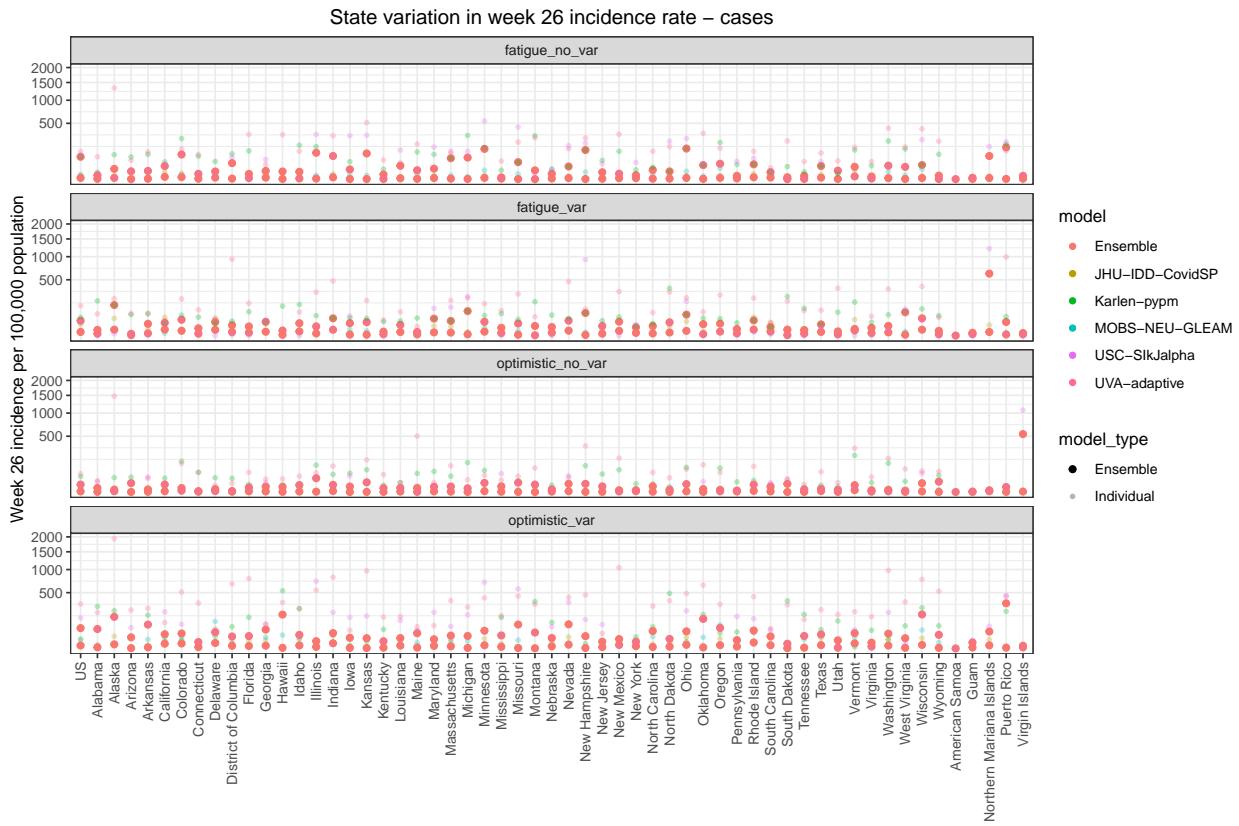


State-level deviation from national

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

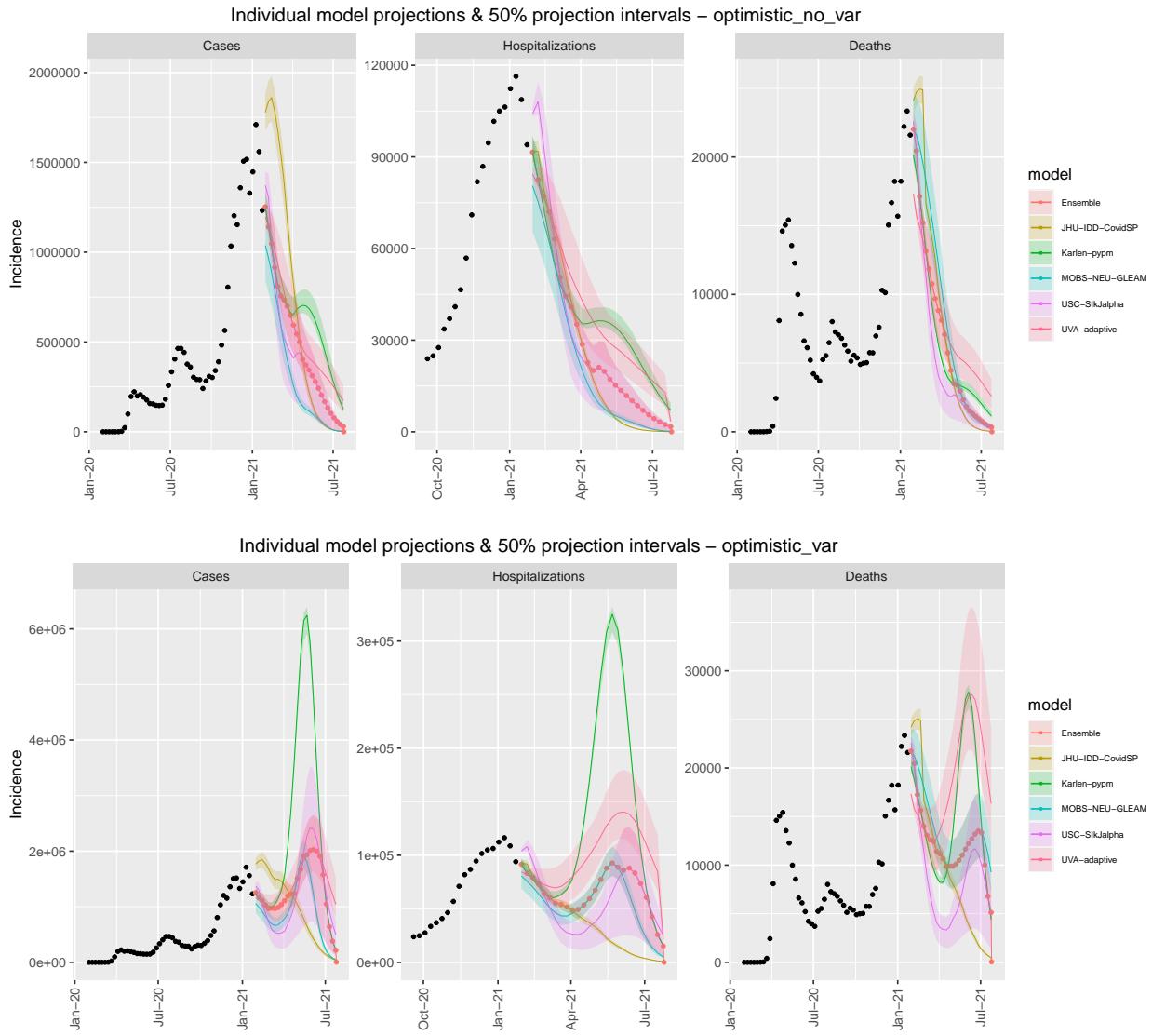


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

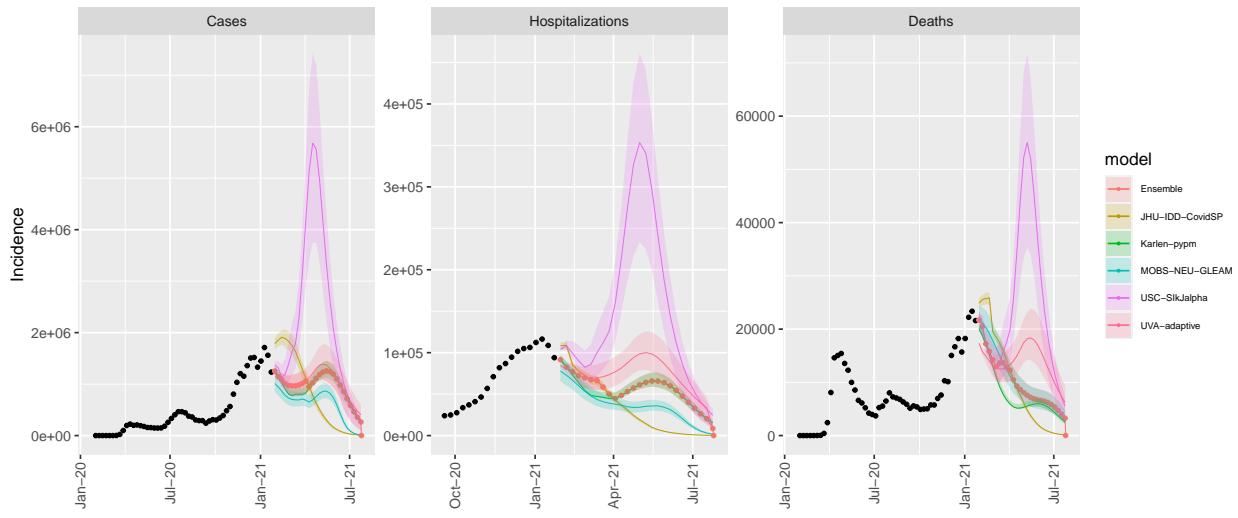


National model variation

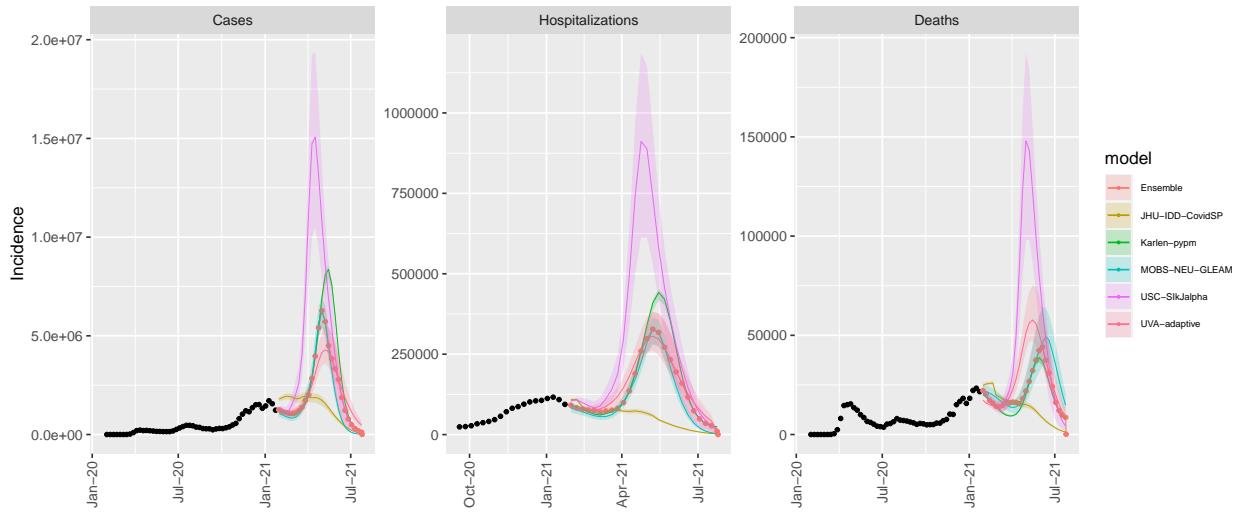
Individual model projections for national incident cases, deaths, and hospitalizations.



Individual model projections & 50% projection intervals – fatigue_no_var

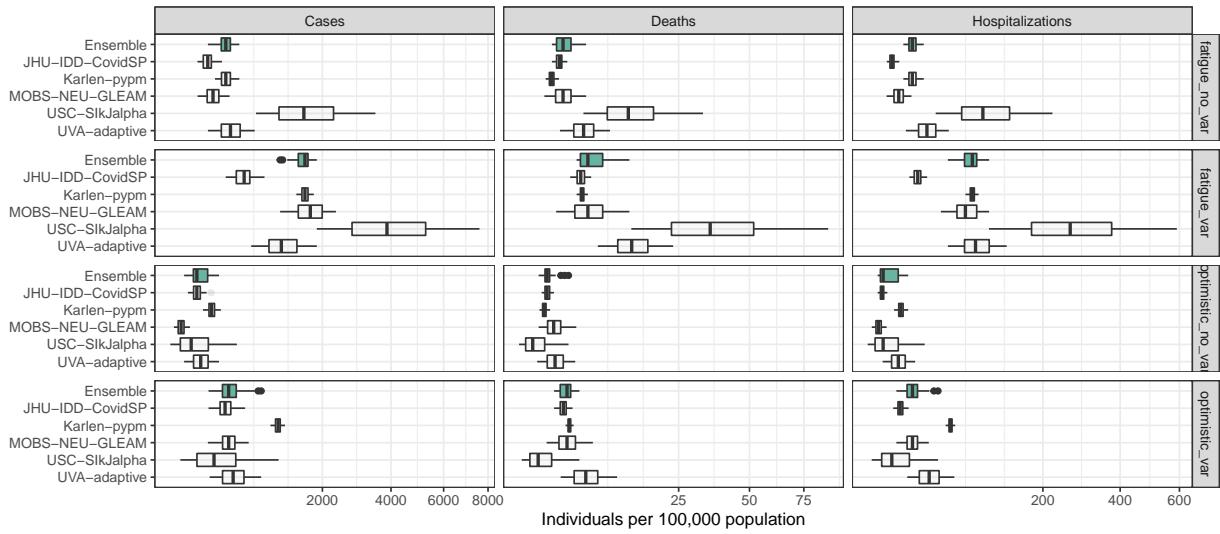


Individual model projections & 50% projection intervals – fatigue_var

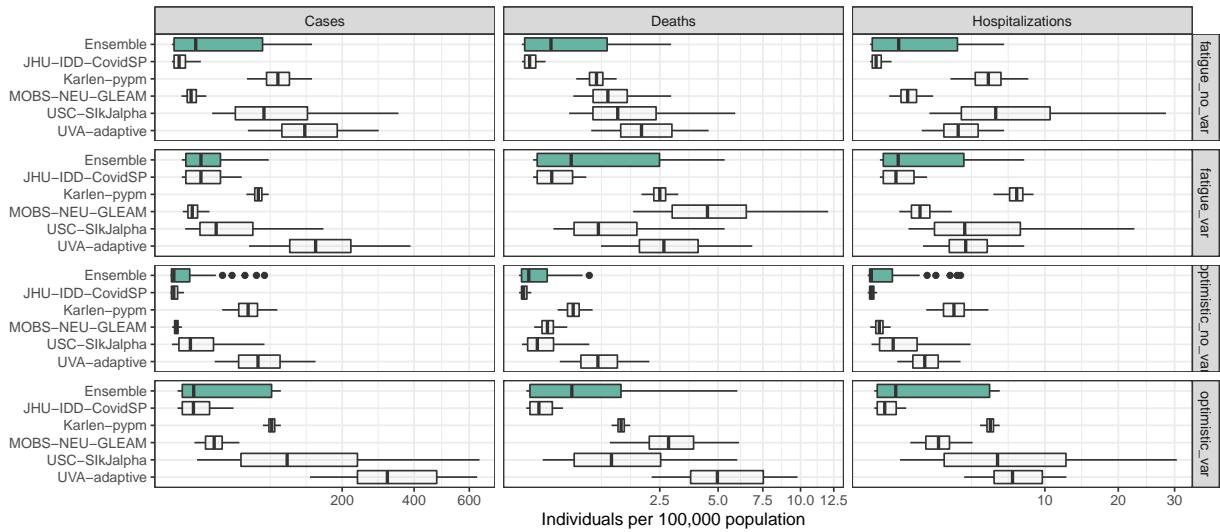


Projection distributions

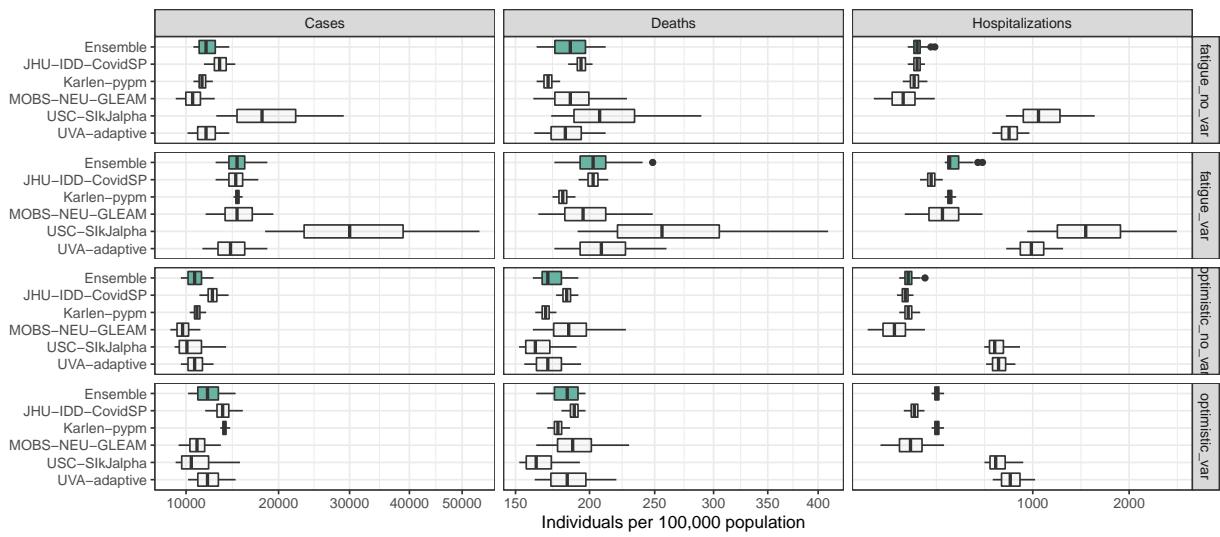
Model variation – 13 week ahead incidence



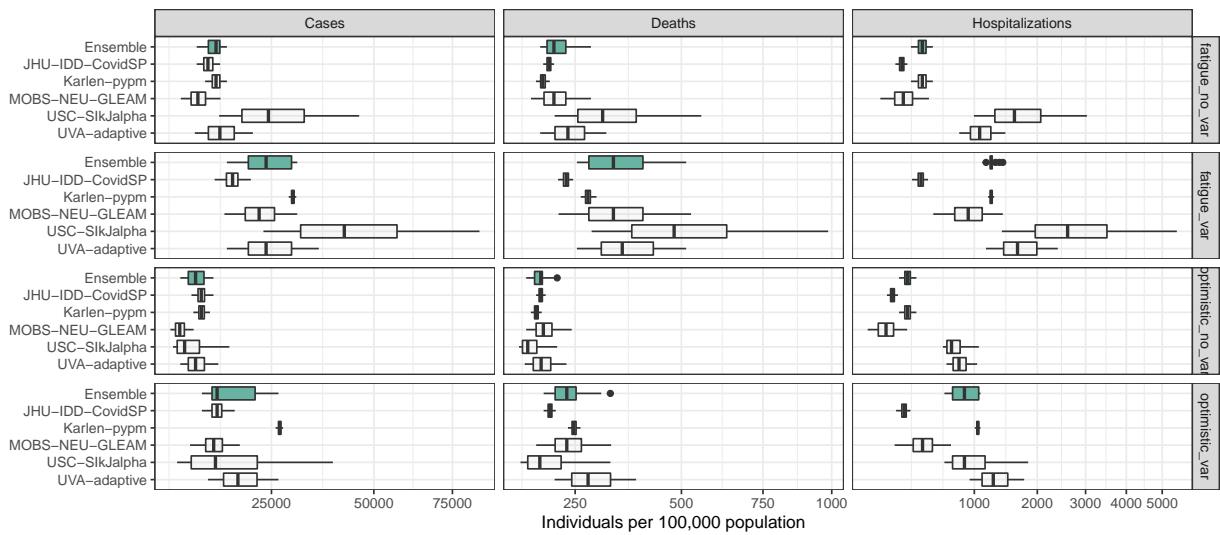
Model variation – 26 week ahead incidence



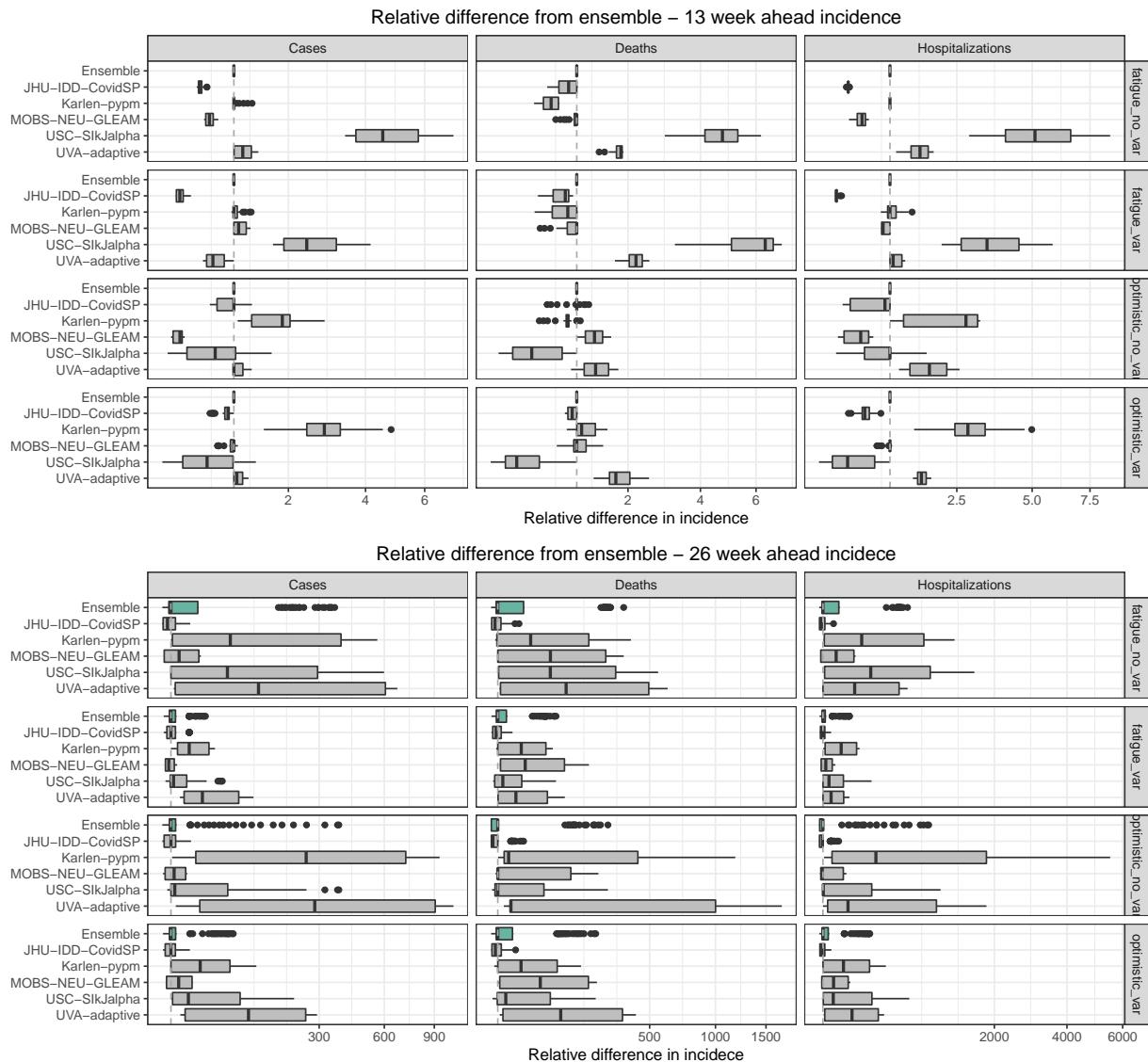
Model variation – 13 week ahead cumulative incidence

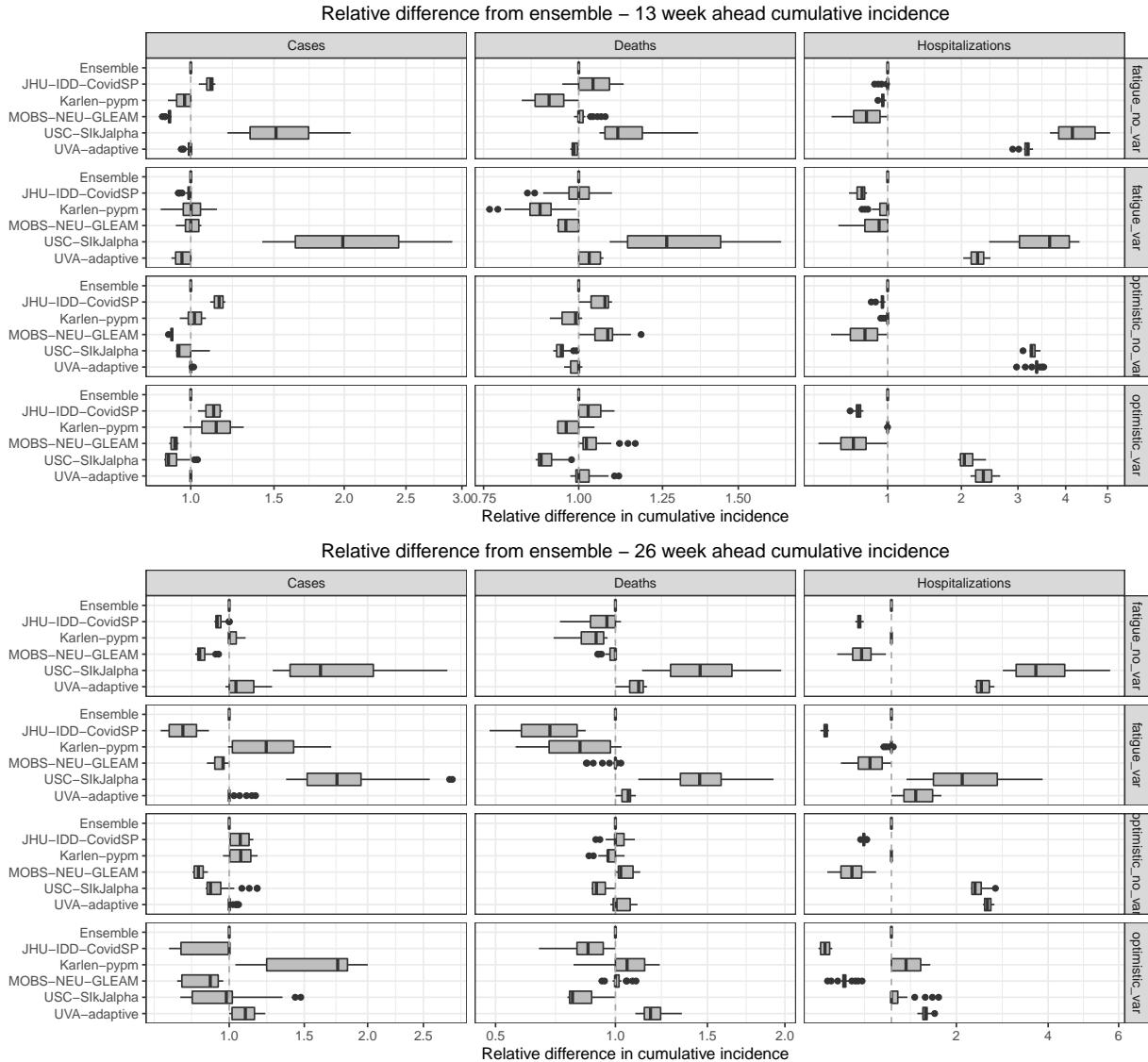


Model variation – 26 week ahead cumulative incidence



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
- USC Data Science Lab — SI kJalpha
- University of Virginia — adaptive

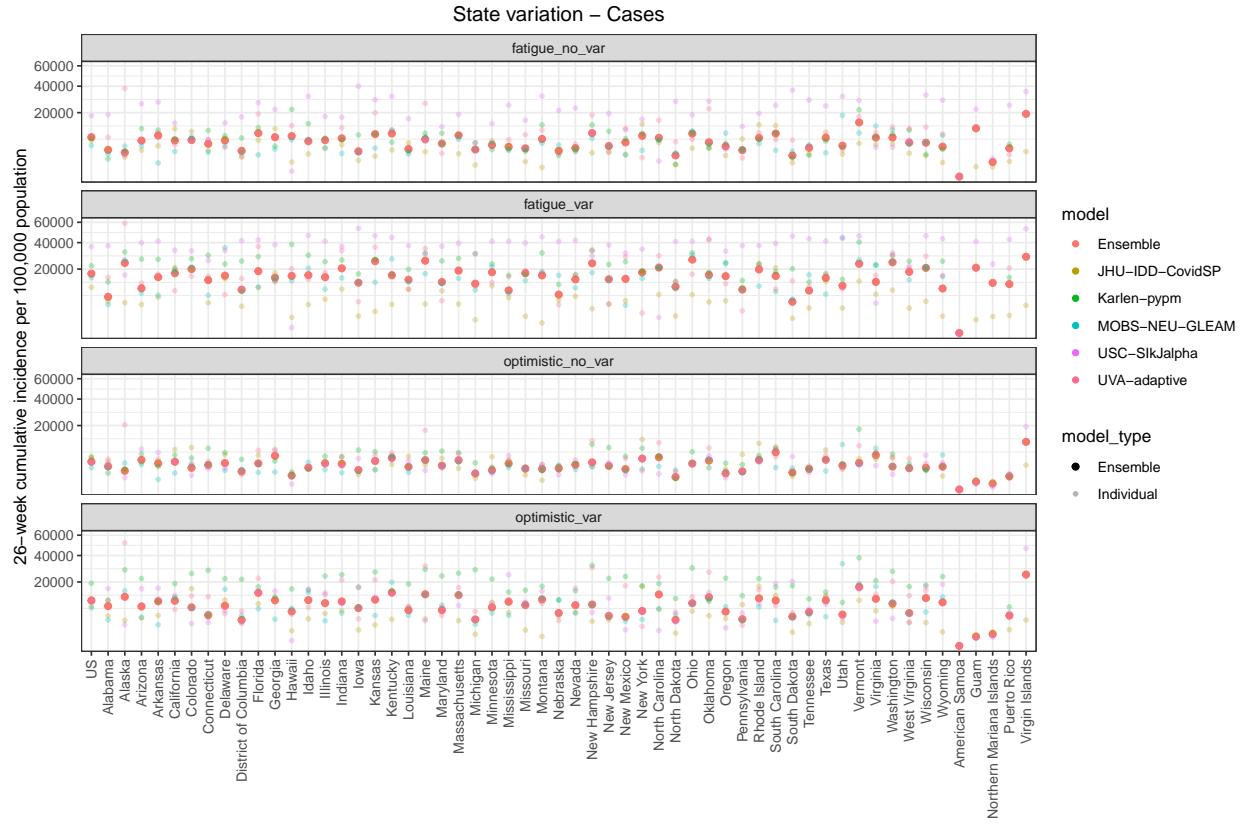
The COVID-19 Scenario Modeling Hub Team

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

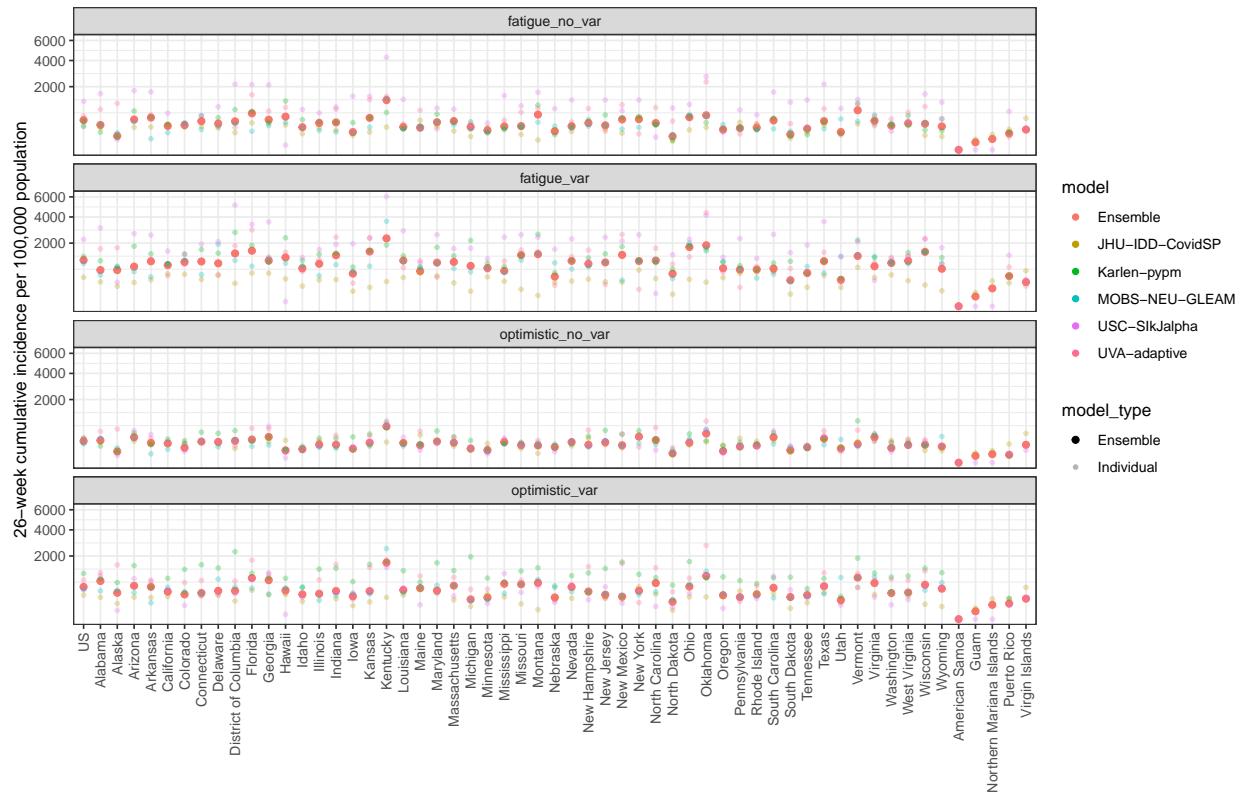
- Nick Reich, University of Massachusetts at Amherst
- Wilbert Van Panhuis, University of Pittsburgh
- Michael Runge, USGS
- Lucie Contamin, University of Pittsburgh
- John Levander, University of Pittsburgh
- Jessica Salerno, University of Pittsburgh

Supplemental Plots

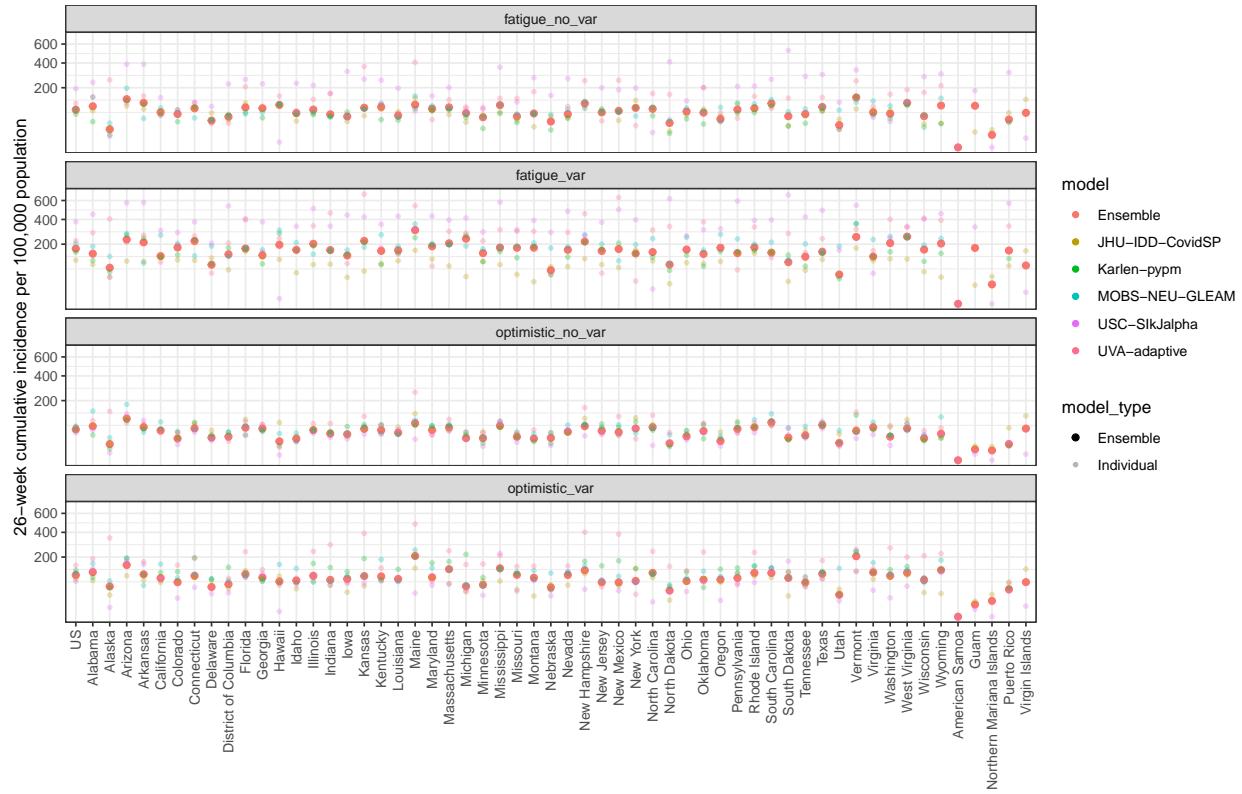
Individual model and ensembles projections for state-level cumulative incidence per 100,000 population over 26-week projection period. Please note the relatively small number of models incorporated in the ensemble at this stage, particularly states and territories for which only one or two models have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



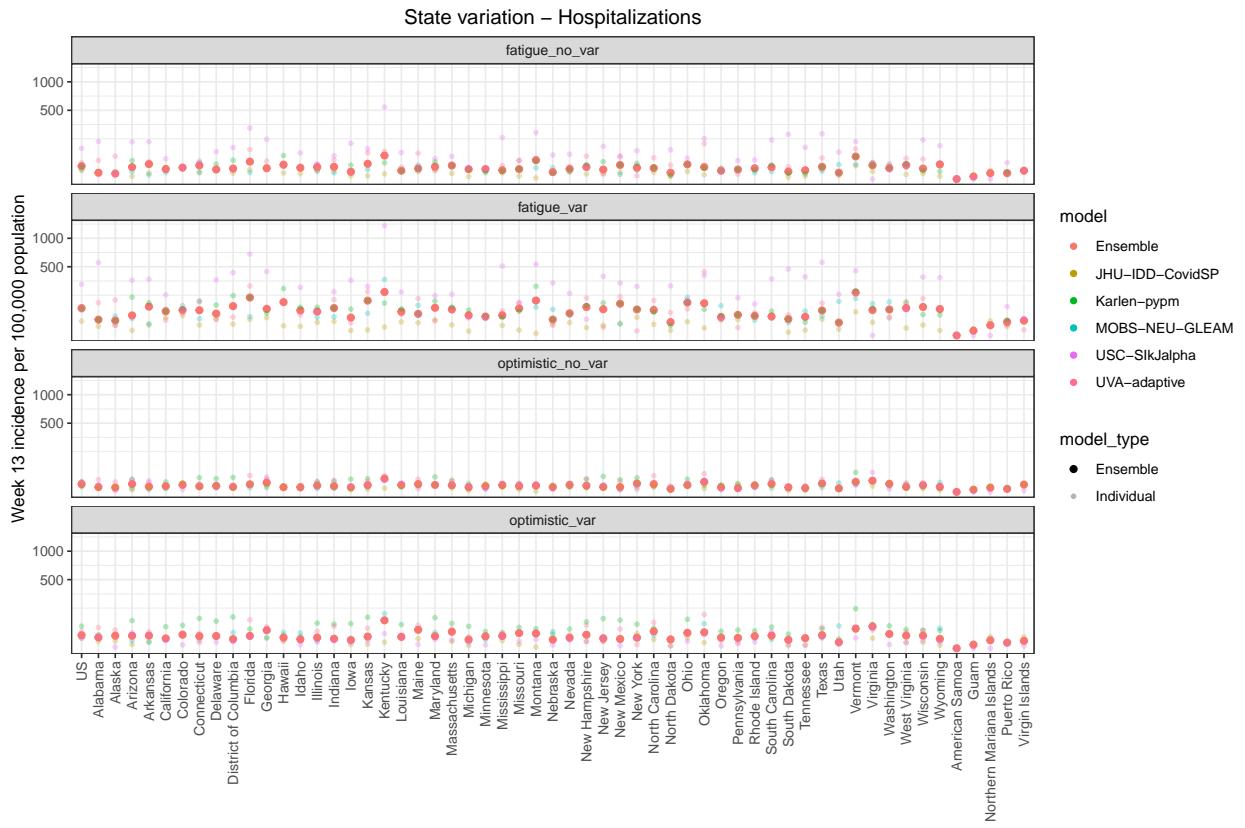
State variation – Hospitalizations

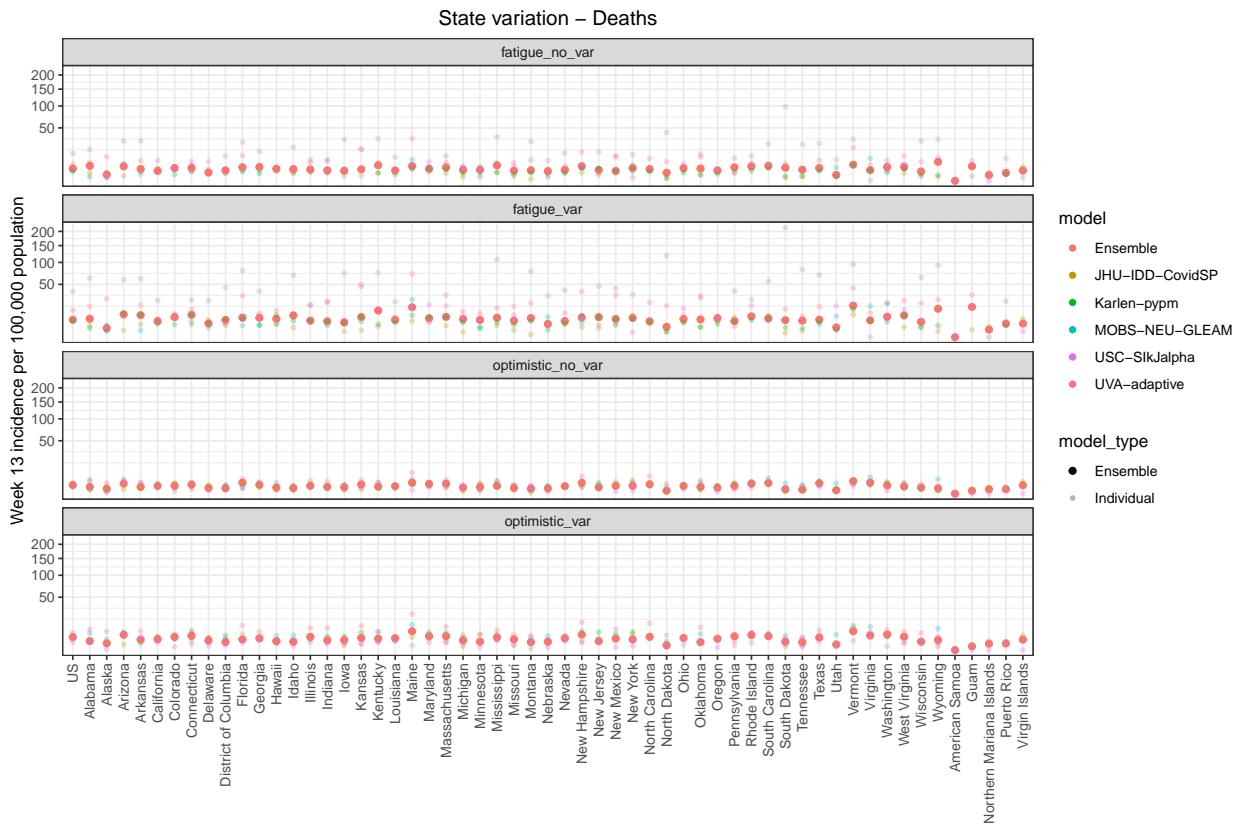


State variation – Deaths

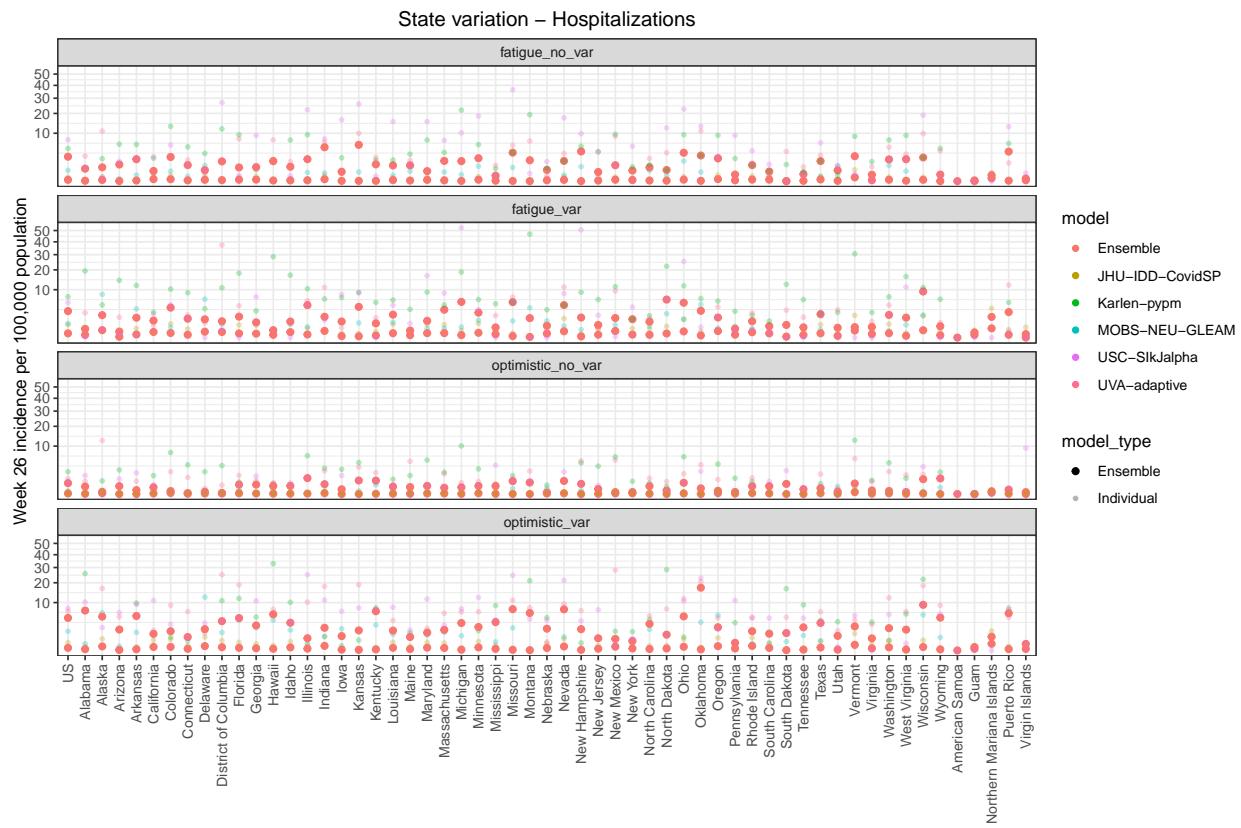


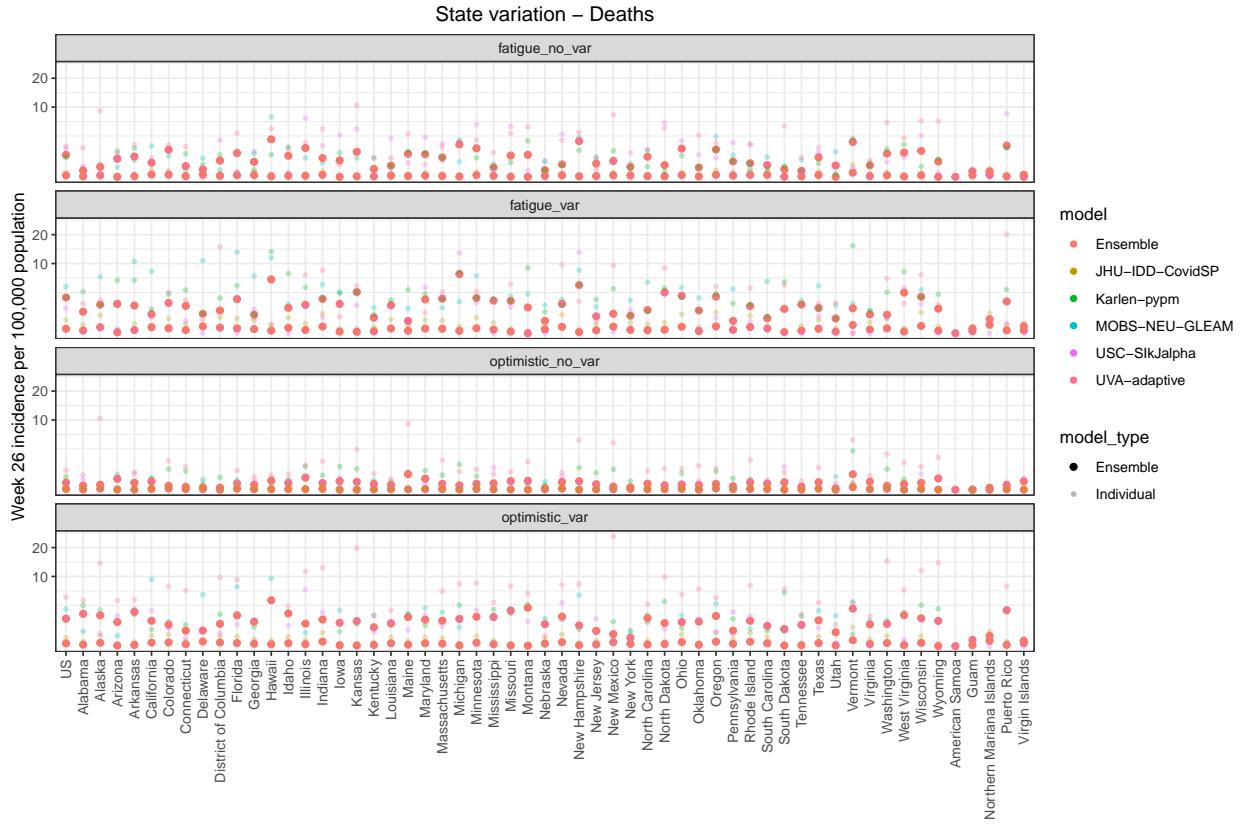
Individual model and ensembles projections for state-level death and hospitalization incidence per 100,000 population at week 13.



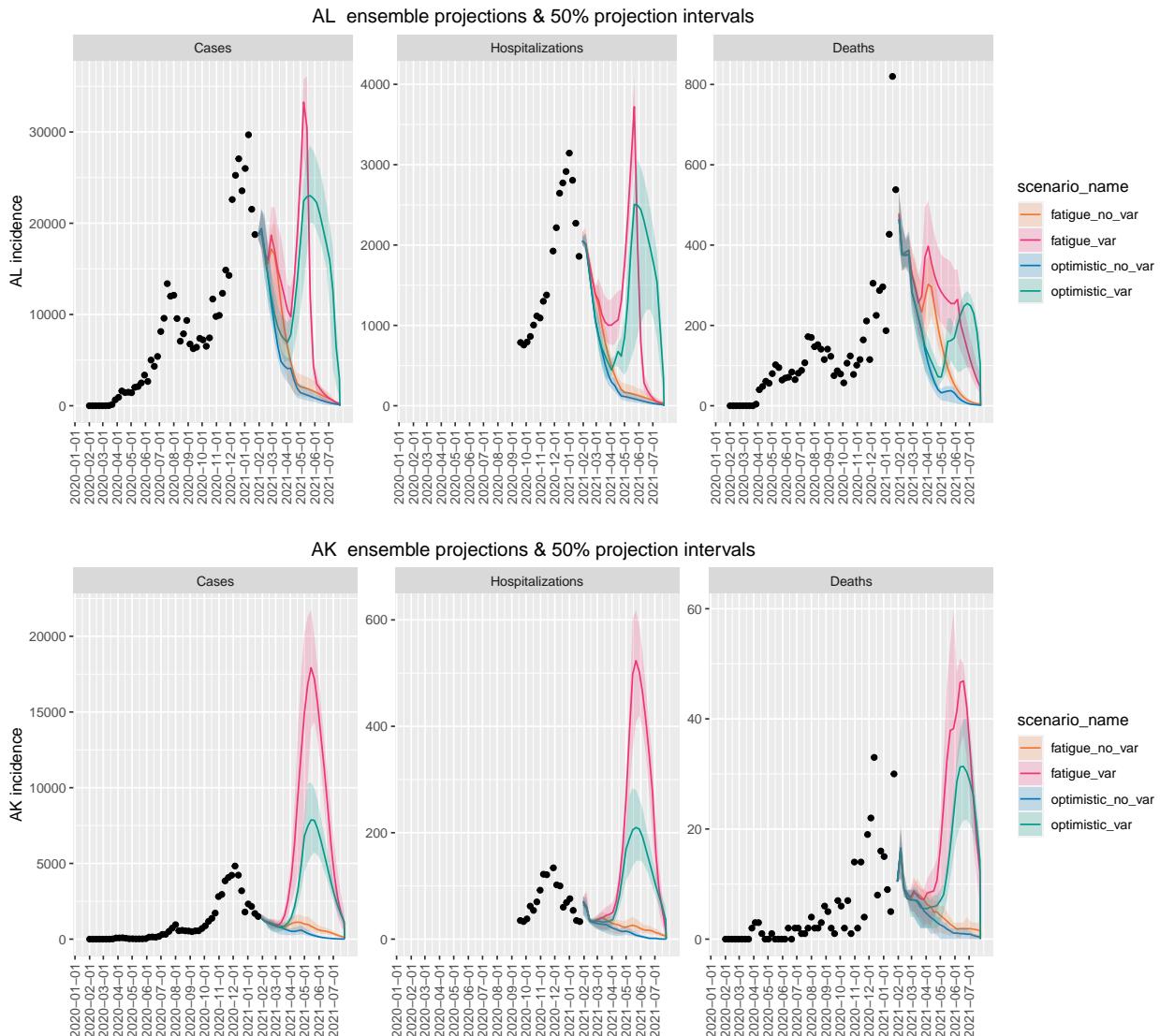


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

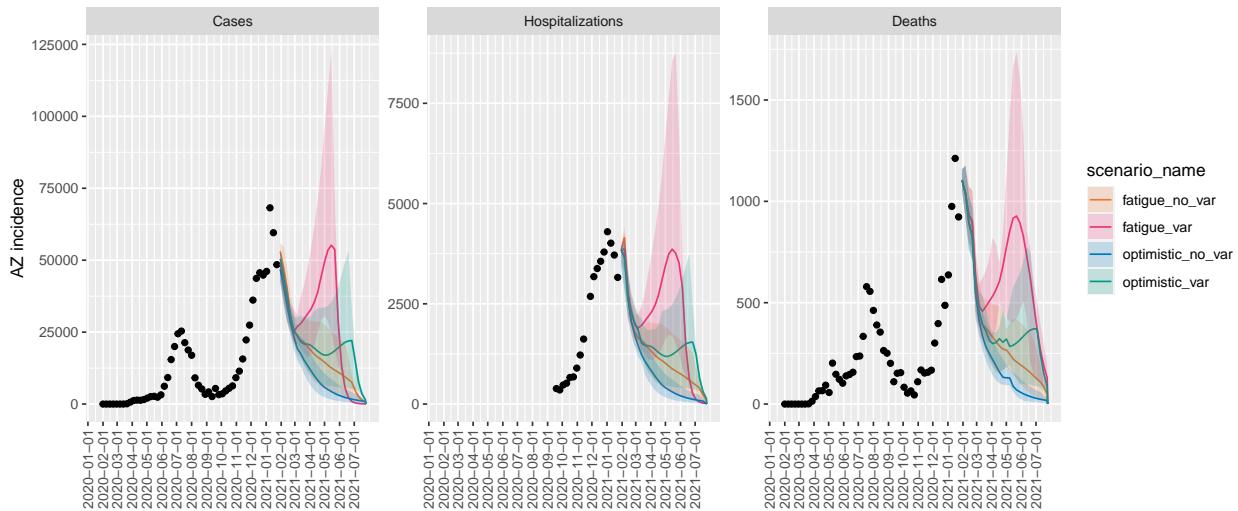




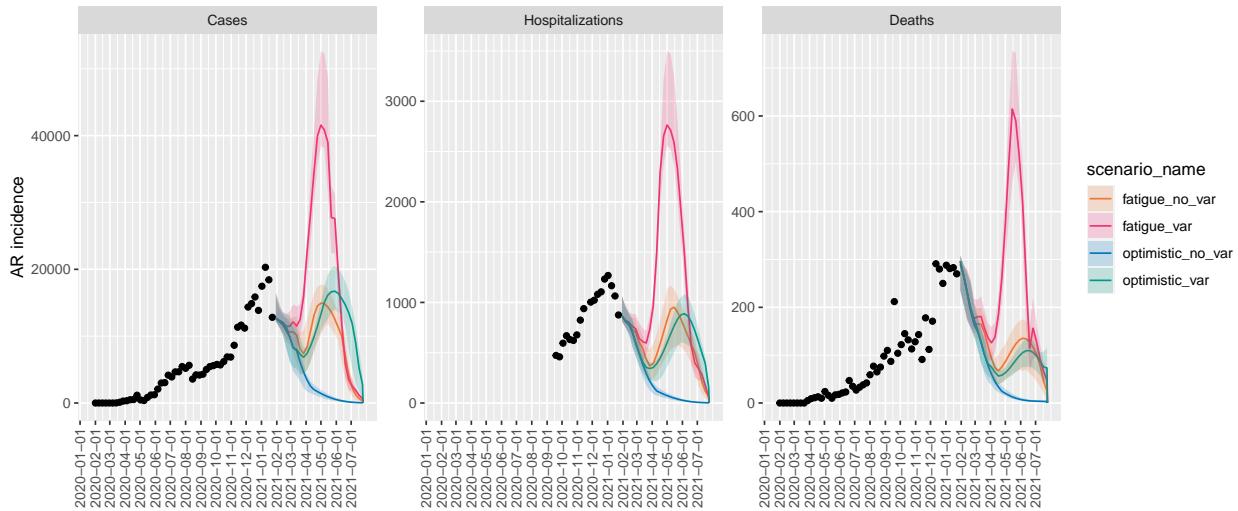
State-level ensemble plots



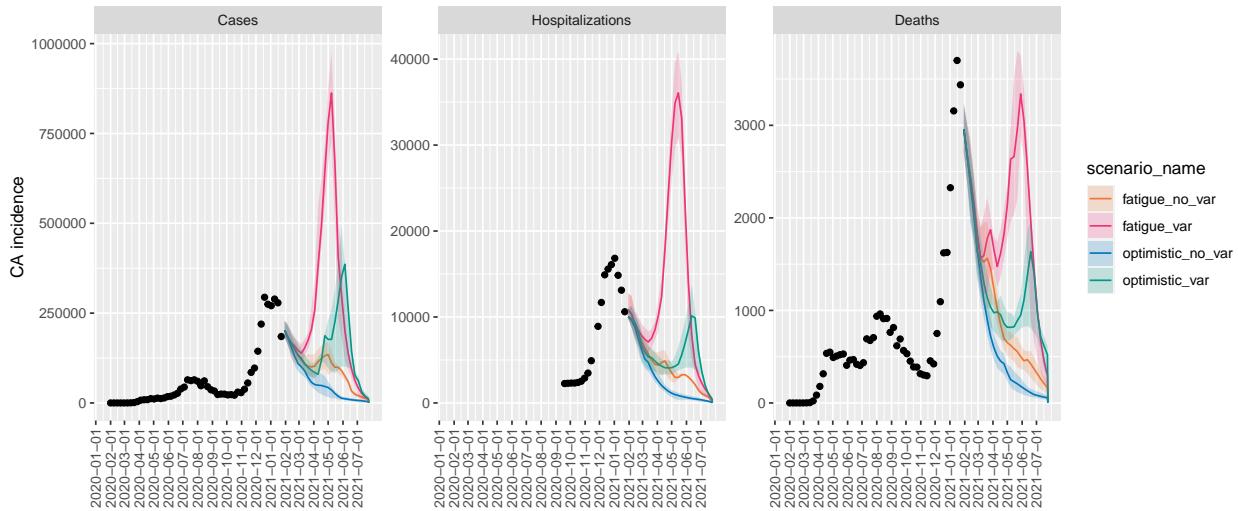
AZ ensemble projections & 50% projection intervals



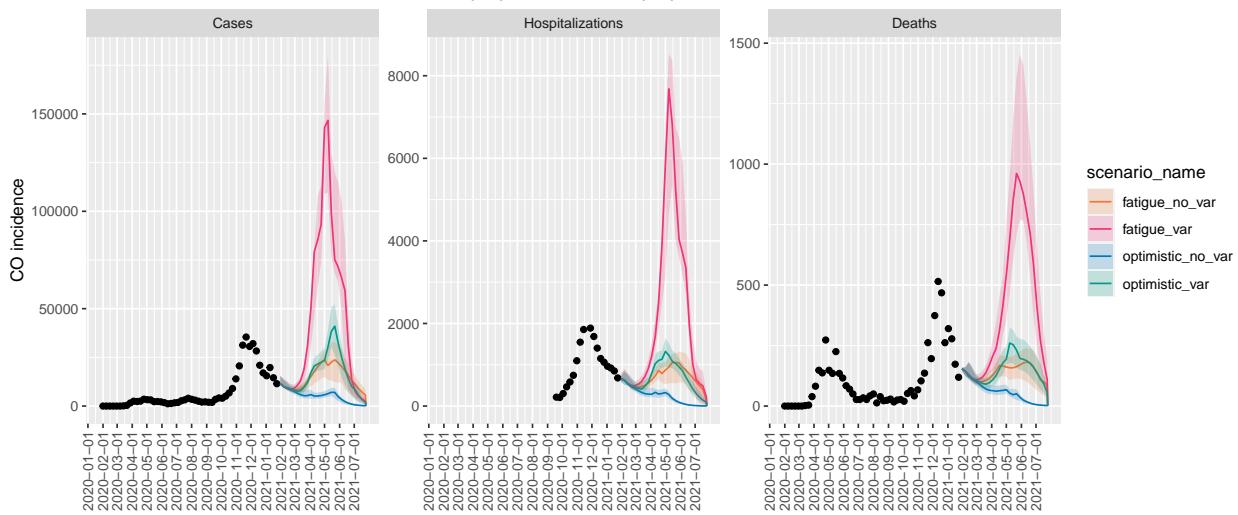
AR ensemble projections & 50% projection intervals



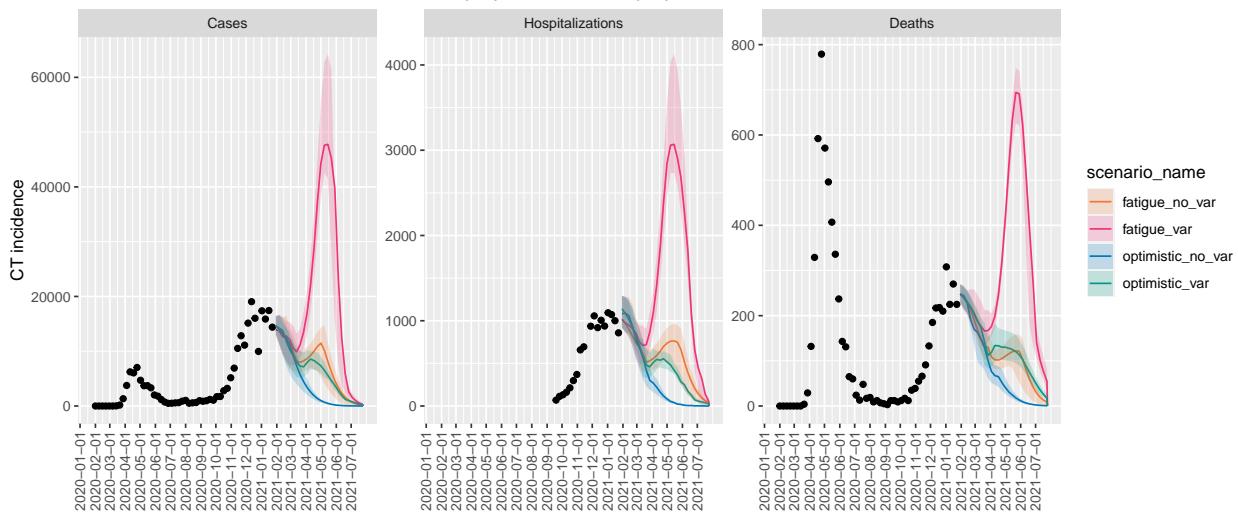
CA ensemble projections & 50% projection intervals



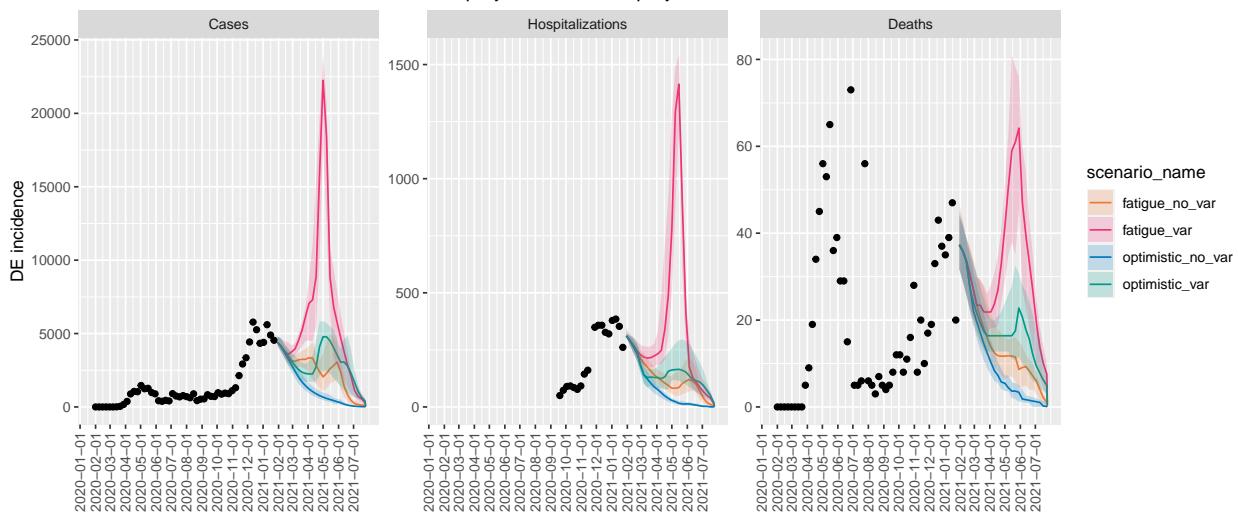
CO ensemble projections & 50% projection intervals



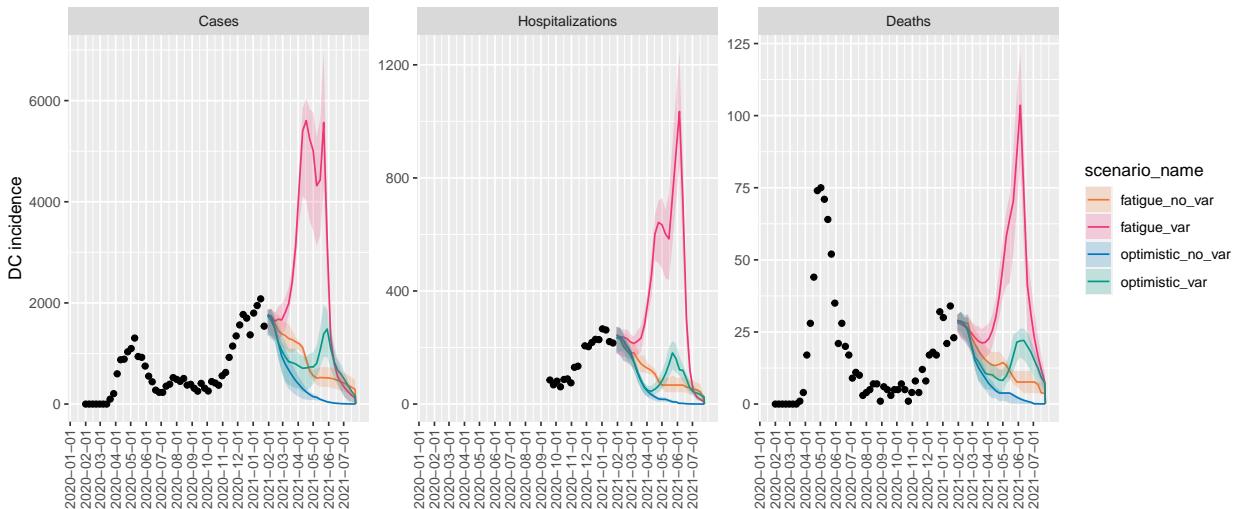
CT ensemble projections & 50% projection intervals



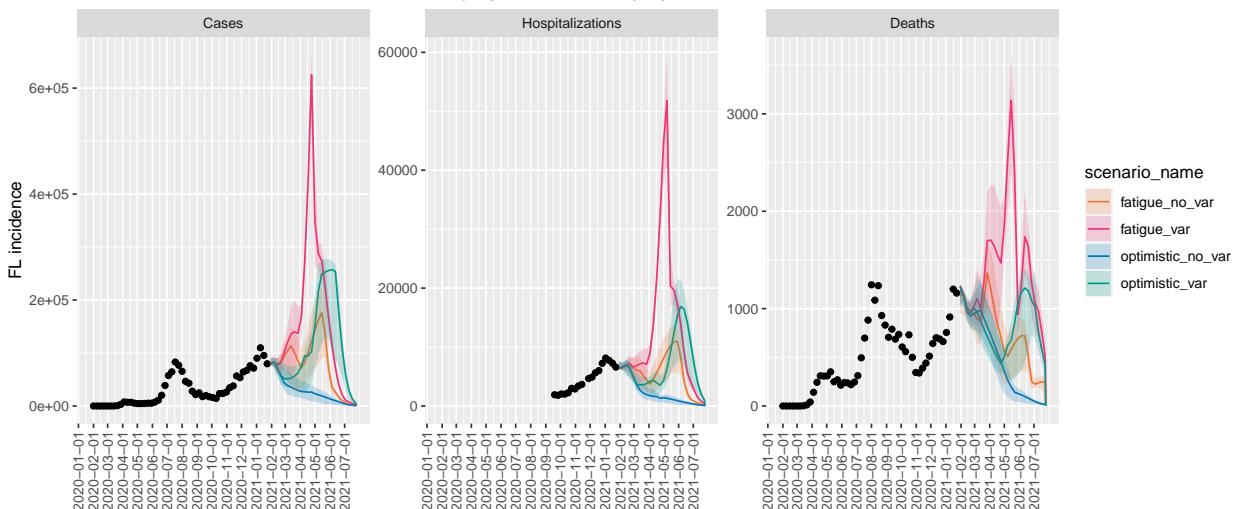
DE ensemble projections & 50% projection intervals



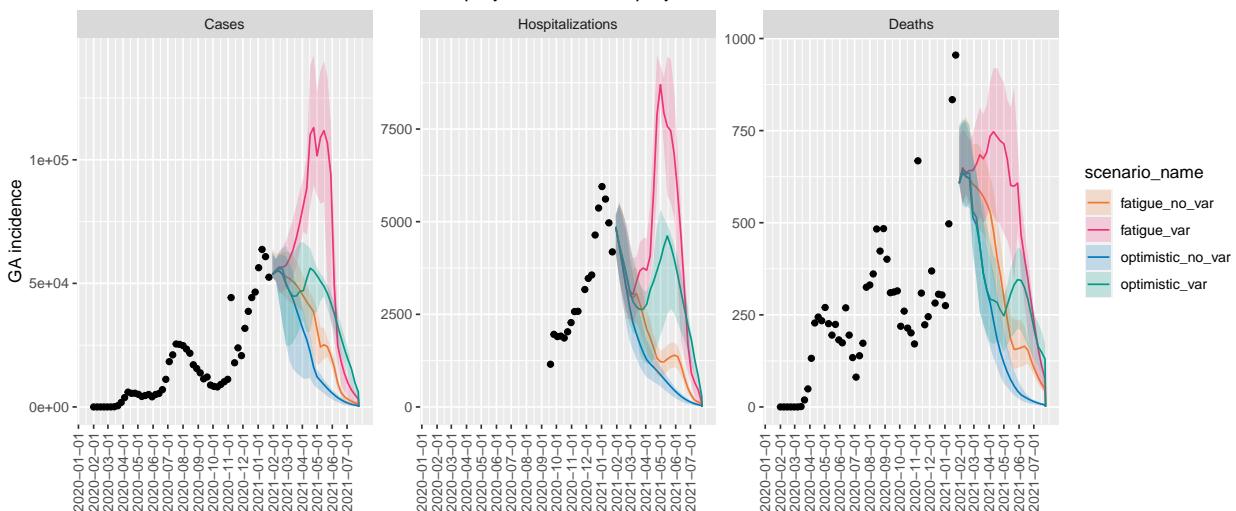
DC ensemble projections & 50% projection intervals



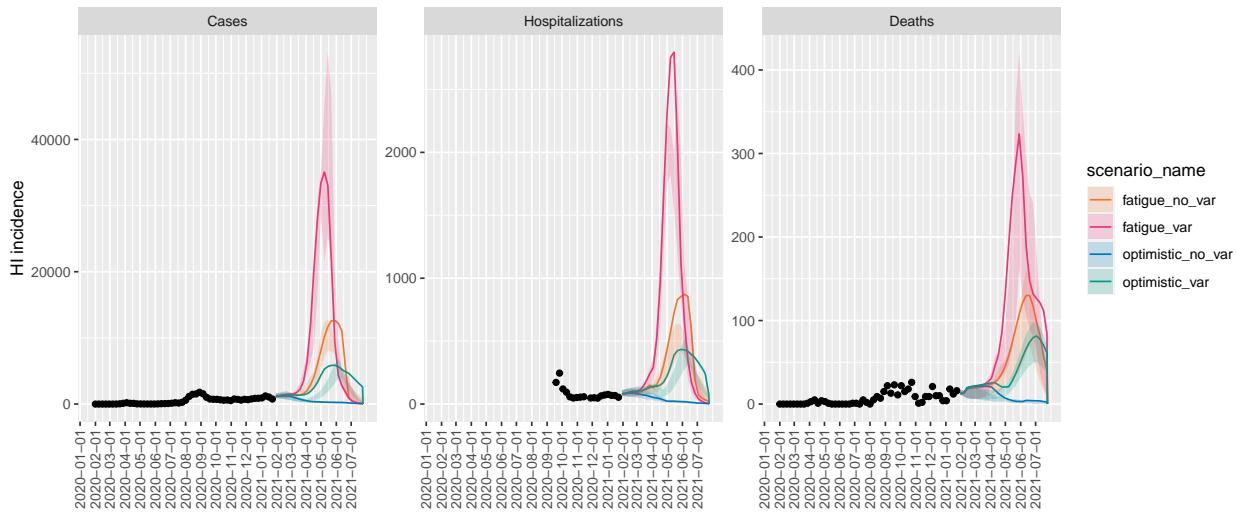
FL ensemble projections & 50% projection intervals



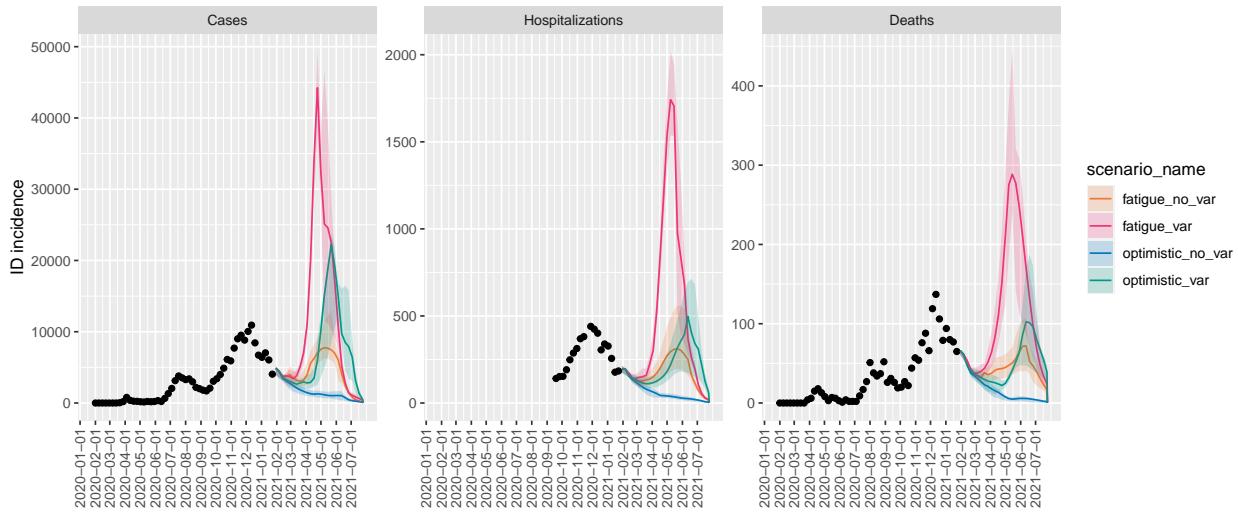
GA ensemble projections & 50% projection intervals



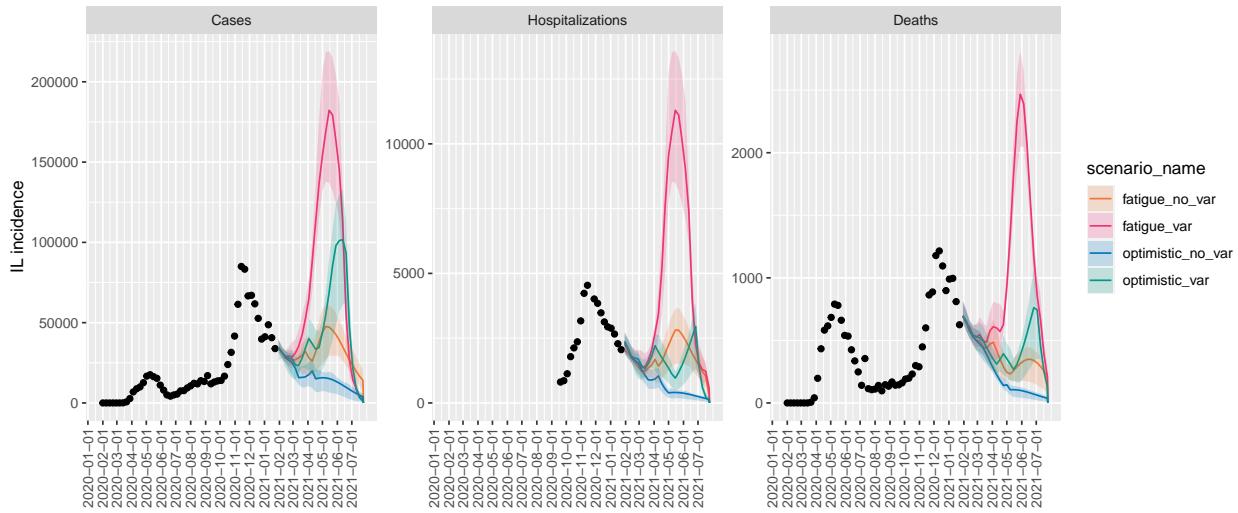
HI ensemble projections & 50% projection intervals



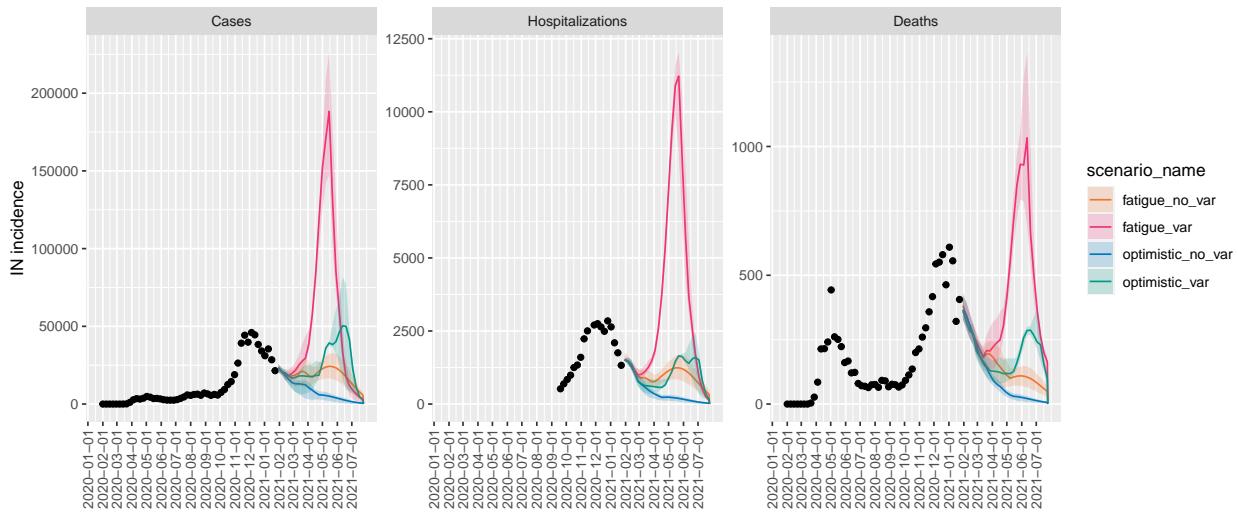
ID ensemble projections & 50% projection intervals



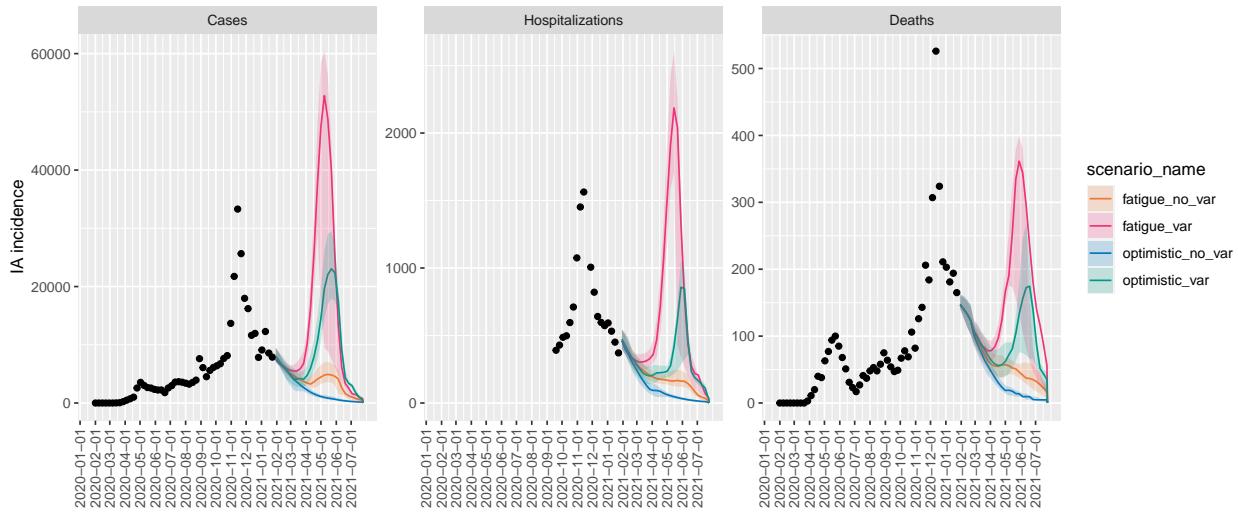
IL ensemble projections & 50% projection intervals



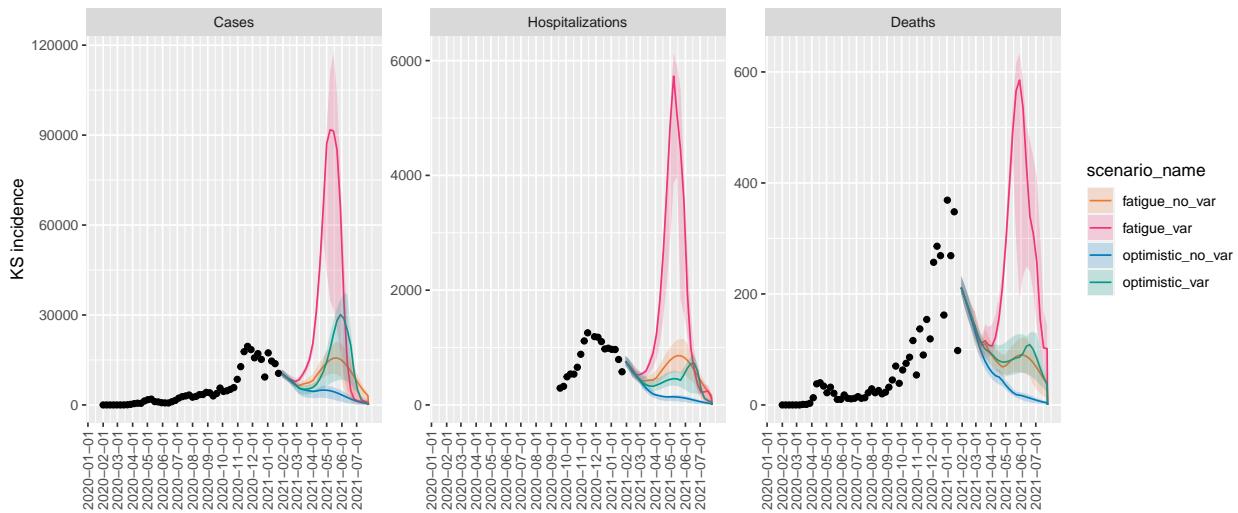
IN ensemble projections & 50% projection intervals



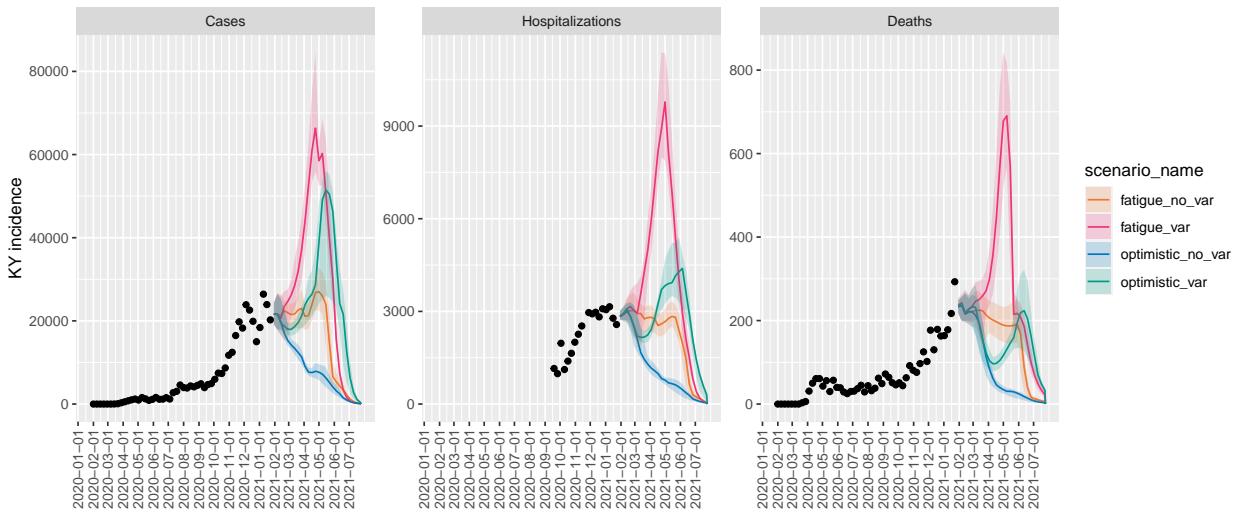
IA ensemble projections & 50% projection intervals



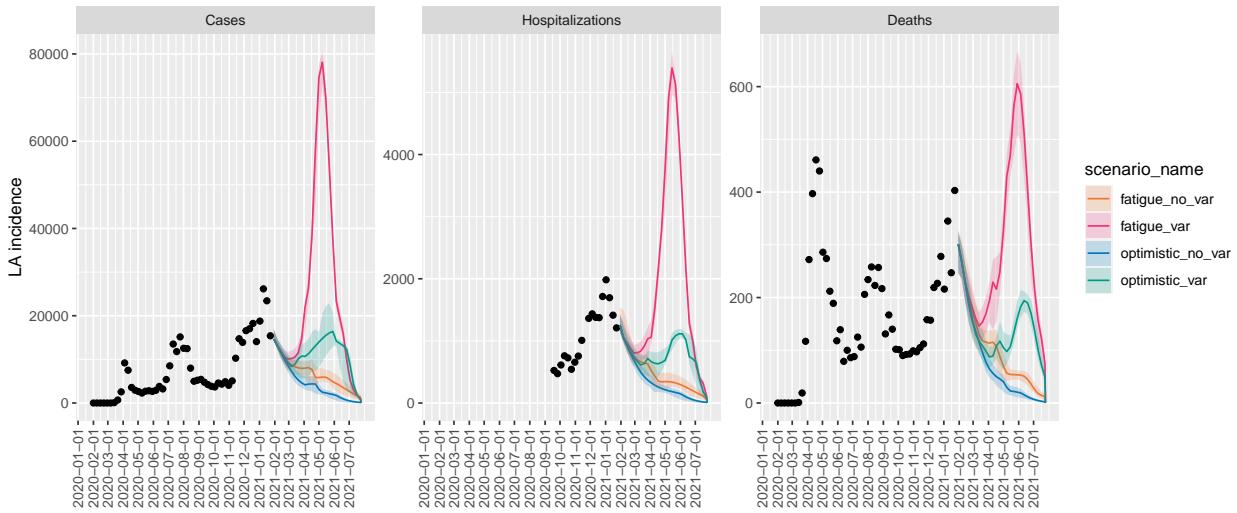
KS ensemble projections & 50% projection intervals



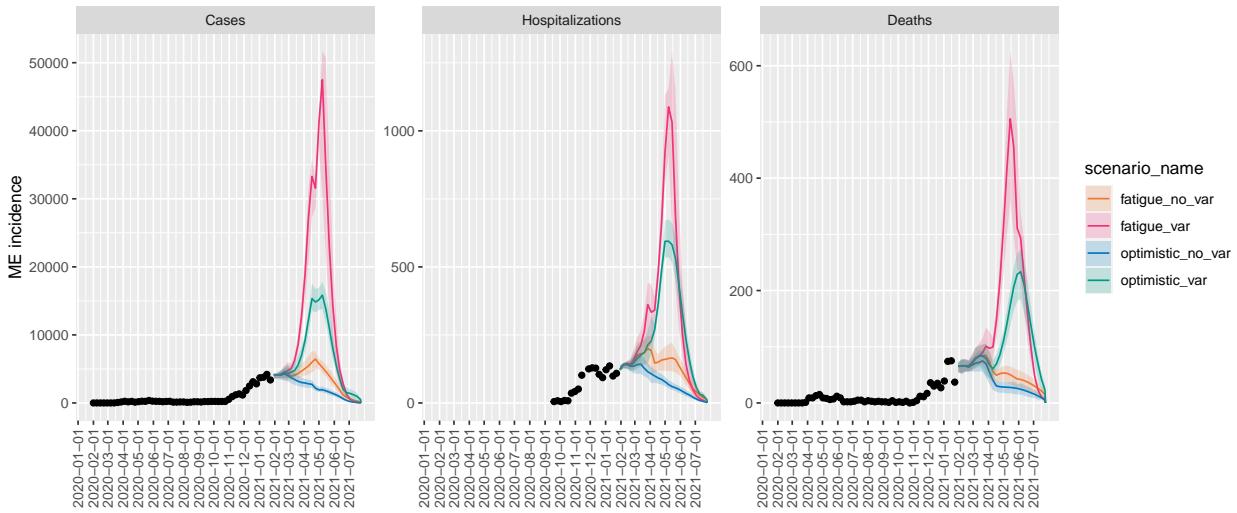
KY ensemble projections & 50% projection intervals



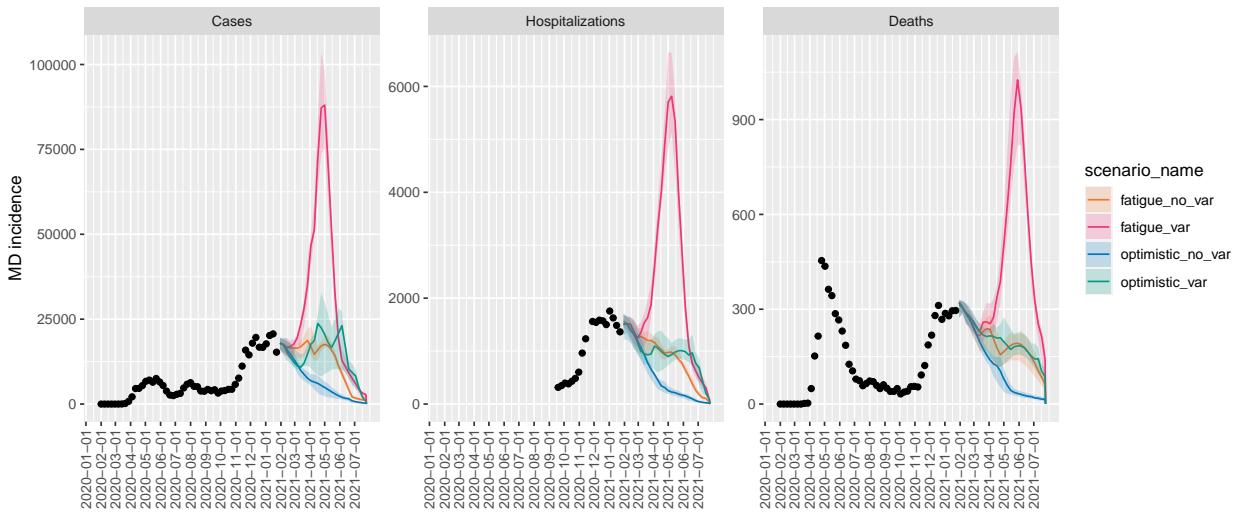
LA ensemble projections & 50% projection intervals



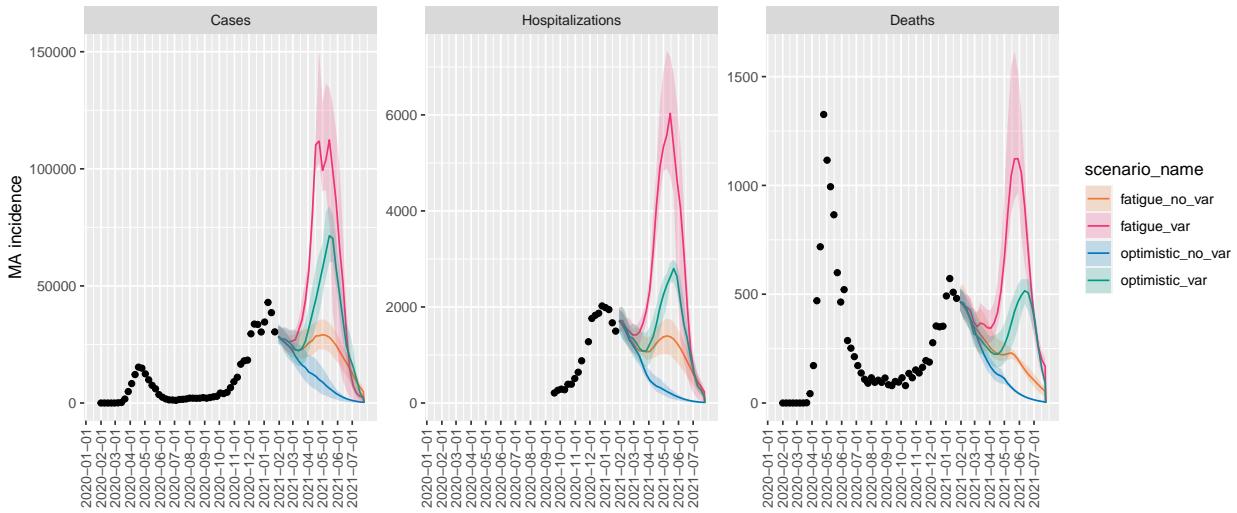
ME ensemble projections & 50% projection intervals



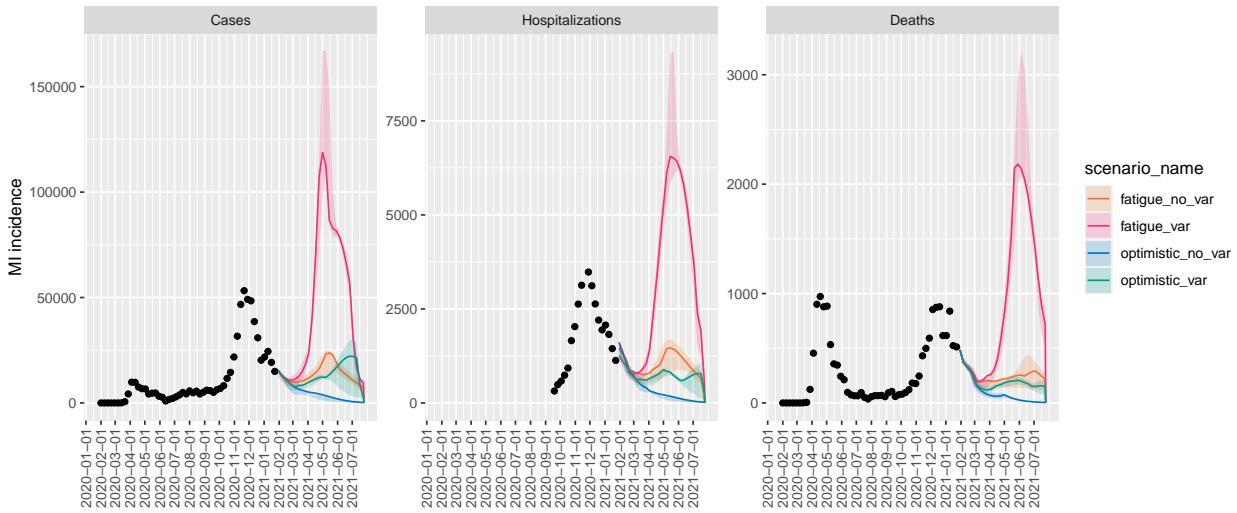
MD ensemble projections & 50% projection intervals



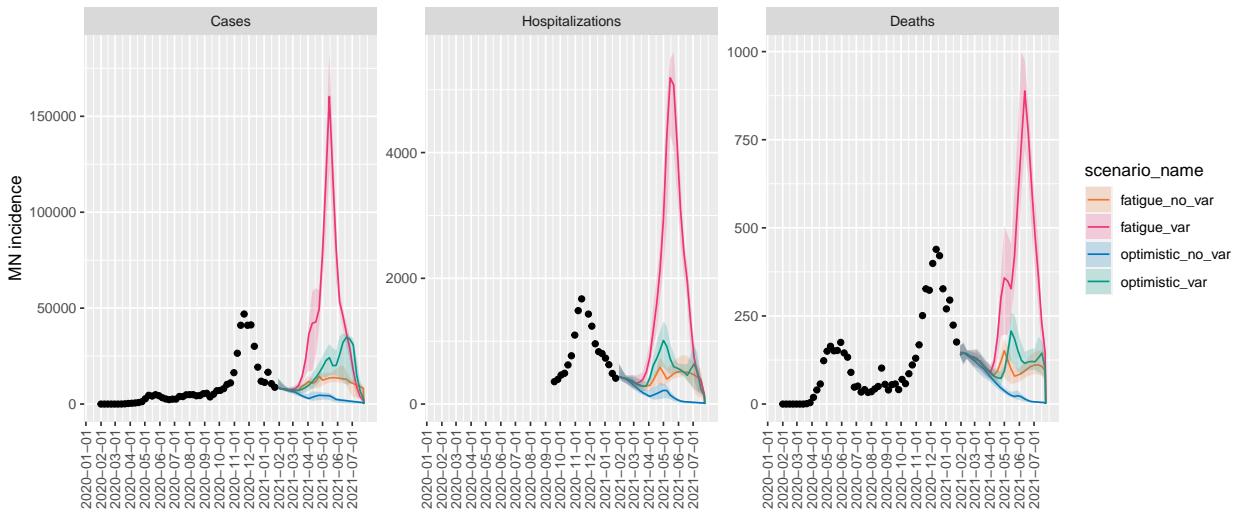
MA ensemble projections & 50% projection intervals



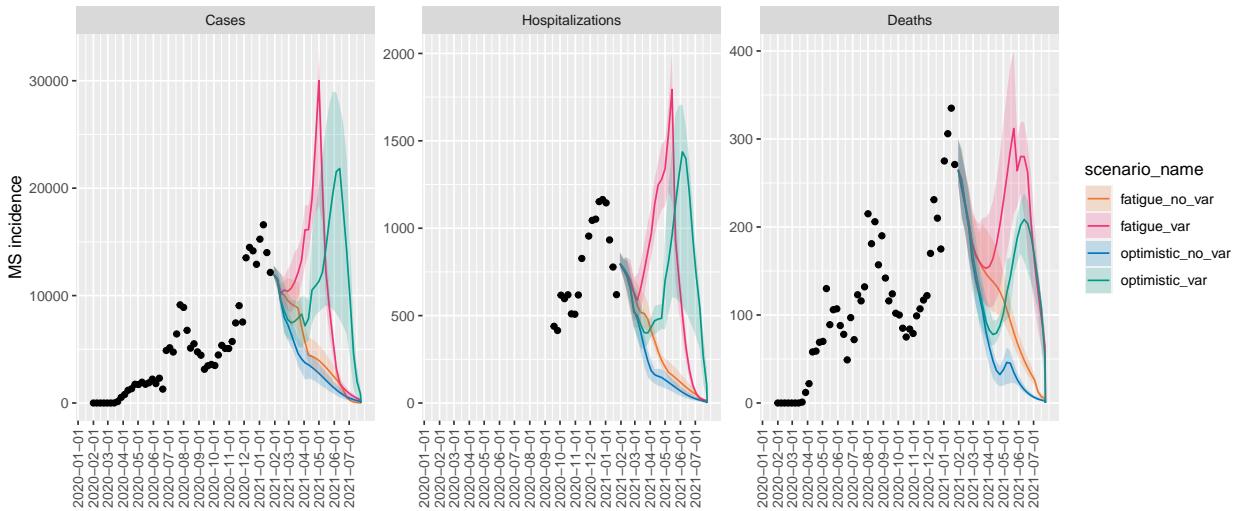
MI ensemble projections & 50% projection intervals



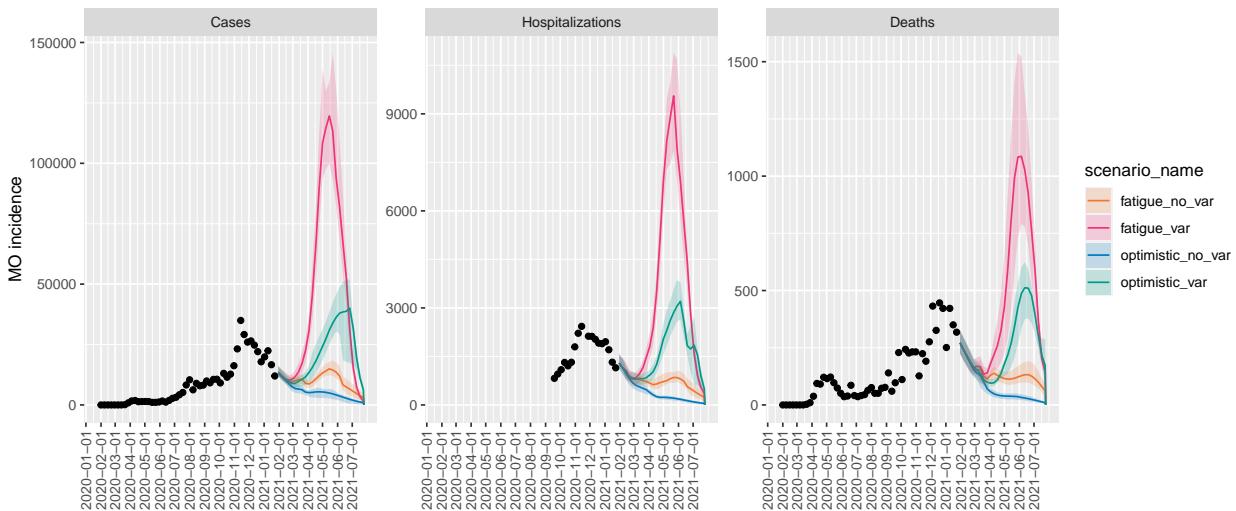
MN ensemble projections & 50% projection intervals



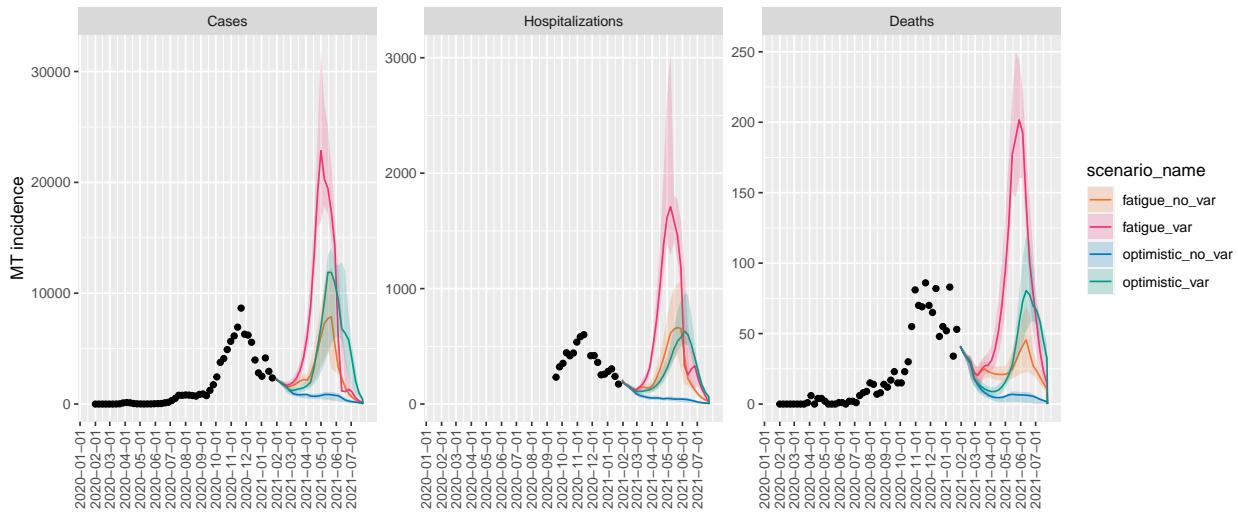
MS ensemble projections & 50% projection intervals



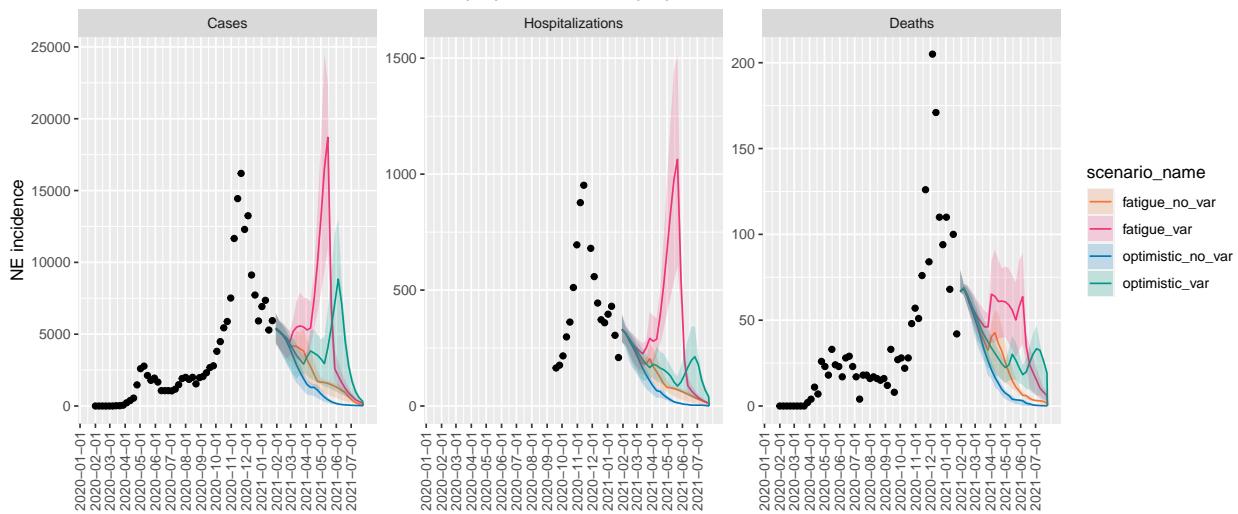
MO ensemble projections & 50% projection intervals



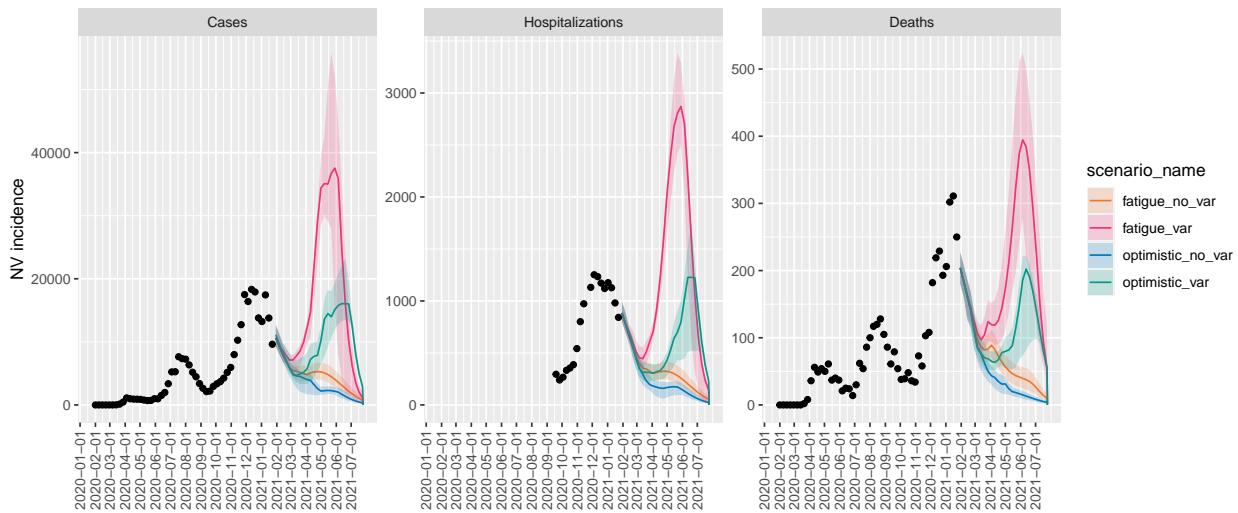
MT ensemble projections & 50% projection intervals



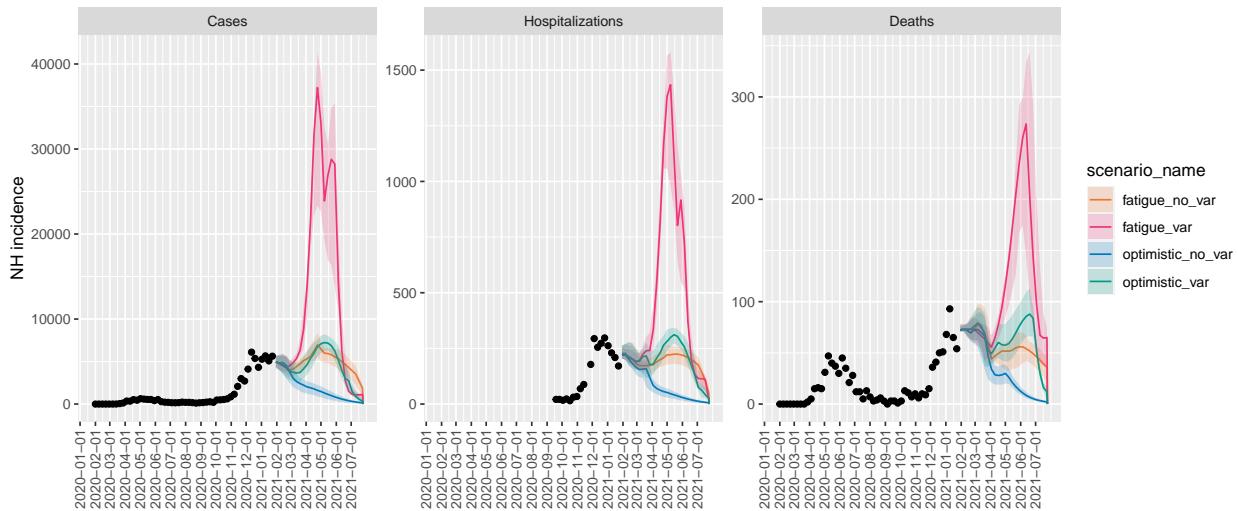
NE ensemble projections & 50% projection intervals



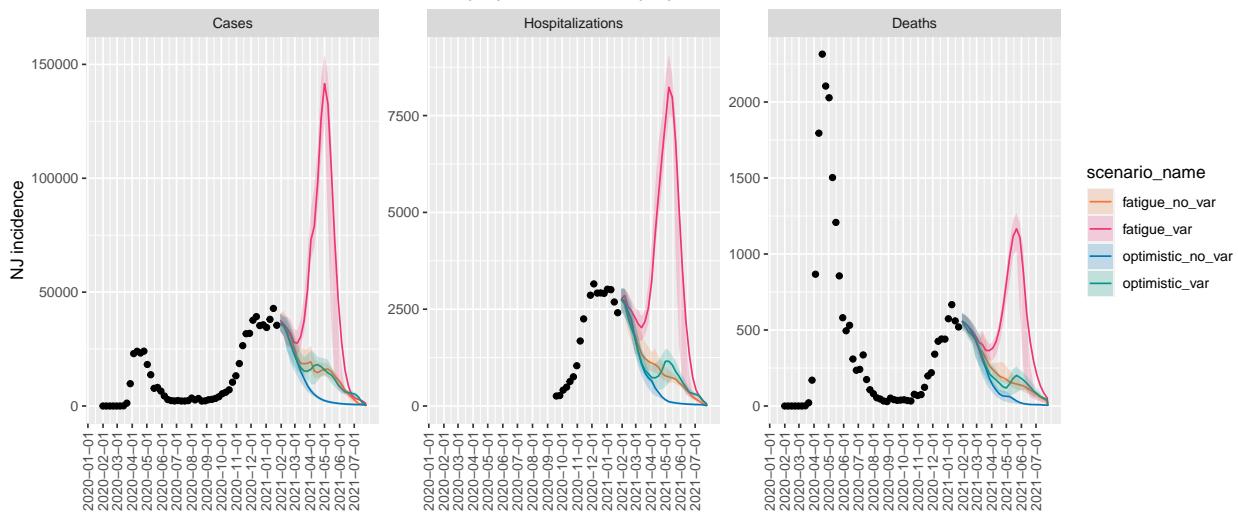
NV ensemble projections & 50% projection intervals



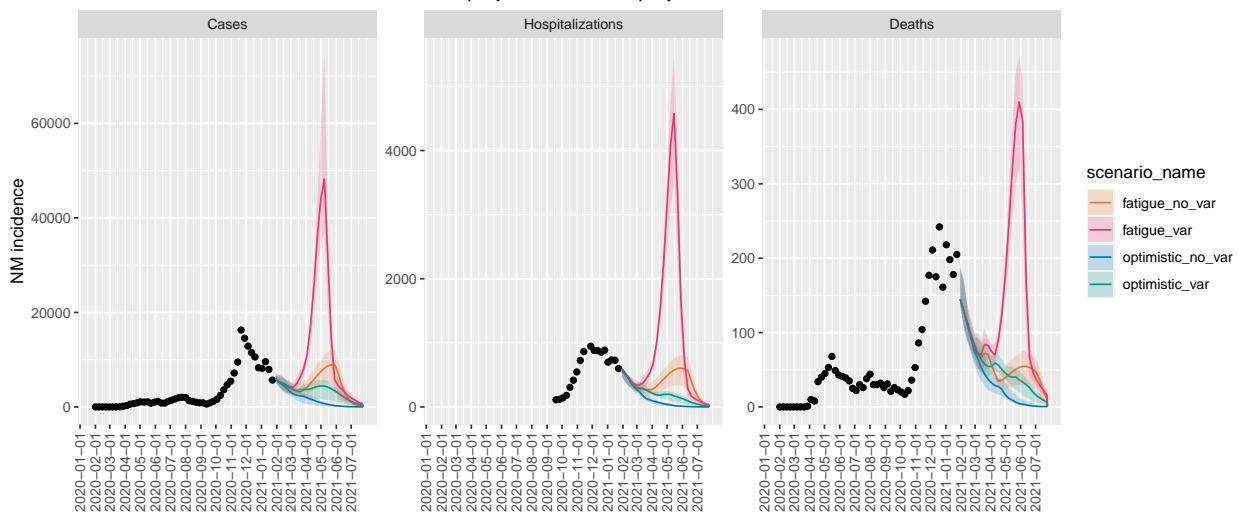
NH ensemble projections & 50% projection intervals



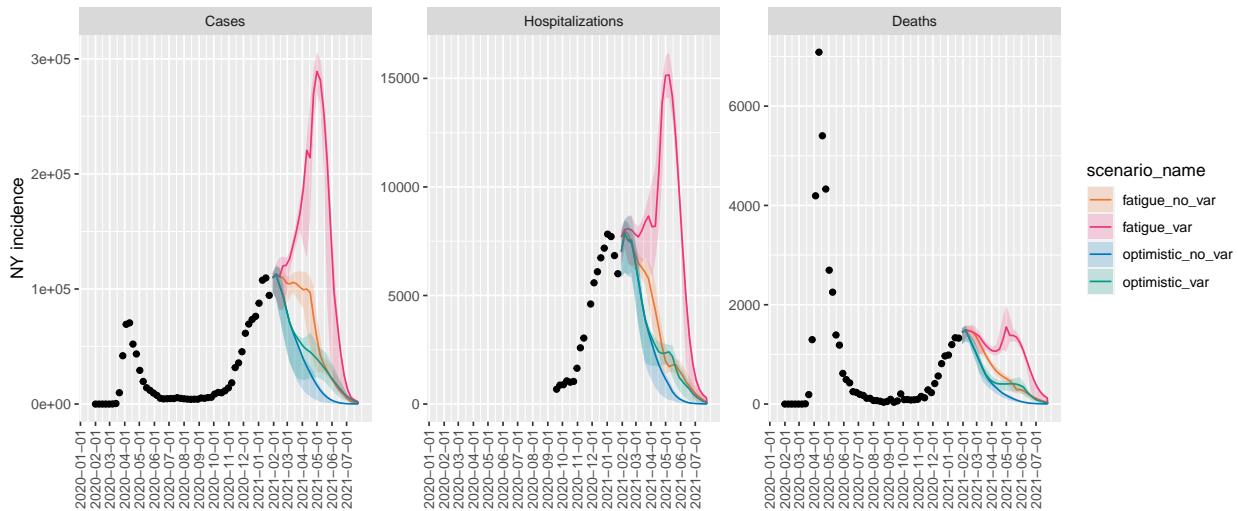
NJ ensemble projections & 50% projection intervals



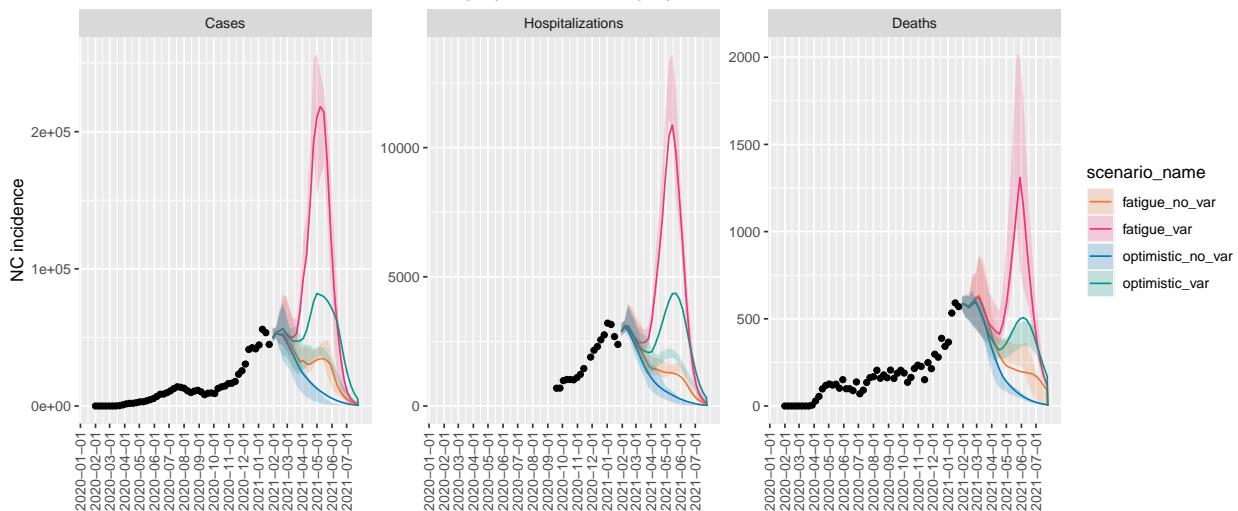
NM ensemble projections & 50% projection intervals



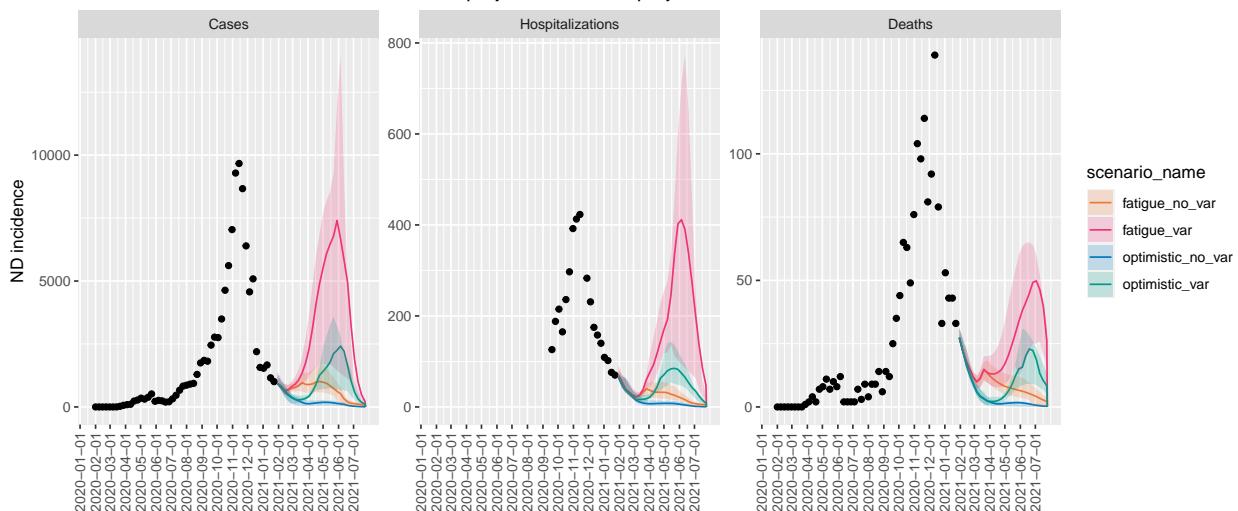
NY ensemble projections & 50% projection intervals



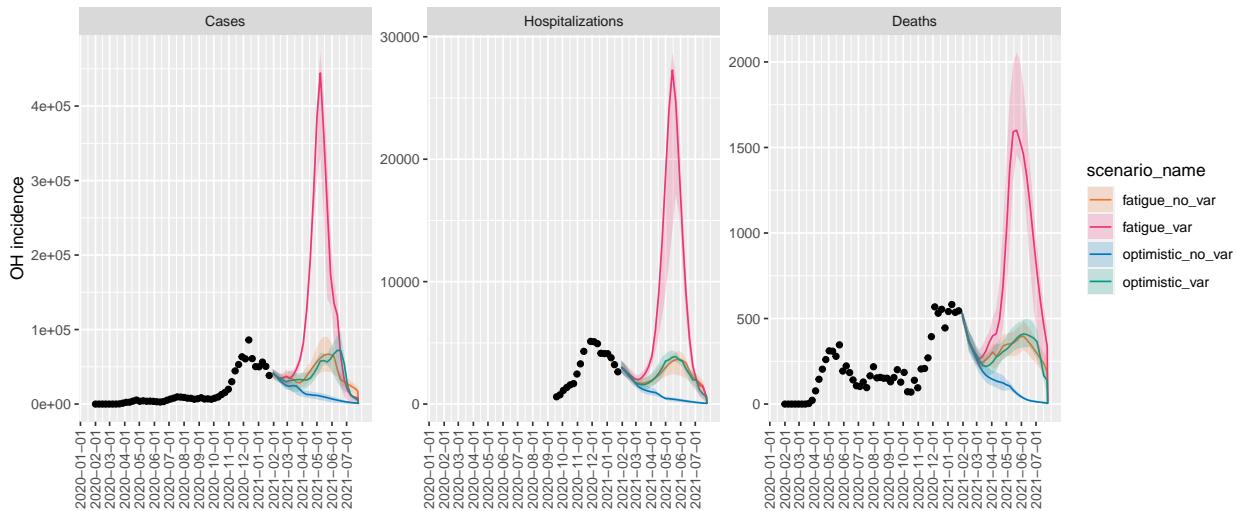
NC ensemble projections & 50% projection intervals



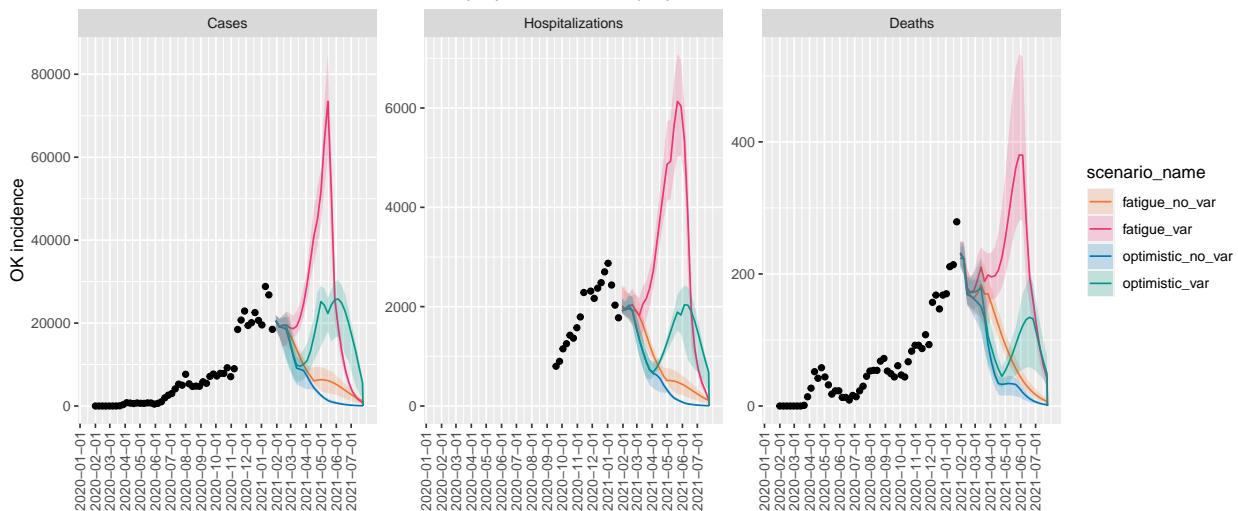
ND ensemble projections & 50% projection intervals



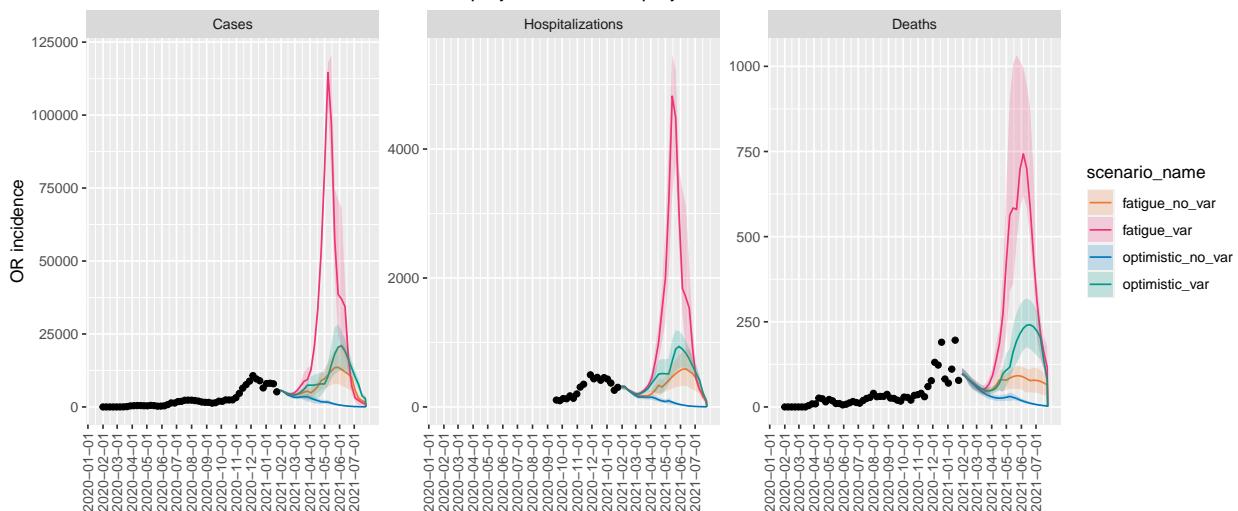
OH ensemble projections & 50% projection intervals



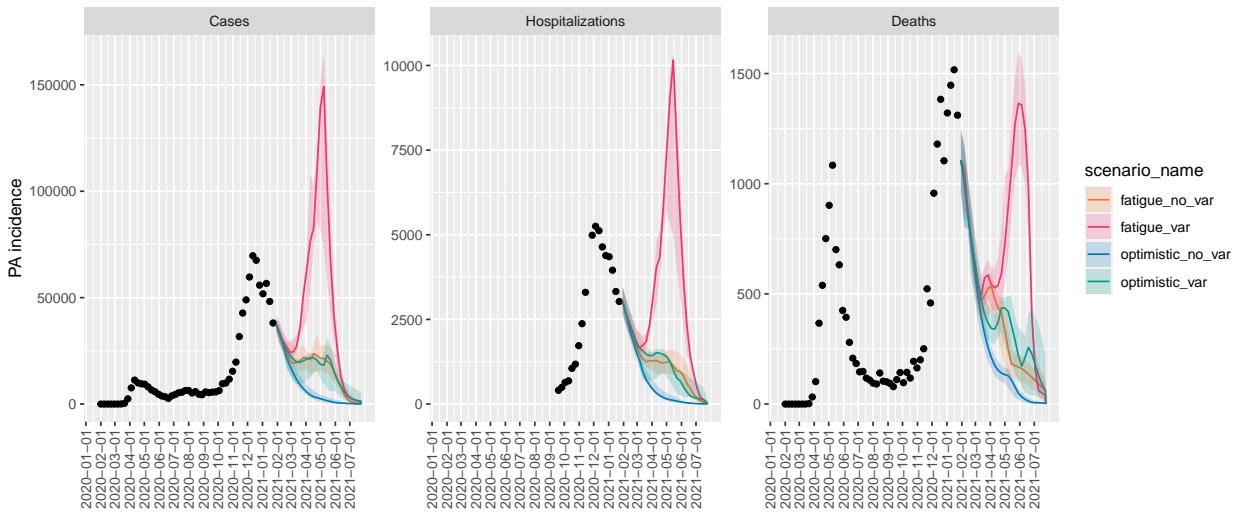
OK ensemble projections & 50% projection intervals



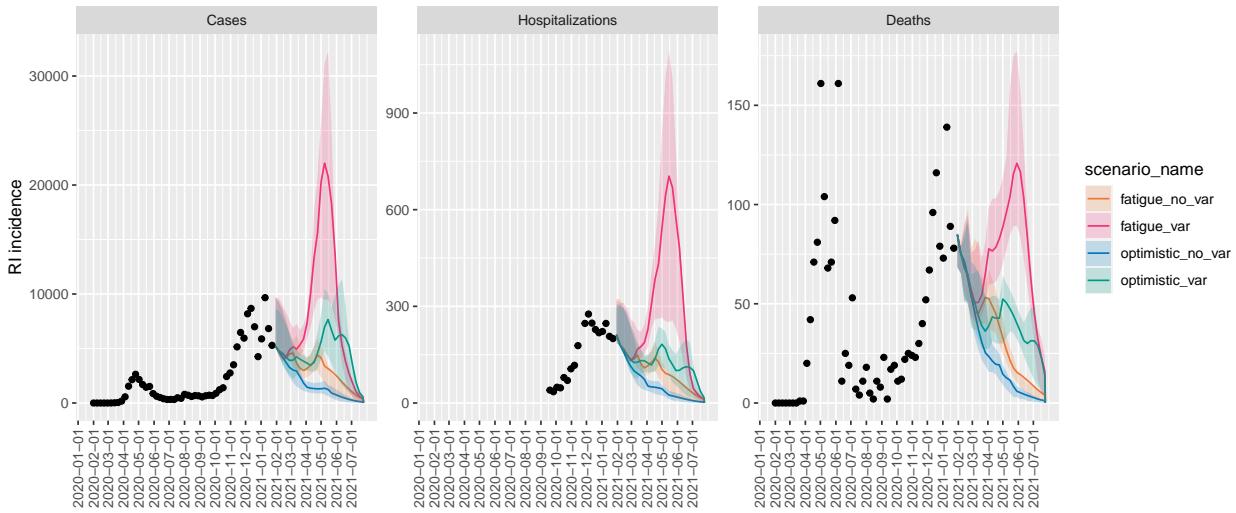
OR ensemble projections & 50% projection intervals



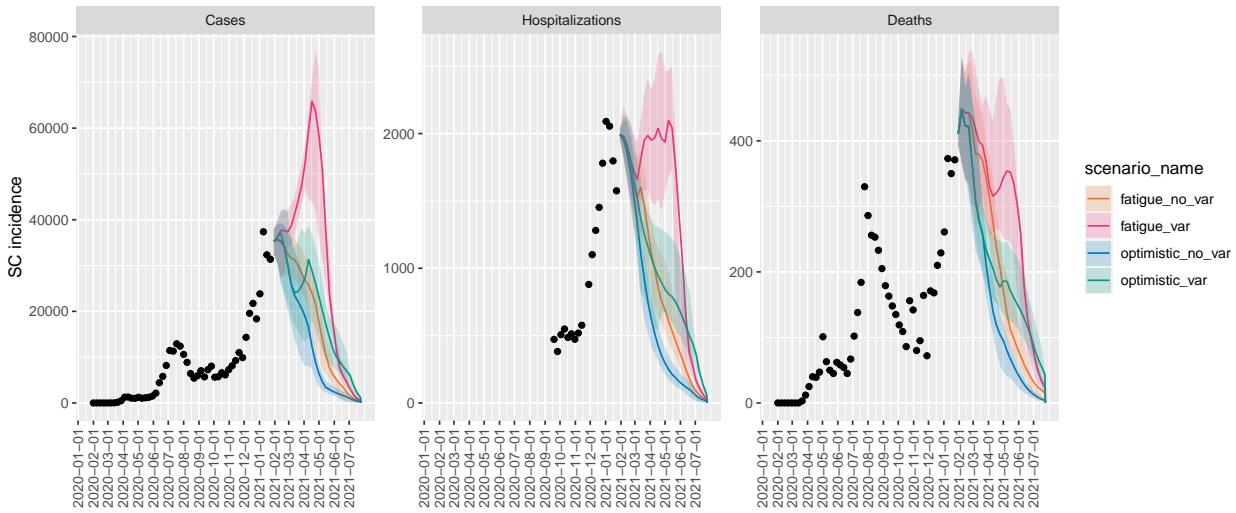
PA ensemble projections & 50% projection intervals



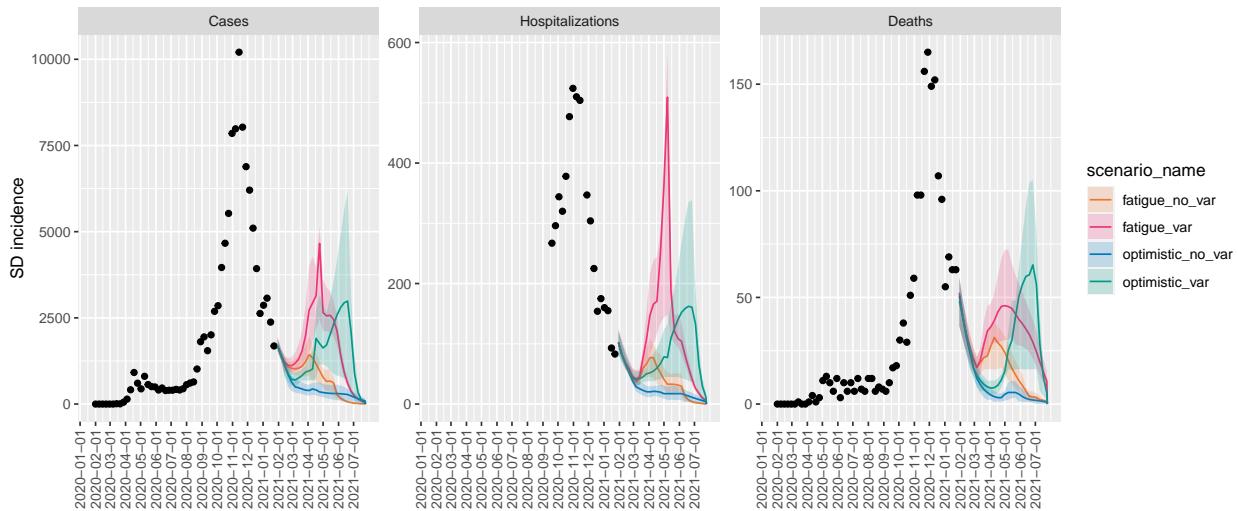
RI ensemble projections & 50% projection intervals



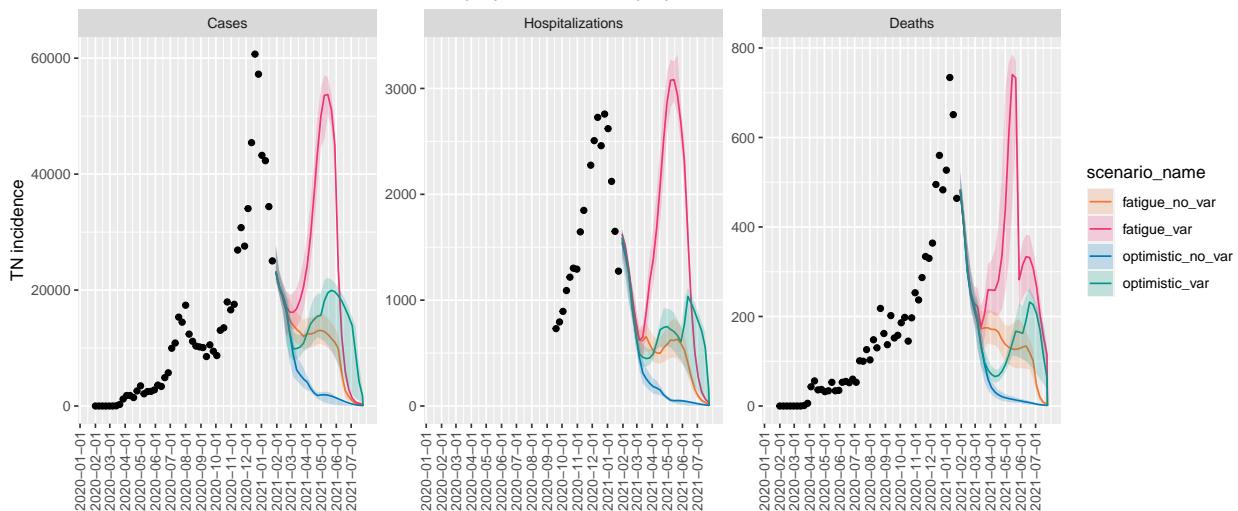
SC ensemble projections & 50% projection intervals



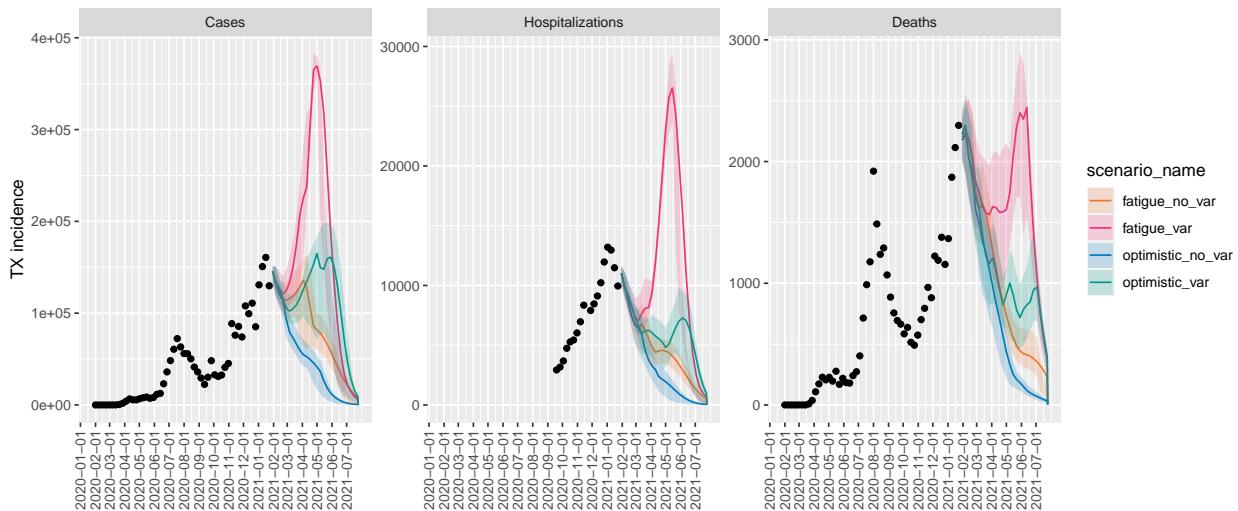
SD ensemble projections & 50% projection intervals



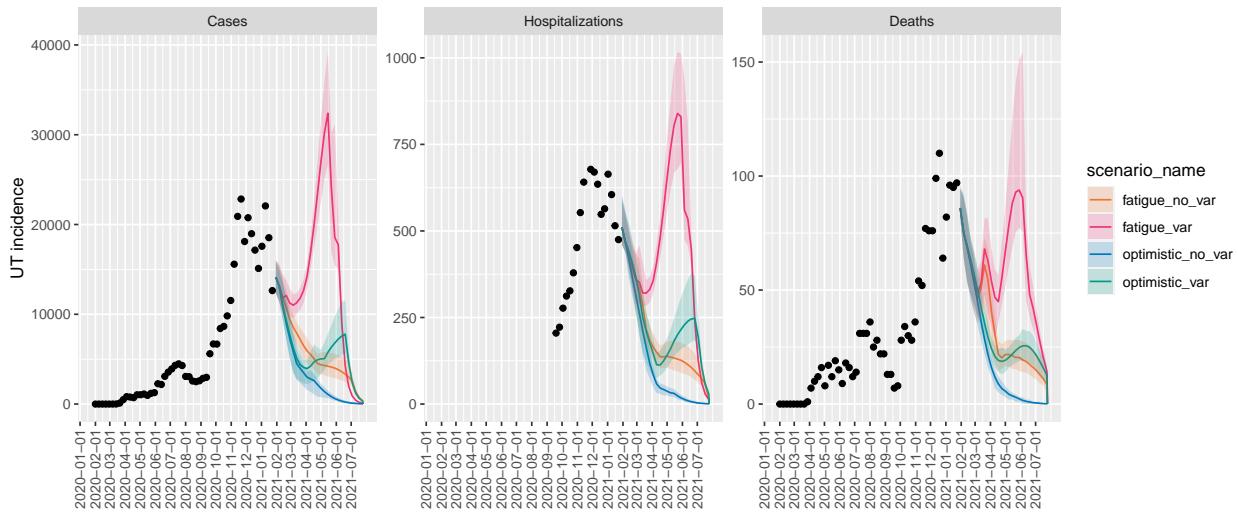
TN ensemble projections & 50% projection intervals



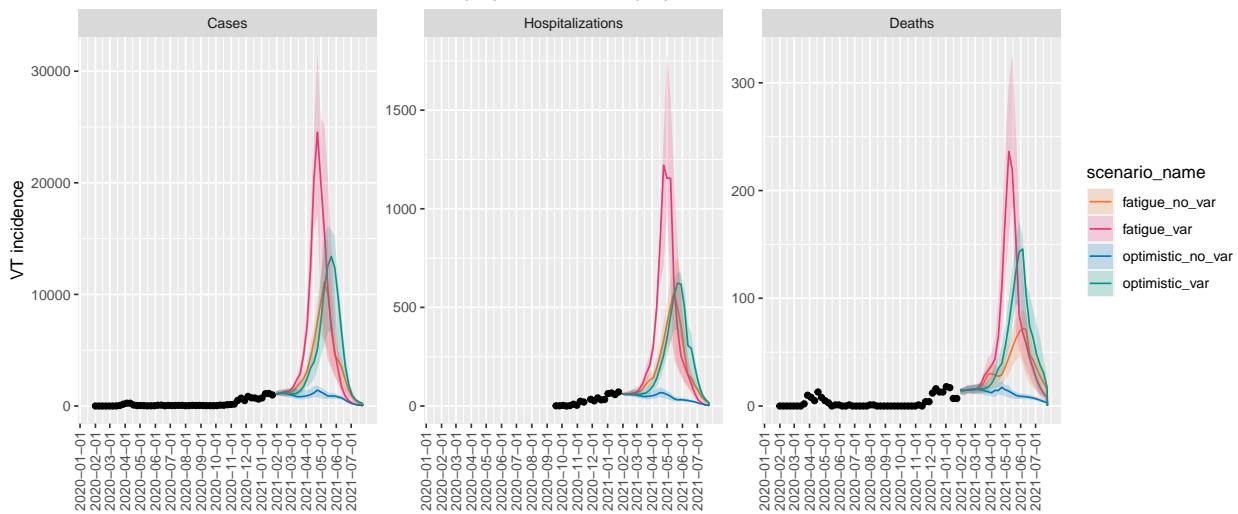
TX ensemble projections & 50% projection intervals



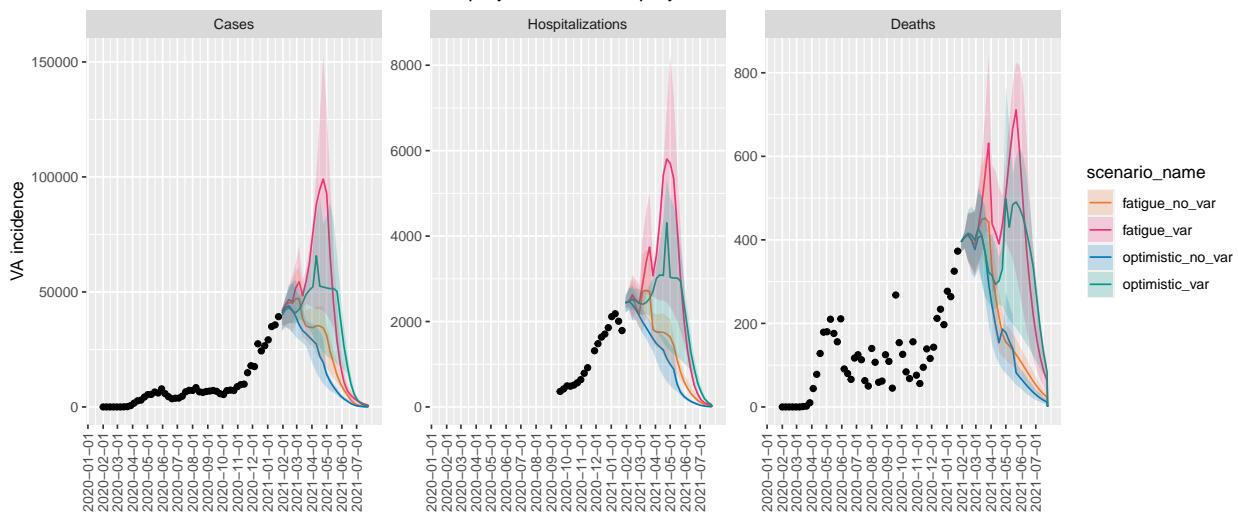
UT ensemble projections & 50% projection intervals



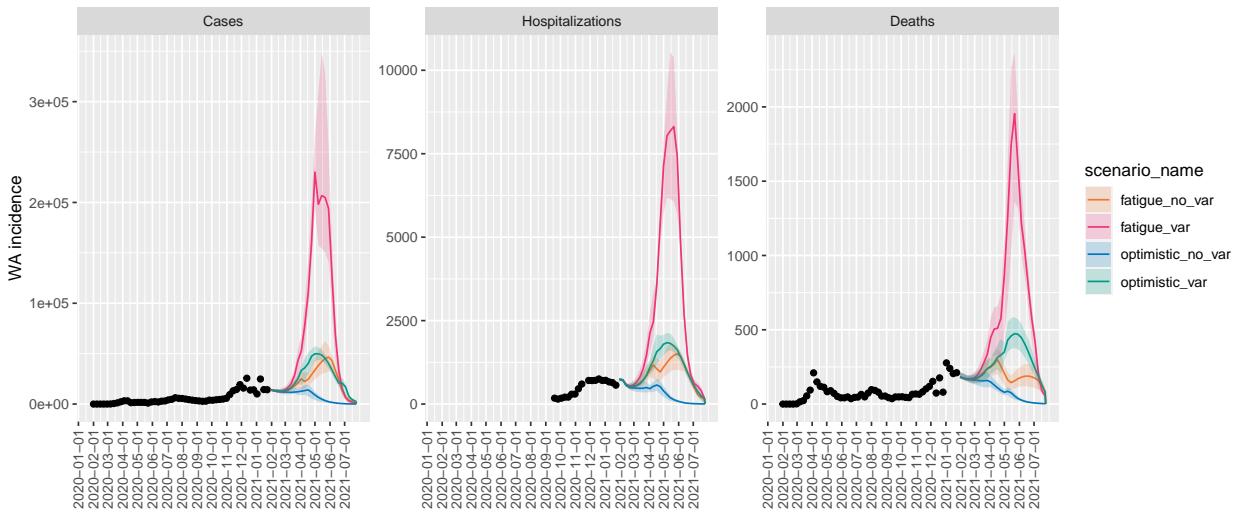
VT ensemble projections & 50% projection intervals



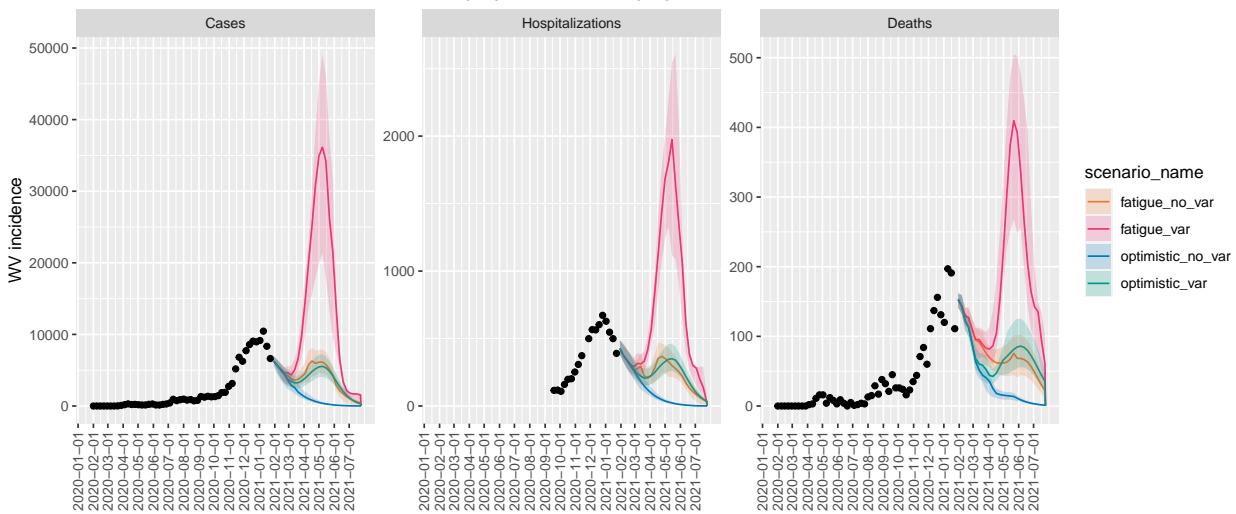
VA ensemble projections & 50% projection intervals



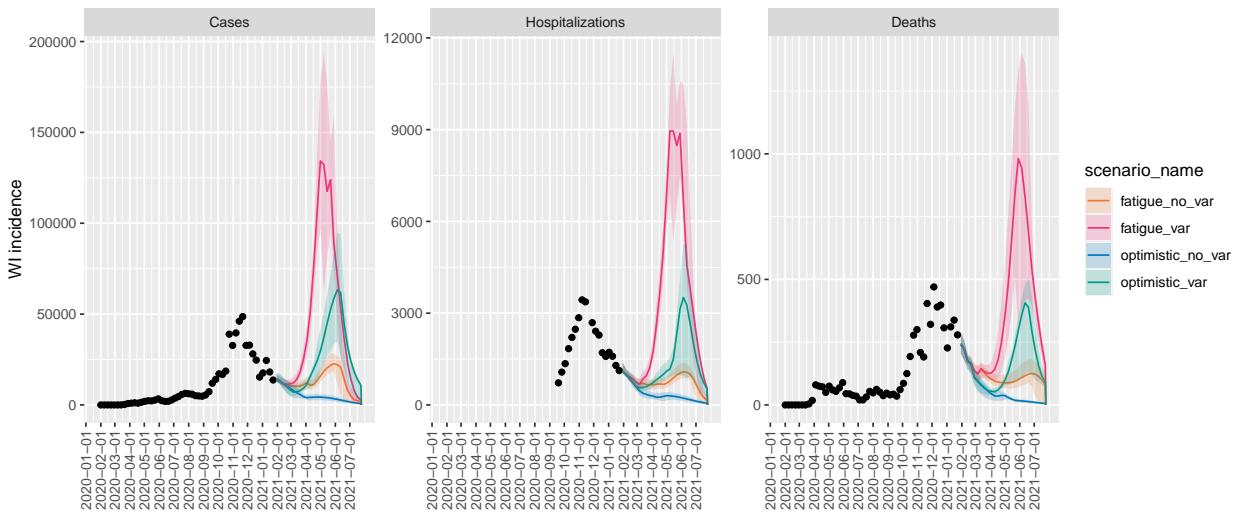
WA ensemble projections & 50% projection intervals



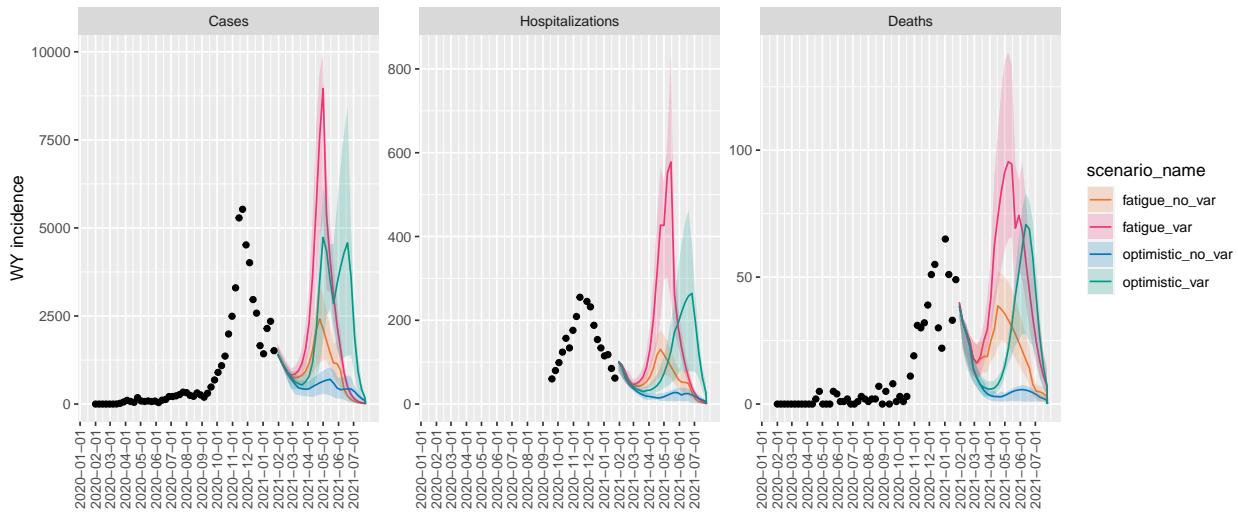
WV ensemble projections & 50% projection intervals



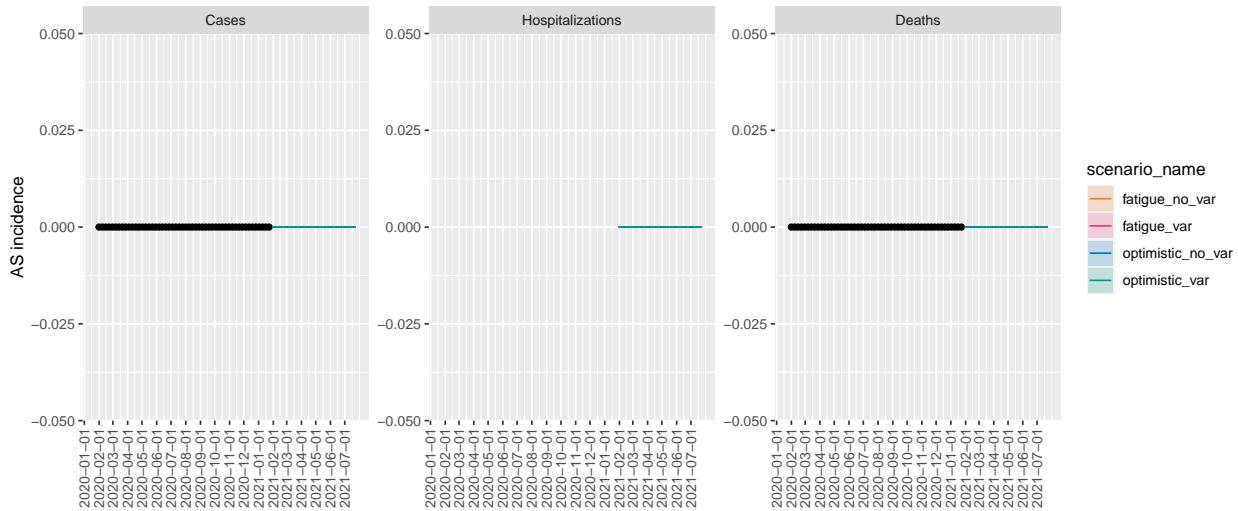
WI ensemble projections & 50% projection intervals



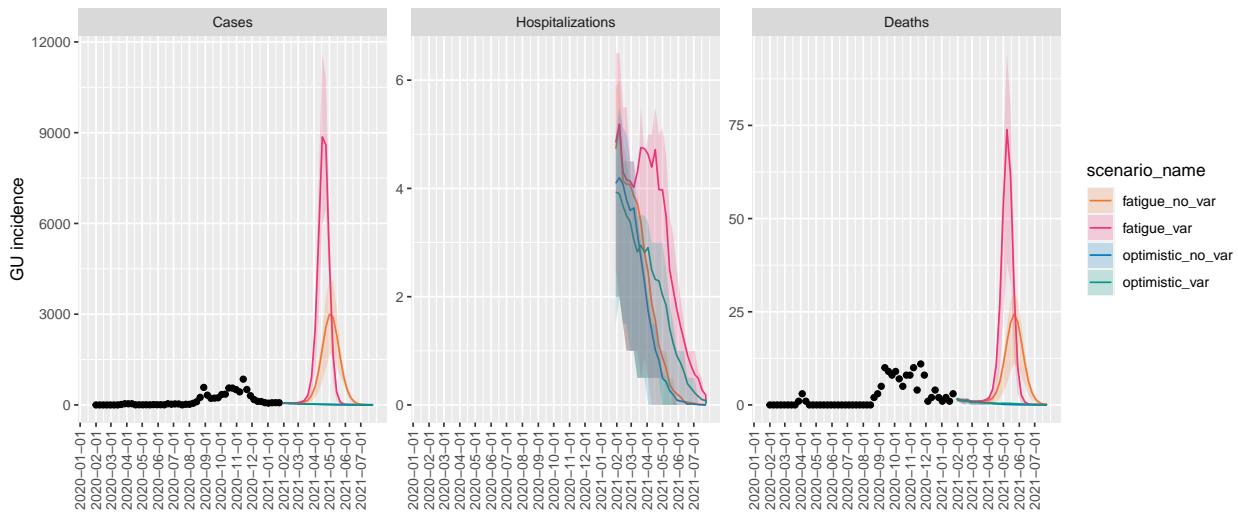
WY ensemble projections & 50% projection intervals



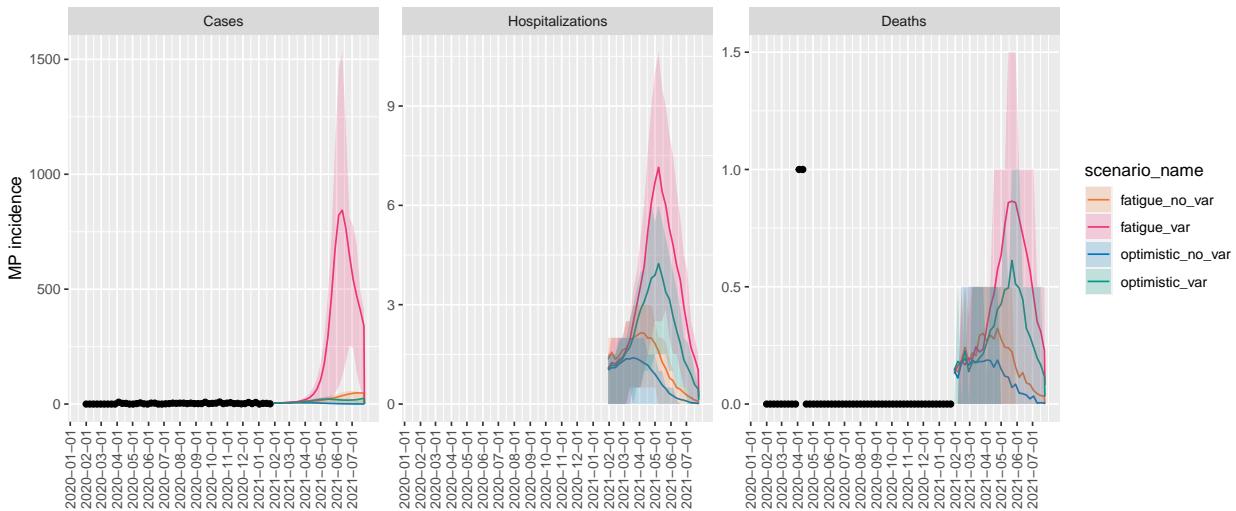
AS ensemble projections & 50% projection intervals



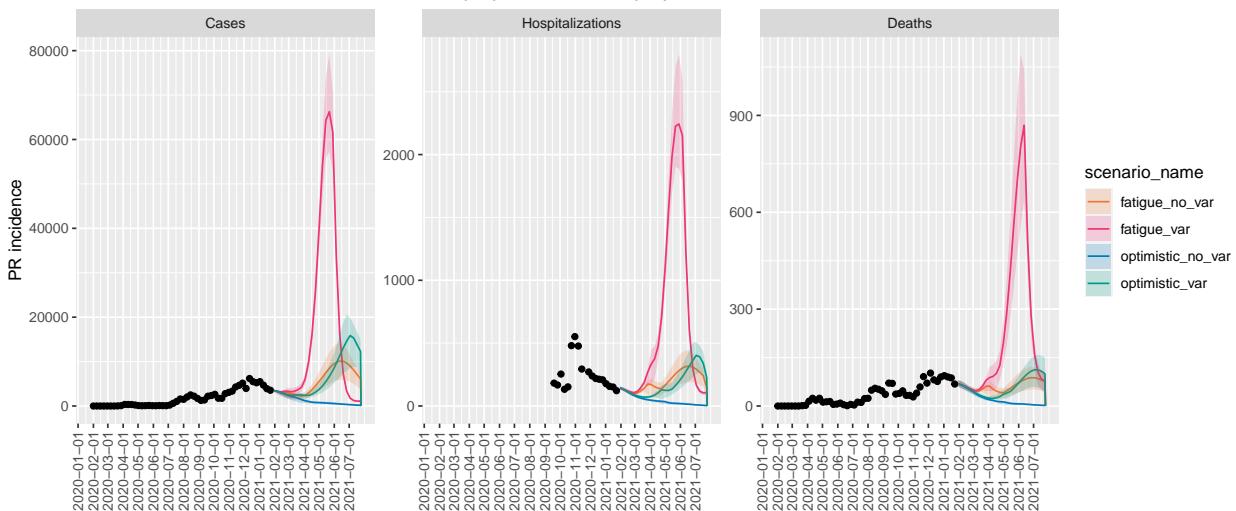
GU ensemble projections & 50% projection intervals



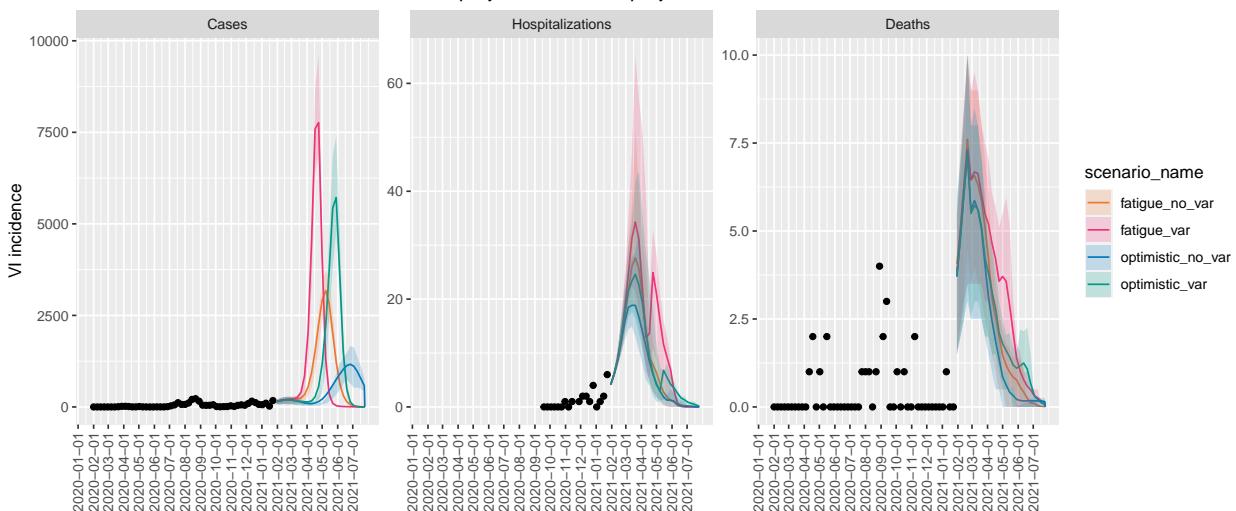
MP ensemble projections & 50% projection intervals



PR ensemble projections & 50% projection intervals

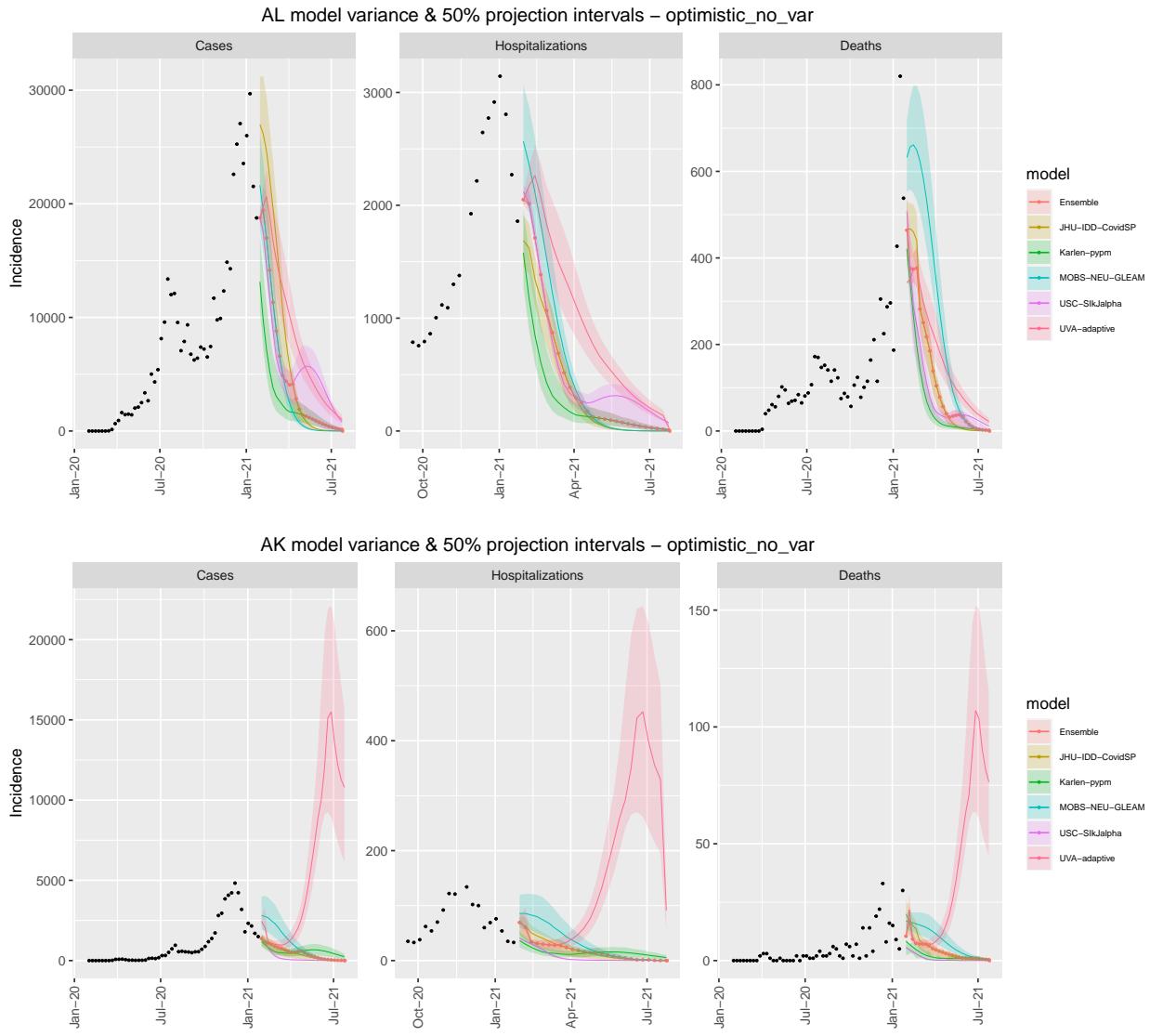


VI ensemble projections & 50% projection intervals

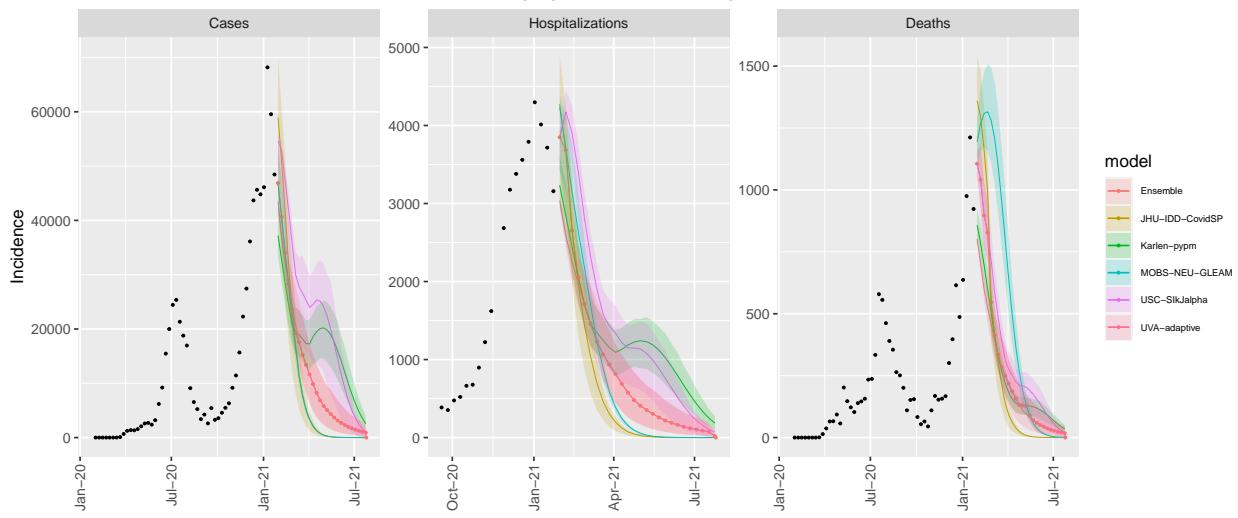


State-level model variation

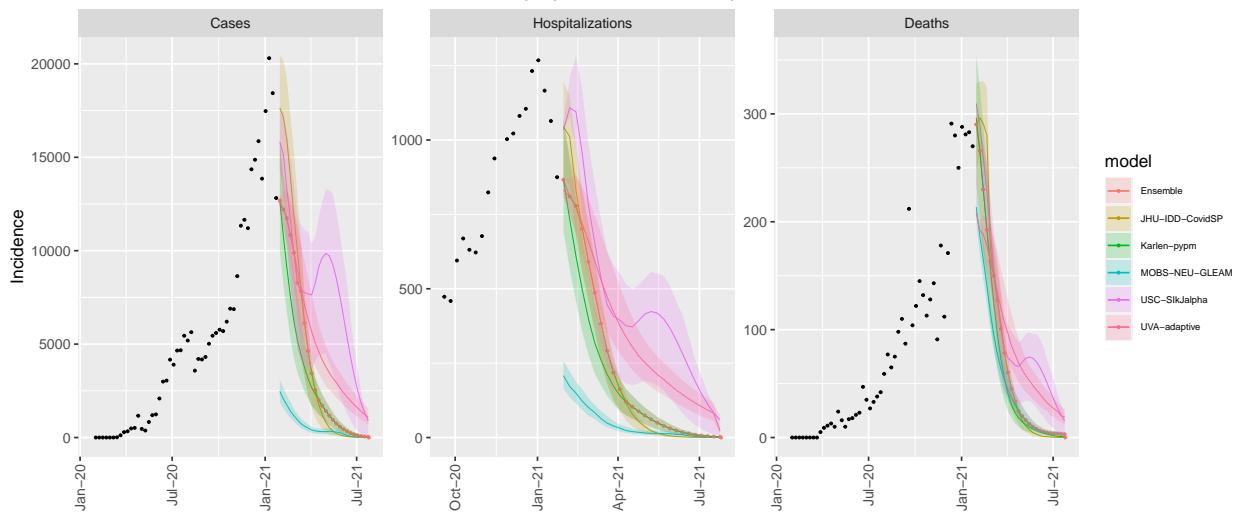
National model variation for the optimistic no variant scenario



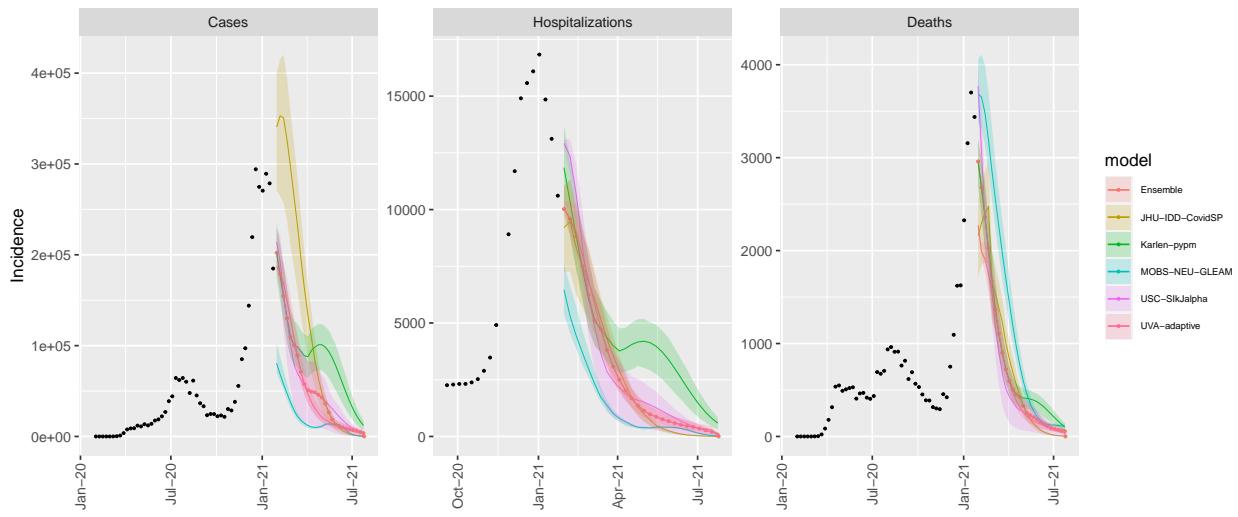
AZ model variance & 50% projection intervals – optimistic_no_var



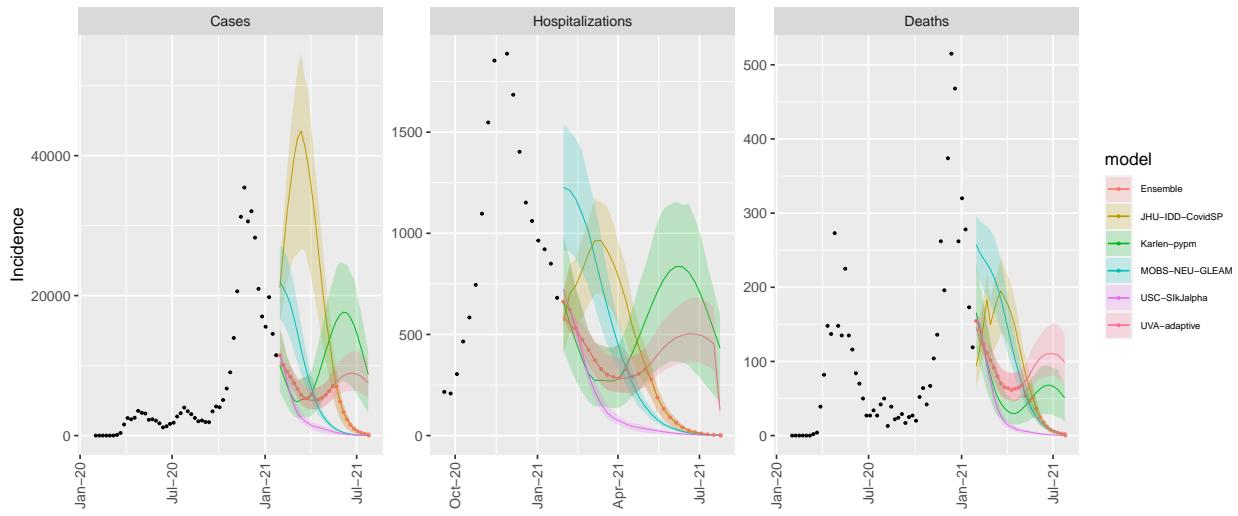
AR model variance & 50% projection intervals – optimistic_no_var



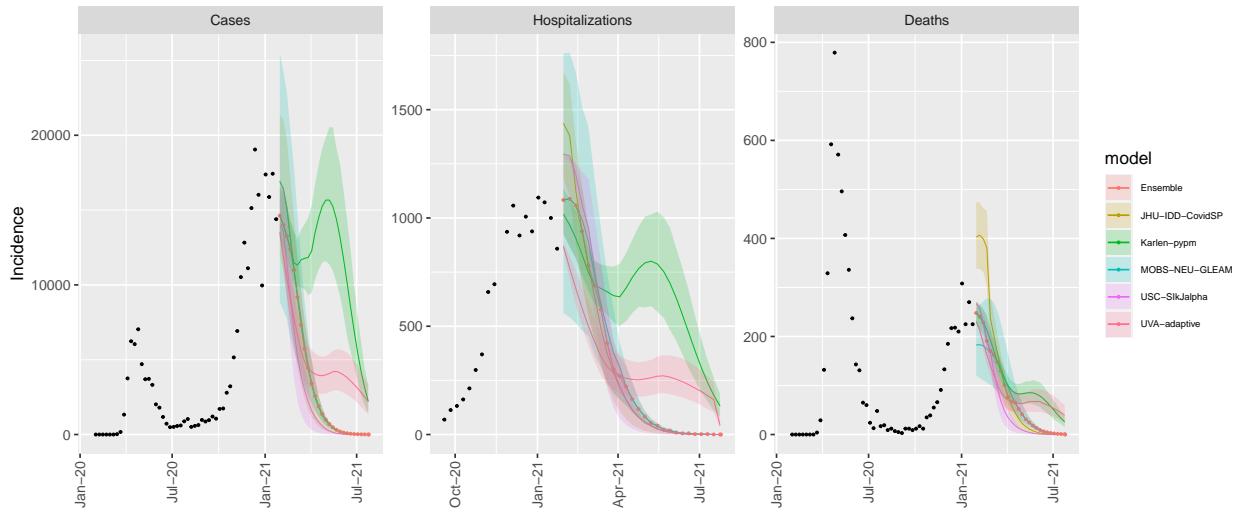
CA model variance & 50% projection intervals – optimistic_no_var



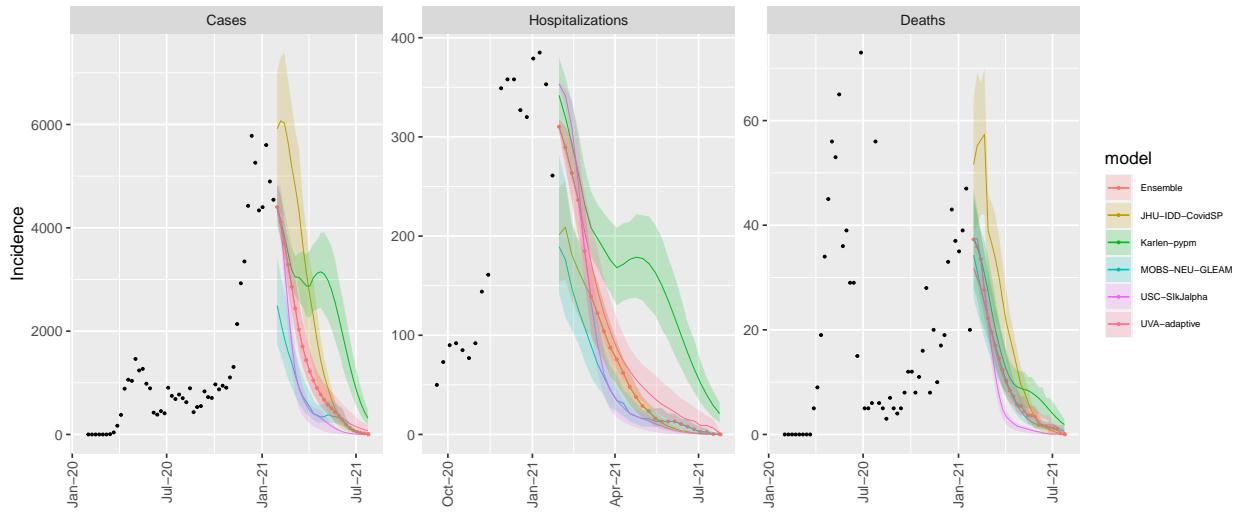
CO model variance & 50% projection intervals – optimistic_no_var



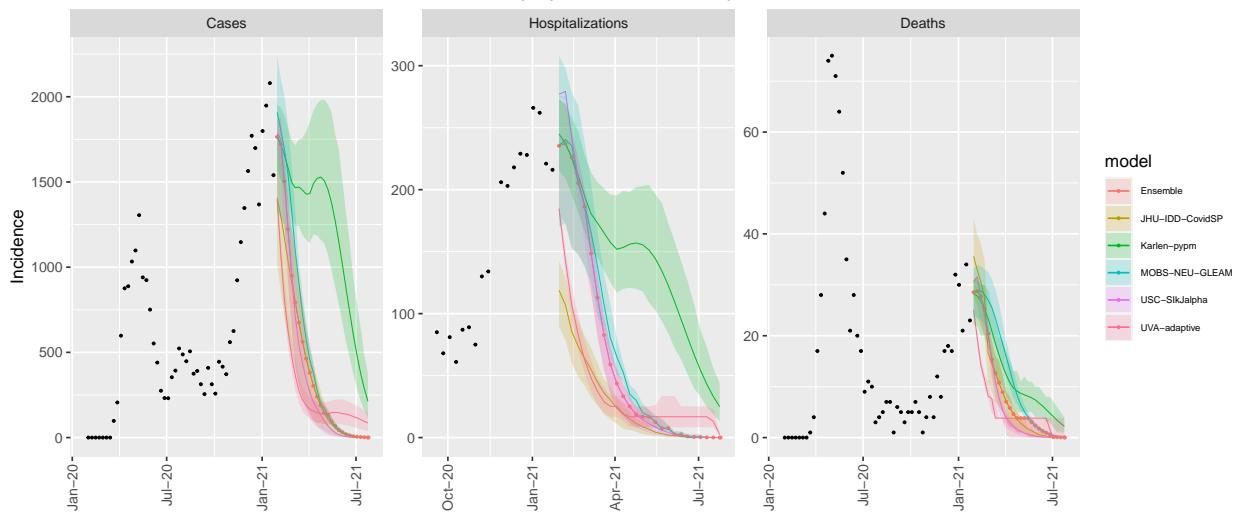
CT model variance & 50% projection intervals – optimistic_no_var



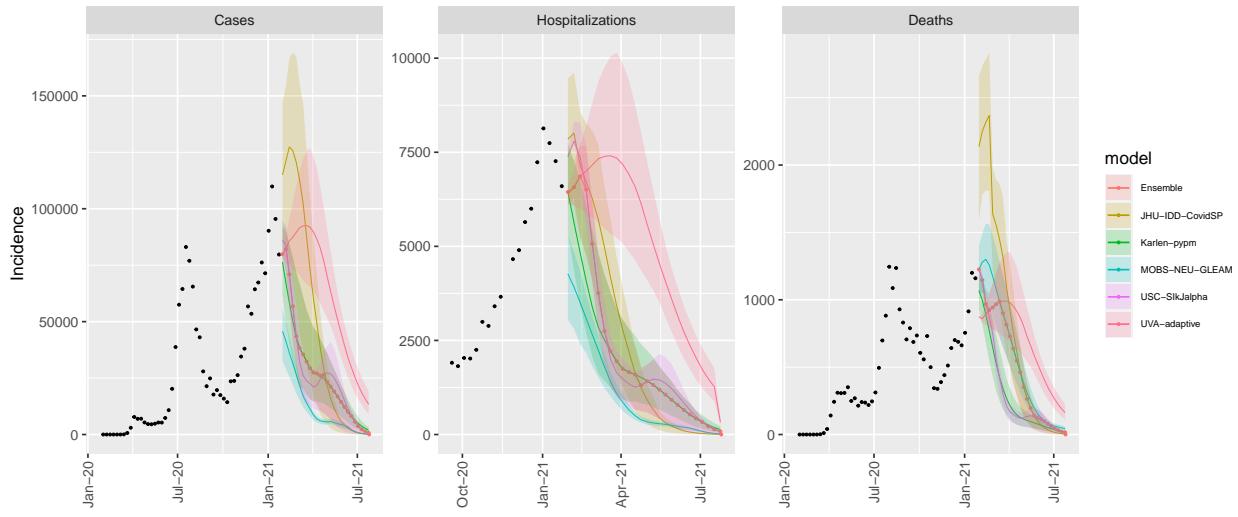
DE model variance & 50% projection intervals – optimistic_no_var



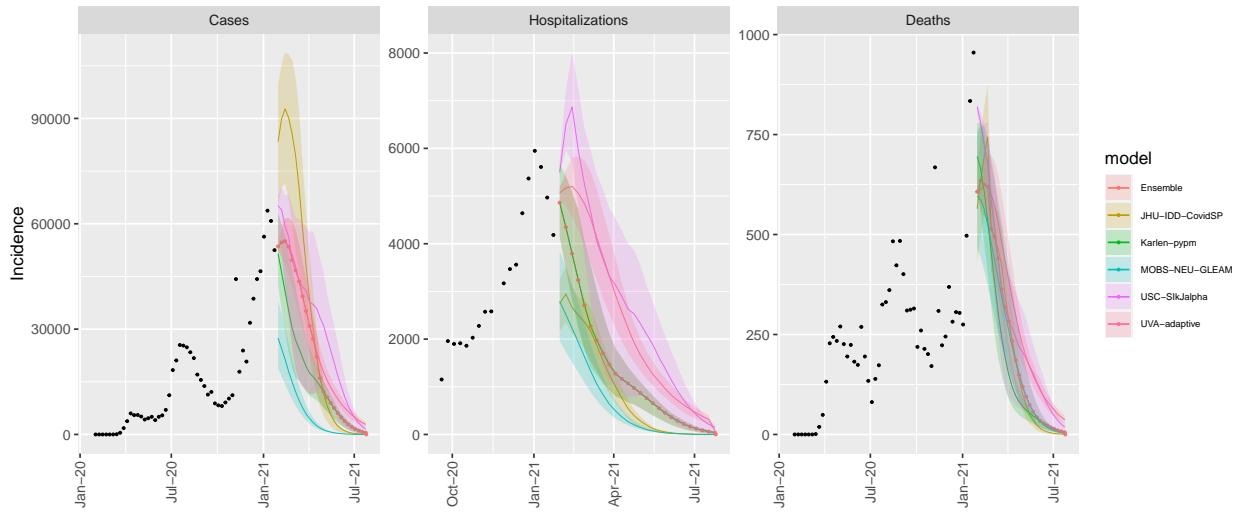
DC model variance & 50% projection intervals – optimistic_no_var



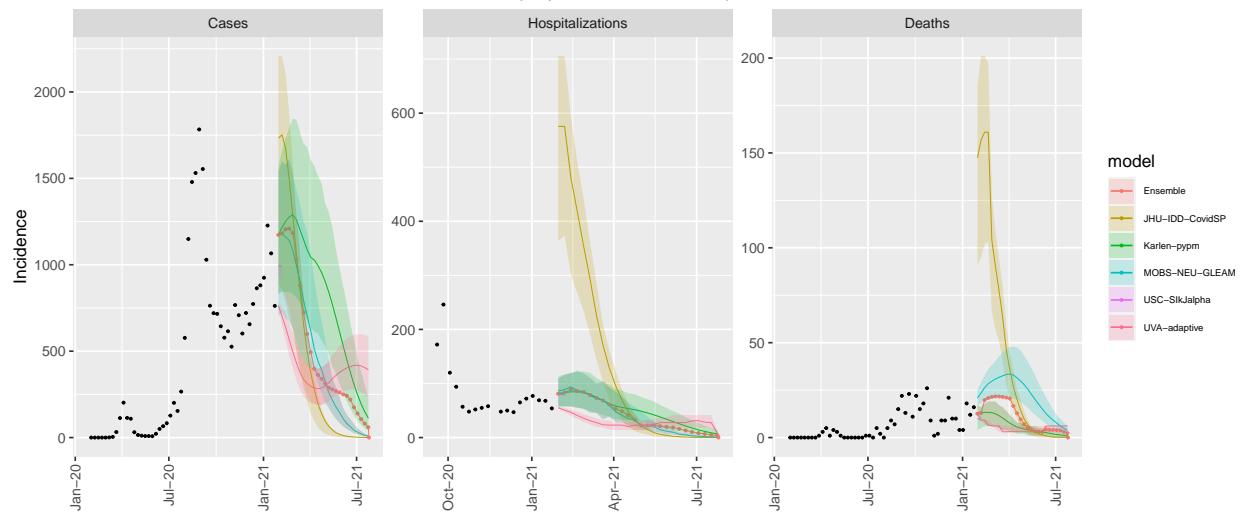
FL model variance & 50% projection intervals – optimistic_no_var



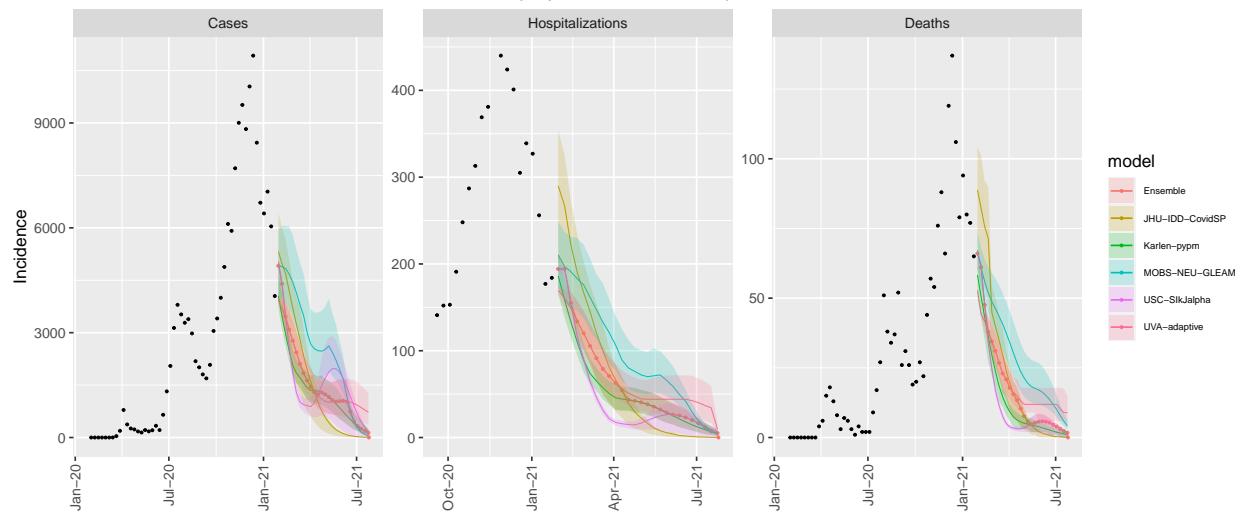
GA model variance & 50% projection intervals – optimistic_no_var



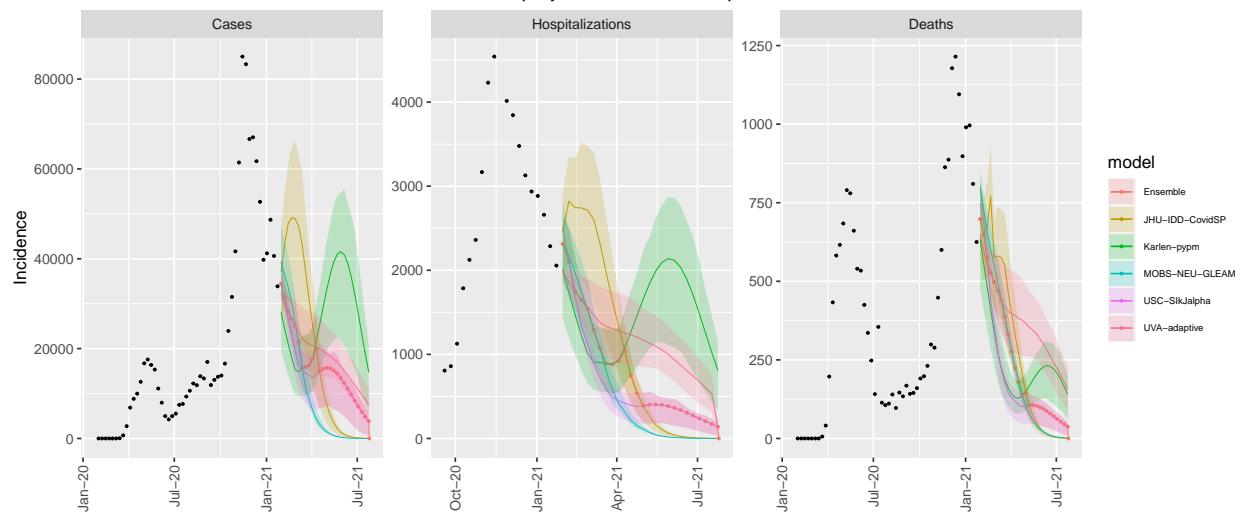
HI model variance & 50% projection intervals – optimistic_no_var



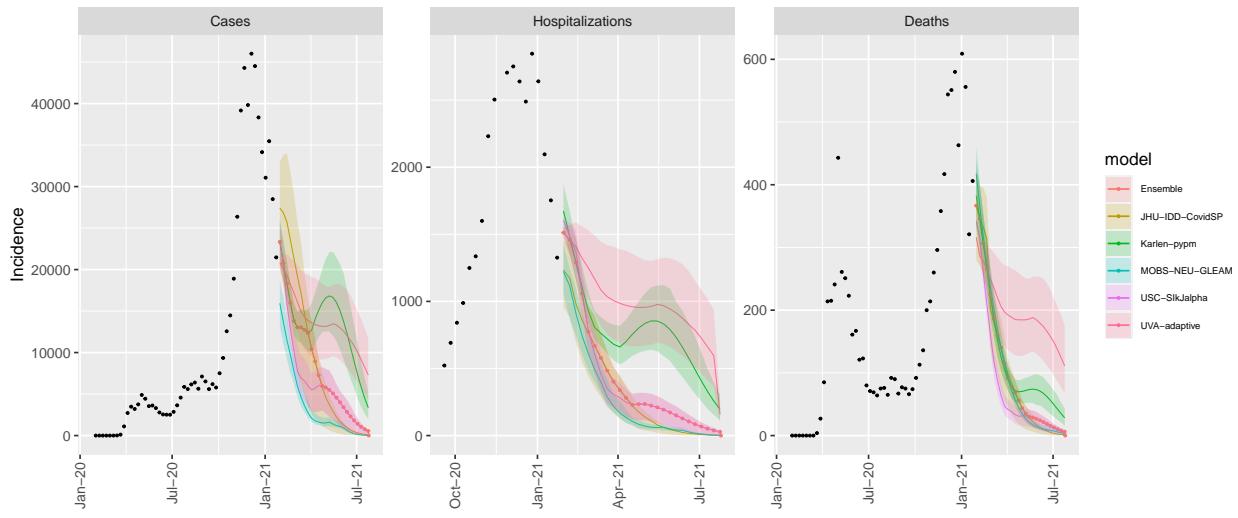
ID model variance & 50% projection intervals – optimistic_no_var



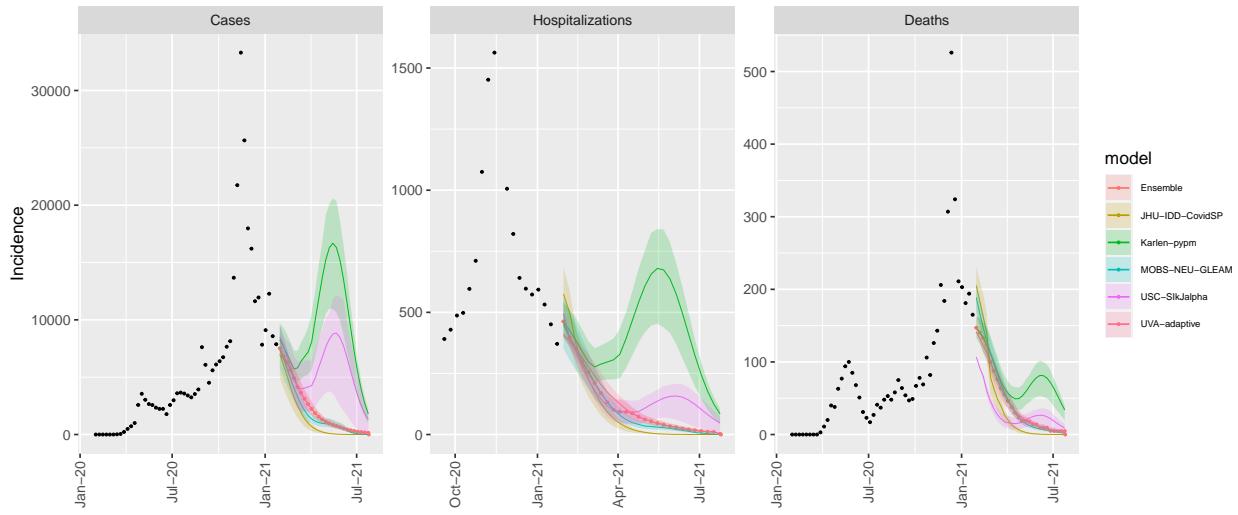
IL model variance & 50% projection intervals – optimistic_no_var



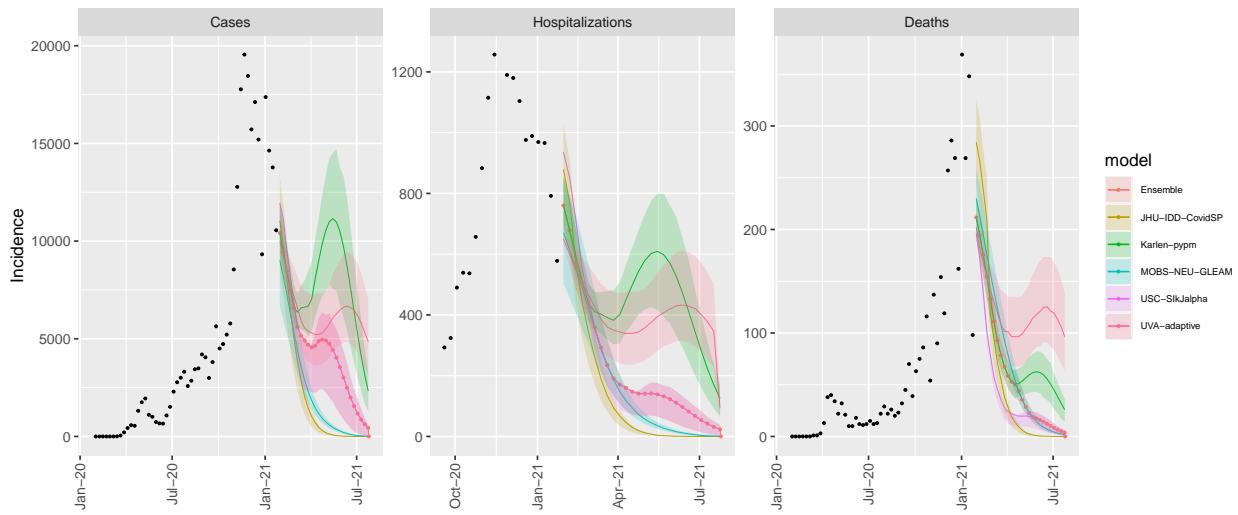
IN model variance & 50% projection intervals – optimistic_no_var



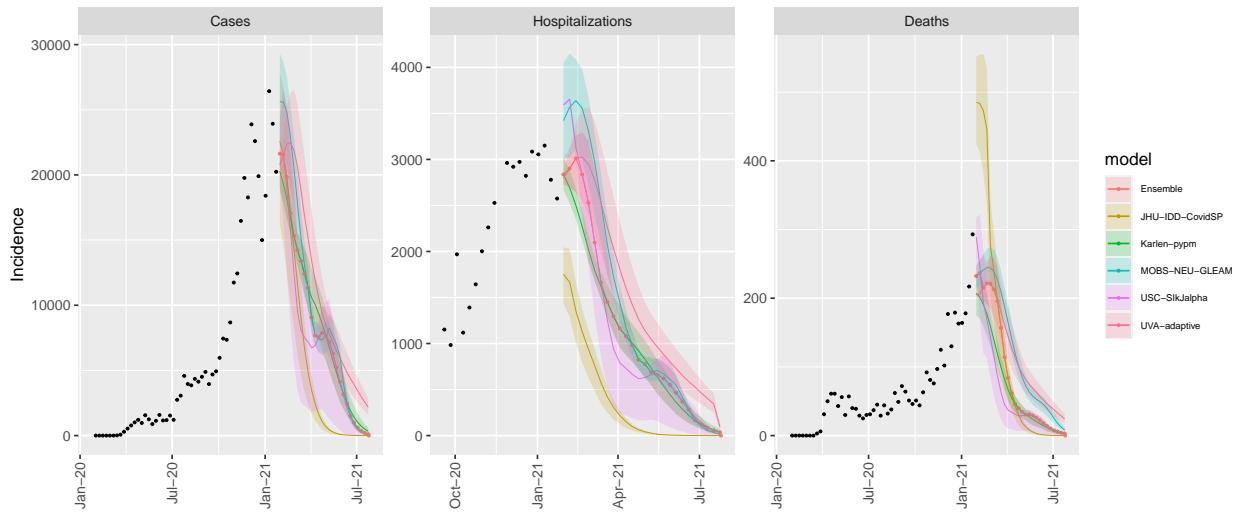
IA model variance & 50% projection intervals – optimistic_no_var



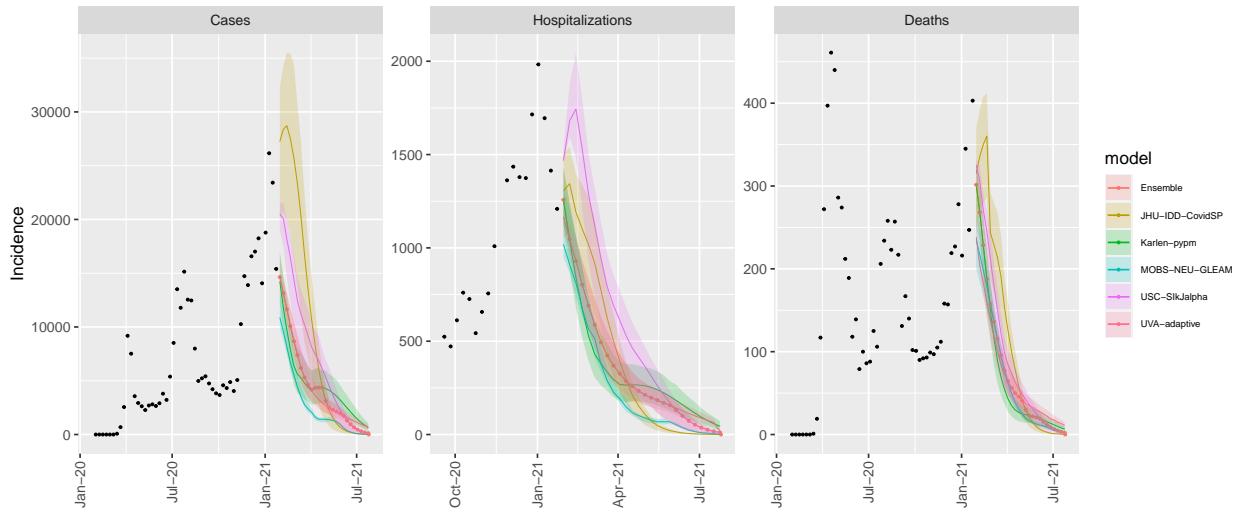
KS model variance & 50% projection intervals – optimistic_no_var



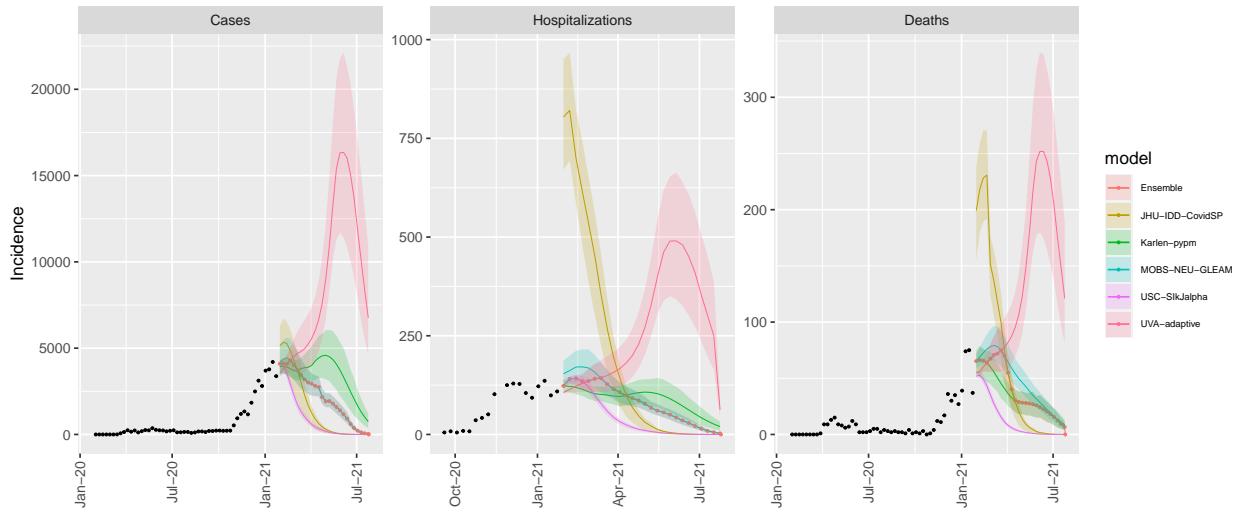
KY model variance & 50% projection intervals – optimistic_no_var



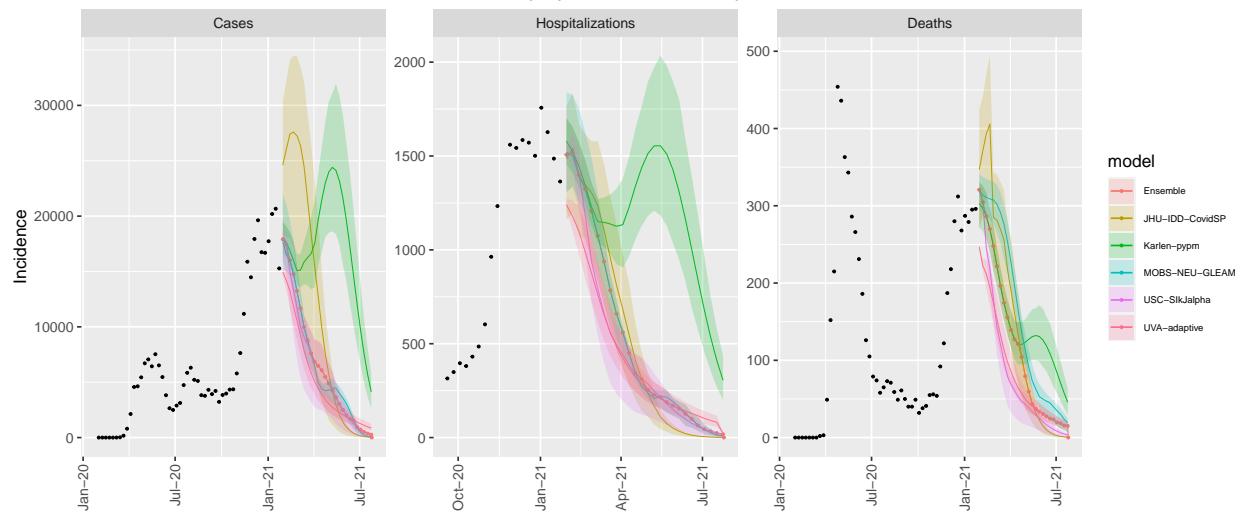
LA model variance & 50% projection intervals – optimistic_no_var



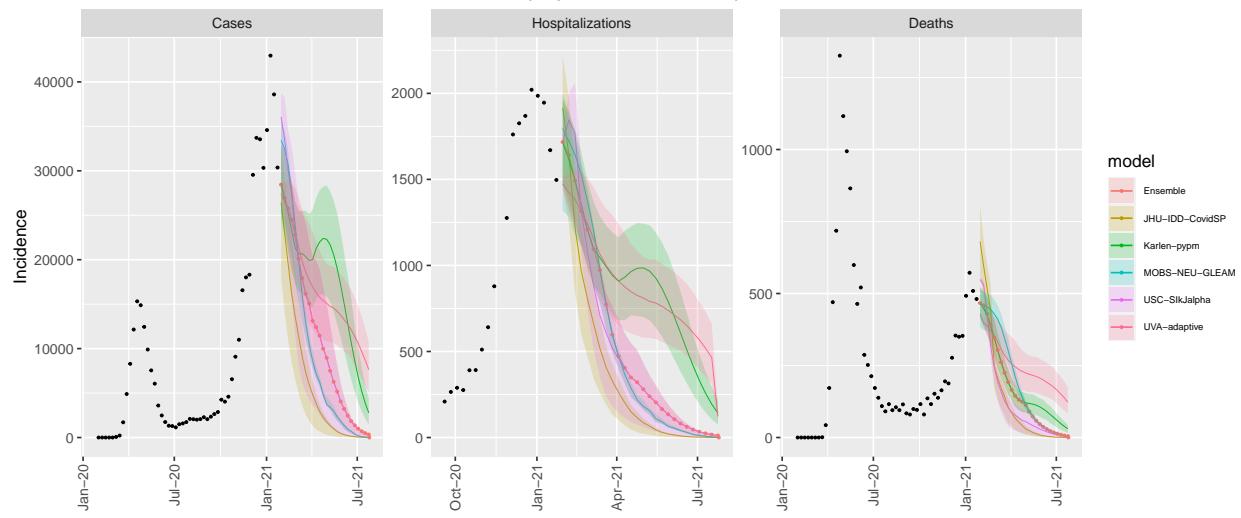
ME model variance & 50% projection intervals – optimistic_no_var



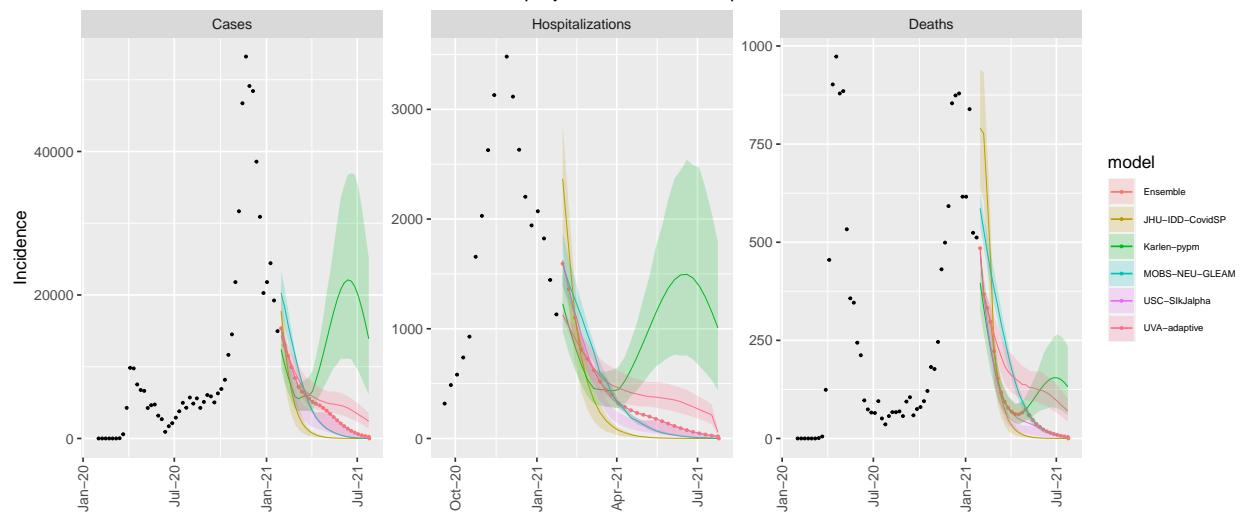
MD model variance & 50% projection intervals – optimistic_no_var



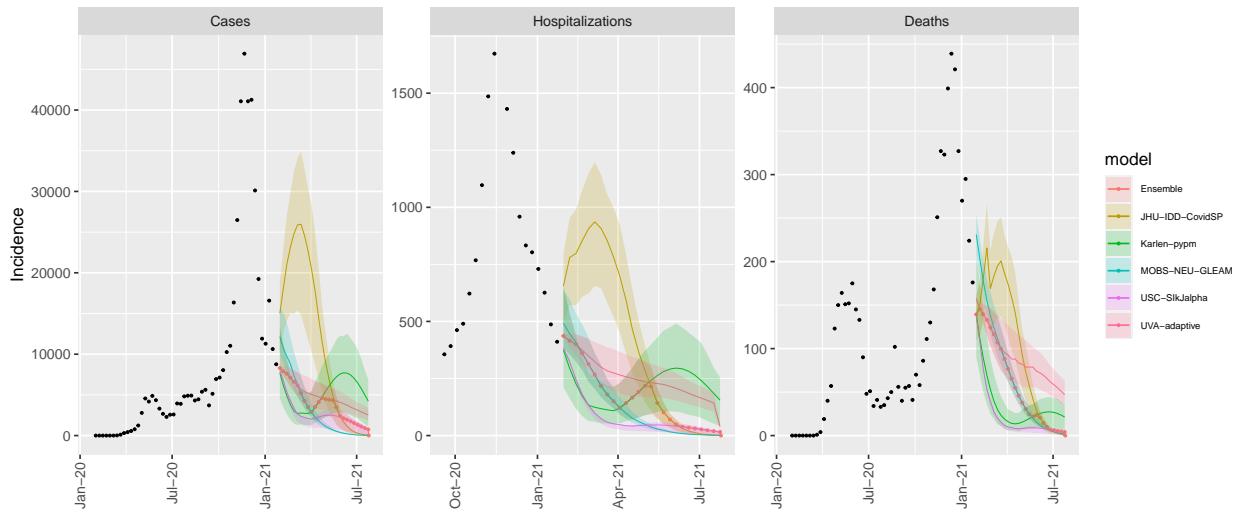
MA model variance & 50% projection intervals – optimistic_no_var



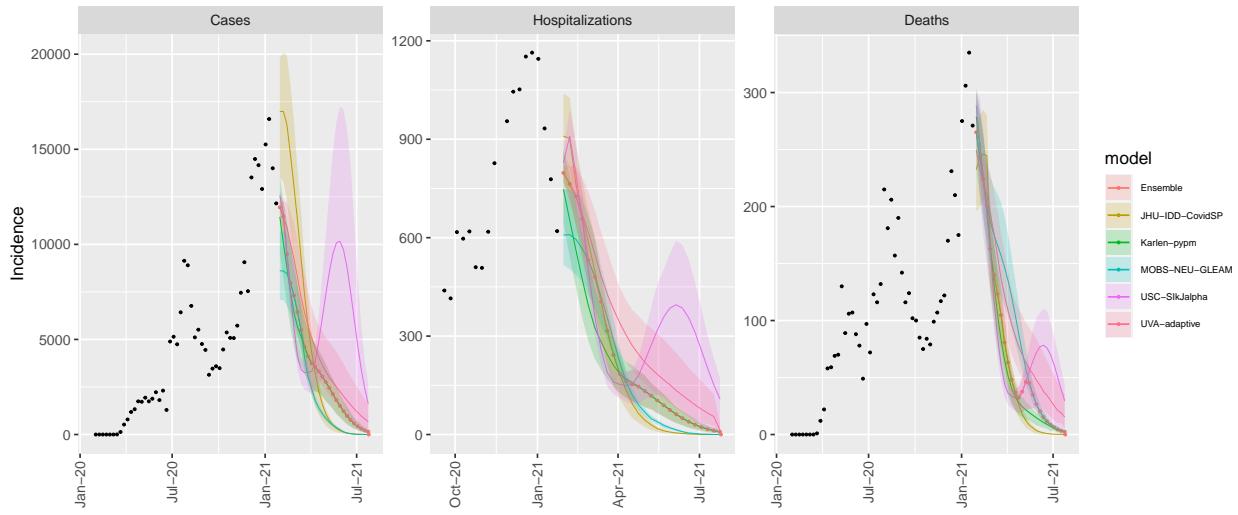
MI model variance & 50% projection intervals – optimistic_no_var



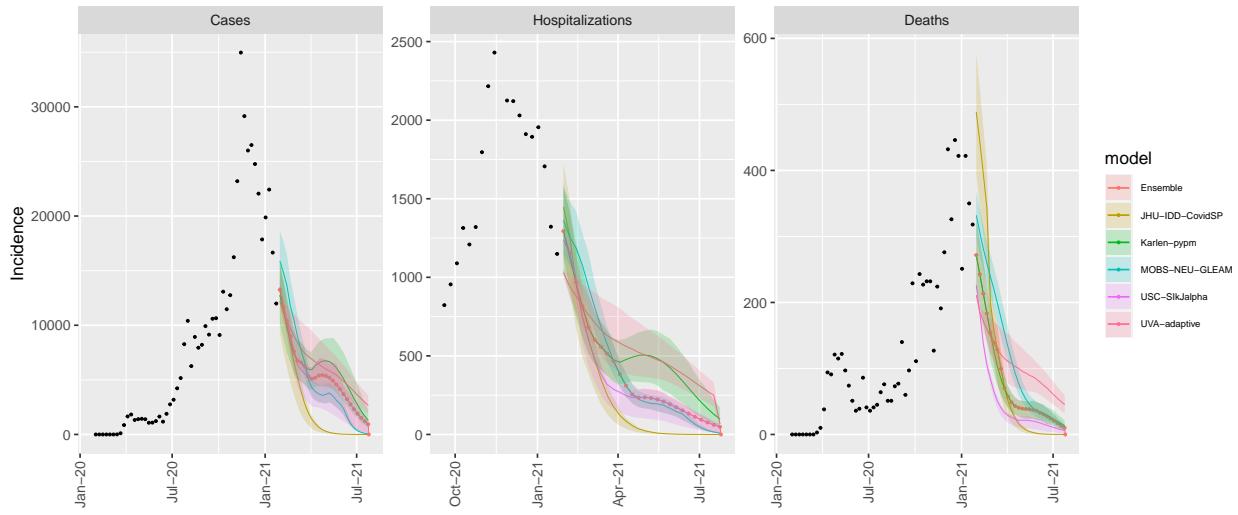
MN model variance & 50% projection intervals – optimistic_no_var



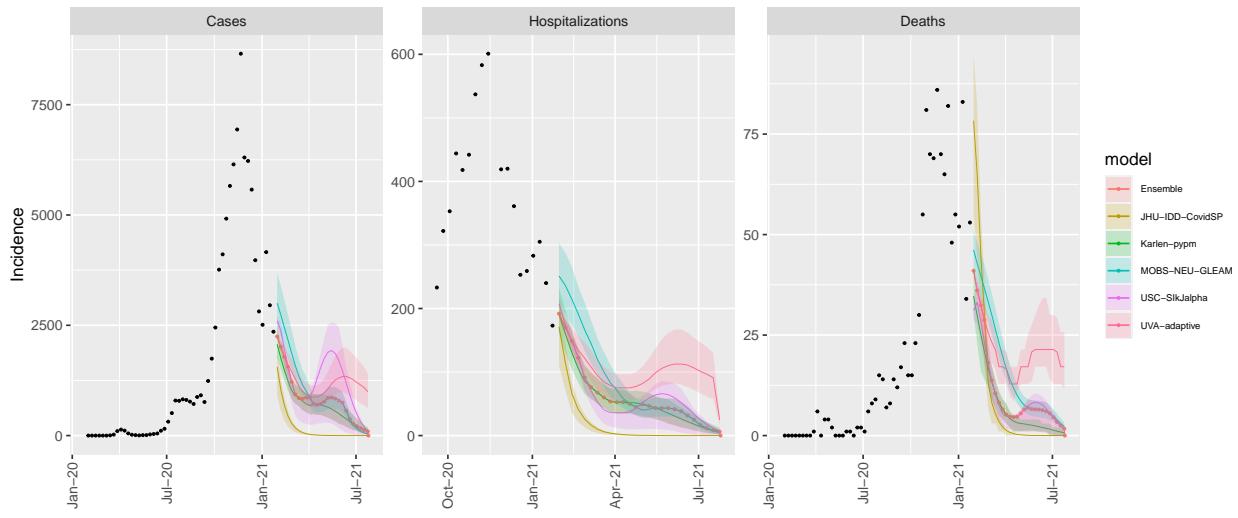
MS model variance & 50% projection intervals – optimistic_no_var



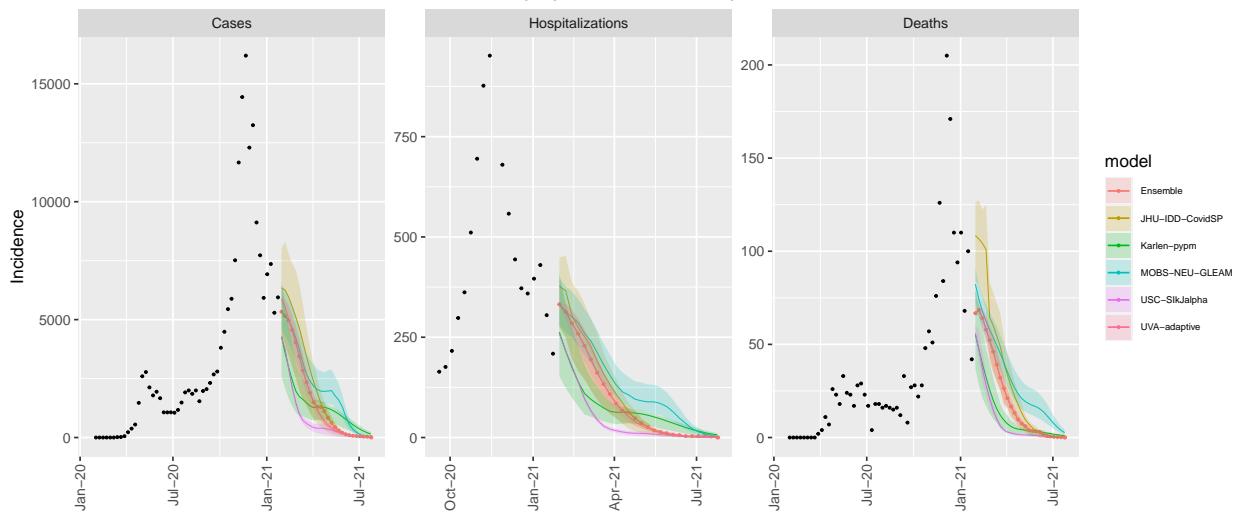
MO model variance & 50% projection intervals – optimistic_no_var



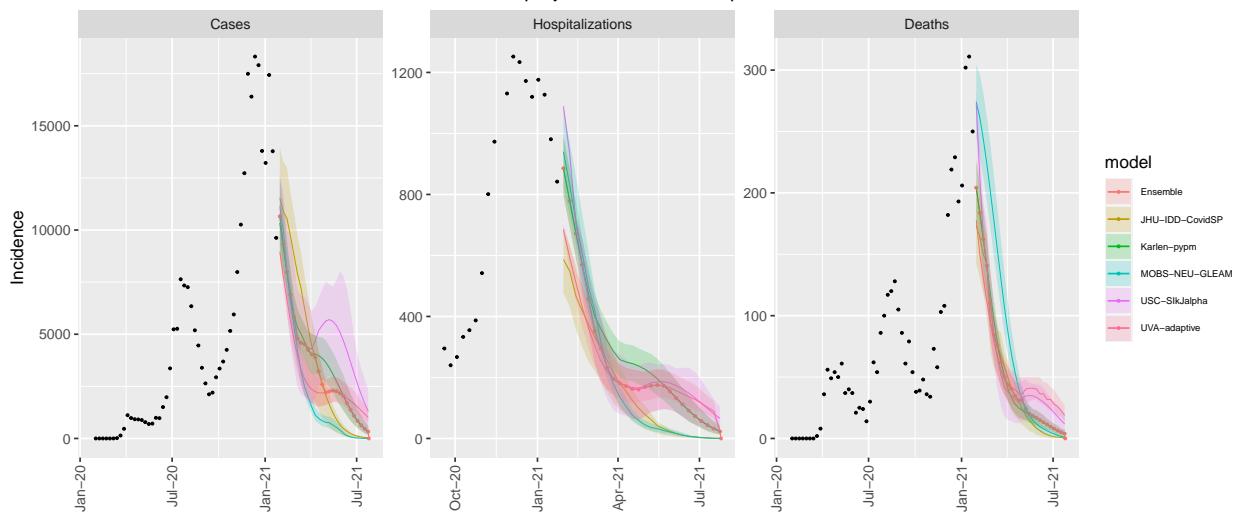
MT model variance & 50% projection intervals – optimistic_no_var



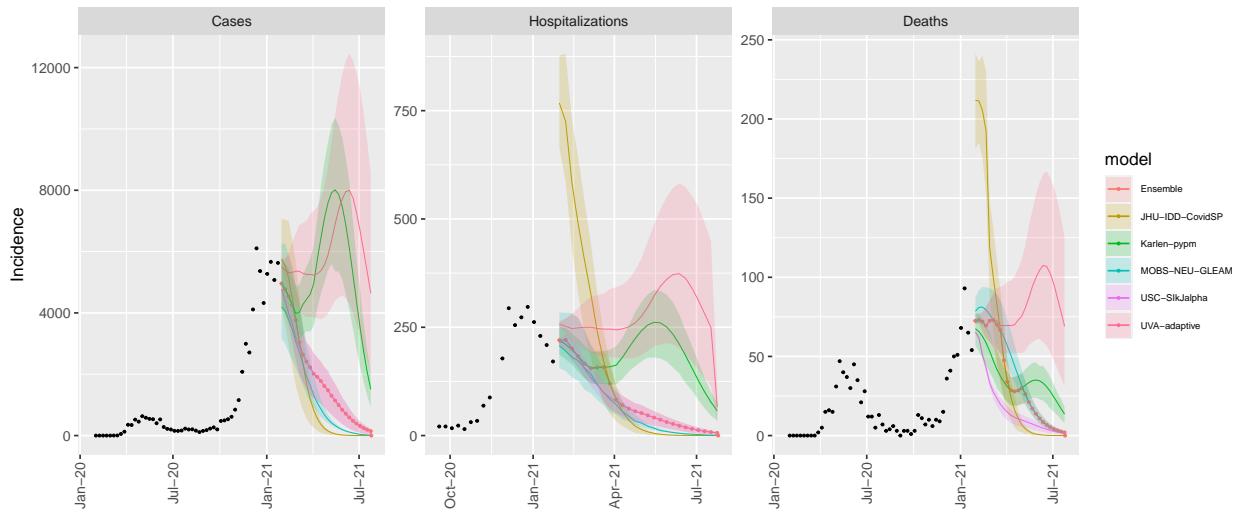
NE model variance & 50% projection intervals – optimistic_no_var



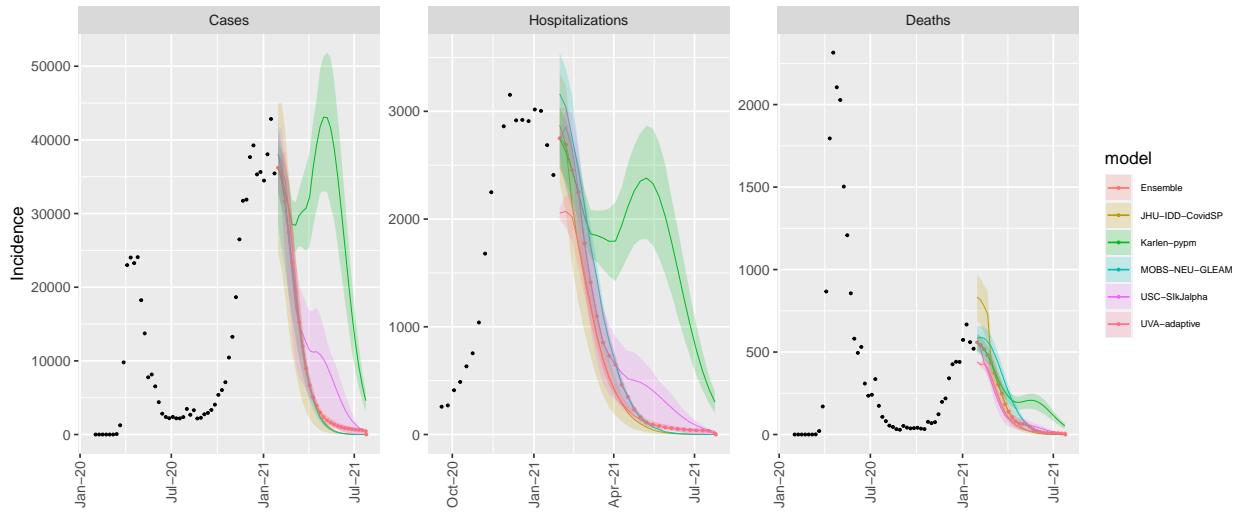
NV model variance & 50% projection intervals – optimistic_no_var



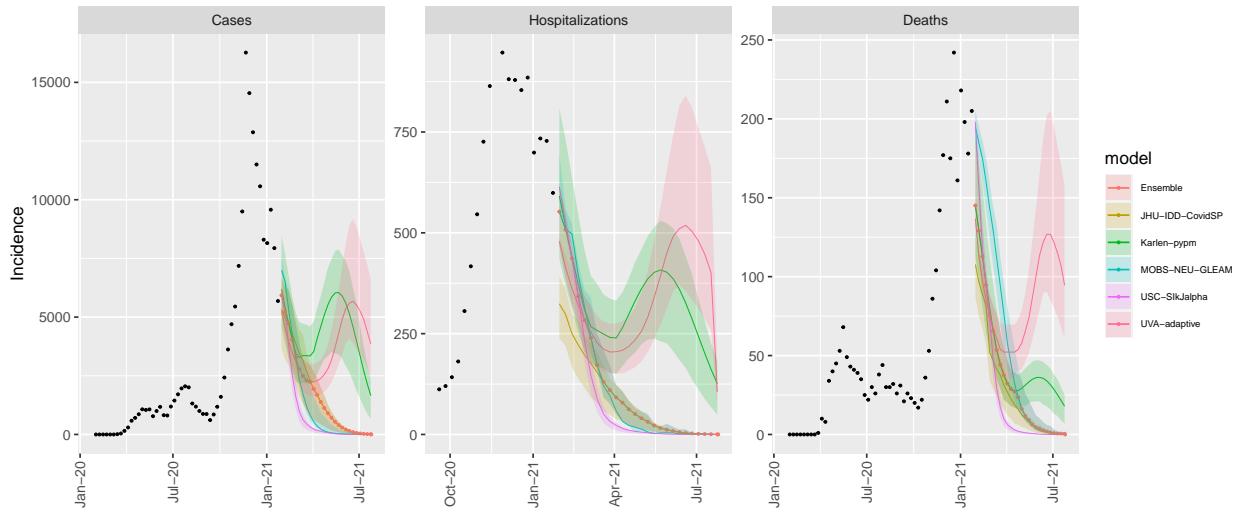
NH model variance & 50% projection intervals – optimistic_no_var



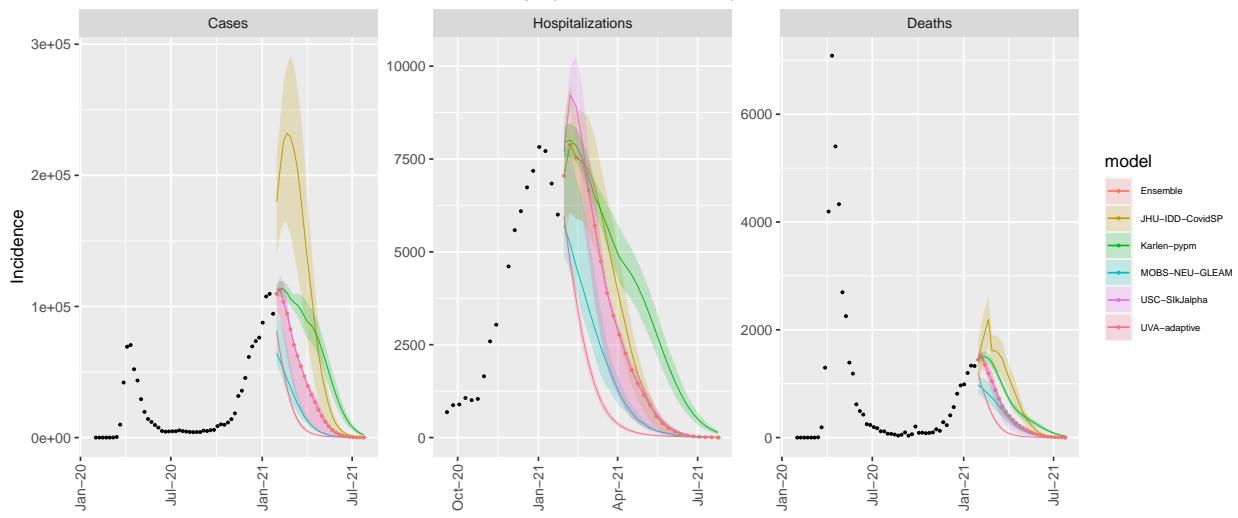
NJ model variance & 50% projection intervals – optimistic_no_var



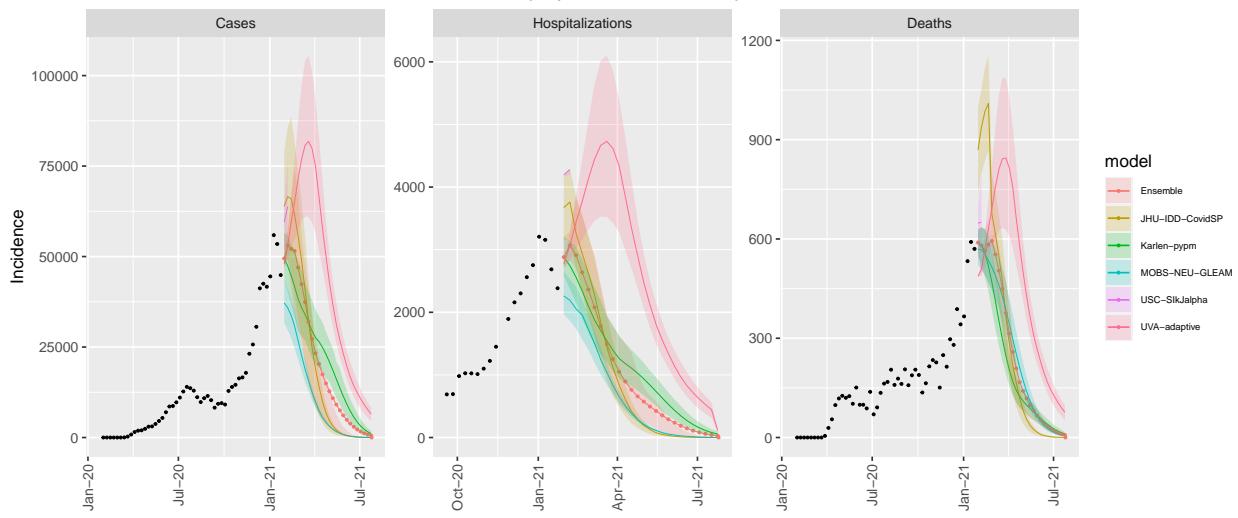
NM model variance & 50% projection intervals – optimistic_no_var



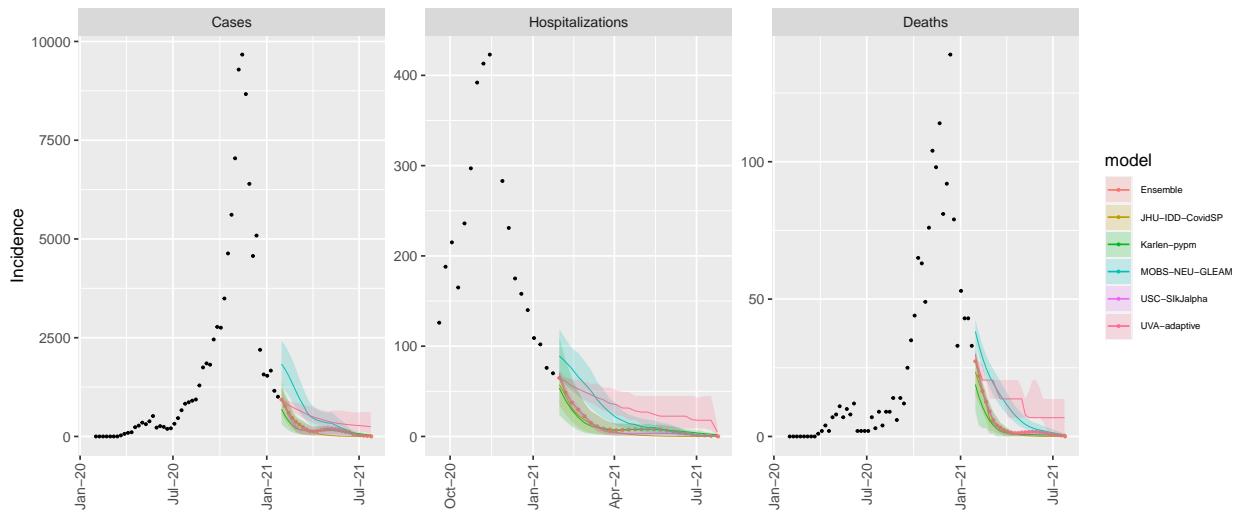
NY model variance & 50% projection intervals – optimistic_no_var



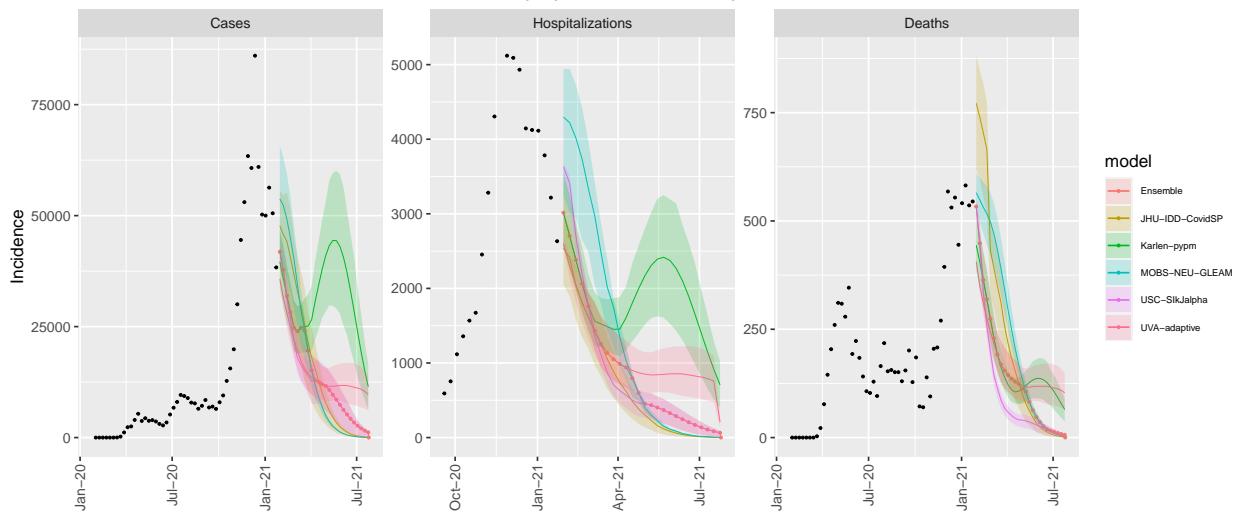
NC model variance & 50% projection intervals – optimistic_no_var



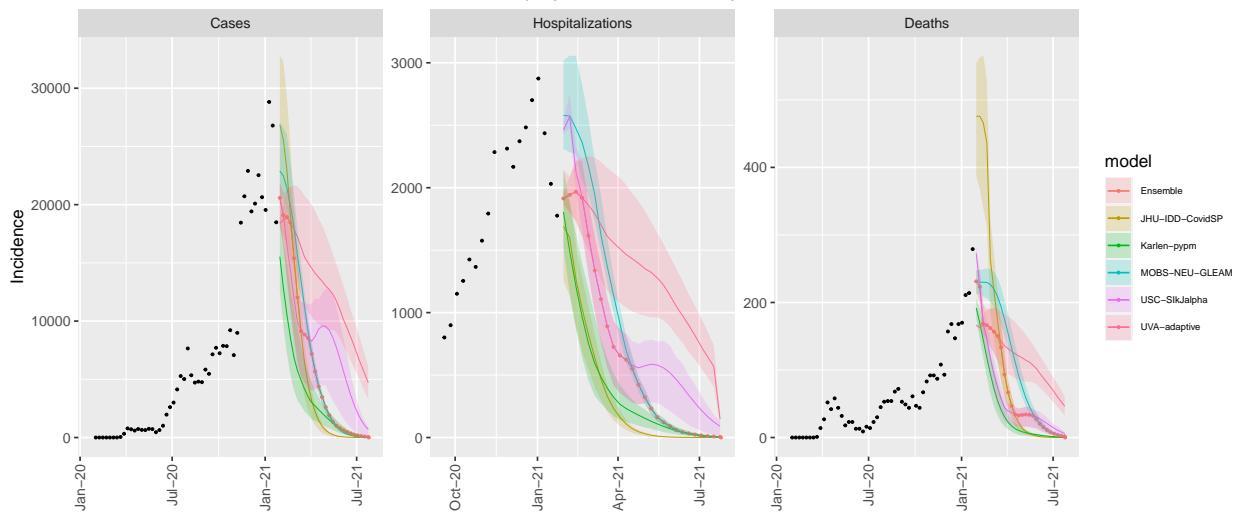
ND model variance & 50% projection intervals – optimistic_no_var



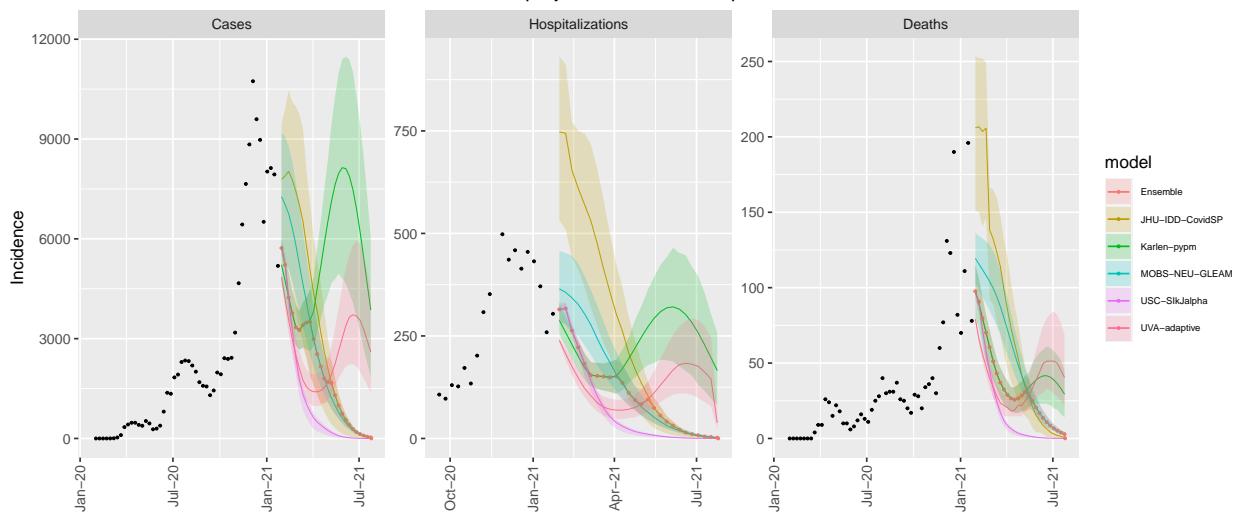
OH model variance & 50% projection intervals – optimistic_no_var



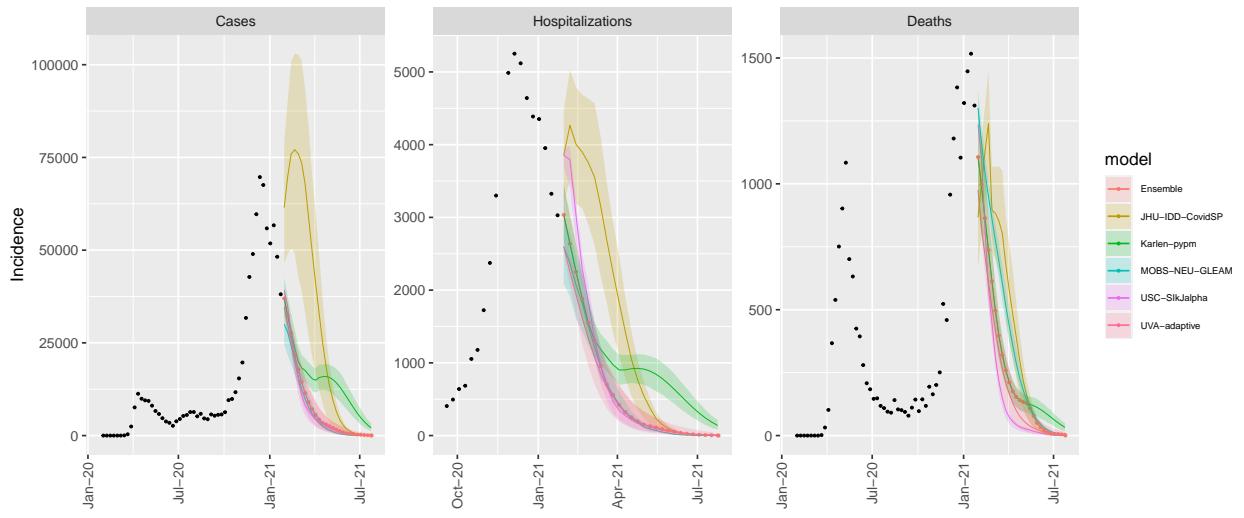
OK model variance & 50% projection intervals – optimistic_no_var



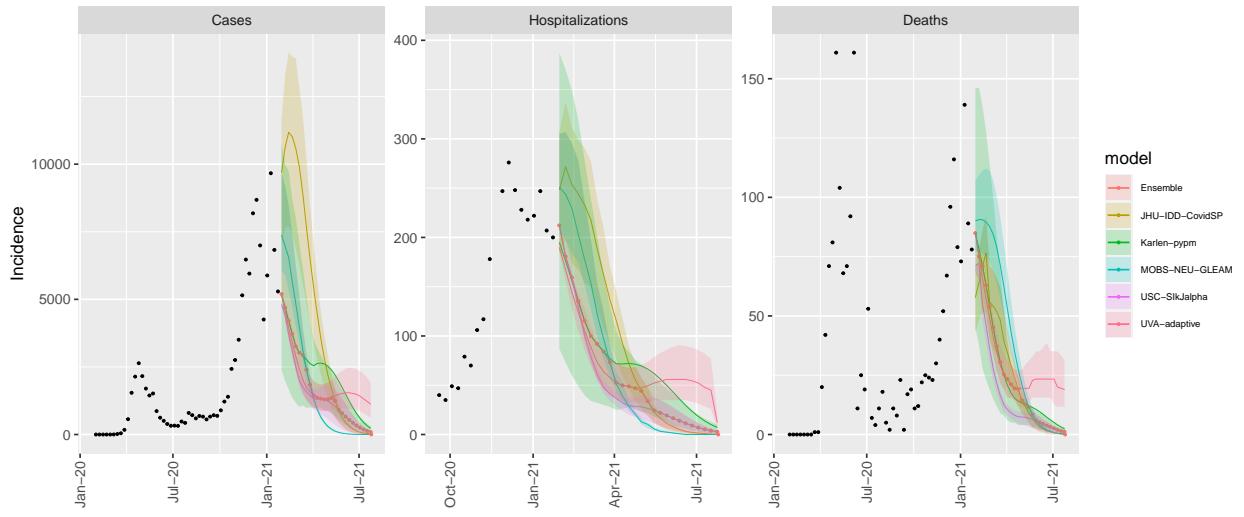
OR model variance & 50% projection intervals – optimistic_no_var



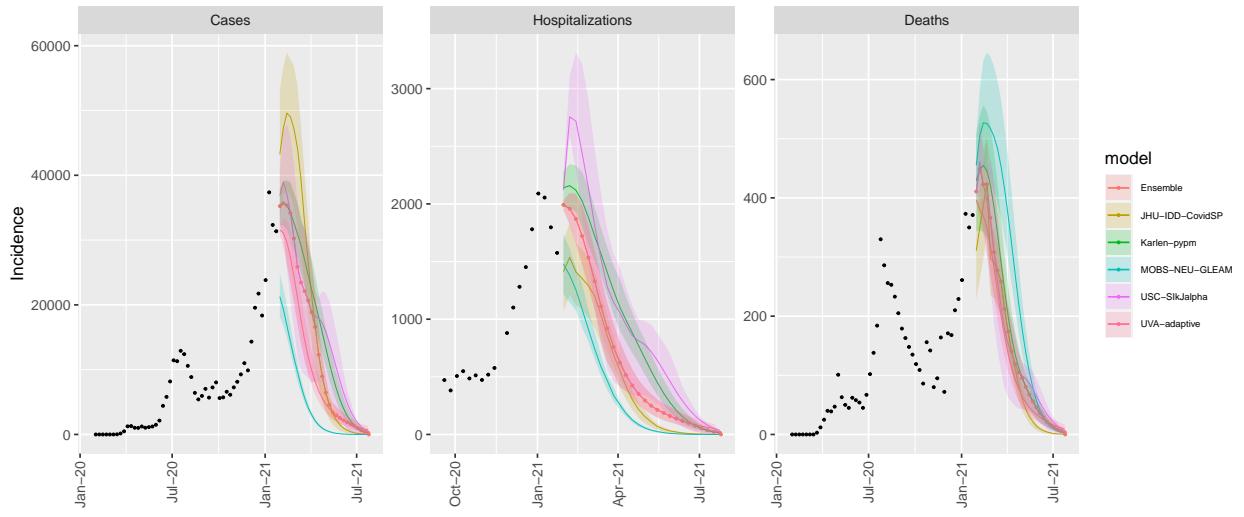
PA model variance & 50% projection intervals – optimistic_no_var



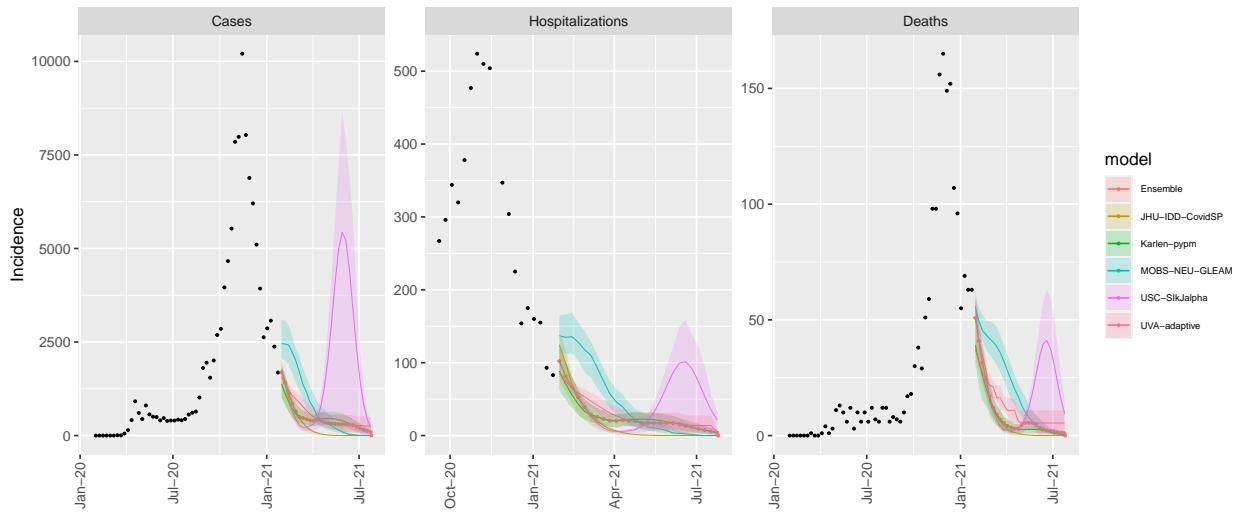
RI model variance & 50% projection intervals – optimistic_no_var



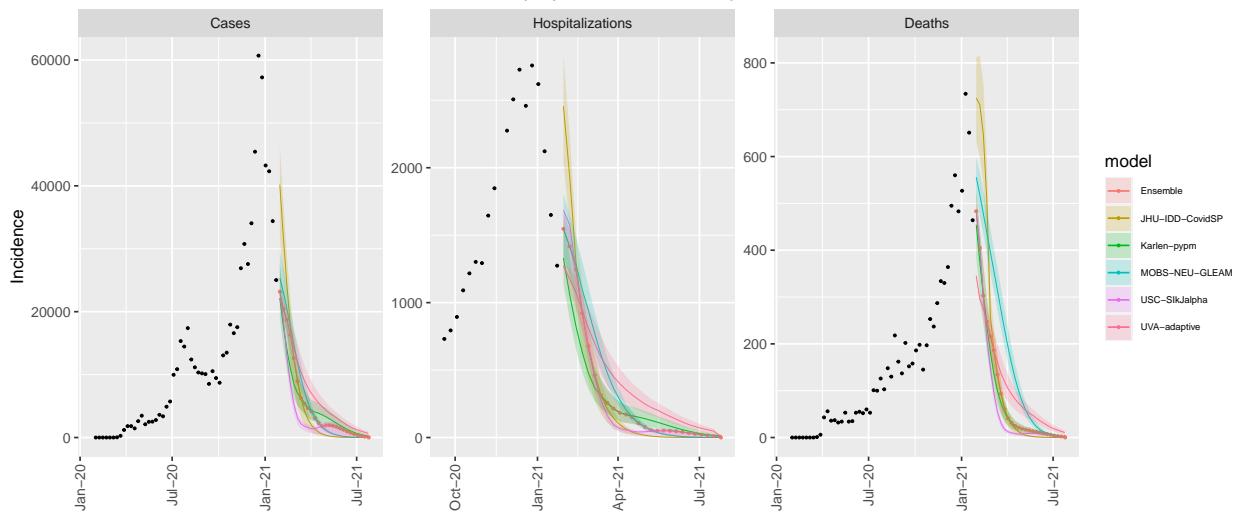
SC model variance & 50% projection intervals – optimistic_no_var



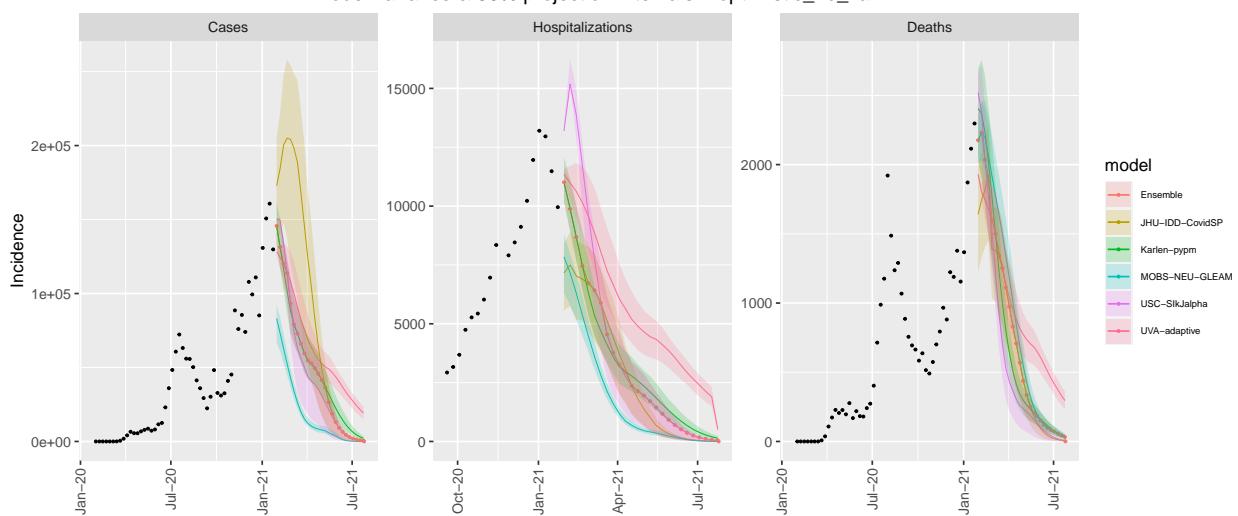
SD model variance & 50% projection intervals – optimistic_no_var



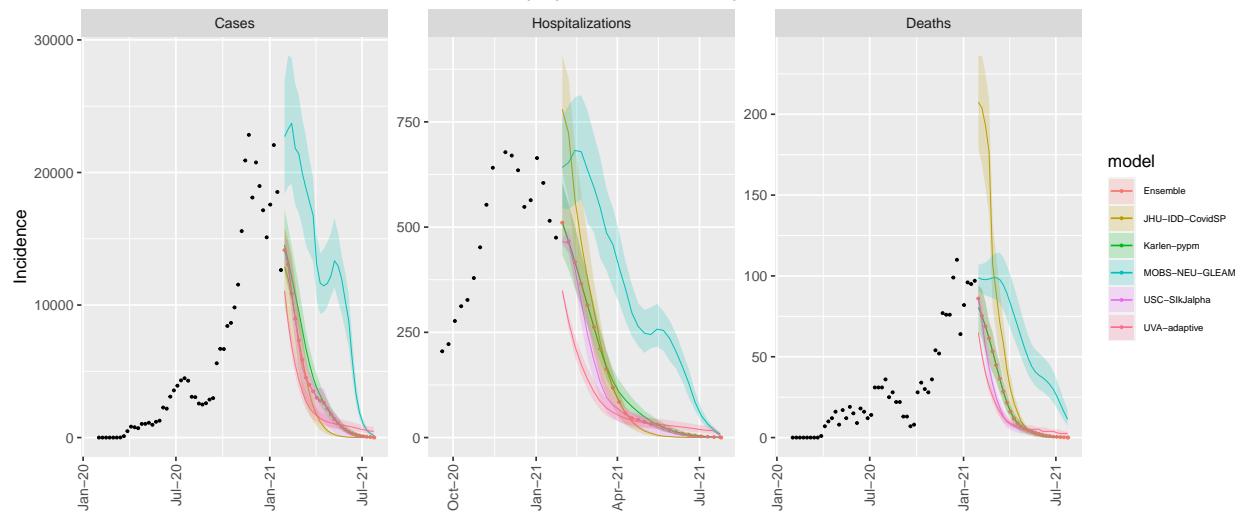
TN model variance & 50% projection intervals – optimistic_no_var



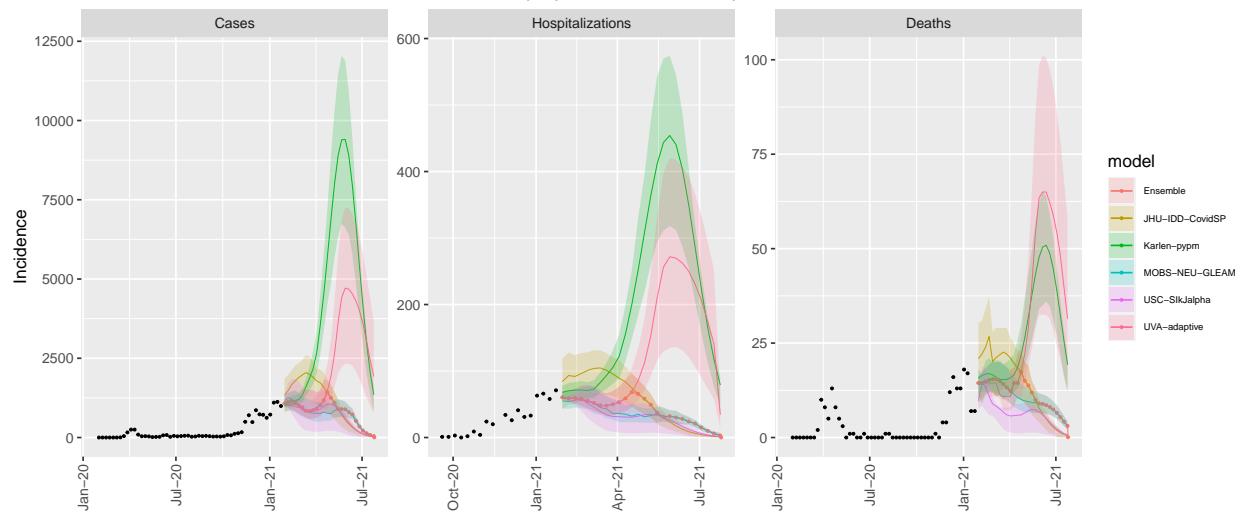
TX model variance & 50% projection intervals – optimistic_no_var



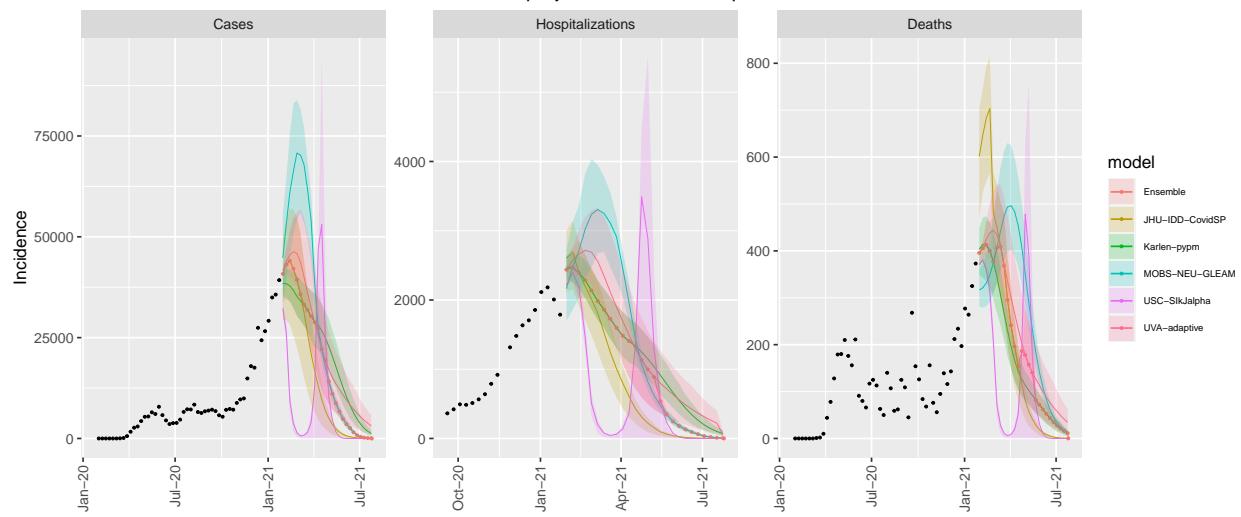
UT model variance & 50% projection intervals – optimistic_no_var



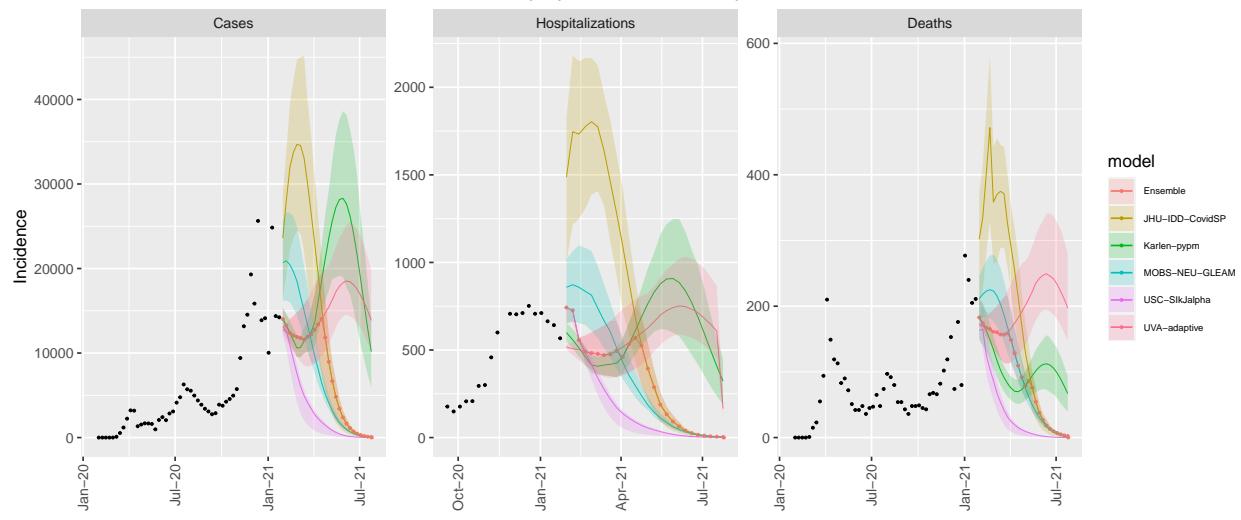
VT model variance & 50% projection intervals – optimistic_no_var



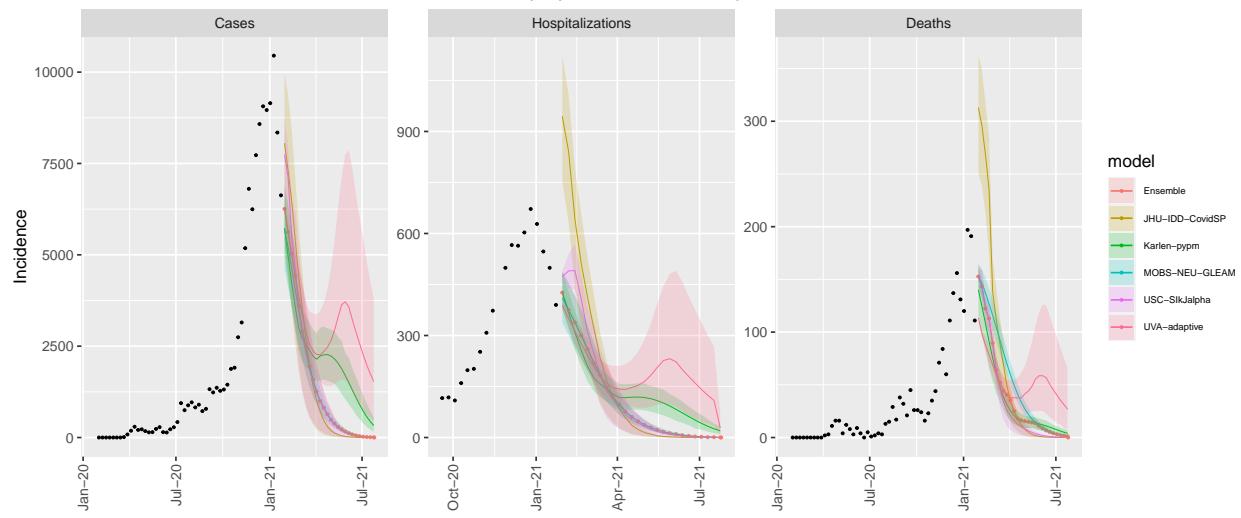
VA model variance & 50% projection intervals – optimistic_no_var



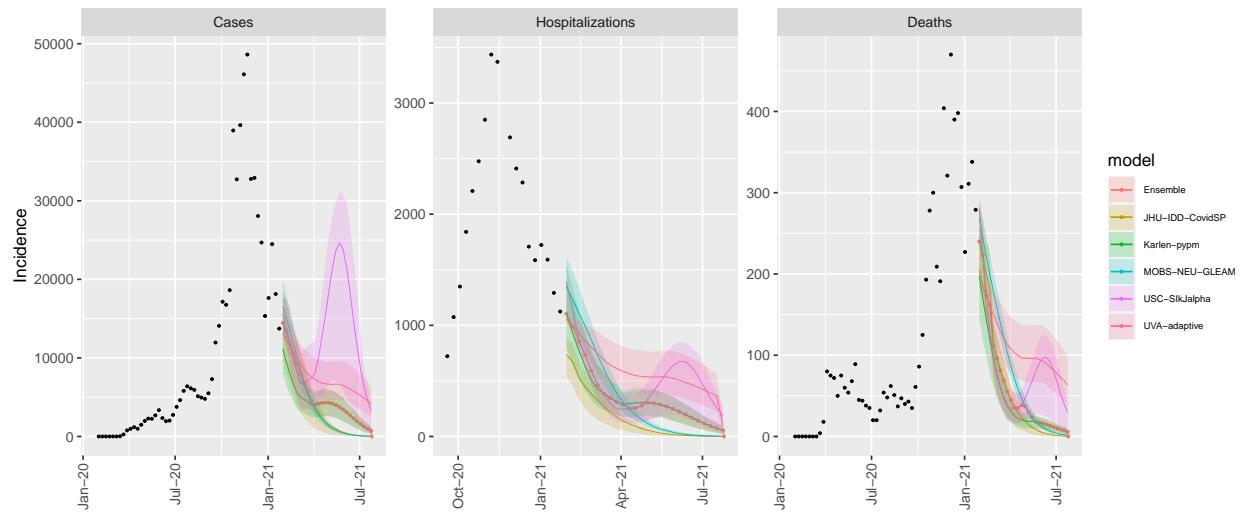
WA model variance & 50% projection intervals – optimistic_no_var



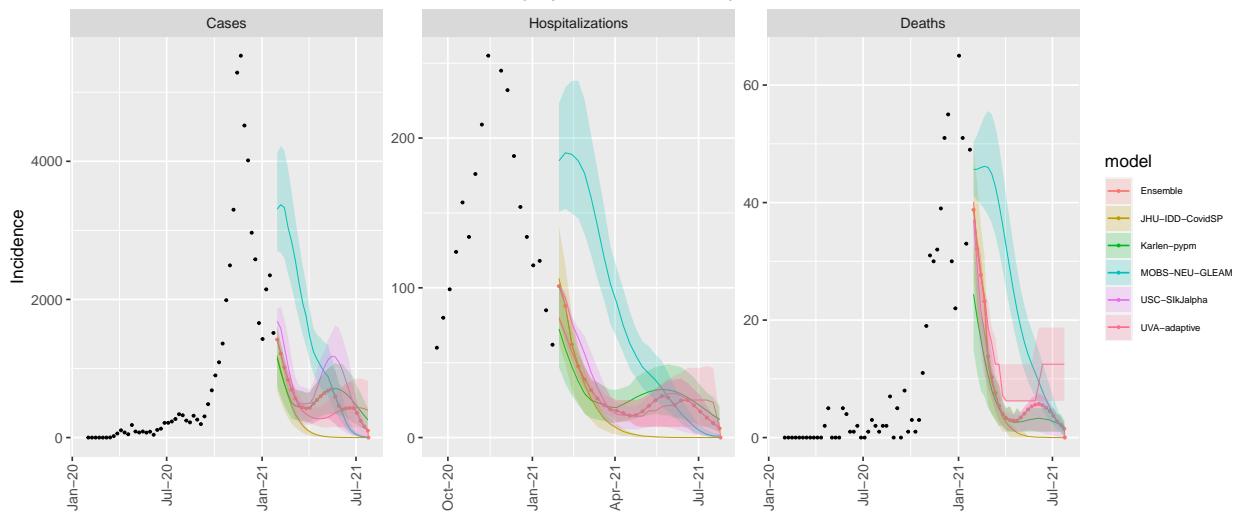
WV model variance & 50% projection intervals – optimistic_no_var



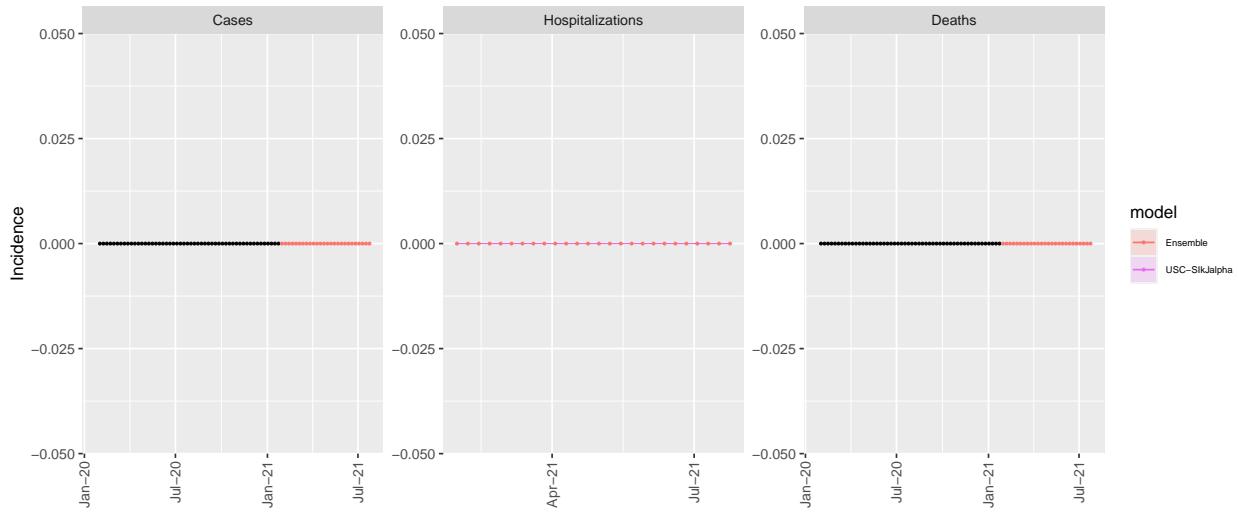
WI model variance & 50% projection intervals – optimistic_no_var



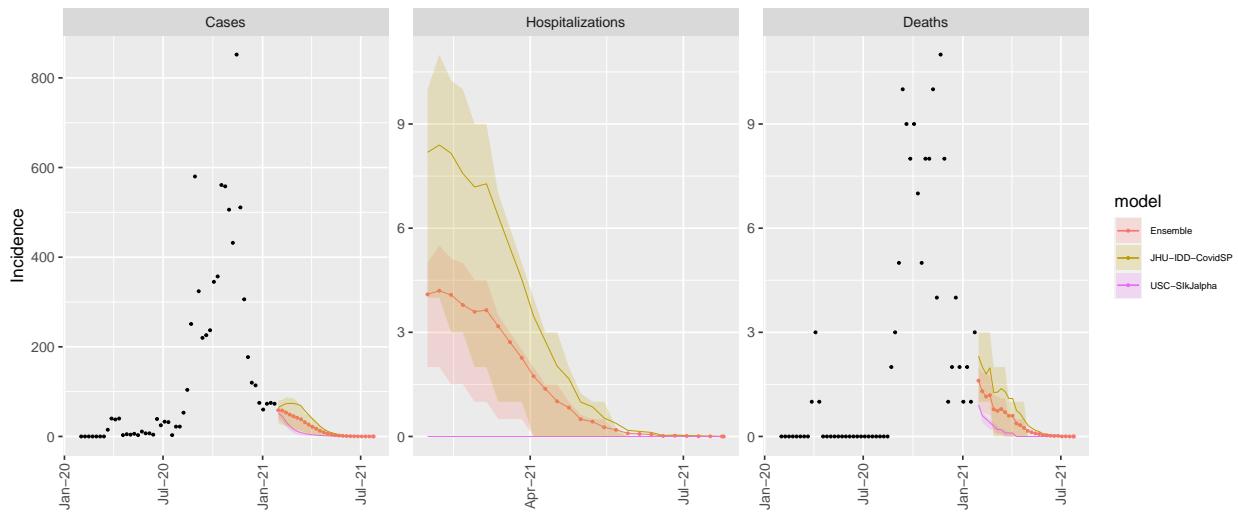
WY model variance & 50% projection intervals – optimistic_no_var



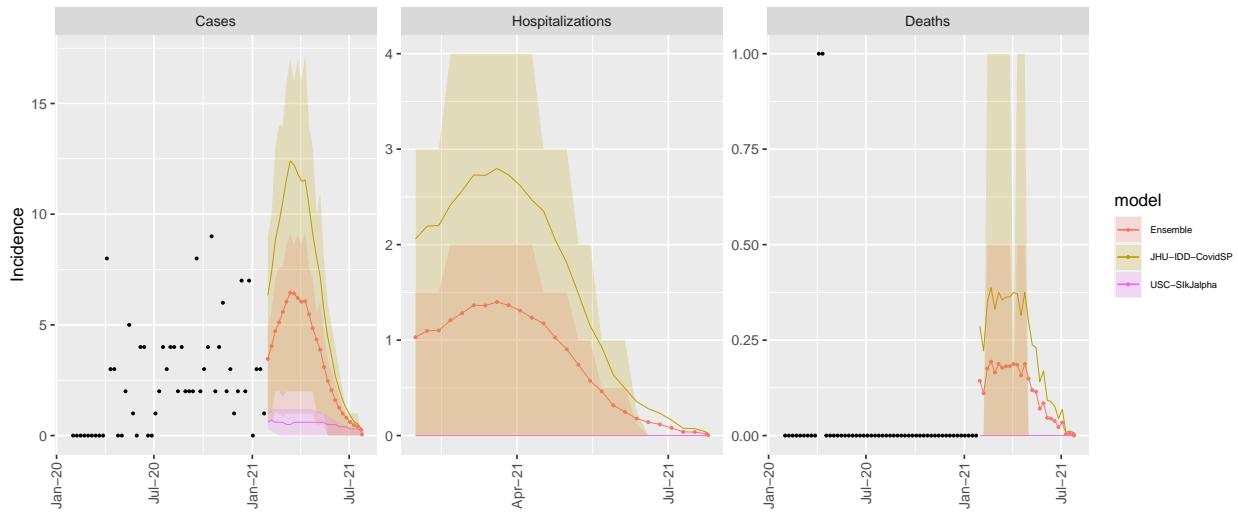
AS model variance & 50% projection intervals – optimistic_no_var



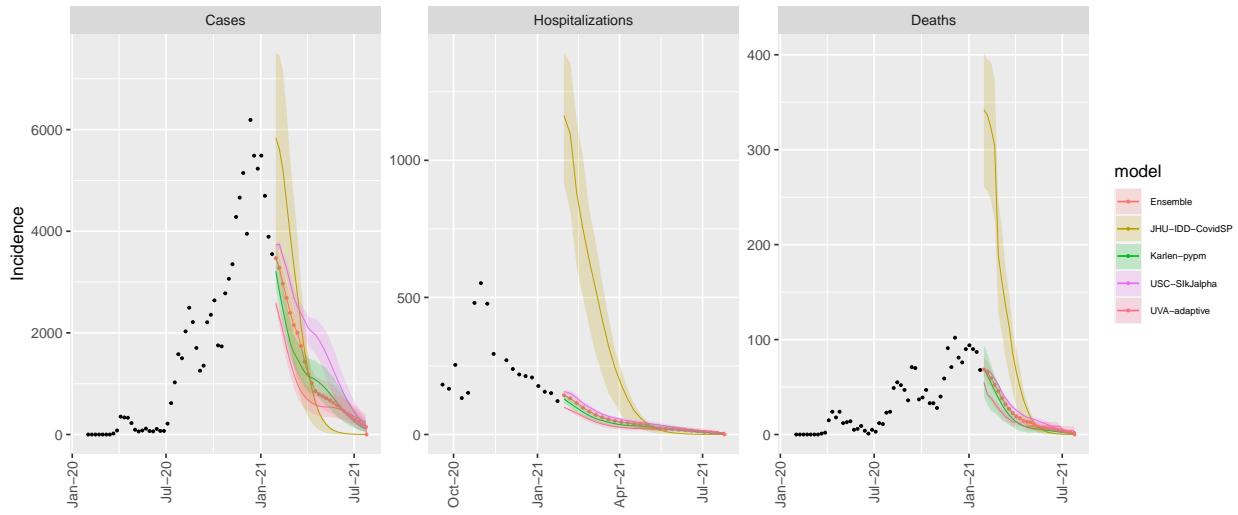
GU model variance & 50% projection intervals – optimistic_no_var



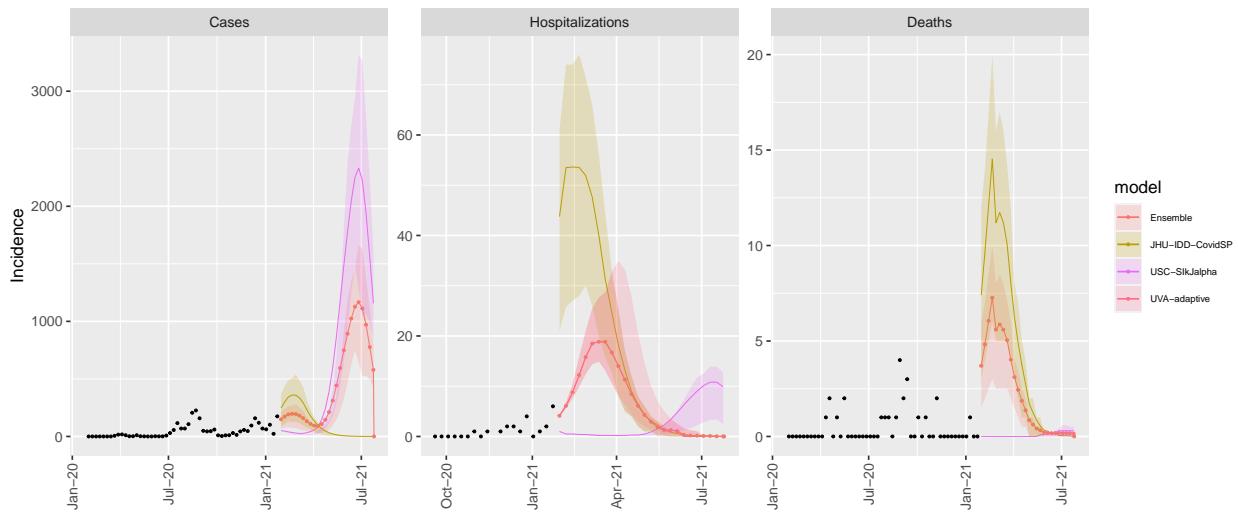
MP model variance & 50% projection intervals – optimistic_no_var



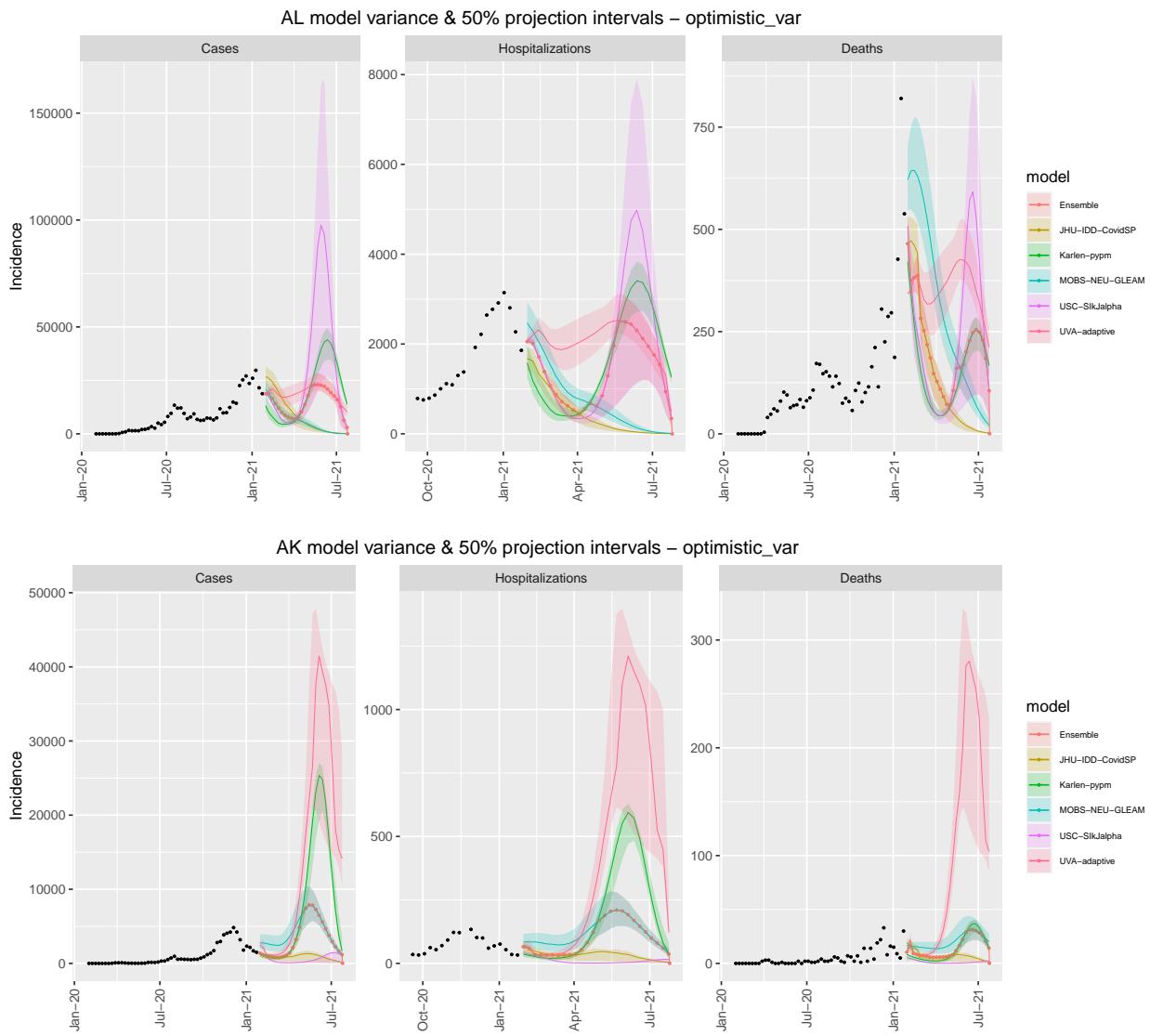
PR model variance & 50% projection intervals – optimistic_no_var



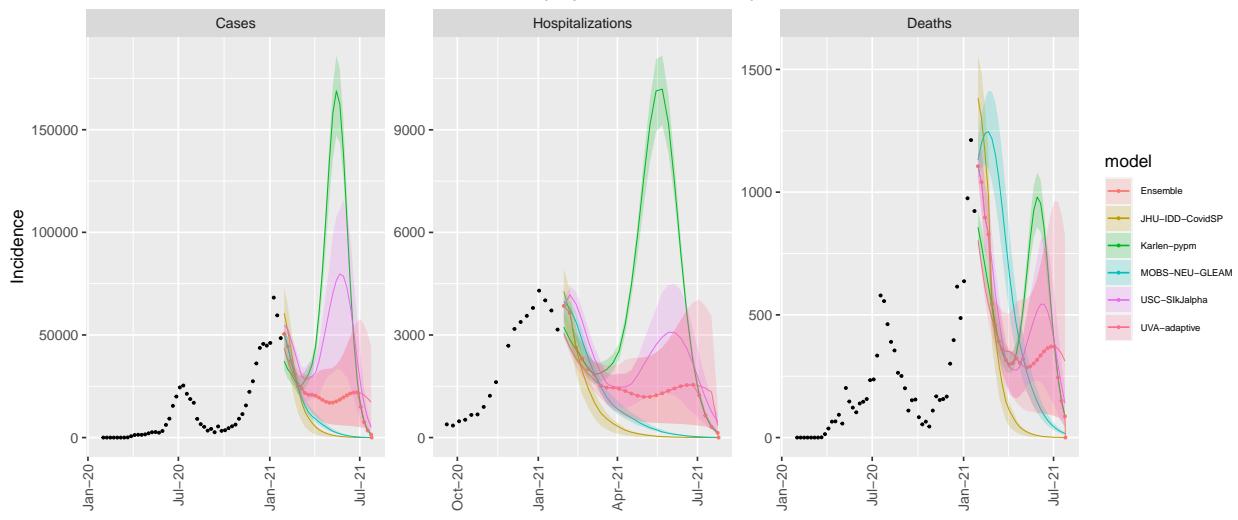
VI model variance & 50% projection intervals – optimistic_no_var



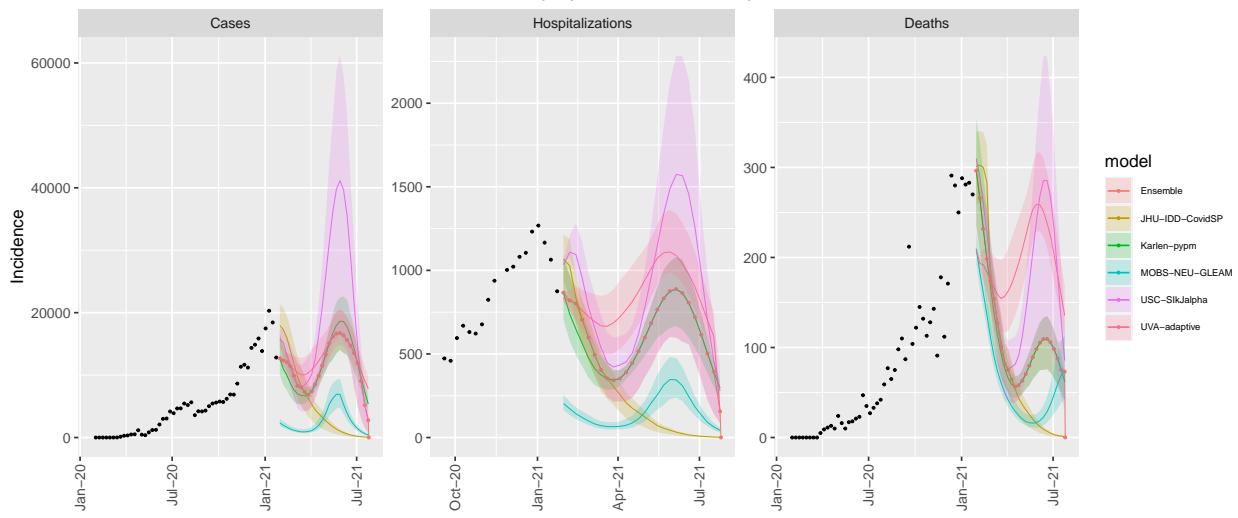
National model variation for the optimistic variant scenario



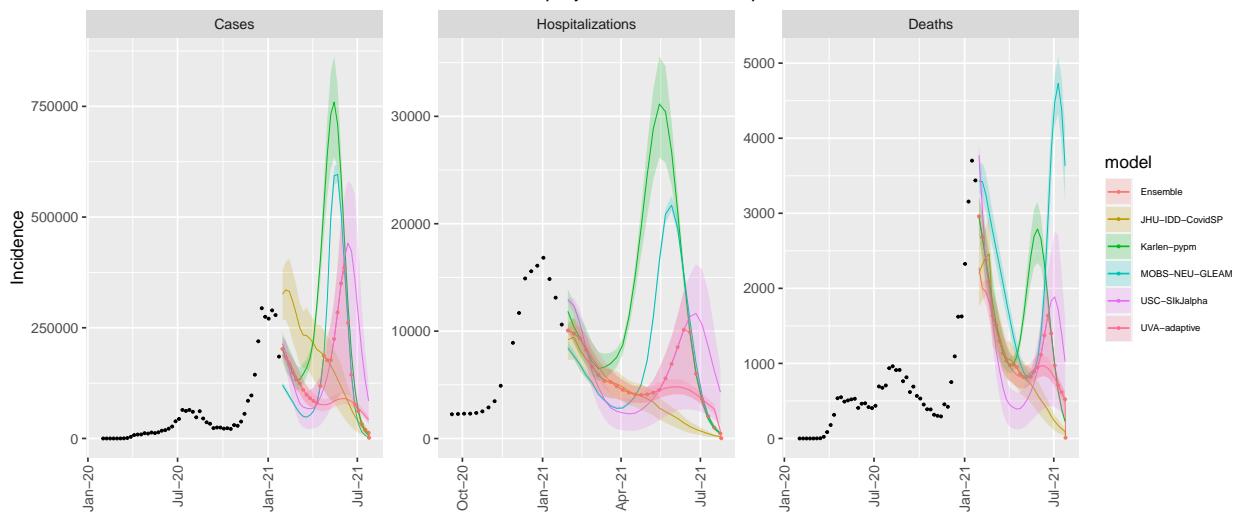
AZ model variance & 50% projection intervals – optimistic_var



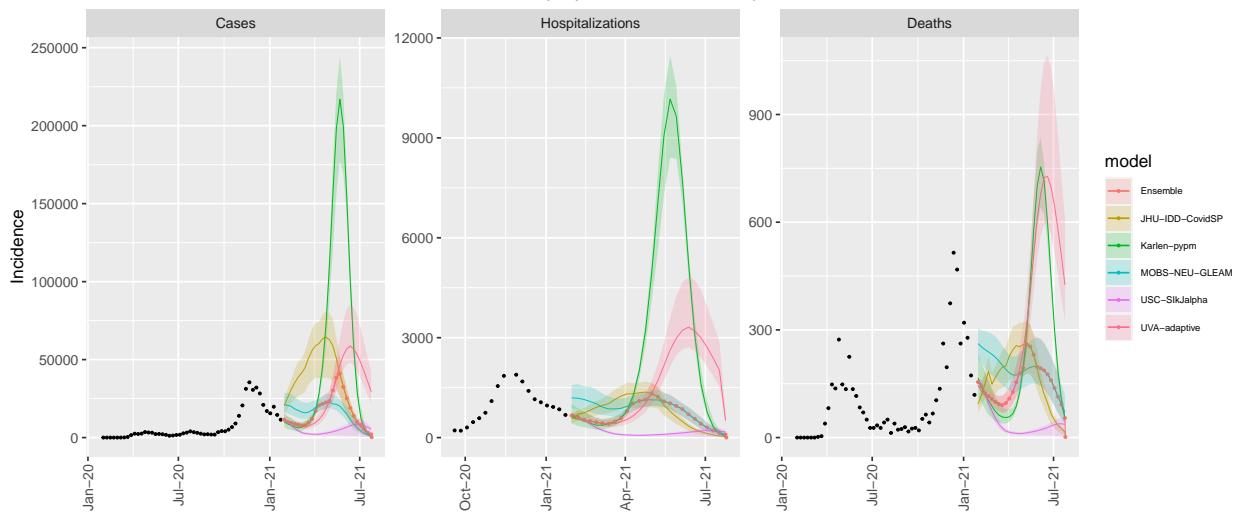
AR model variance & 50% projection intervals – optimistic_var



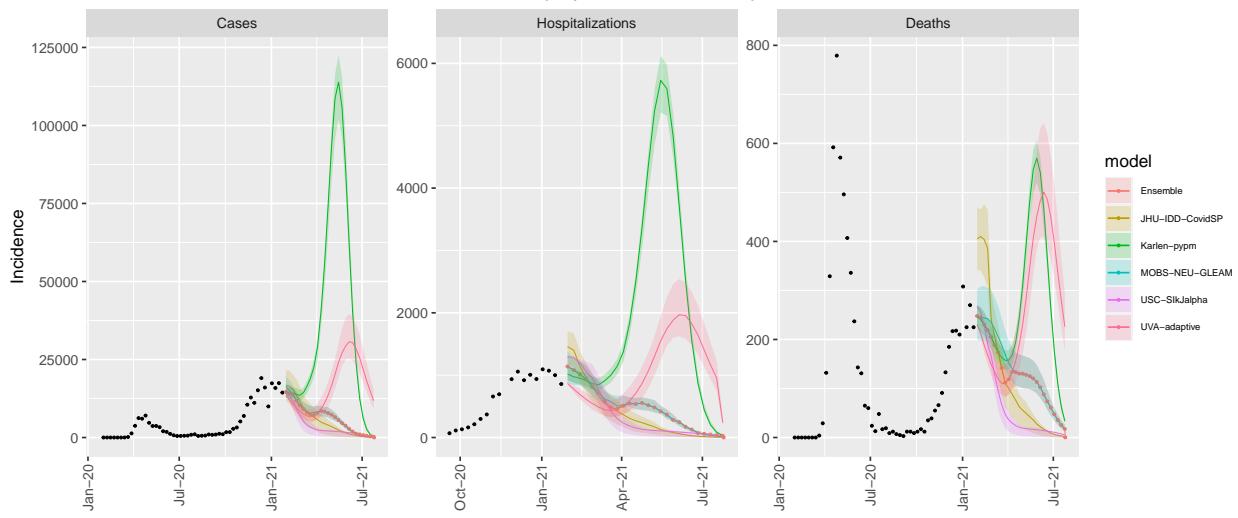
CA model variance & 50% projection intervals – optimistic_var



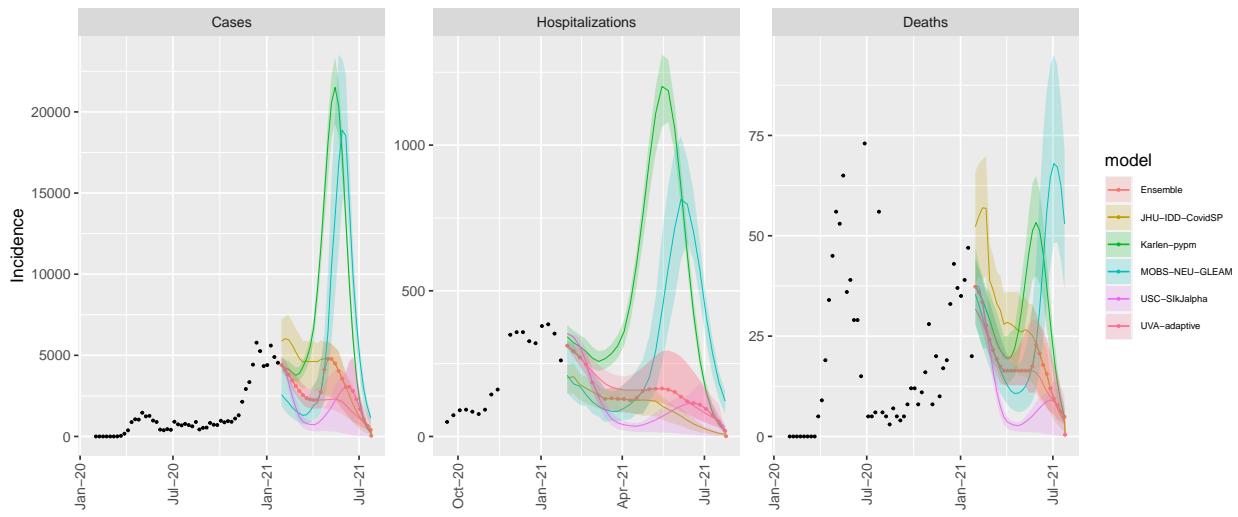
CO model variance & 50% projection intervals – optimistic_var



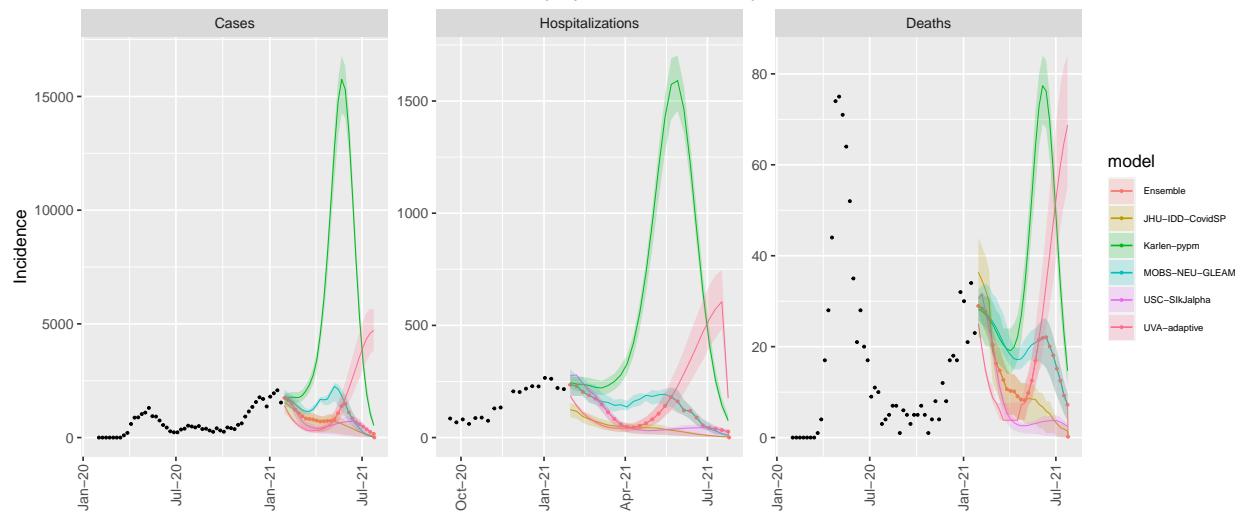
CT model variance & 50% projection intervals – optimistic_var



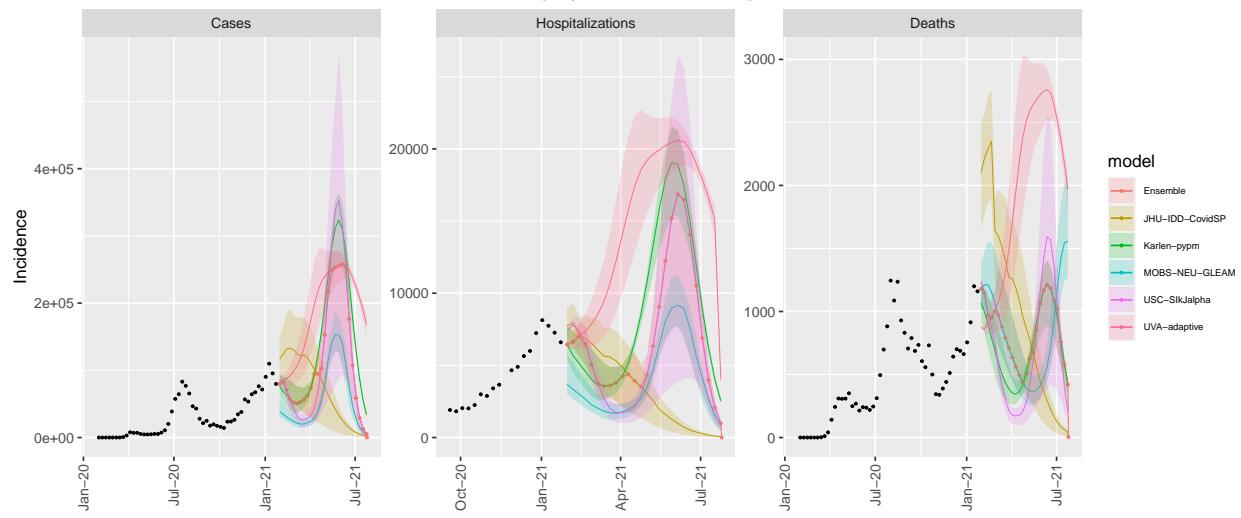
DE model variance & 50% projection intervals – optimistic_var



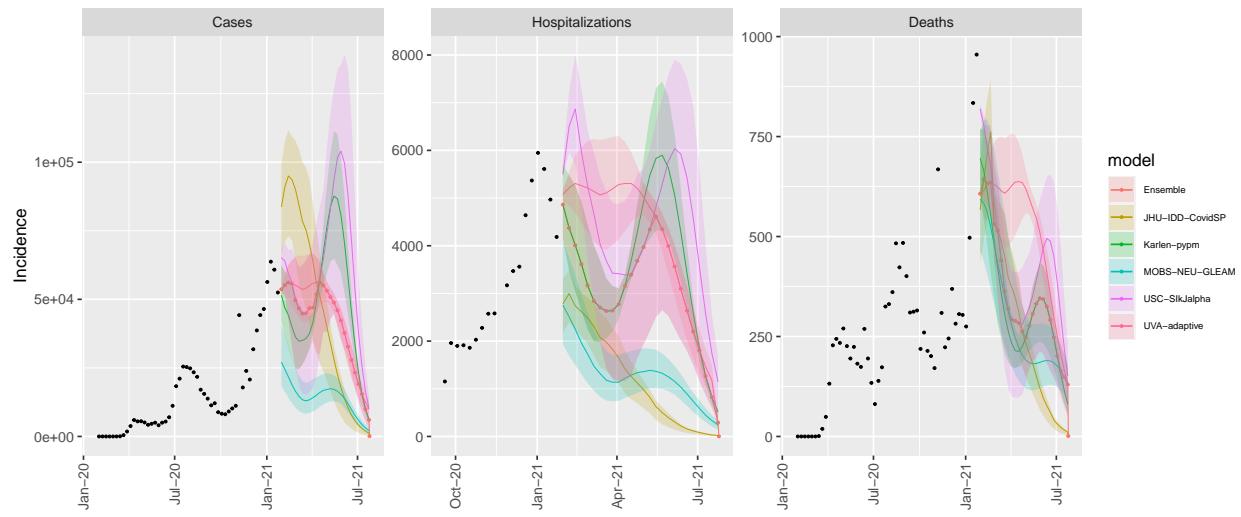
DC model variance & 50% projection intervals – optimistic_var



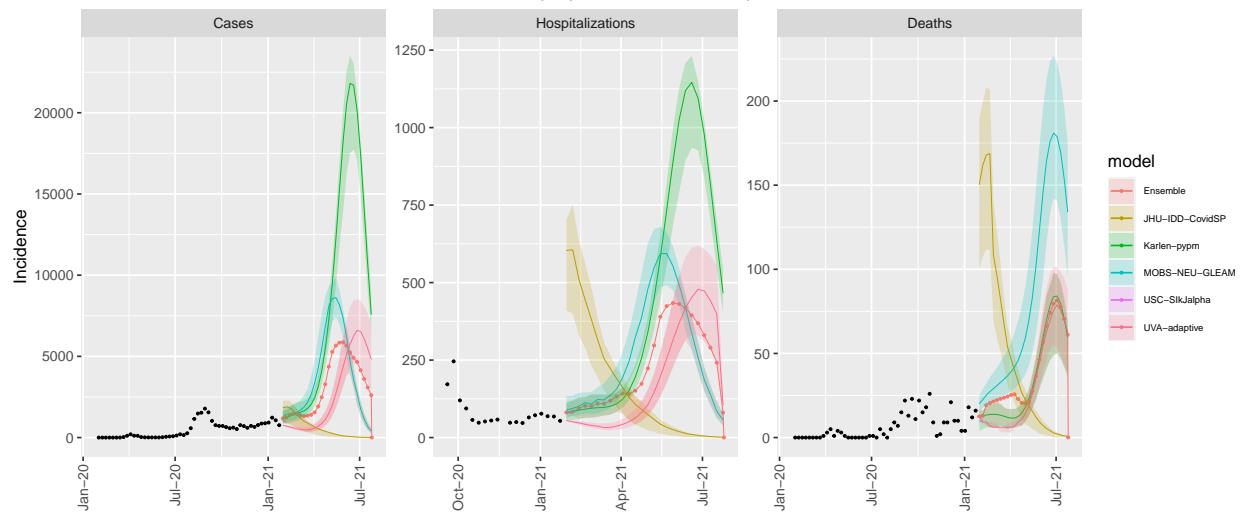
FL model variance & 50% projection intervals – optimistic_var



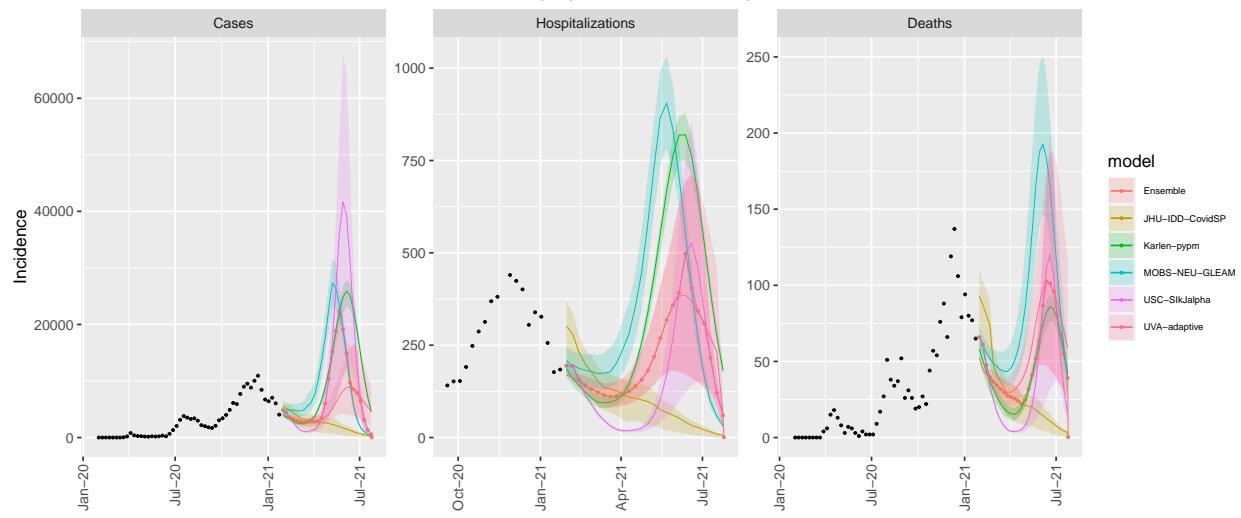
GA model variance & 50% projection intervals – optimistic_var



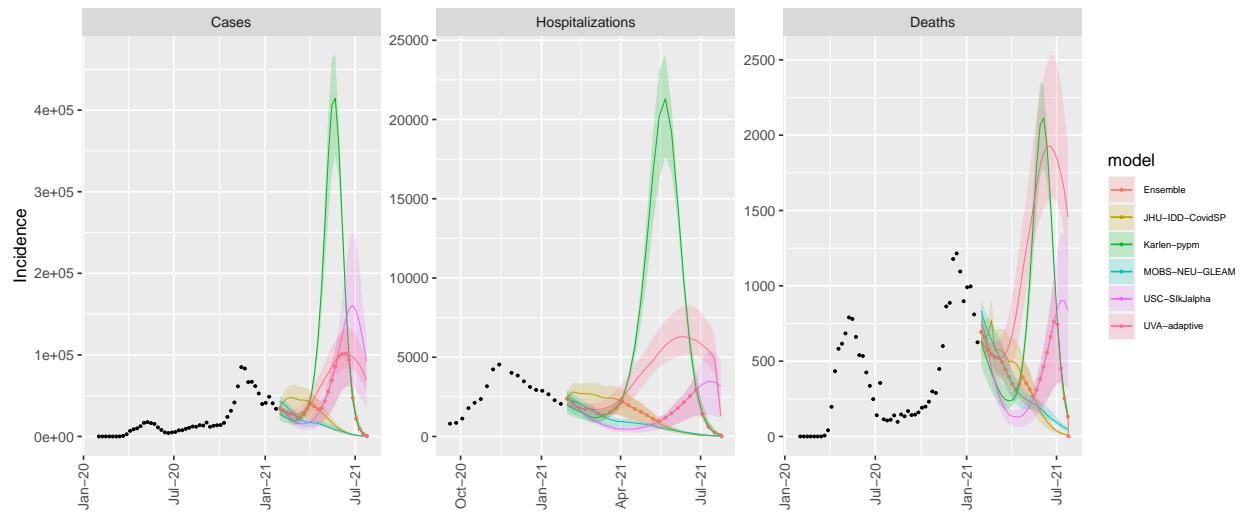
HI model variance & 50% projection intervals – optimistic_var



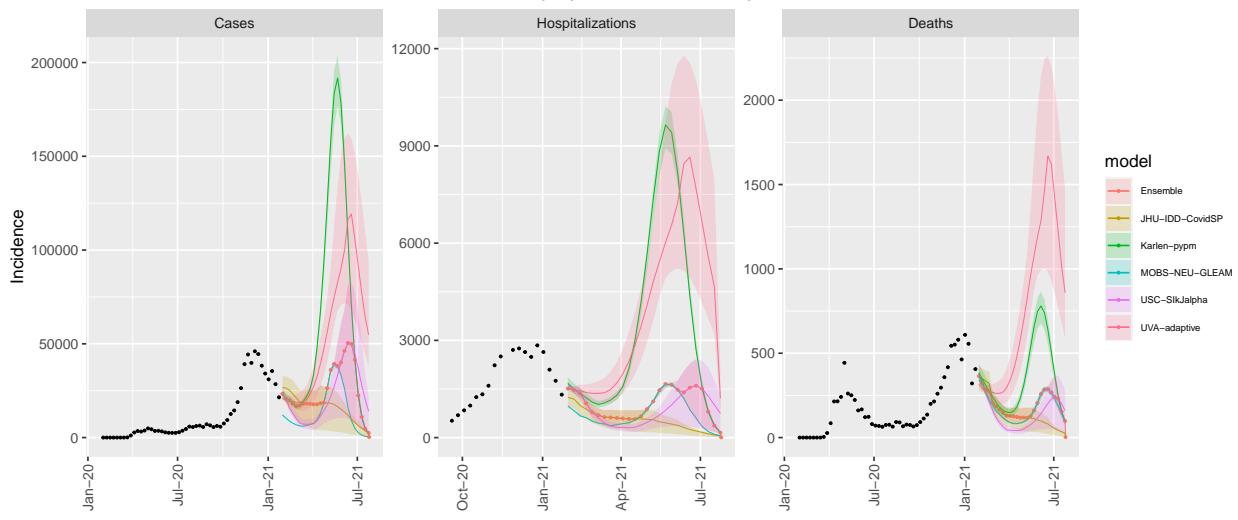
ID model variance & 50% projection intervals – optimistic_var



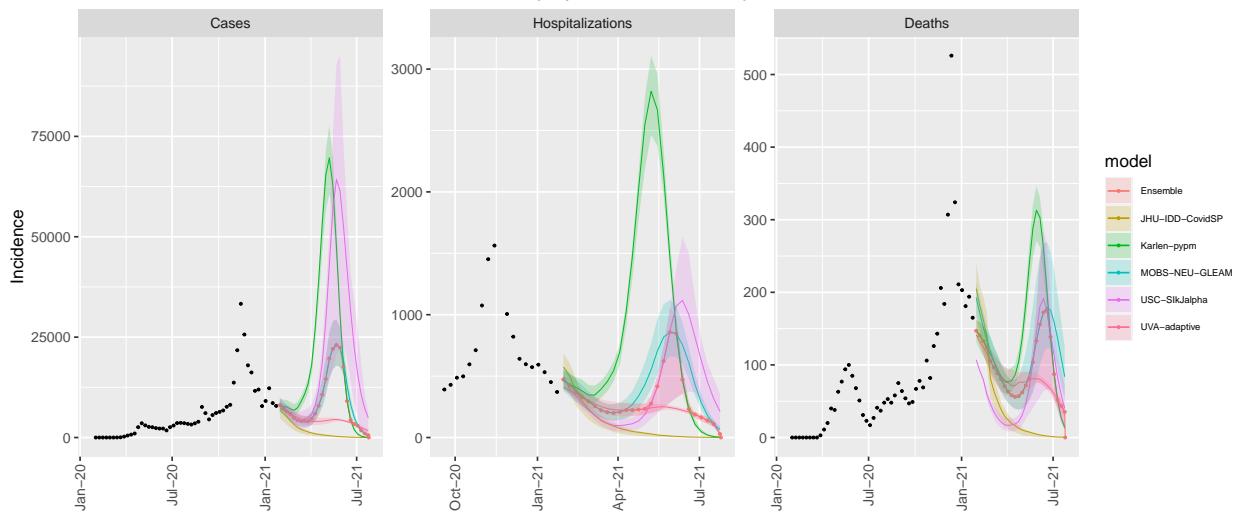
IL model variance & 50% projection intervals – optimistic_var



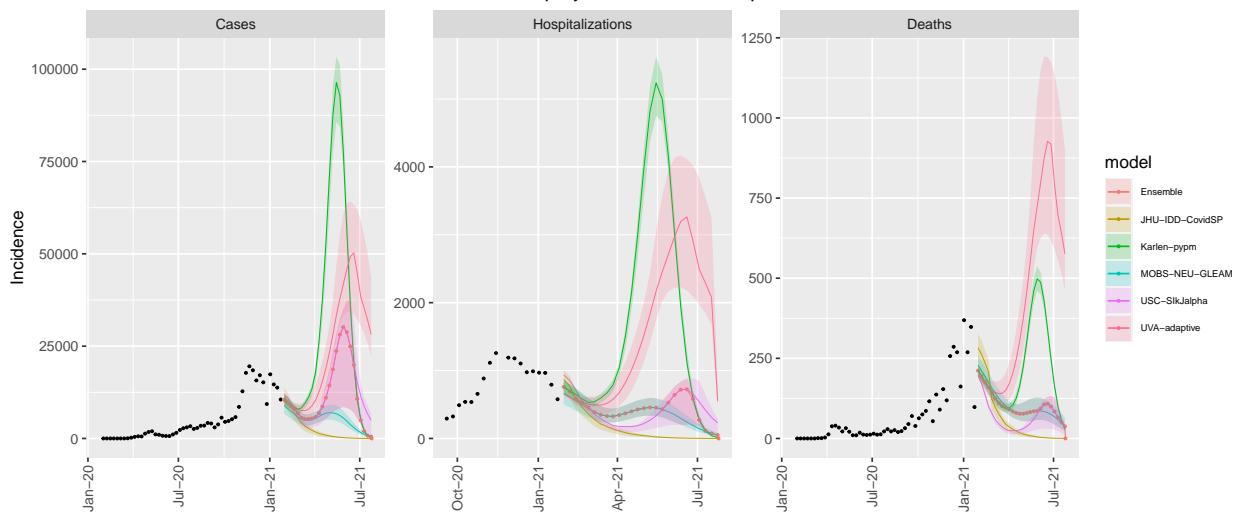
IN model variance & 50% projection intervals – optimistic_var



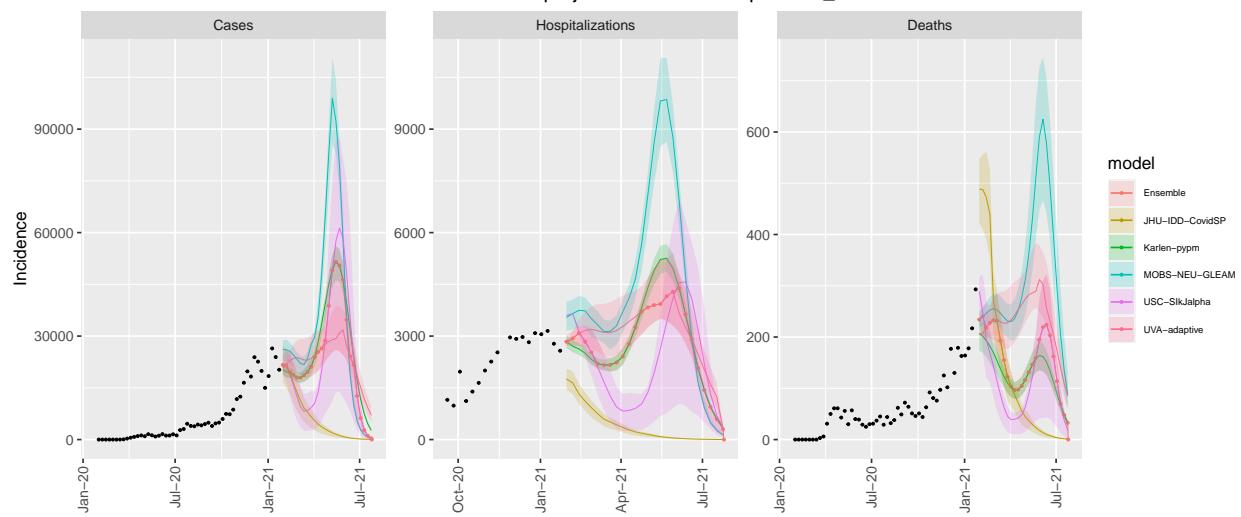
IA model variance & 50% projection intervals – optimistic_var



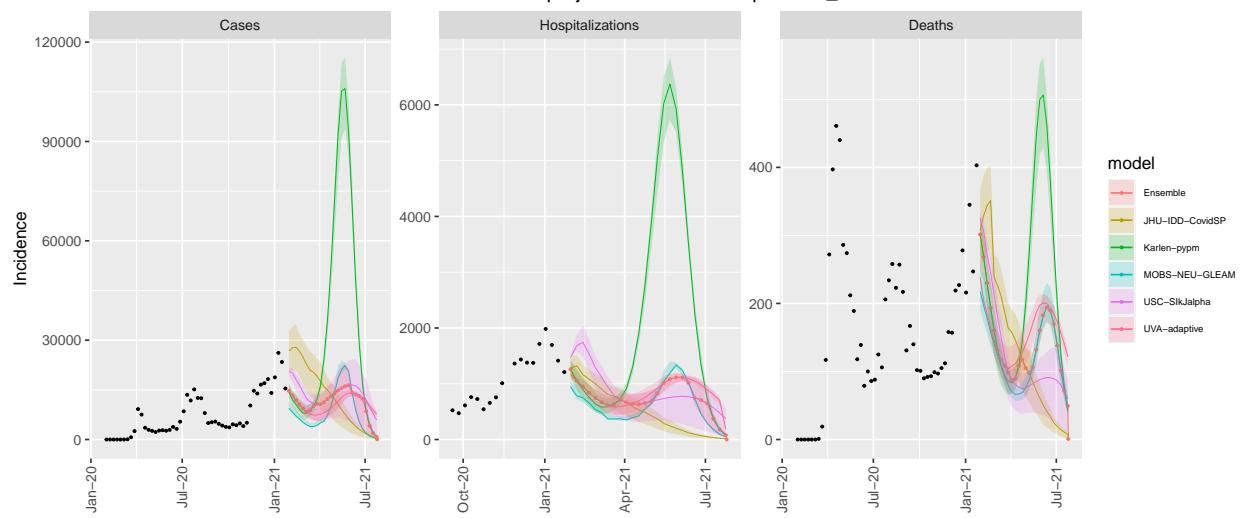
KS model variance & 50% projection intervals – optimistic_var



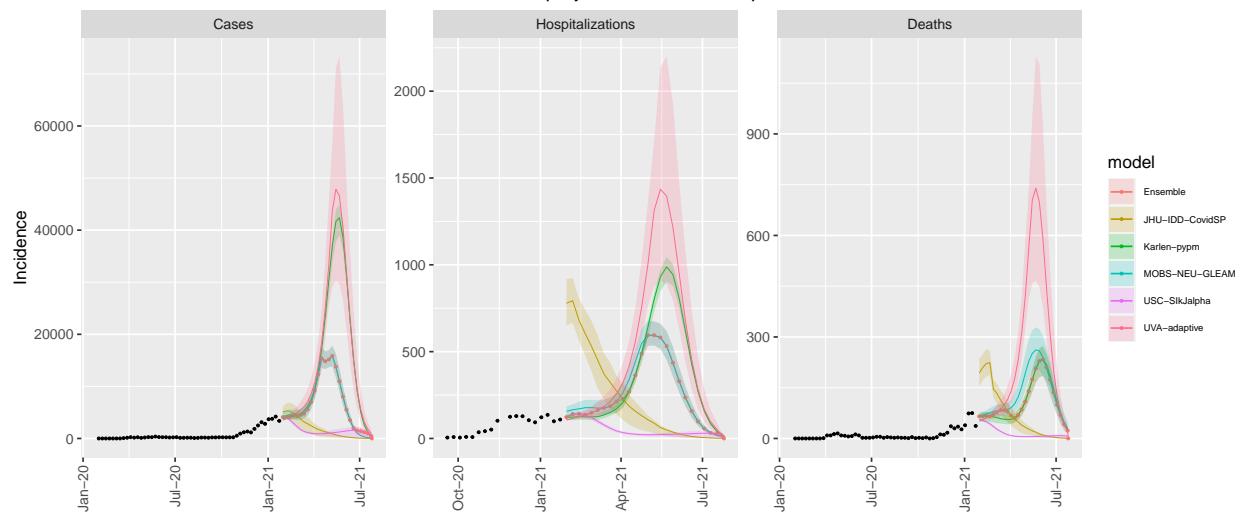
KY model variance & 50% projection intervals – optimistic_var



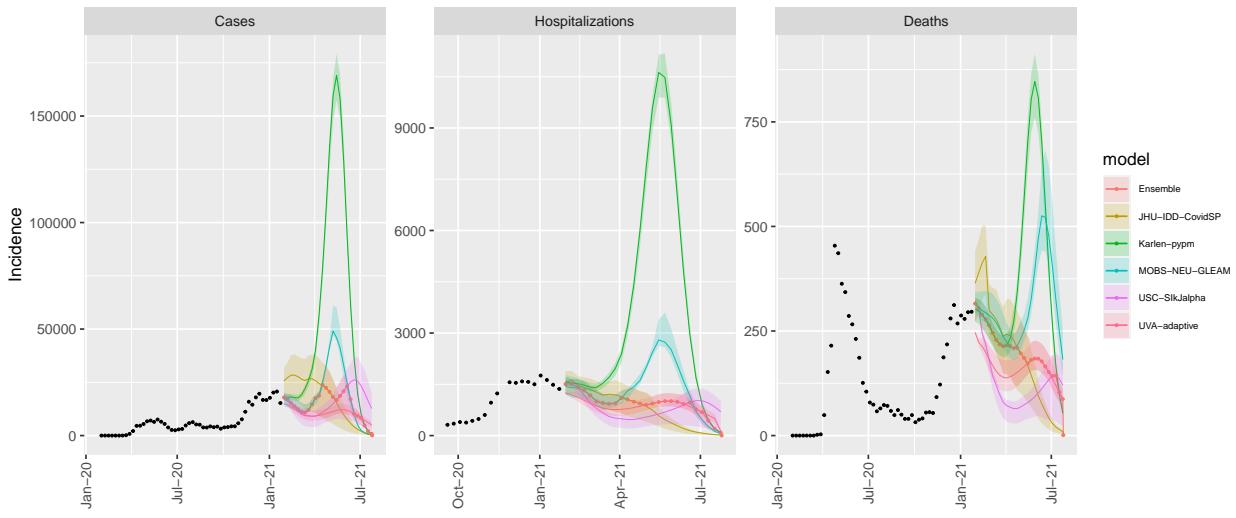
LA model variance & 50% projection intervals – optimistic_var



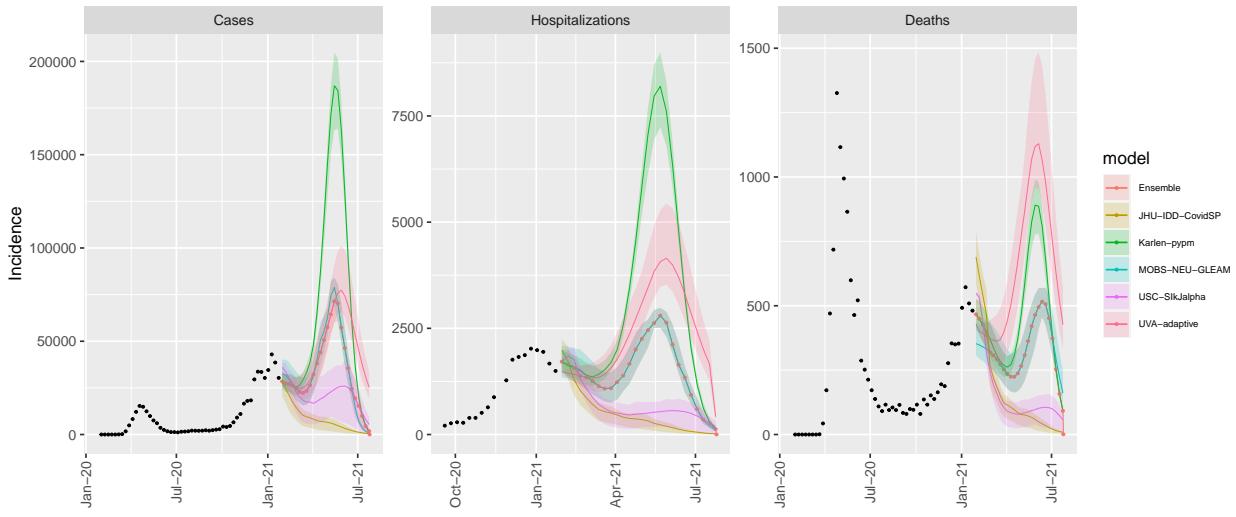
ME model variance & 50% projection intervals – optimistic_var



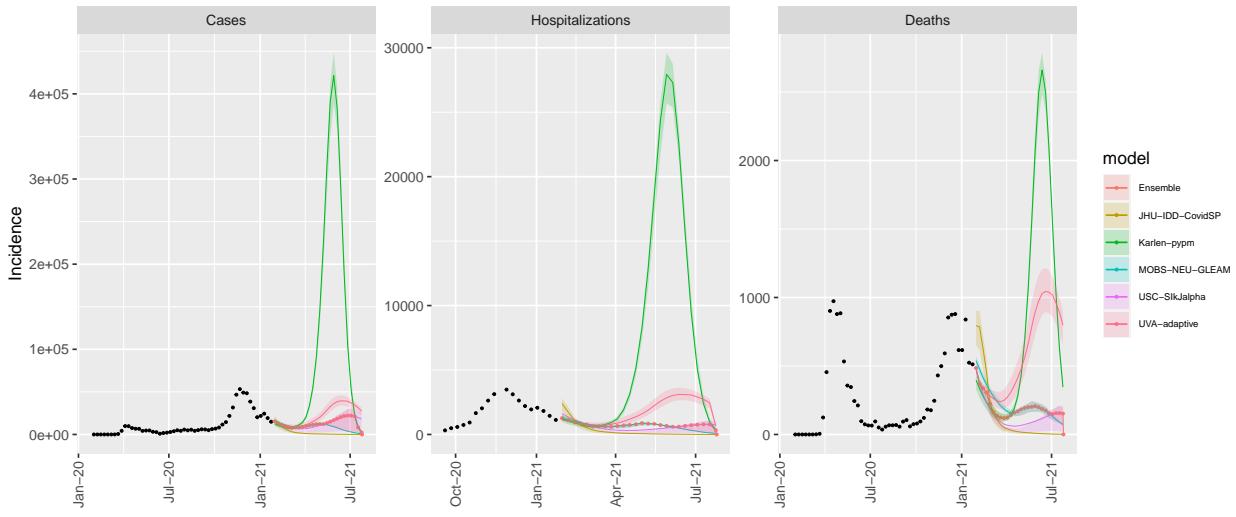
MD model variance & 50% projection intervals – optimistic_var



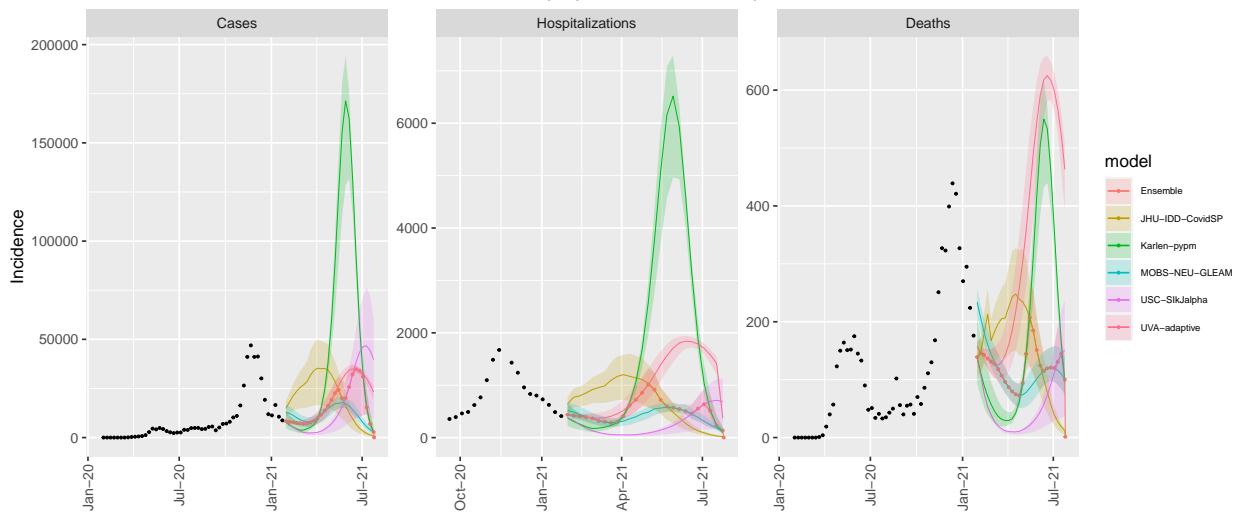
MA model variance & 50% projection intervals – optimistic_var



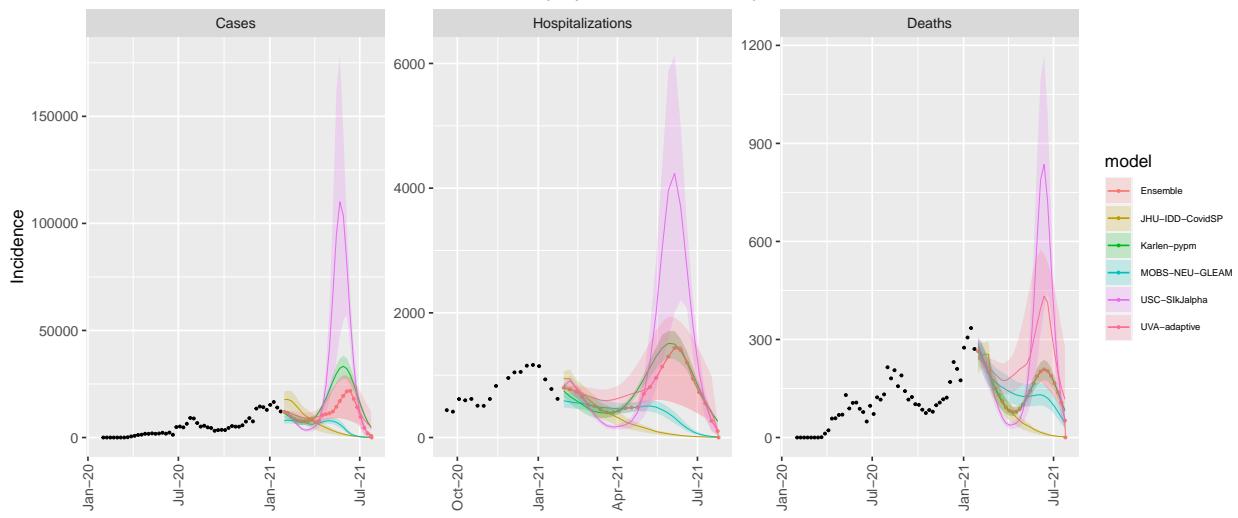
MI model variance & 50% projection intervals – optimistic_var



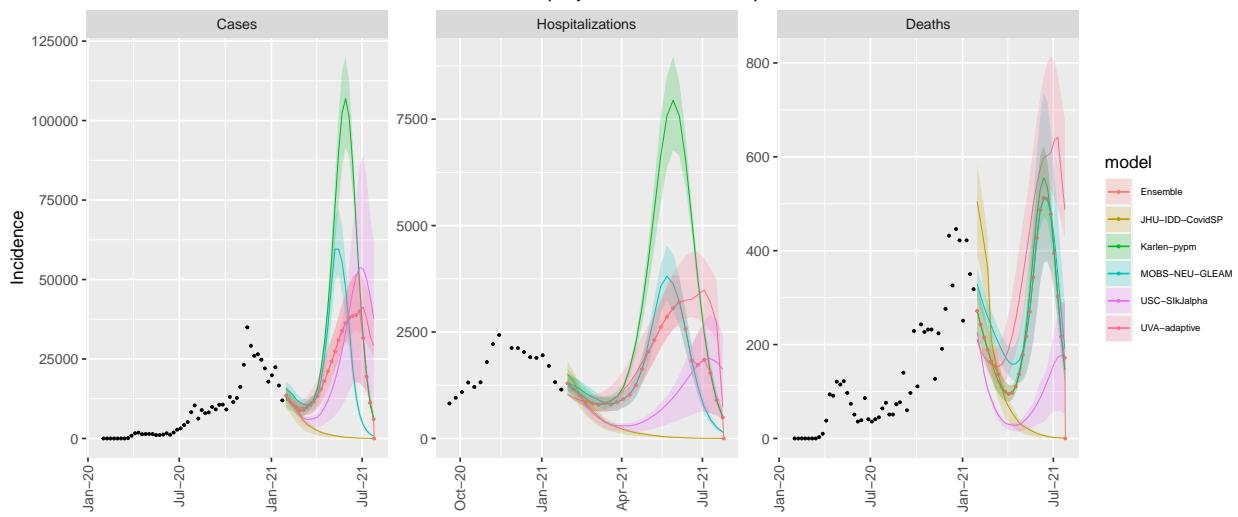
MN model variance & 50% projection intervals – optimistic_var



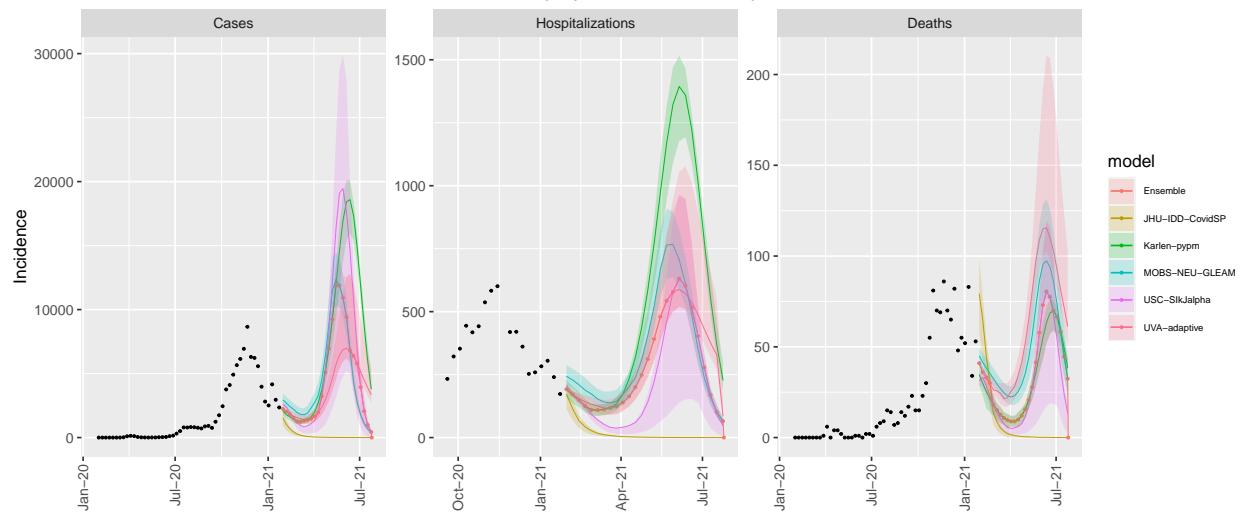
MS model variance & 50% projection intervals – optimistic_var



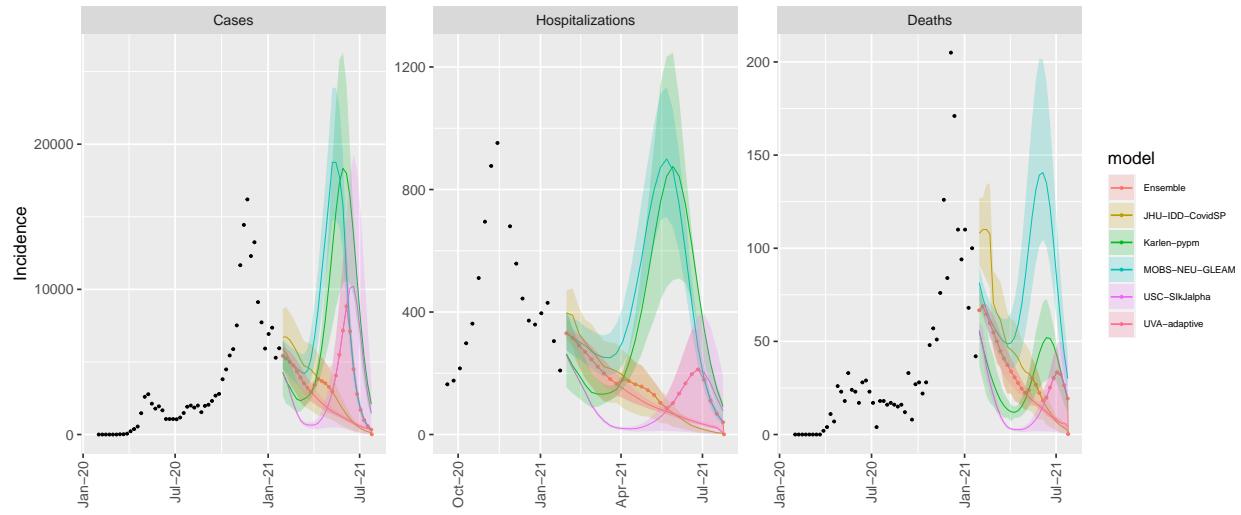
MO model variance & 50% projection intervals – optimistic_var



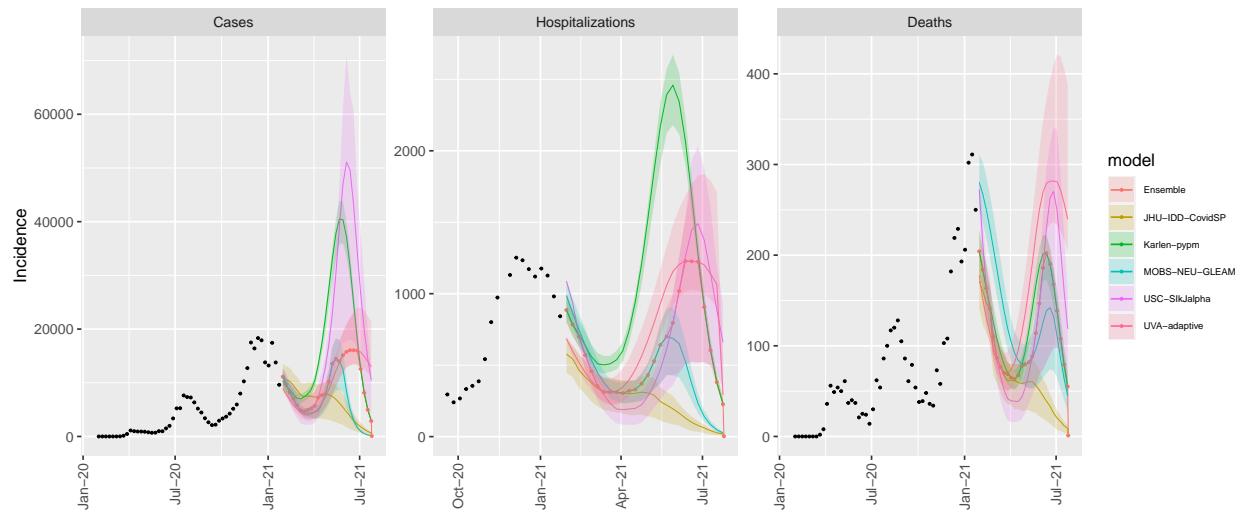
MT model variance & 50% projection intervals – optimistic_var



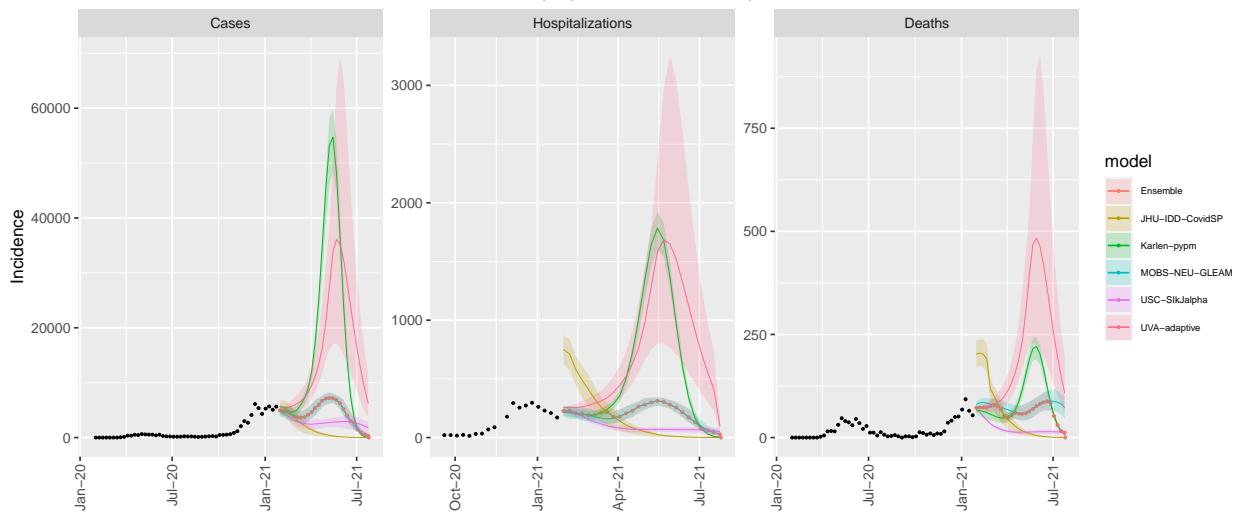
NE model variance & 50% projection intervals – optimistic_var



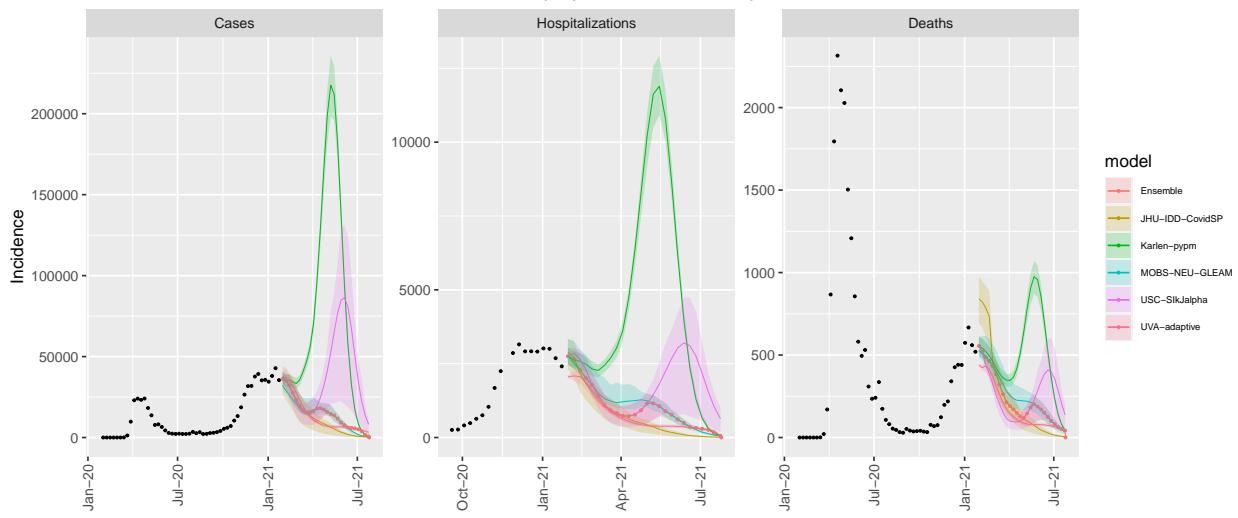
NV model variance & 50% projection intervals – optimistic_var



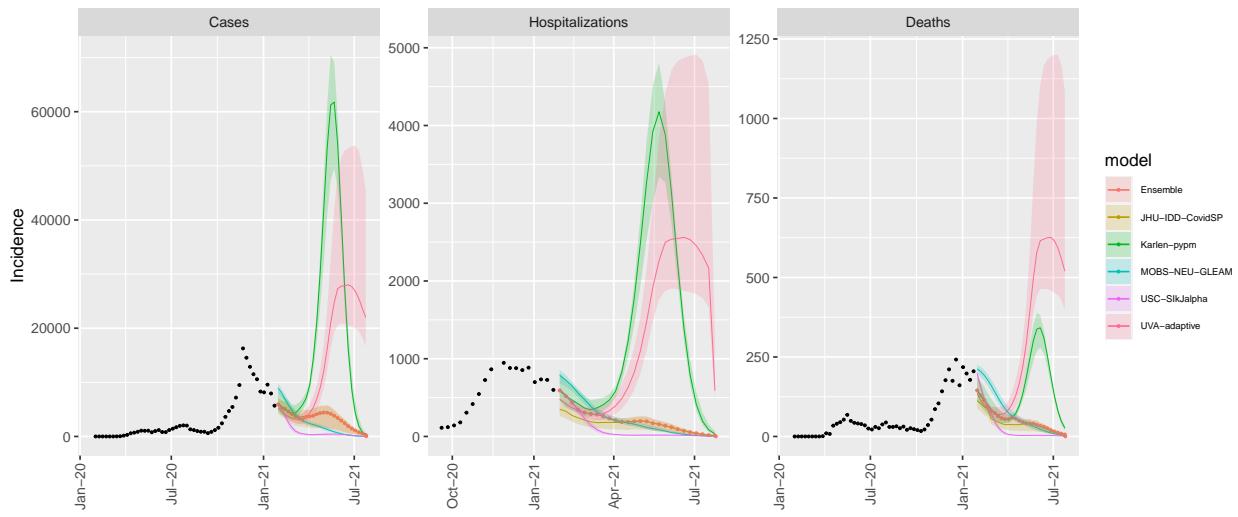
NH model variance & 50% projection intervals – optimistic_var



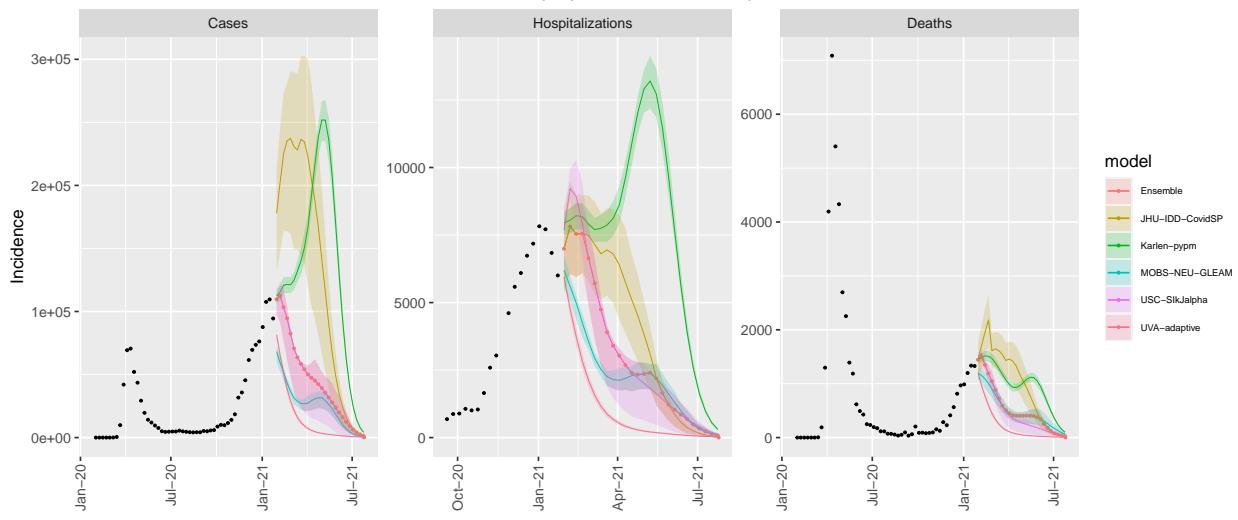
NJ model variance & 50% projection intervals – optimistic_var



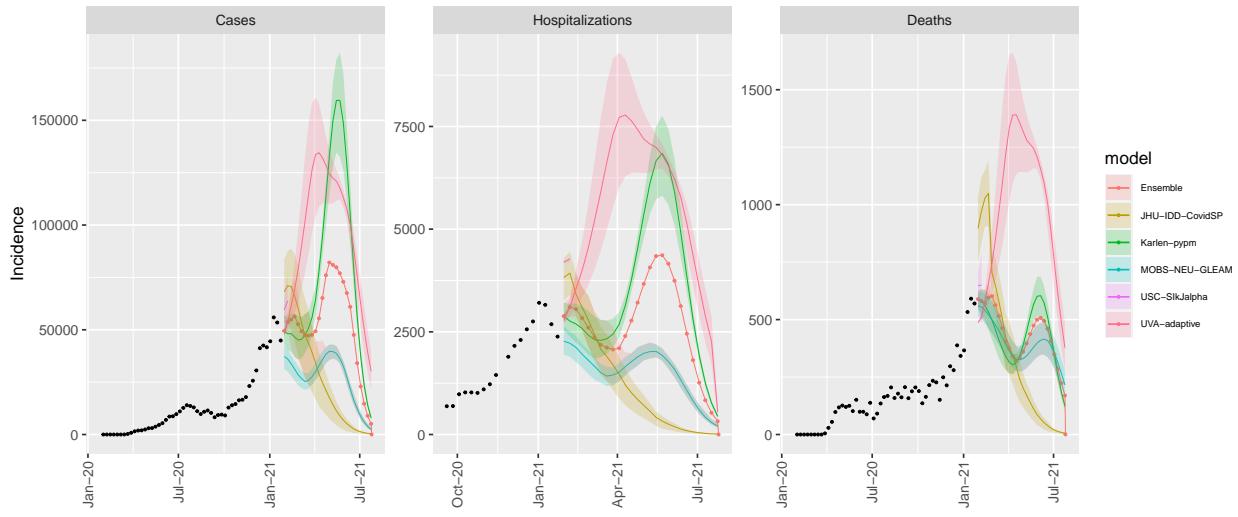
NM model variance & 50% projection intervals – optimistic_var



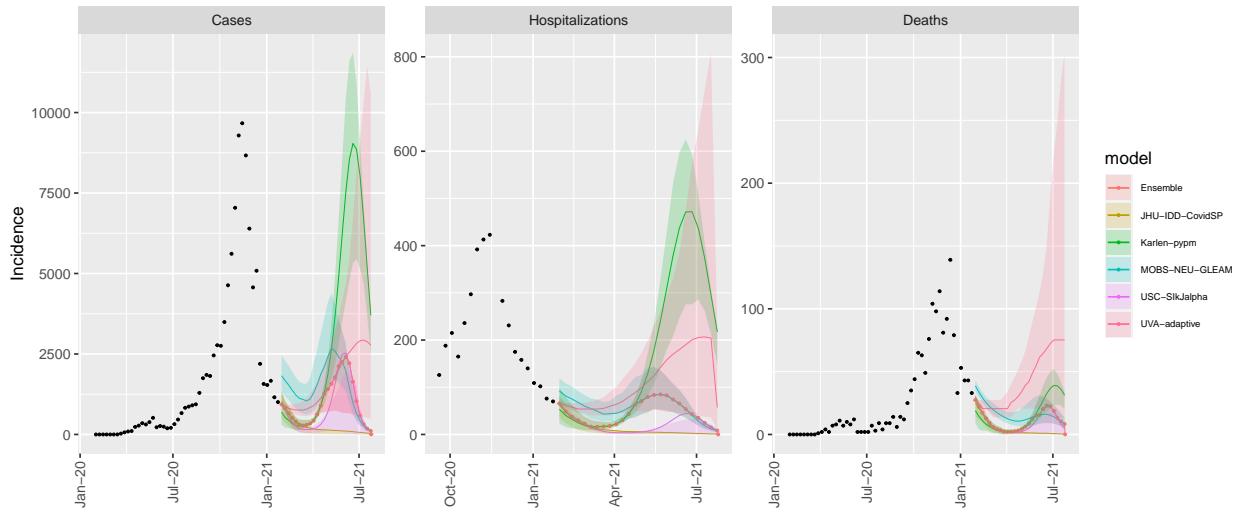
NY model variance & 50% projection intervals – optimistic_var



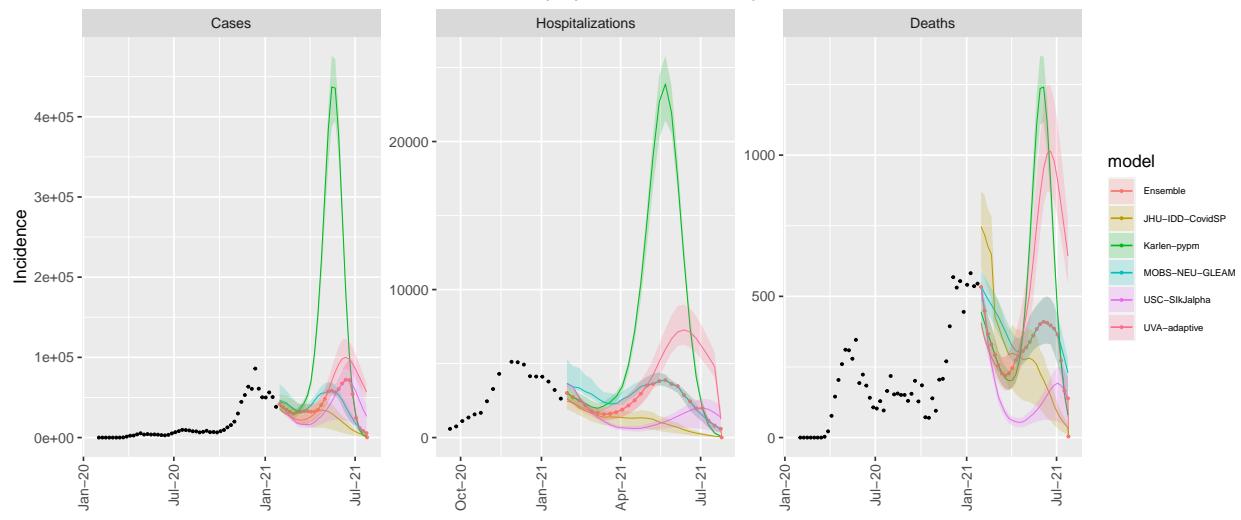
NC model variance & 50% projection intervals – optimistic_var



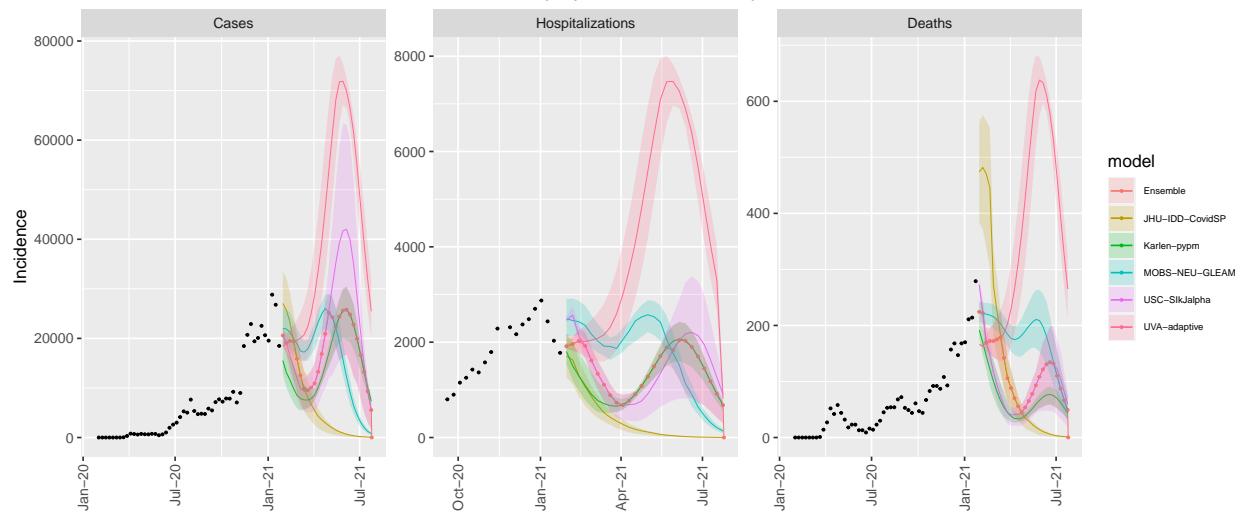
ND model variance & 50% projection intervals – optimistic_var



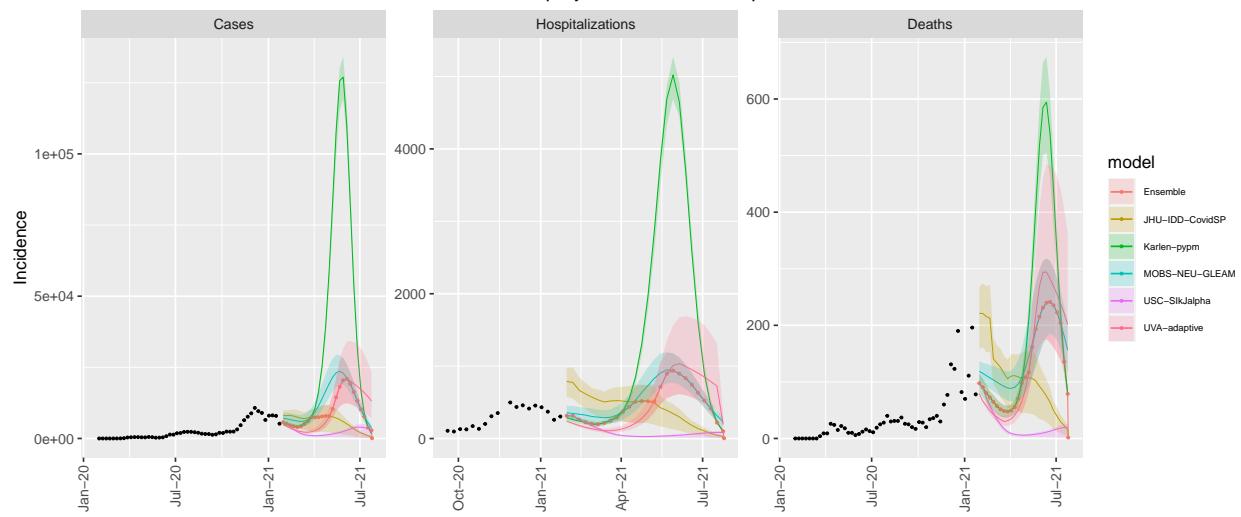
OH model variance & 50% projection intervals – optimistic_var



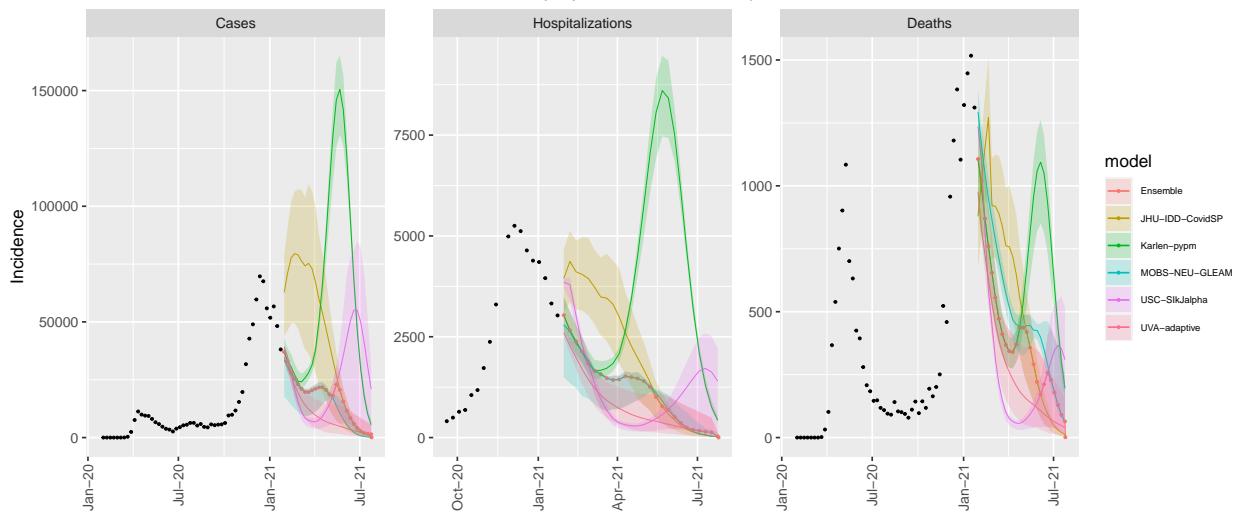
OK model variance & 50% projection intervals – optimistic_var



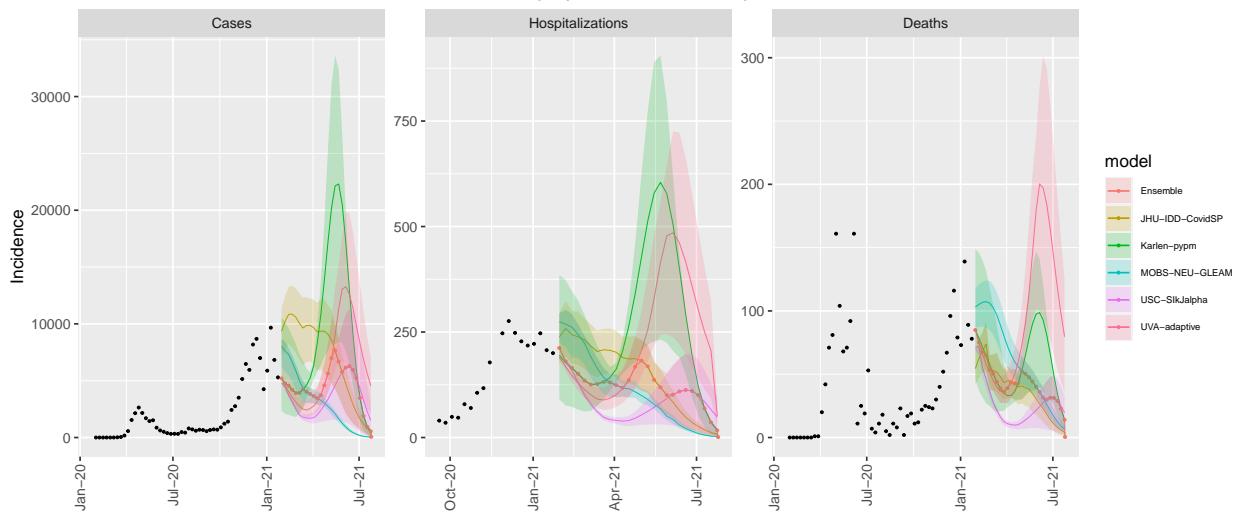
OR model variance & 50% projection intervals – optimistic_var



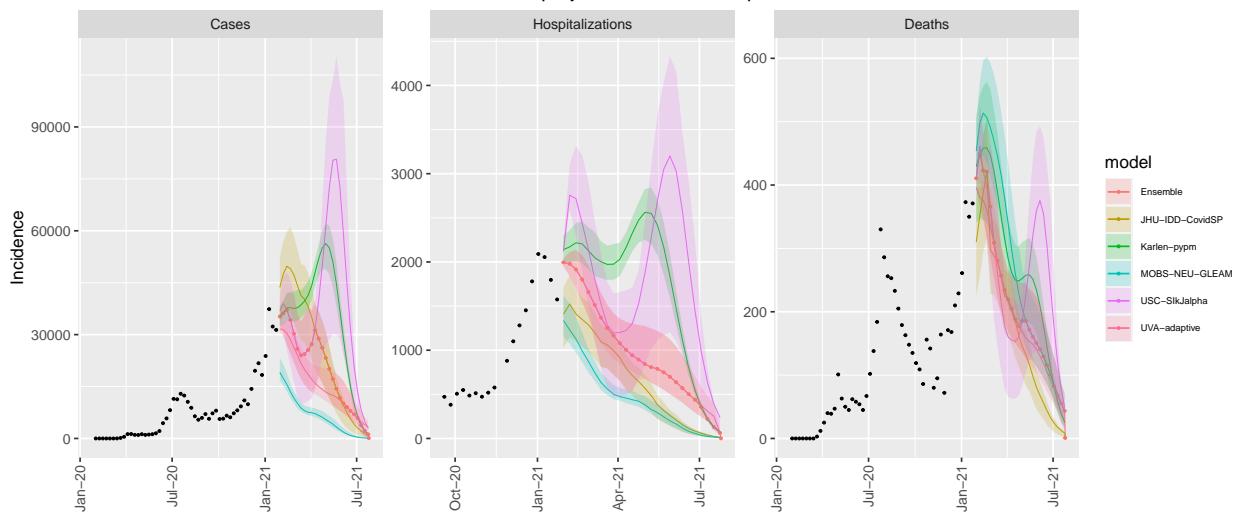
PA model variance & 50% projection intervals – optimistic_var



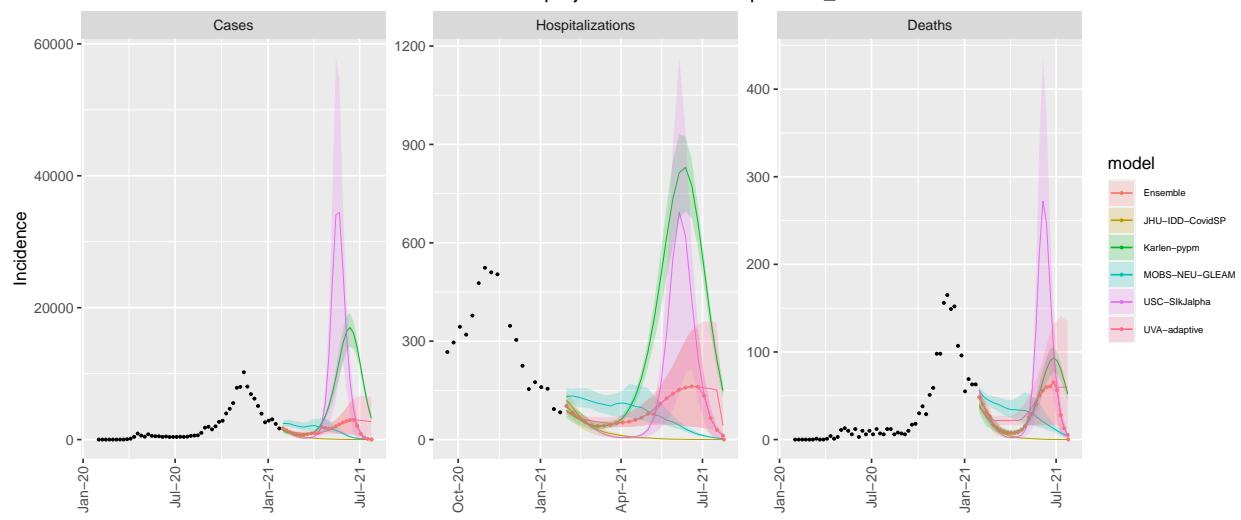
RI model variance & 50% projection intervals – optimistic_var



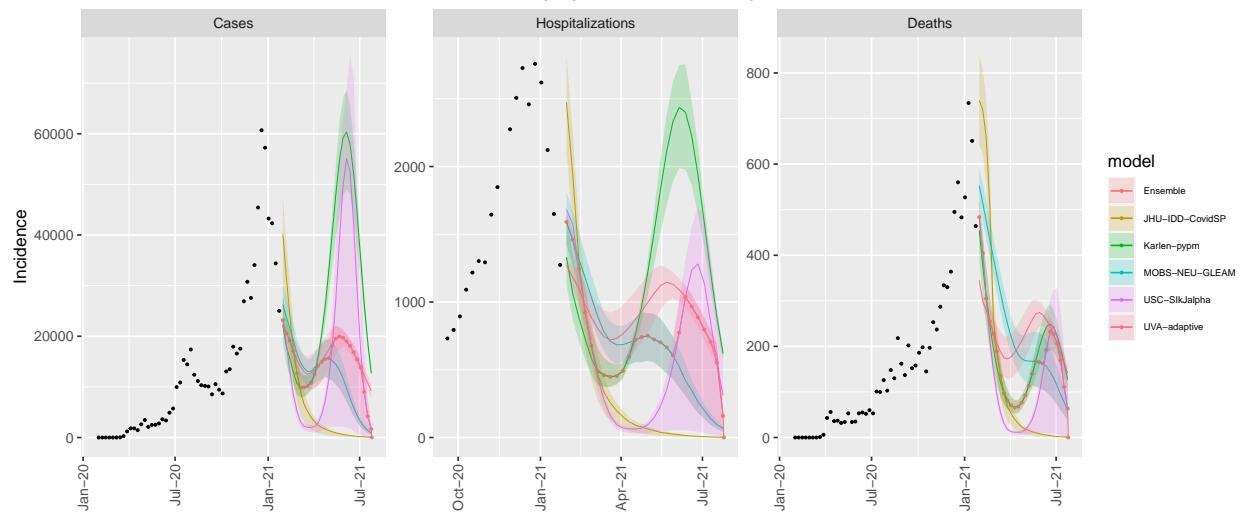
SC model variance & 50% projection intervals – optimistic_var



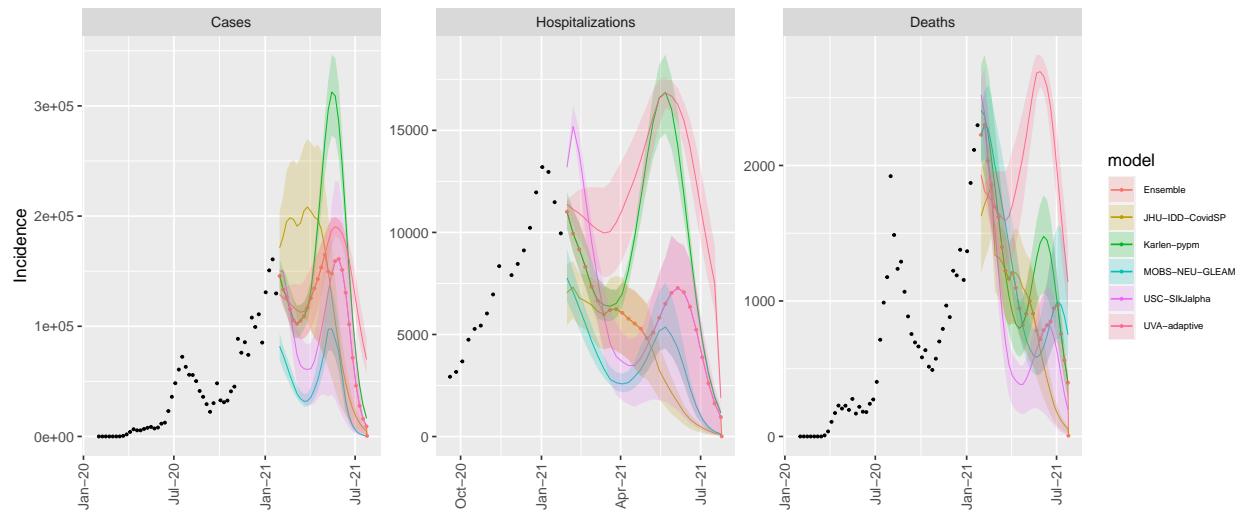
SD model variance & 50% projection intervals – optimistic_var



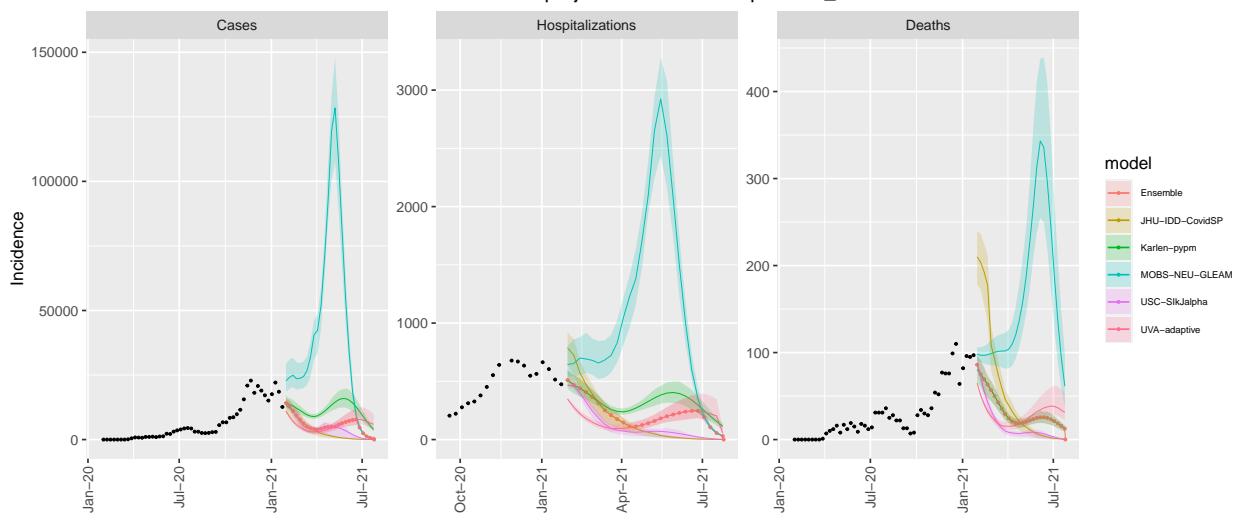
TN model variance & 50% projection intervals – optimistic_var



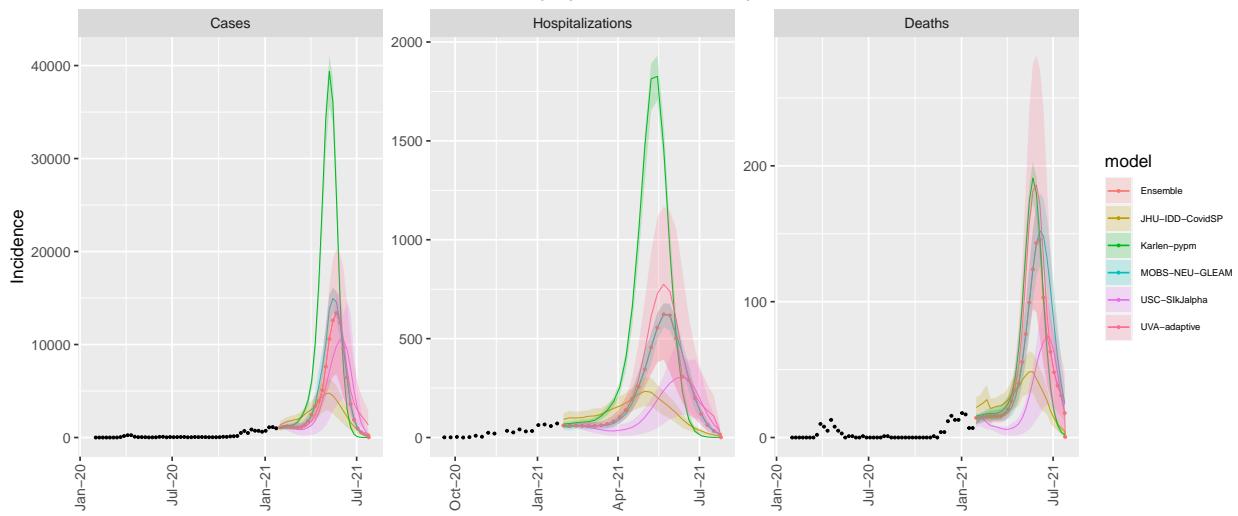
TX model variance & 50% projection intervals – optimistic_var



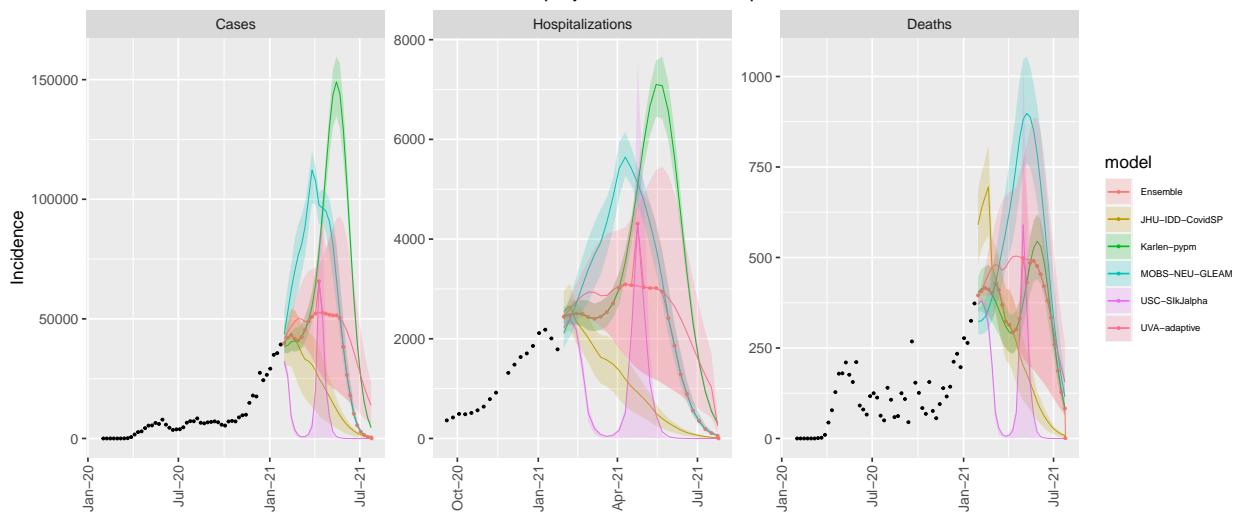
UT model variance & 50% projection intervals – optimistic_var



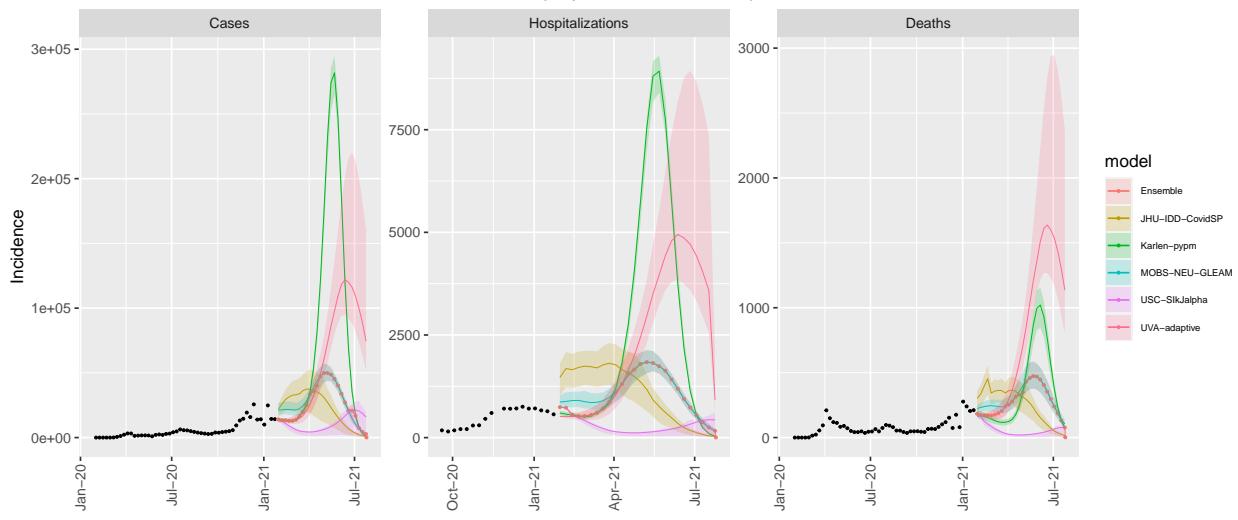
VT model variance & 50% projection intervals – optimistic_var



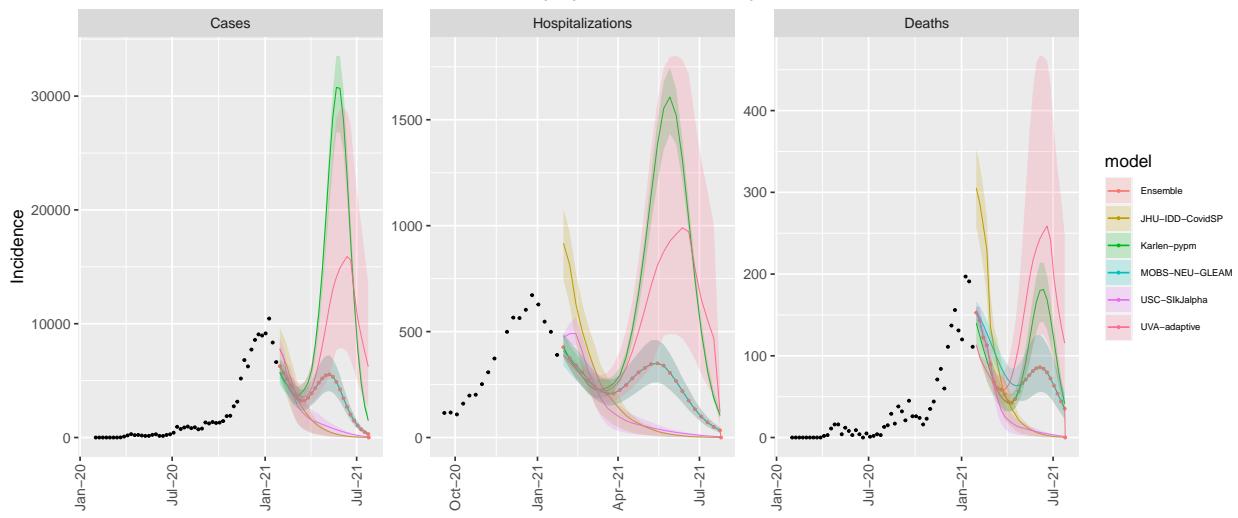
VA model variance & 50% projection intervals – optimistic_var



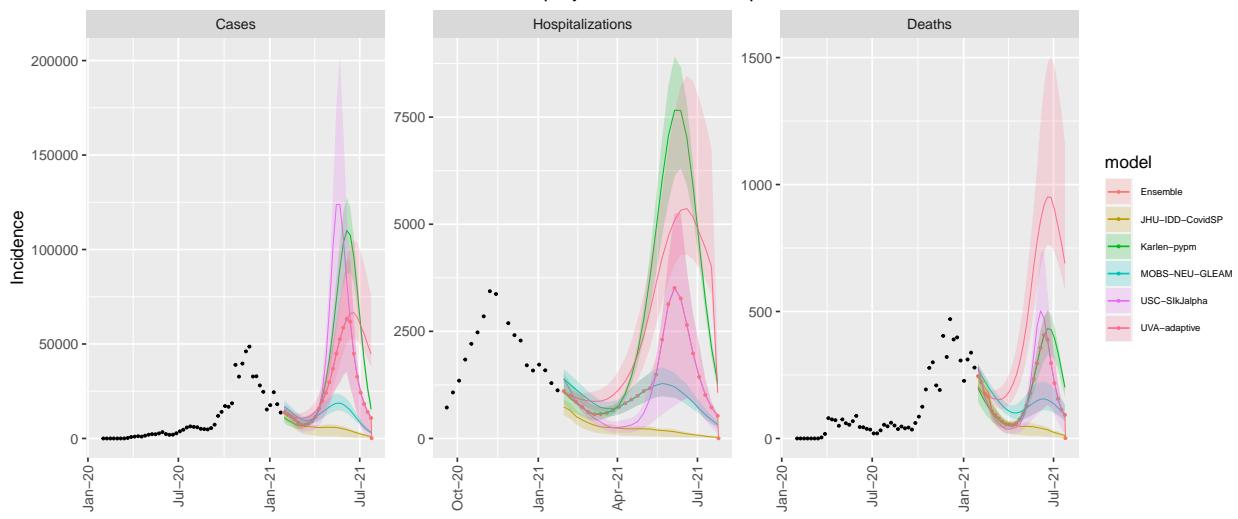
WA model variance & 50% projection intervals – optimistic_var



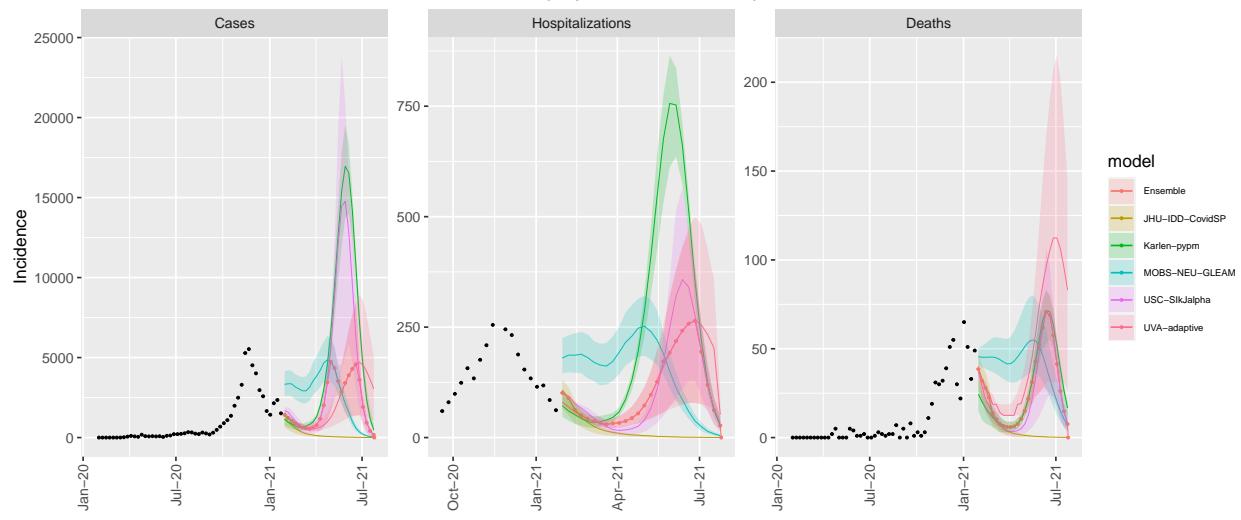
WV model variance & 50% projection intervals – optimistic_var



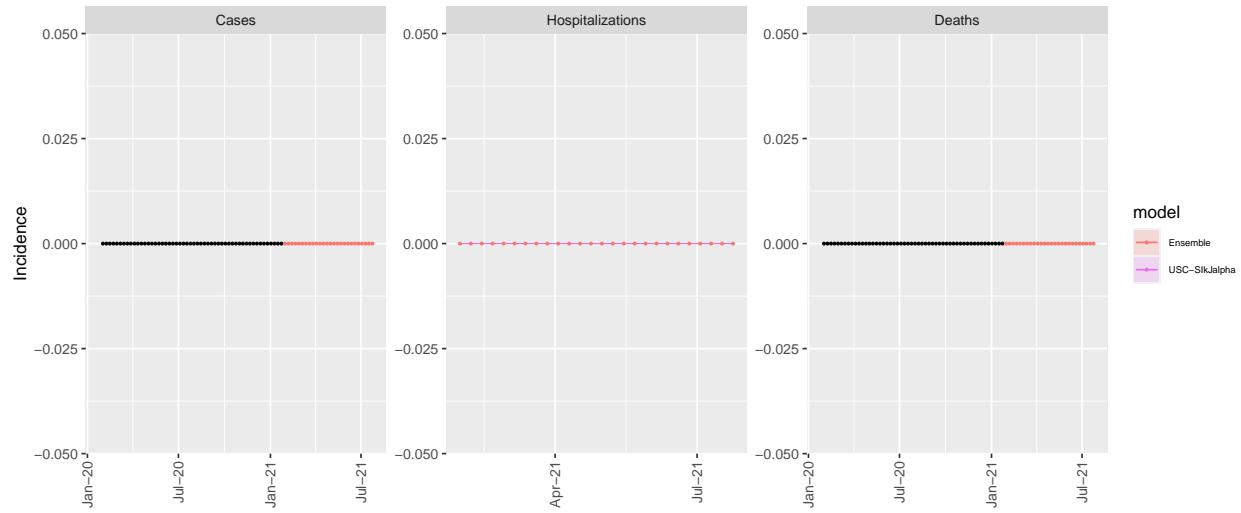
WI model variance & 50% projection intervals – optimistic_var



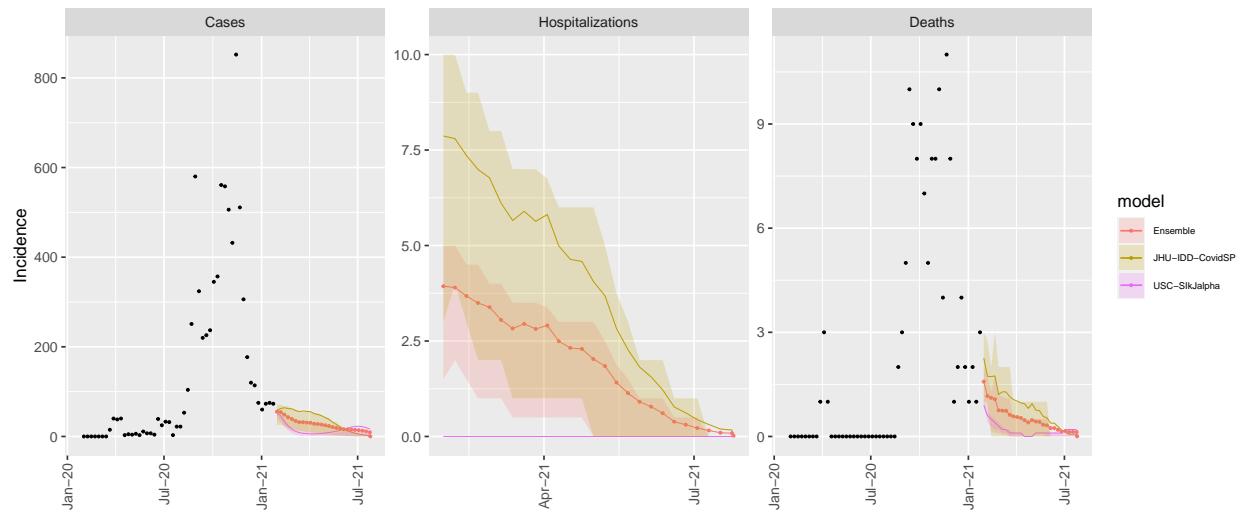
WY model variance & 50% projection intervals – optimistic_var



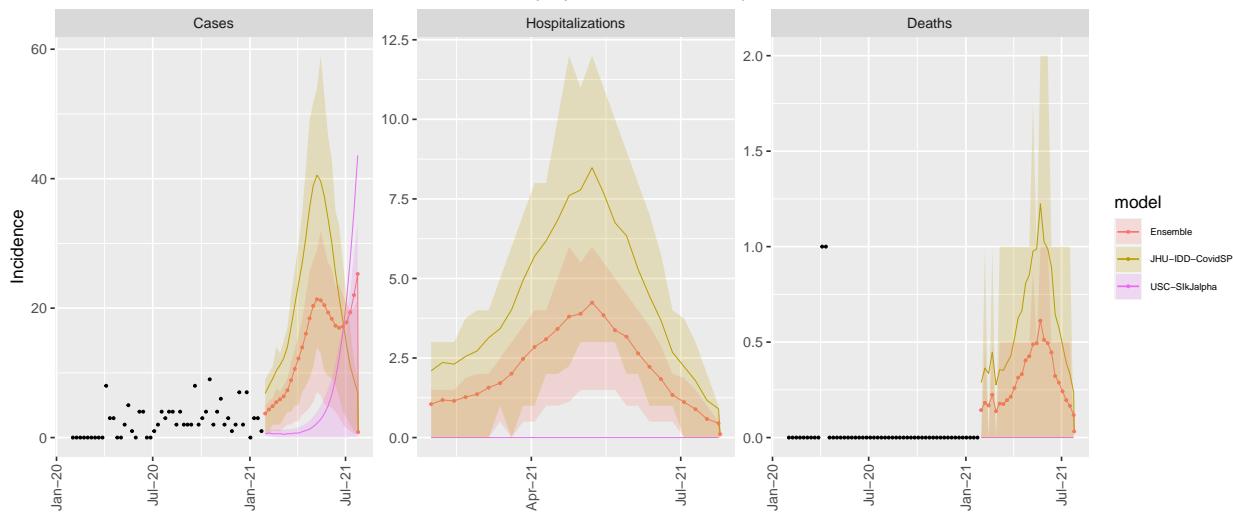
AS model variance & 50% projection intervals – optimistic_var



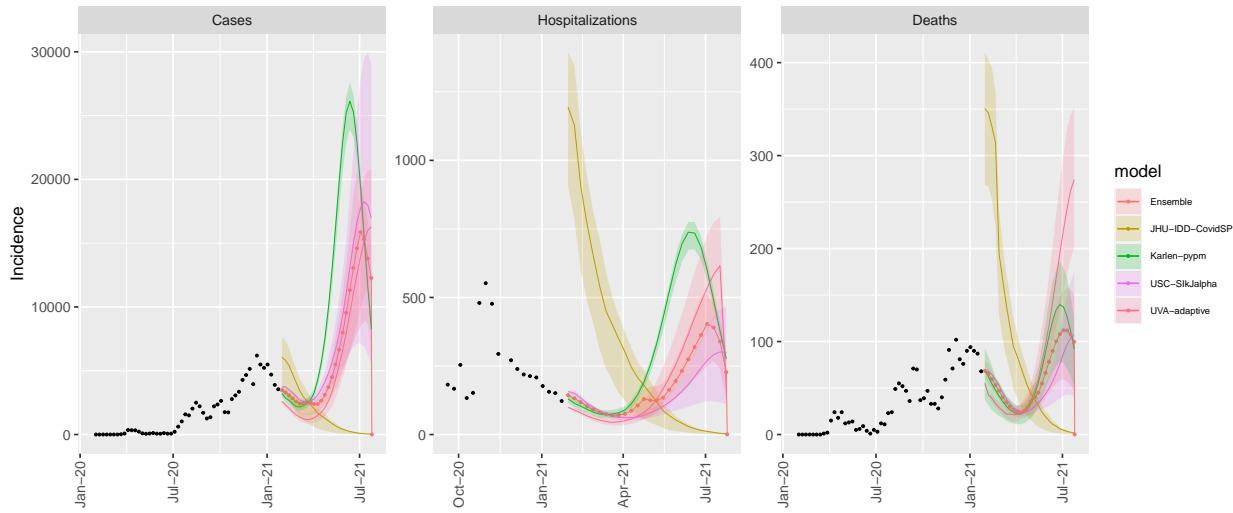
GU model variance & 50% projection intervals – optimistic_var



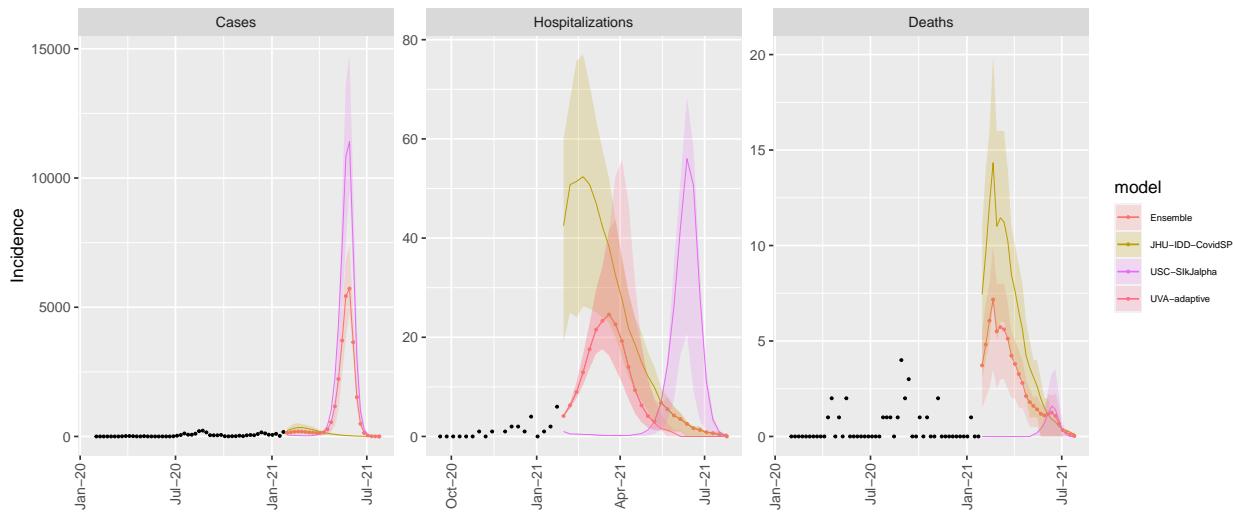
MP model variance & 50% projection intervals – optimistic_var



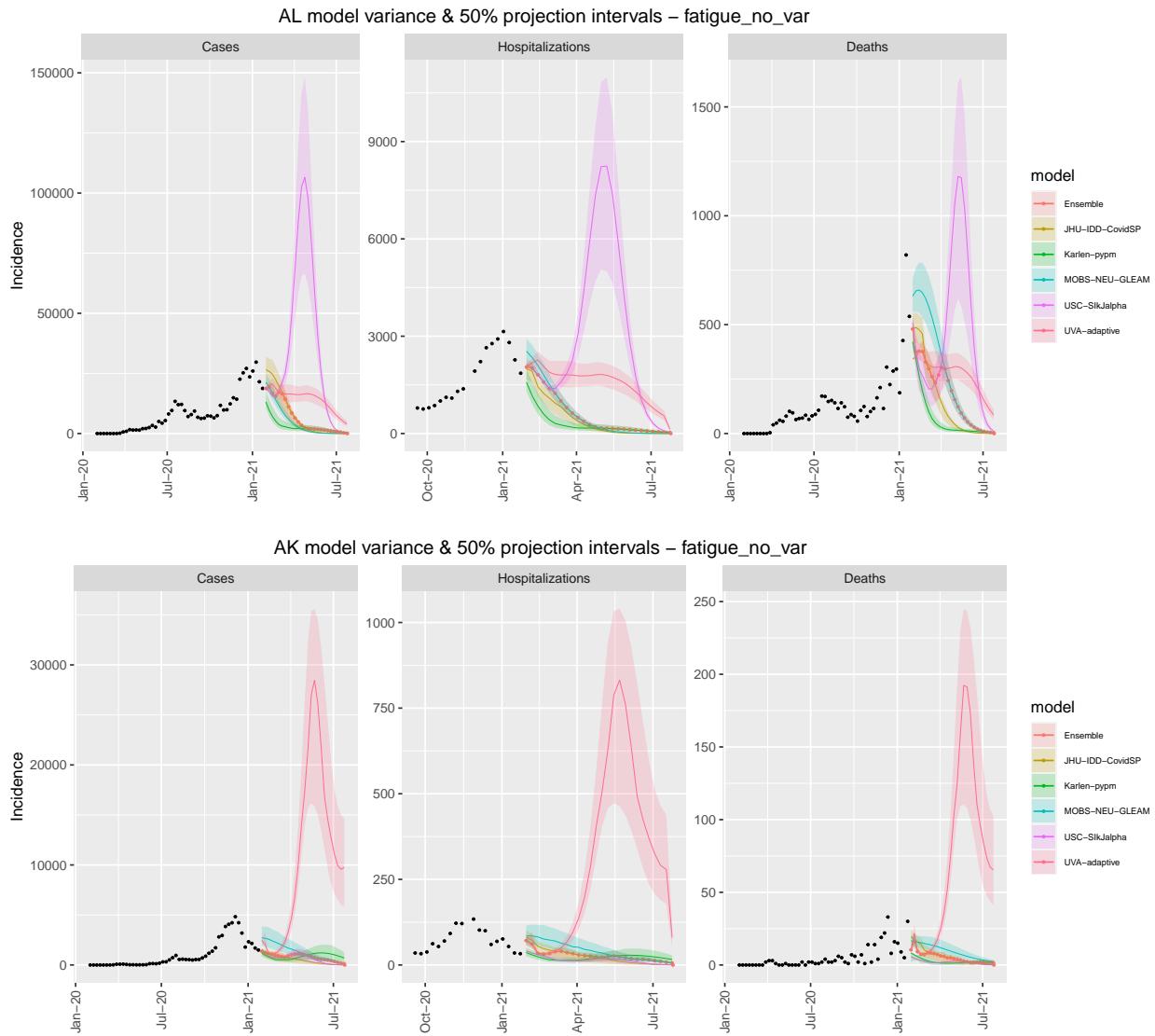
PR model variance & 50% projection intervals – optimistic_var



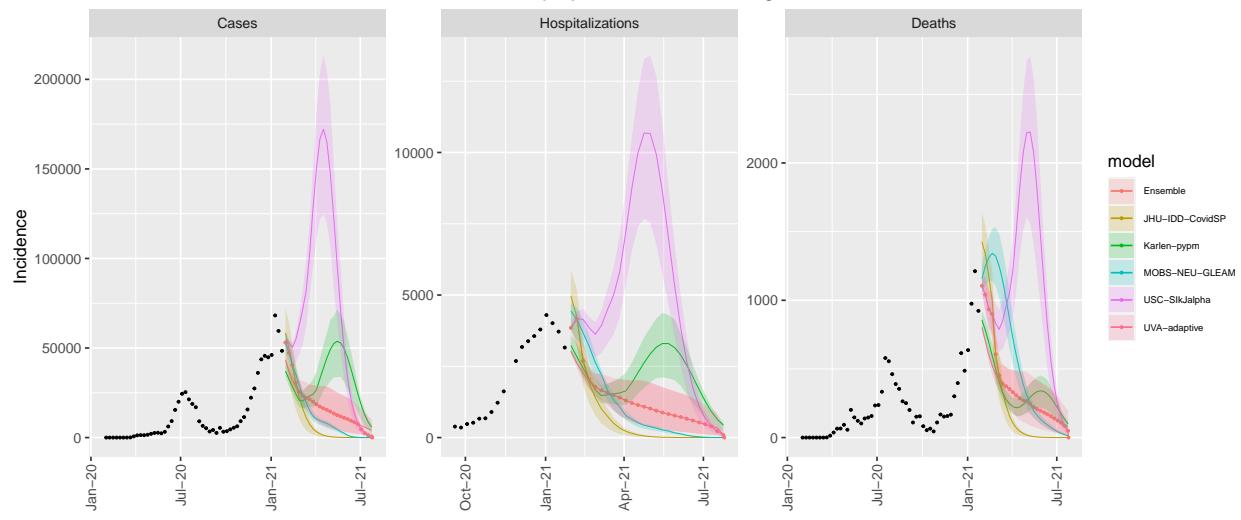
VI model variance & 50% projection intervals – optimistic_var



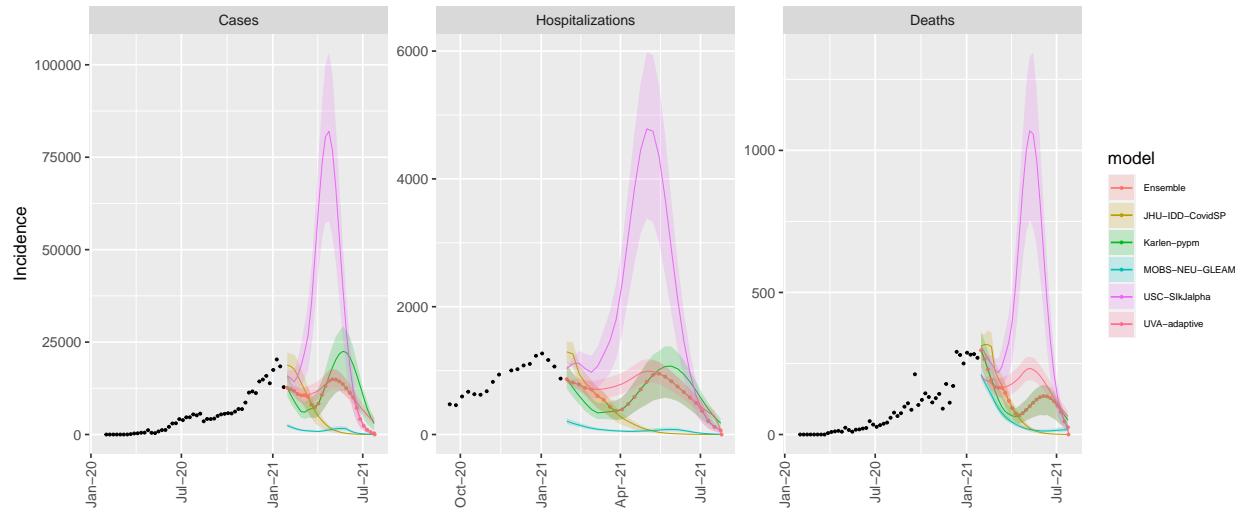
National model variation for the fatigue no variant scenario



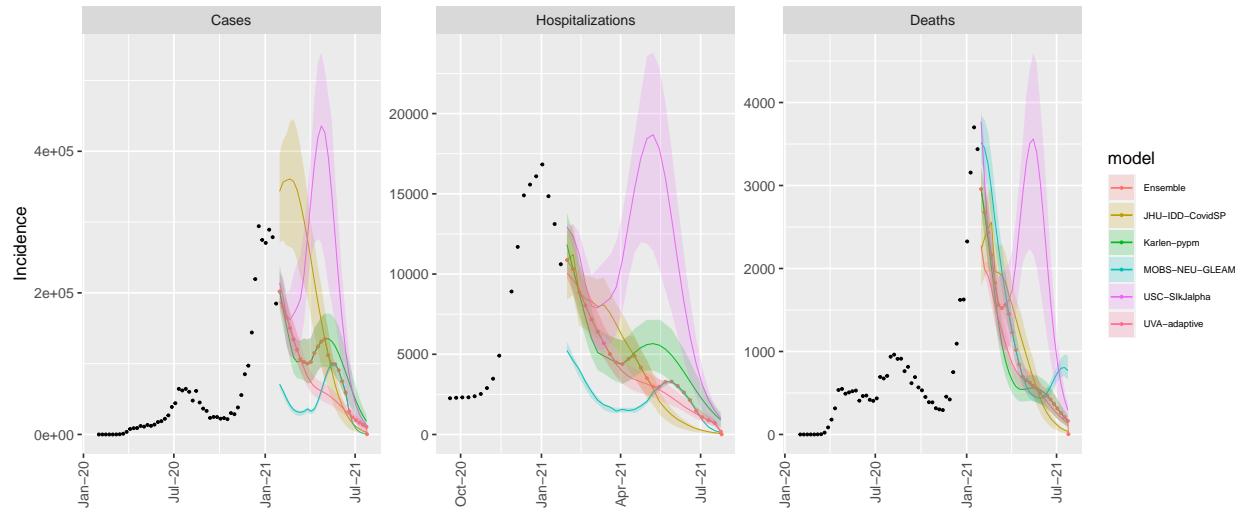
AZ model variance & 50% projection intervals – fatigue_no_var



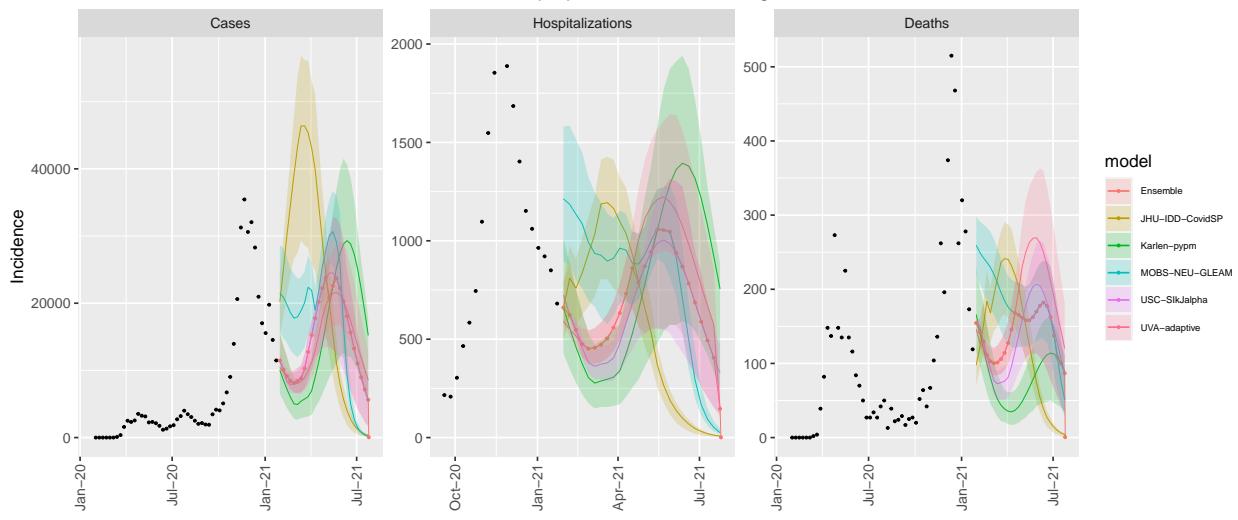
AR model variance & 50% projection intervals – fatigue_no_var



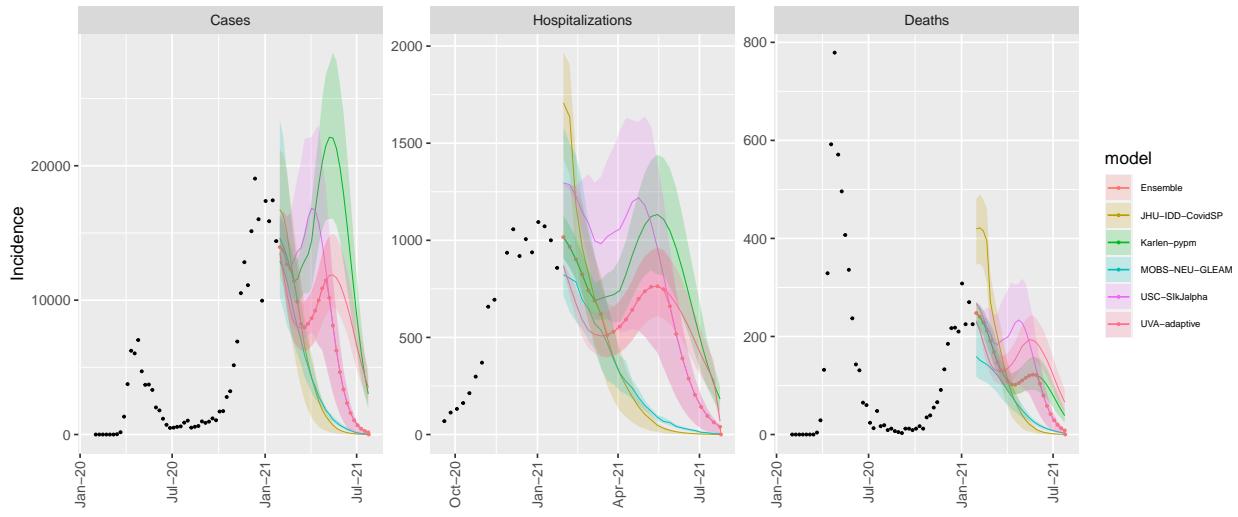
CA model variance & 50% projection intervals – fatigue_no_var



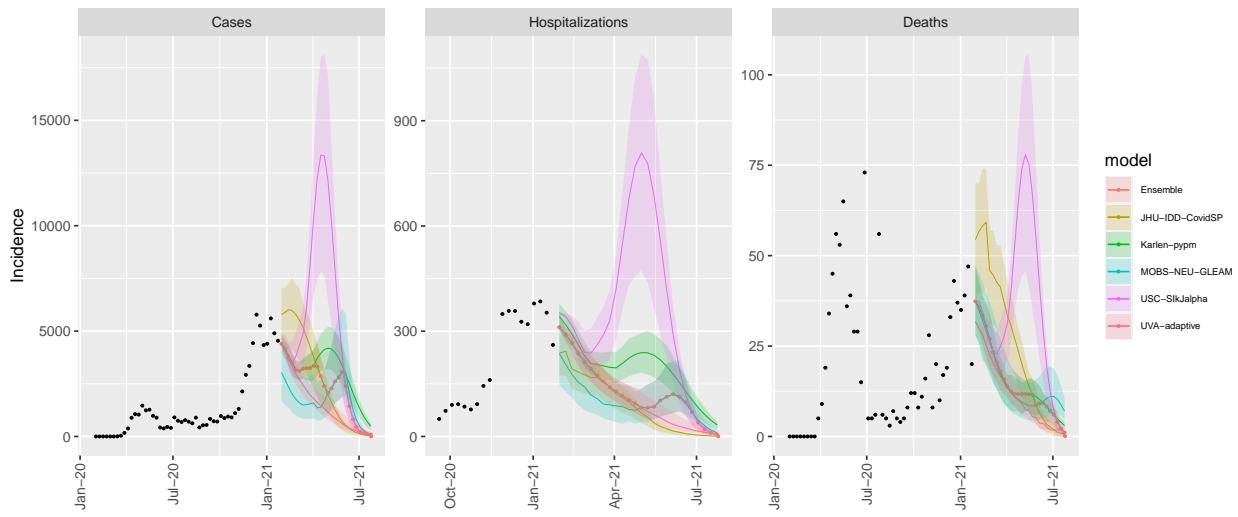
CO model variance & 50% projection intervals – fatigue_no_var



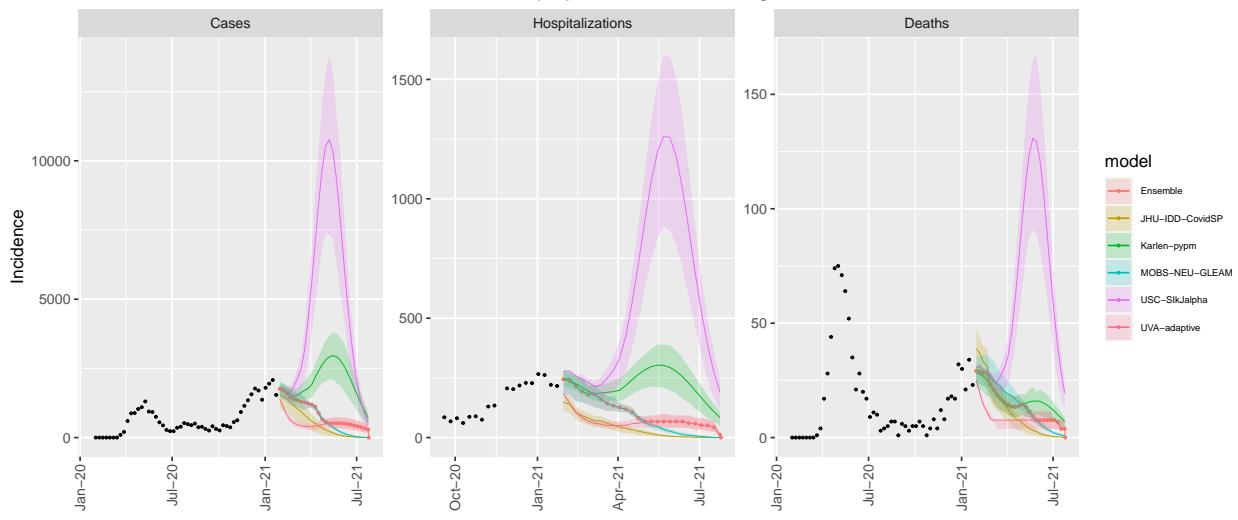
CT model variance & 50% projection intervals – fatigue_no_var



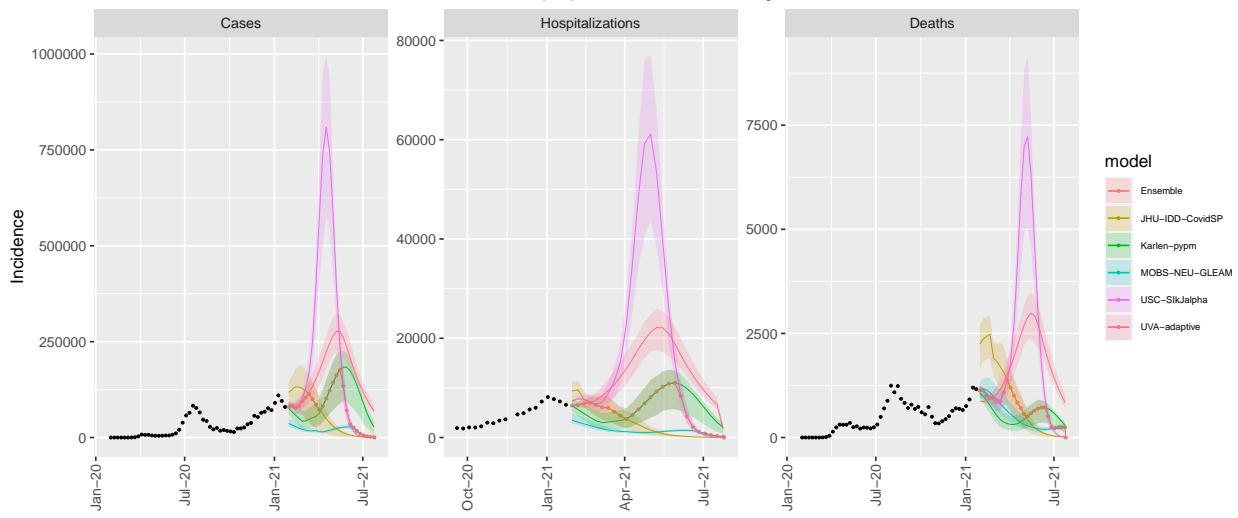
DE model variance & 50% projection intervals – fatigue_no_var



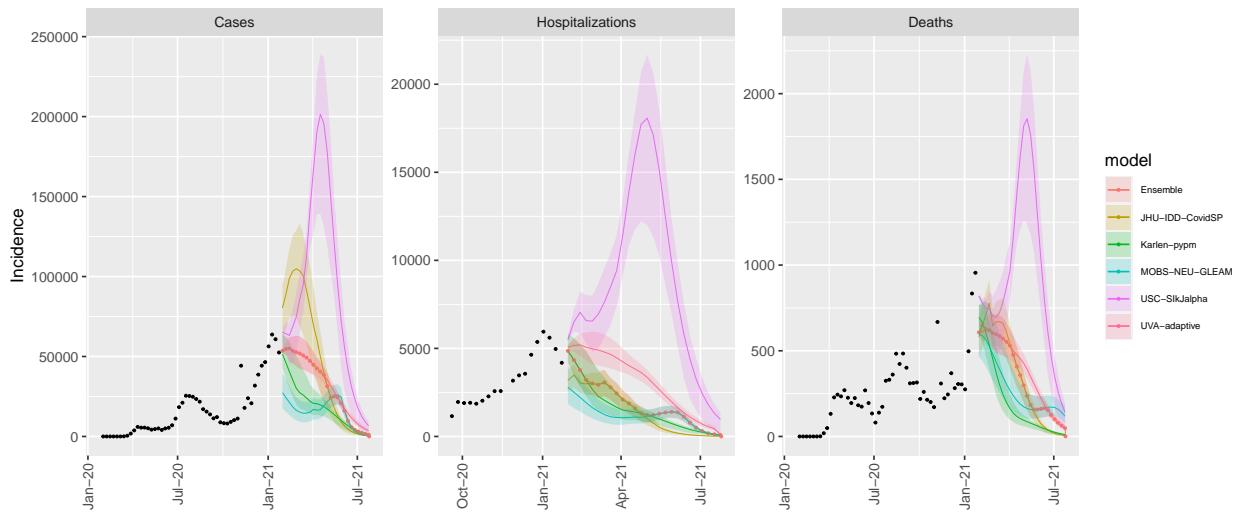
DC model variance & 50% projection intervals – fatigue_no_var



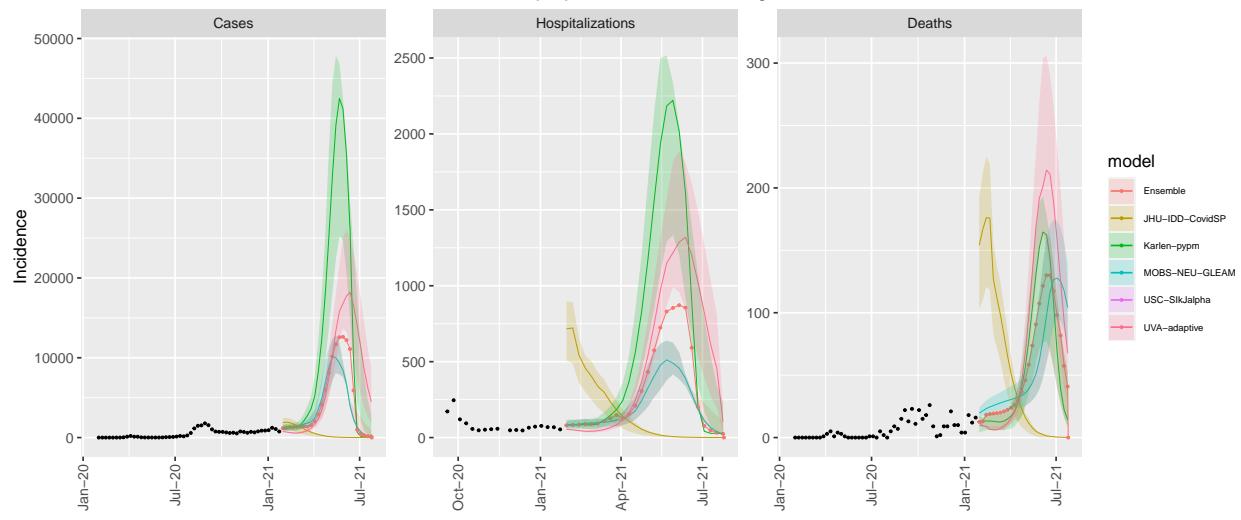
FL model variance & 50% projection intervals – fatigue_no_var



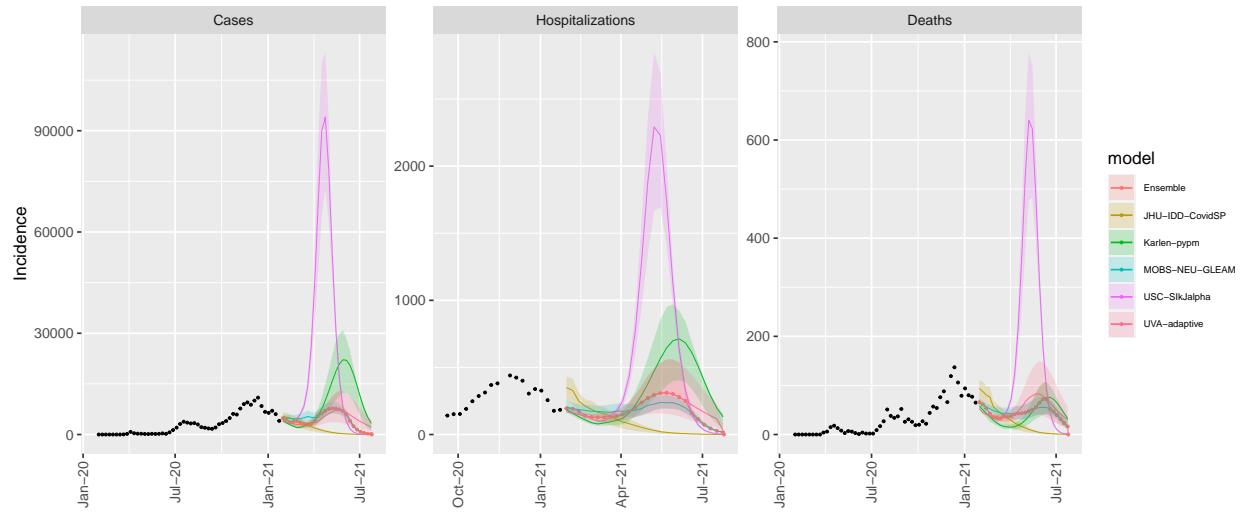
GA model variance & 50% projection intervals – fatigue_no_var



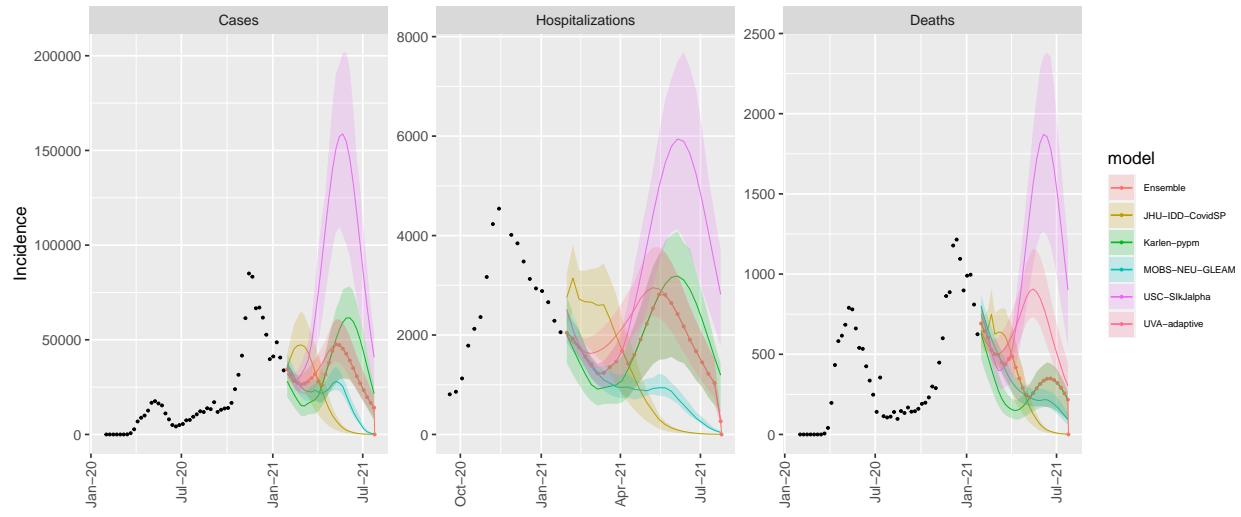
HI model variance & 50% projection intervals – fatigue_no_var



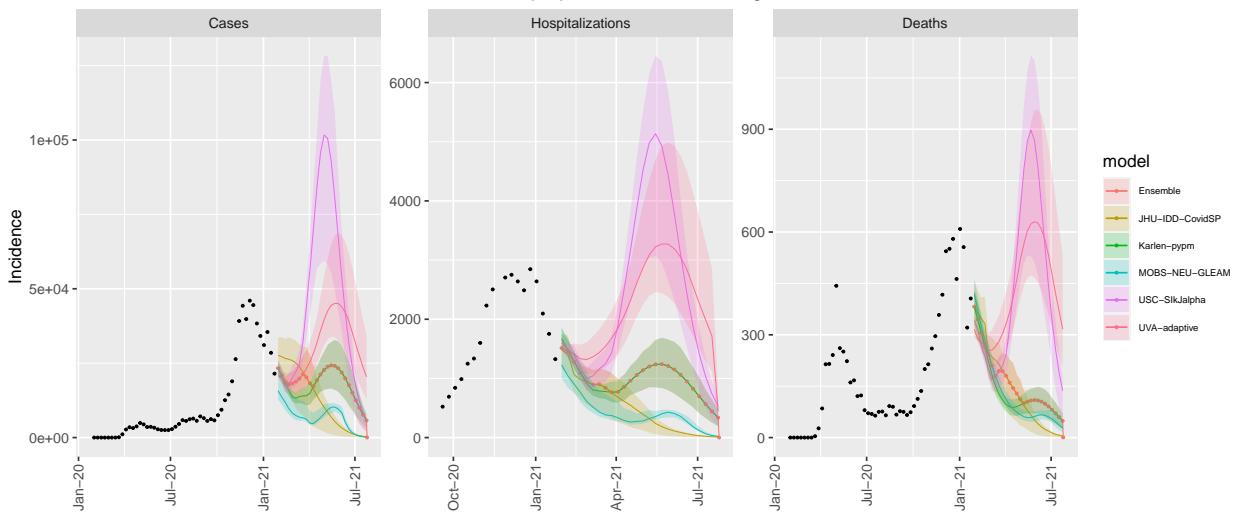
ID model variance & 50% projection intervals – fatigue_no_var



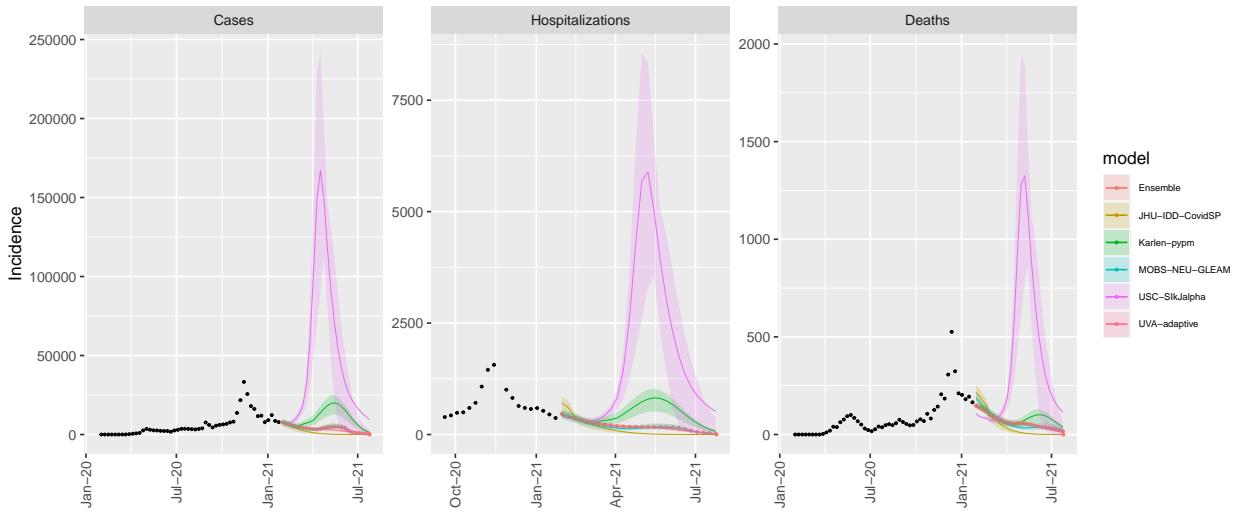
IL model variance & 50% projection intervals – fatigue_no_var



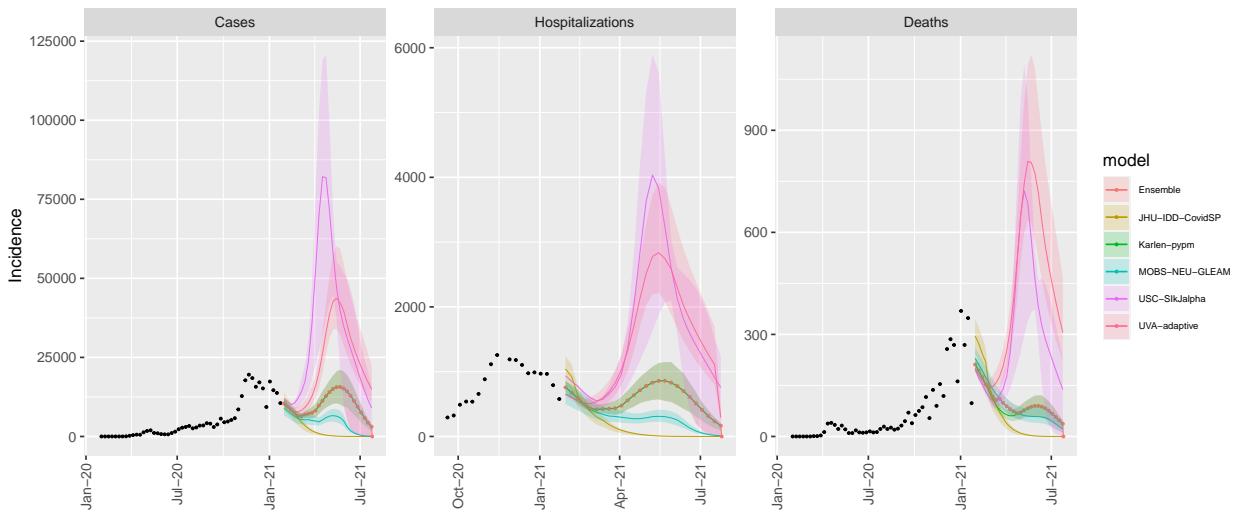
IN model variance & 50% projection intervals – fatigue_no_var



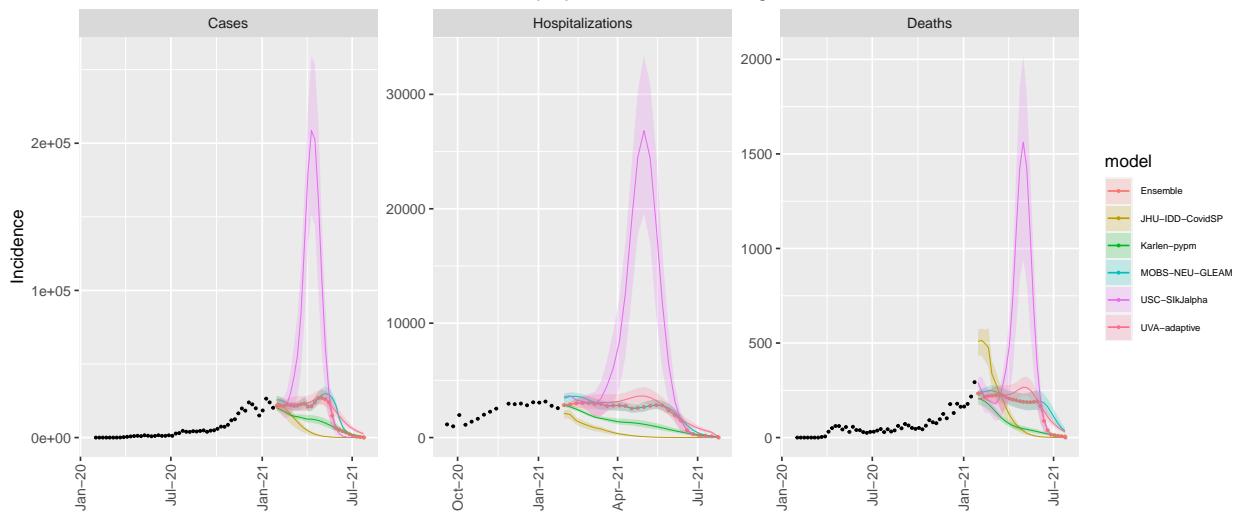
IA model variance & 50% projection intervals – fatigue_no_var



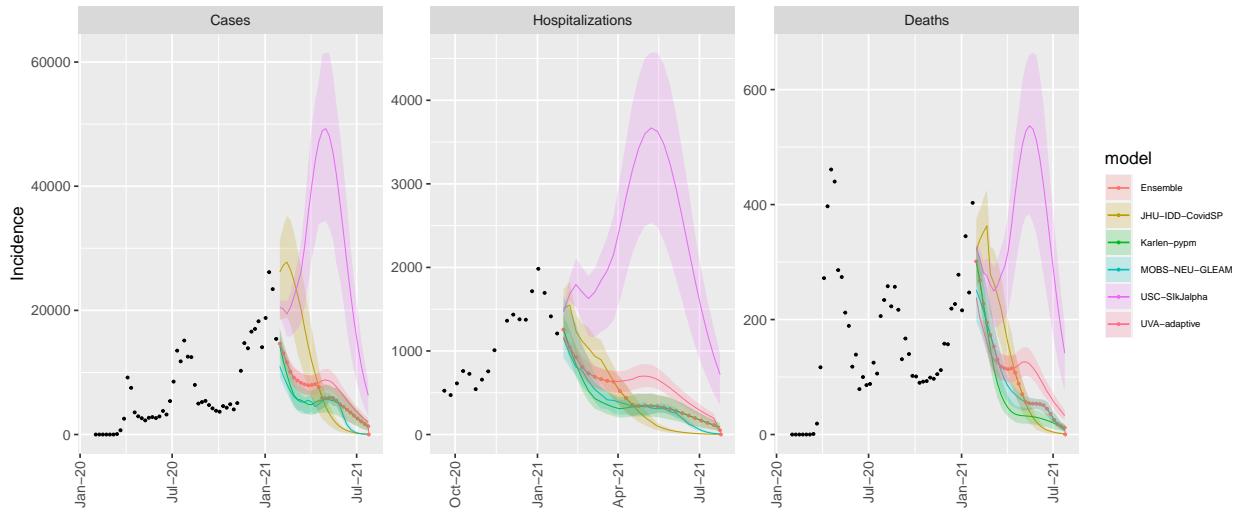
KS model variance & 50% projection intervals – fatigue_no_var



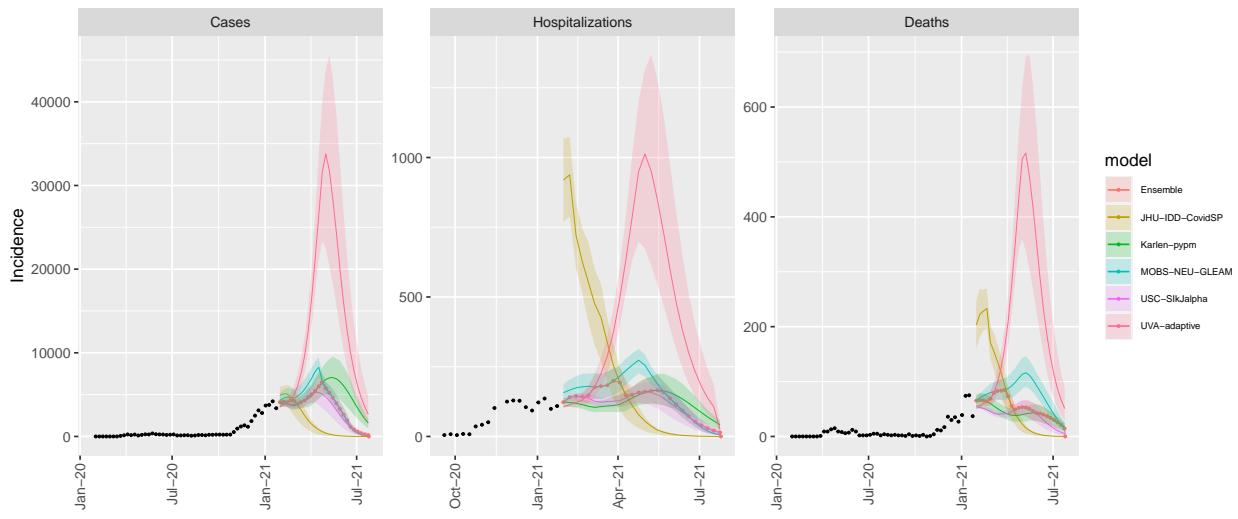
KY model variance & 50% projection intervals – fatigue_no_var



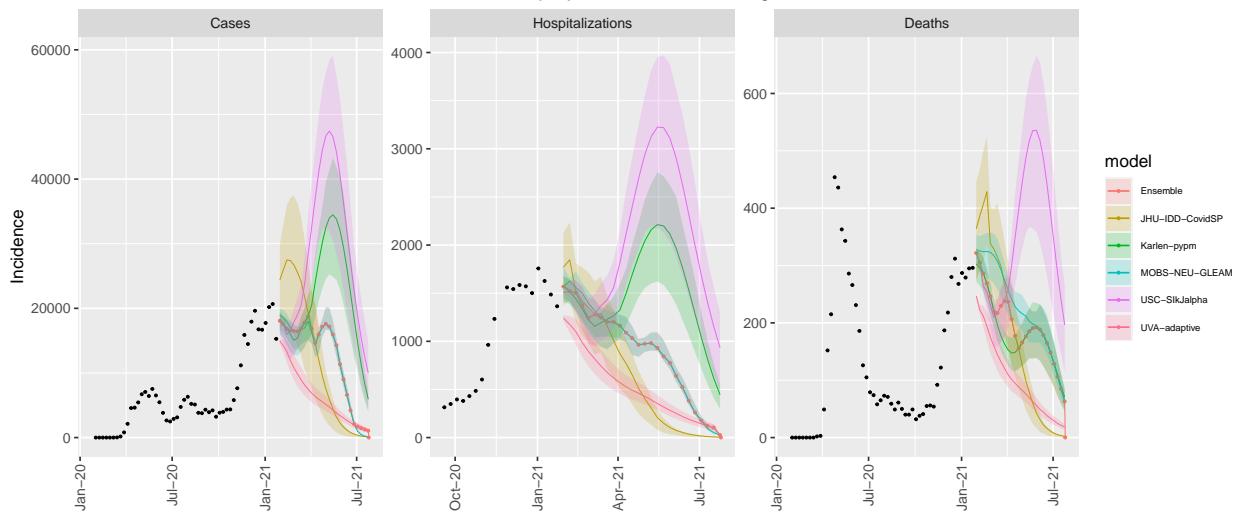
LA model variance & 50% projection intervals – fatigue_no_var



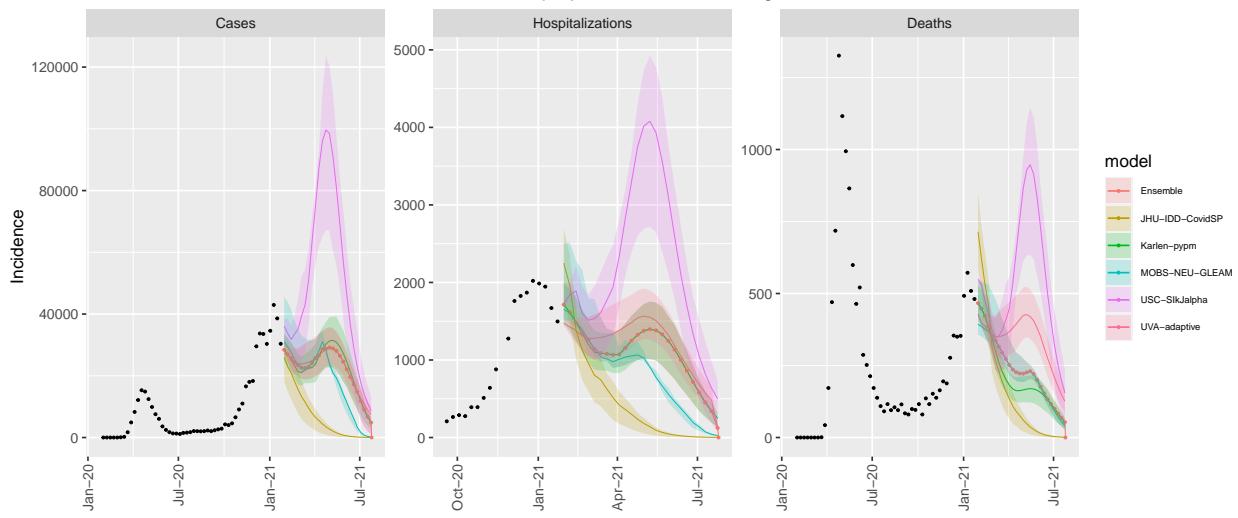
ME model variance & 50% projection intervals – fatigue_no_var



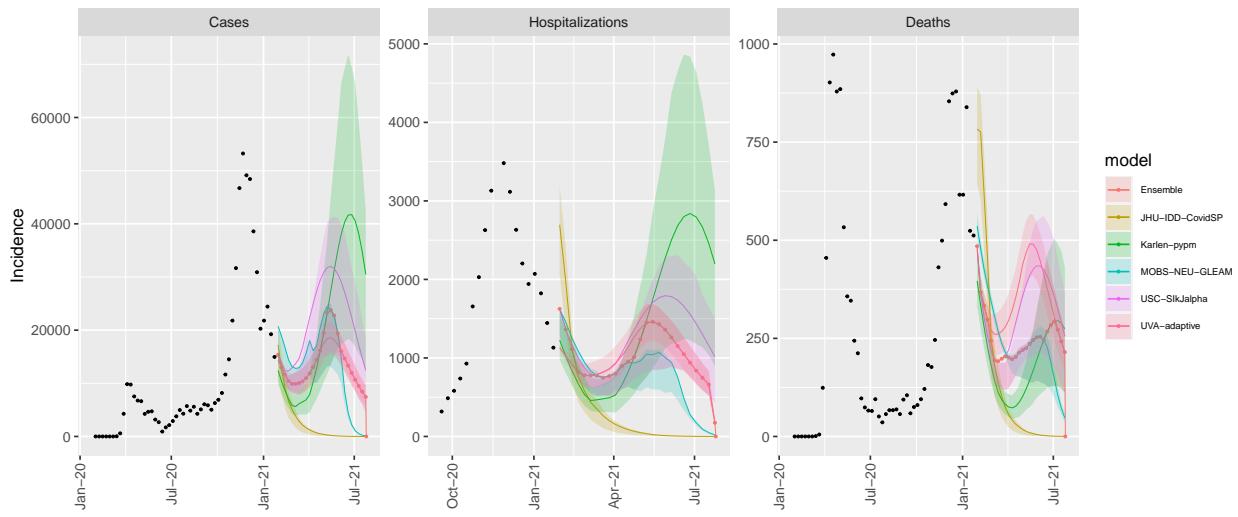
MD model variance & 50% projection intervals – fatigue_no_var



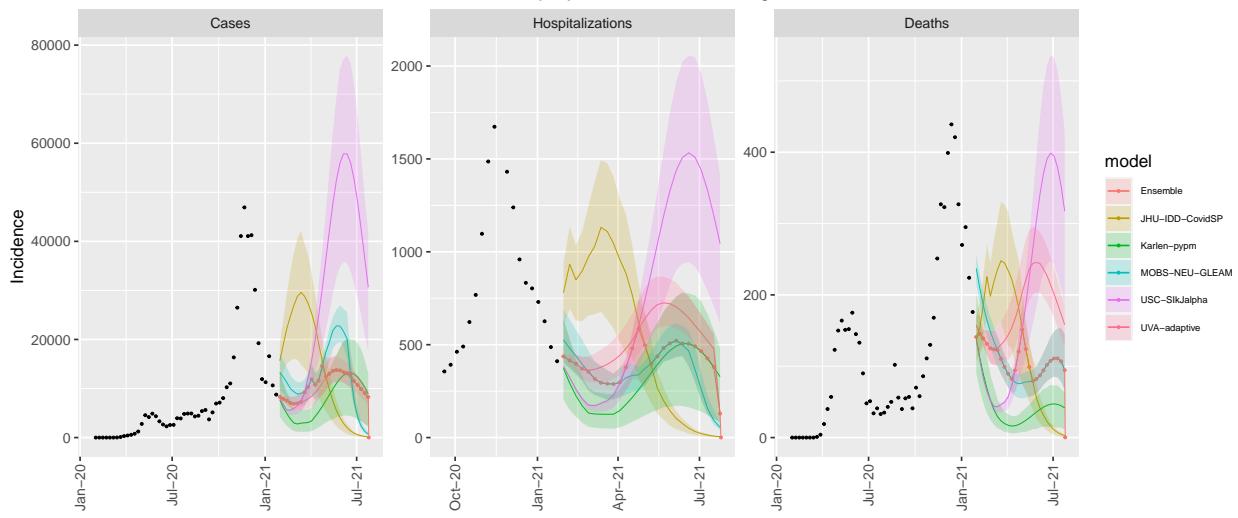
MA model variance & 50% projection intervals – fatigue_no_var



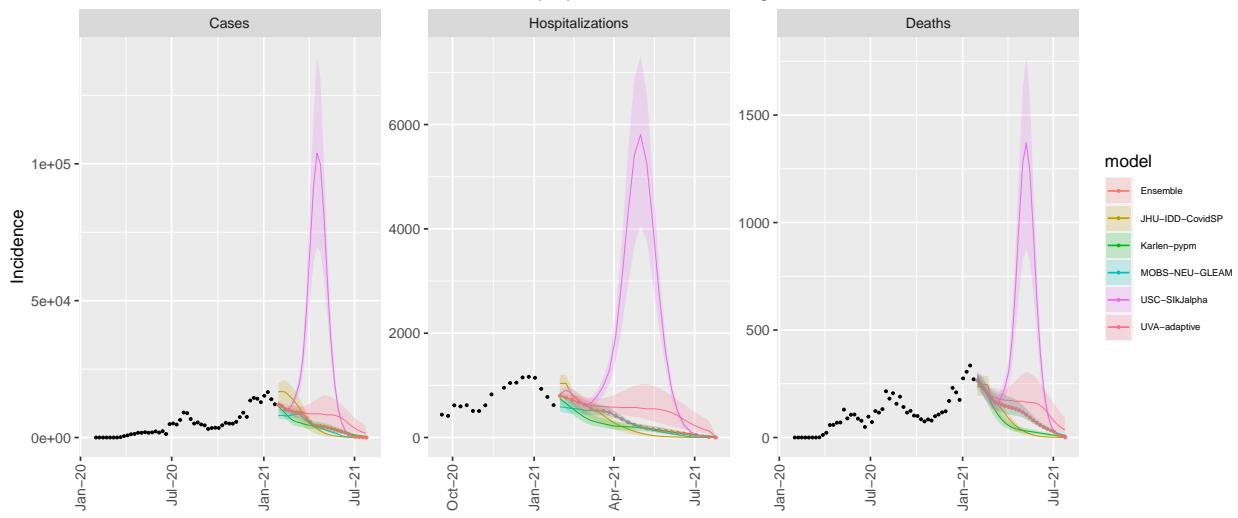
MI model variance & 50% projection intervals – fatigue_no_var



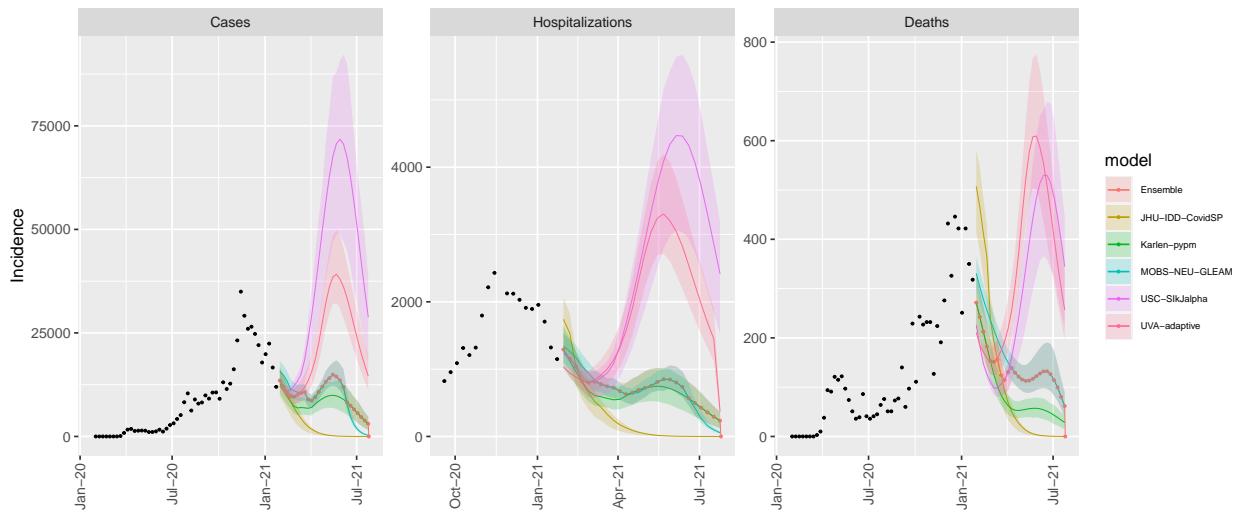
MN model variance & 50% projection intervals – fatigue_no_var



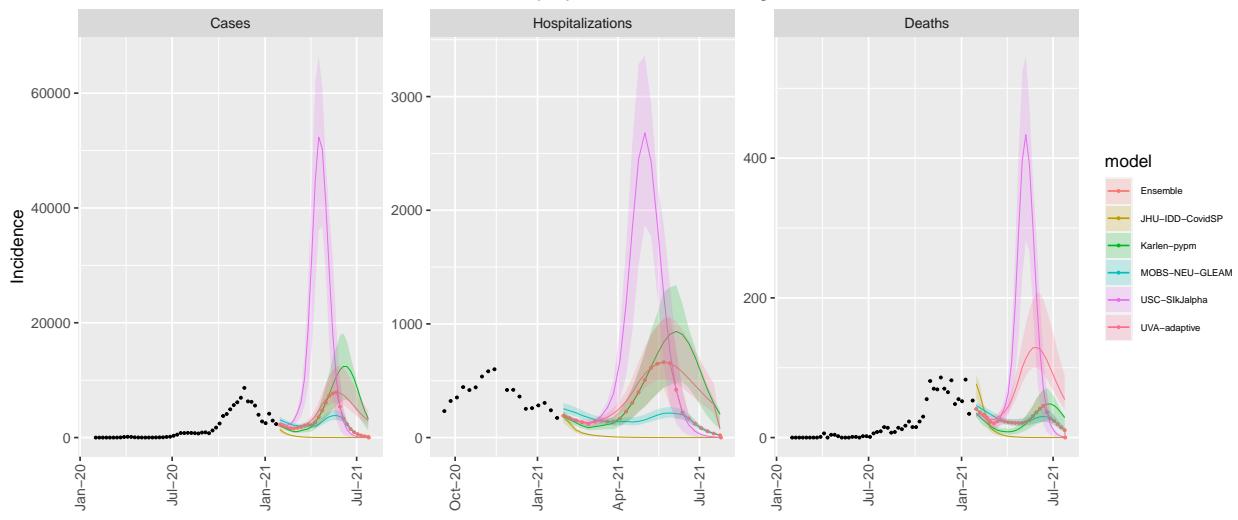
MS model variance & 50% projection intervals – fatigue_no_var



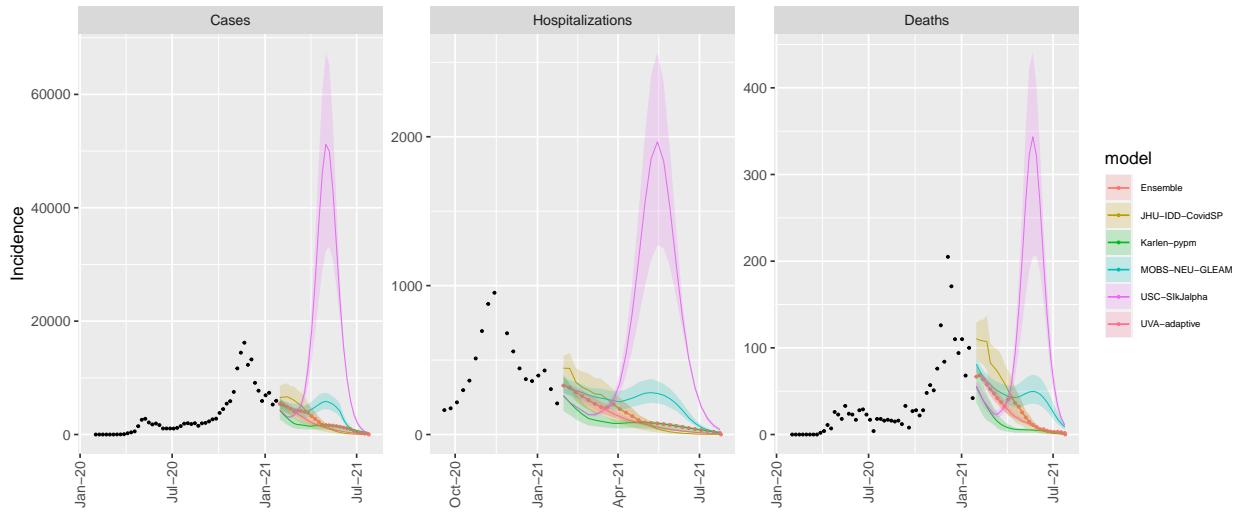
MO model variance & 50% projection intervals – fatigue_no_var



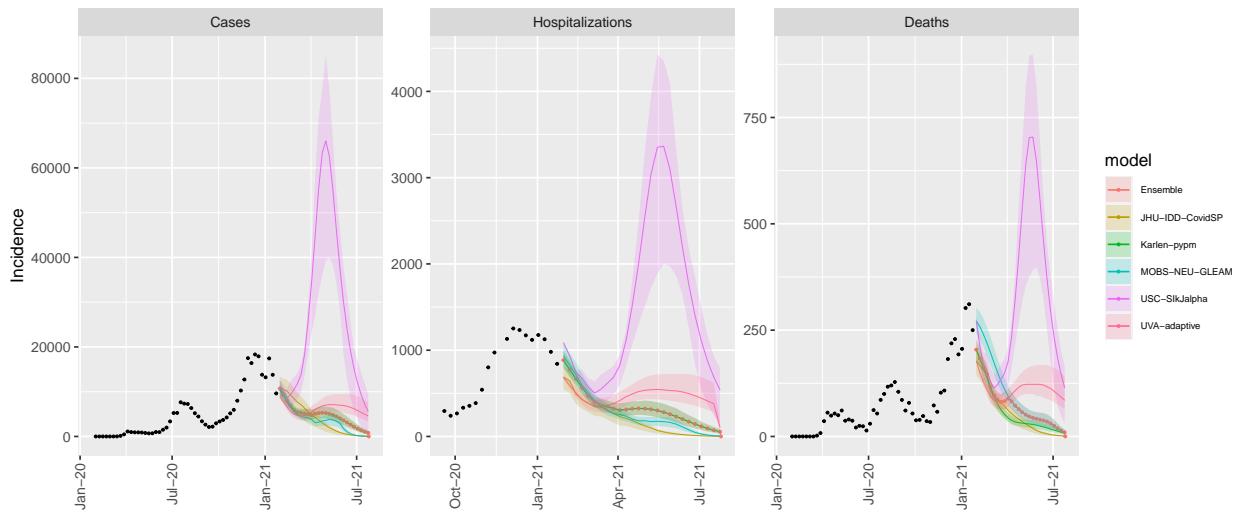
MT model variance & 50% projection intervals – fatigue_no_var



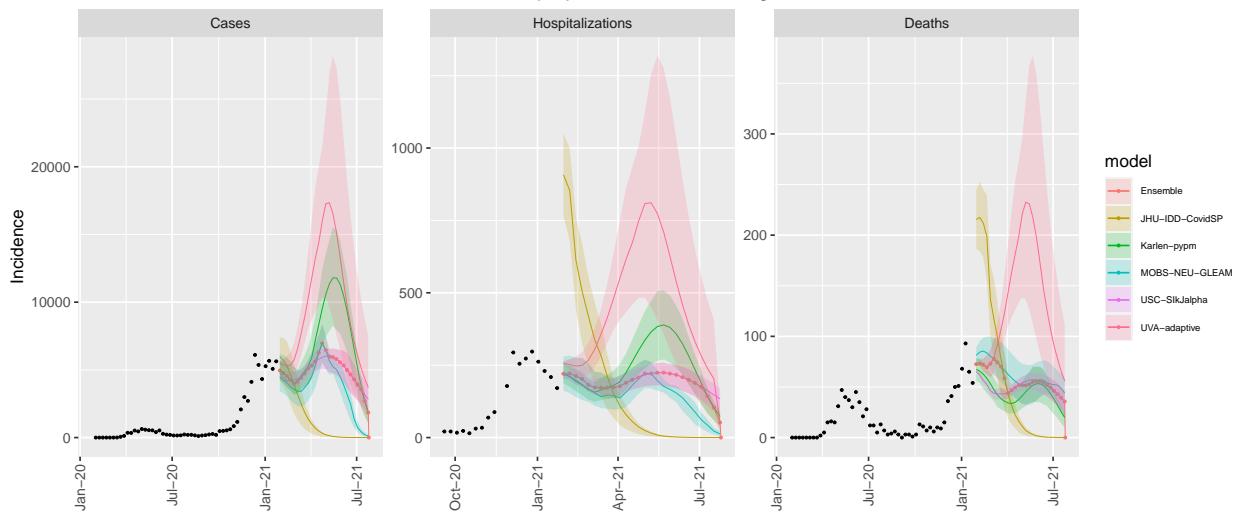
NE model variance & 50% projection intervals – fatigue_no_var



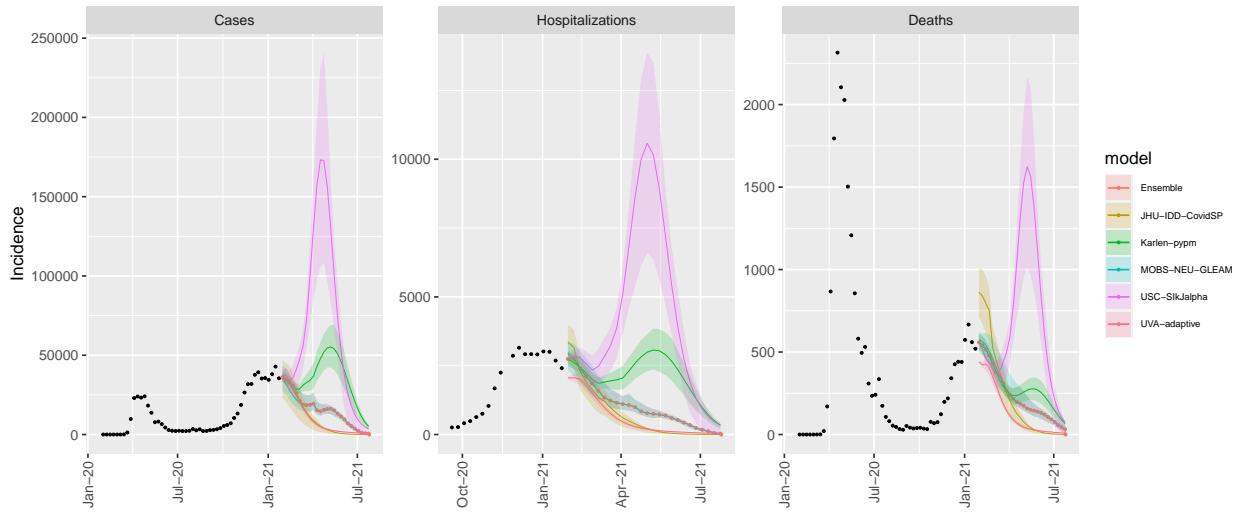
NV model variance & 50% projection intervals – fatigue_no_var



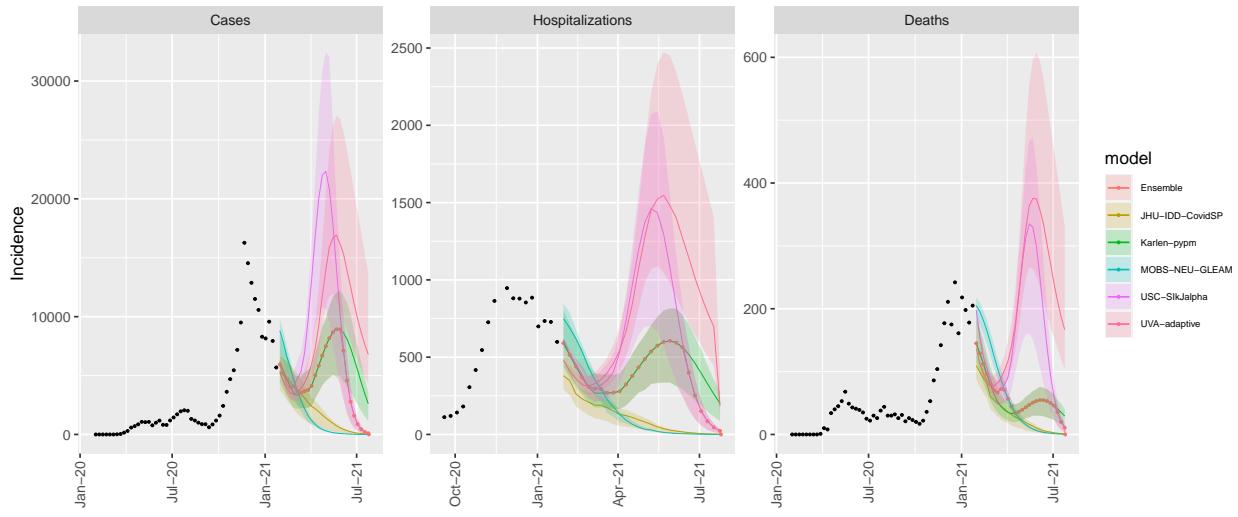
NH model variance & 50% projection intervals – fatigue_no_var



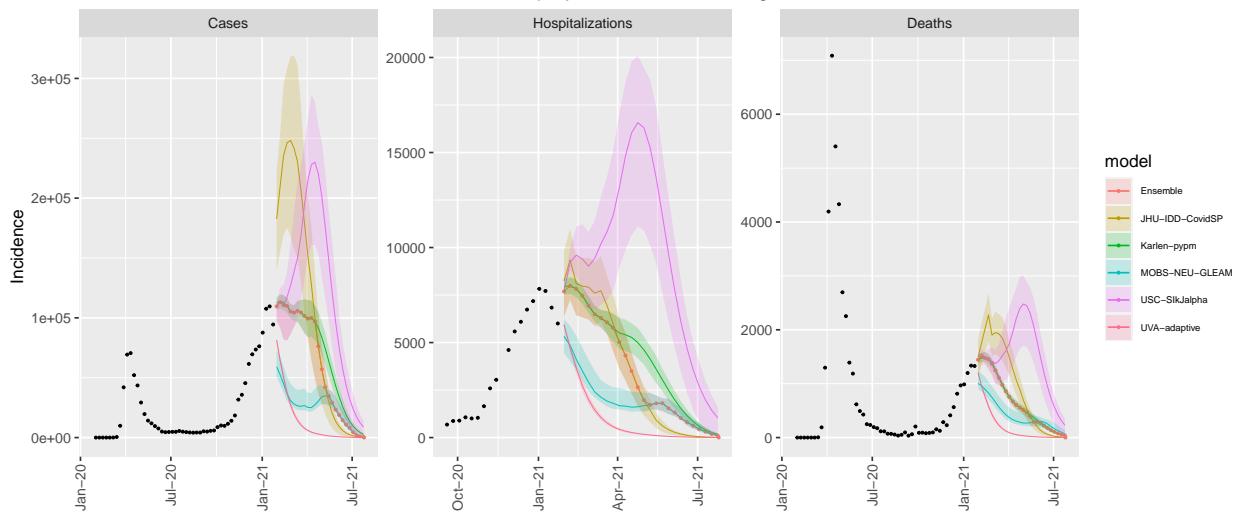
NJ model variance & 50% projection intervals – fatigue_no_var



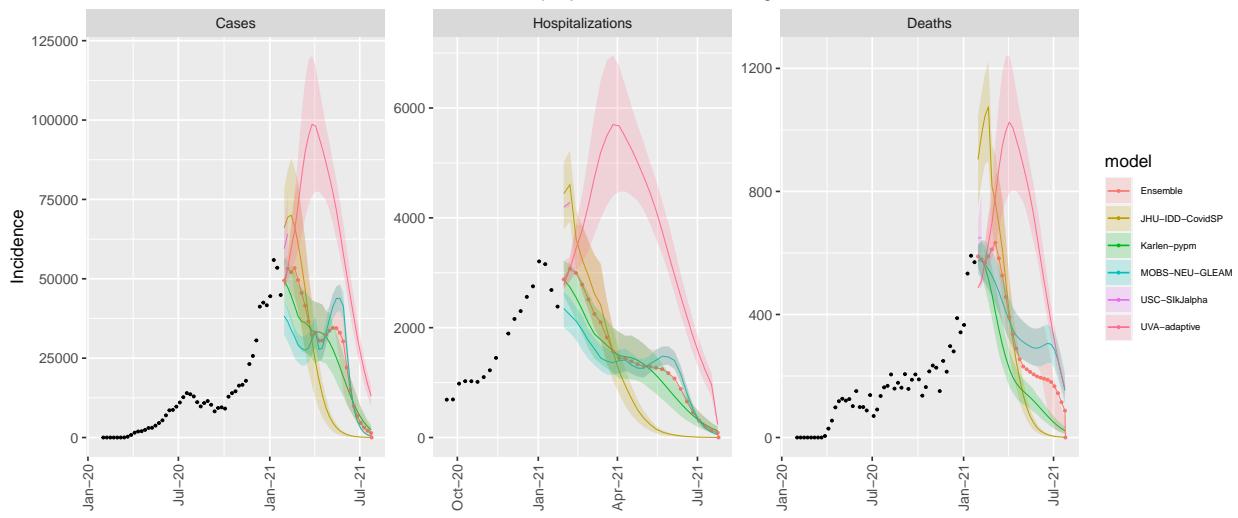
NM model variance & 50% projection intervals – fatigue_no_var



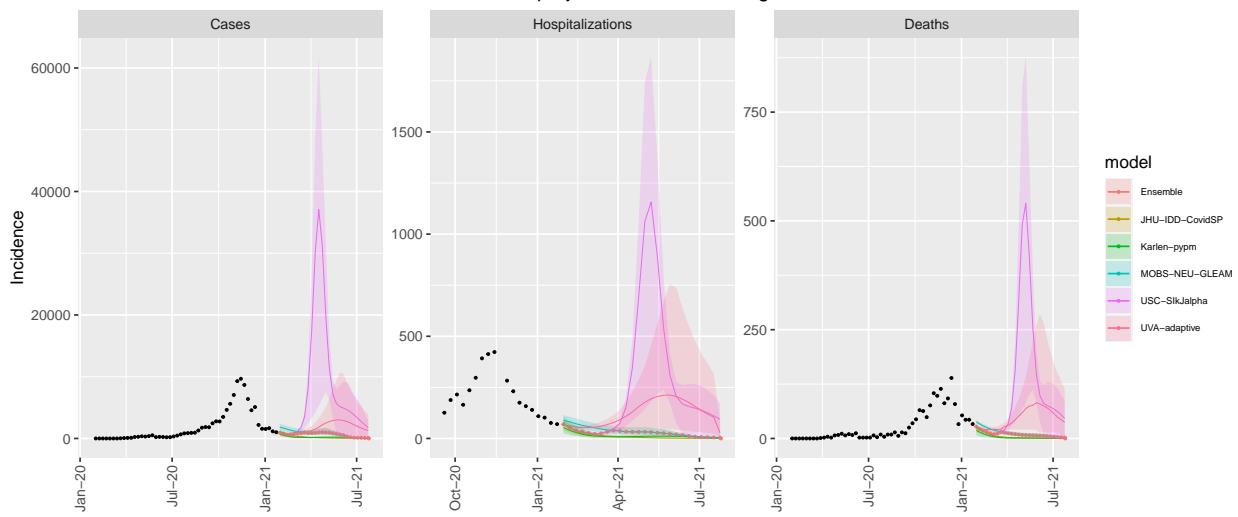
NY model variance & 50% projection intervals – fatigue_no_var



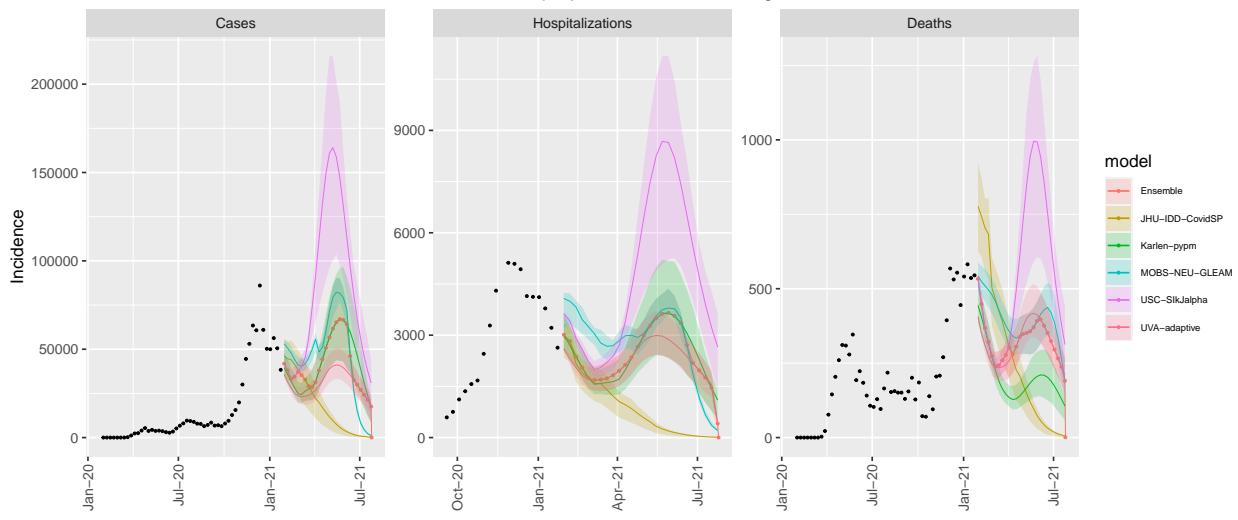
NC model variance & 50% projection intervals – fatigue_no_var



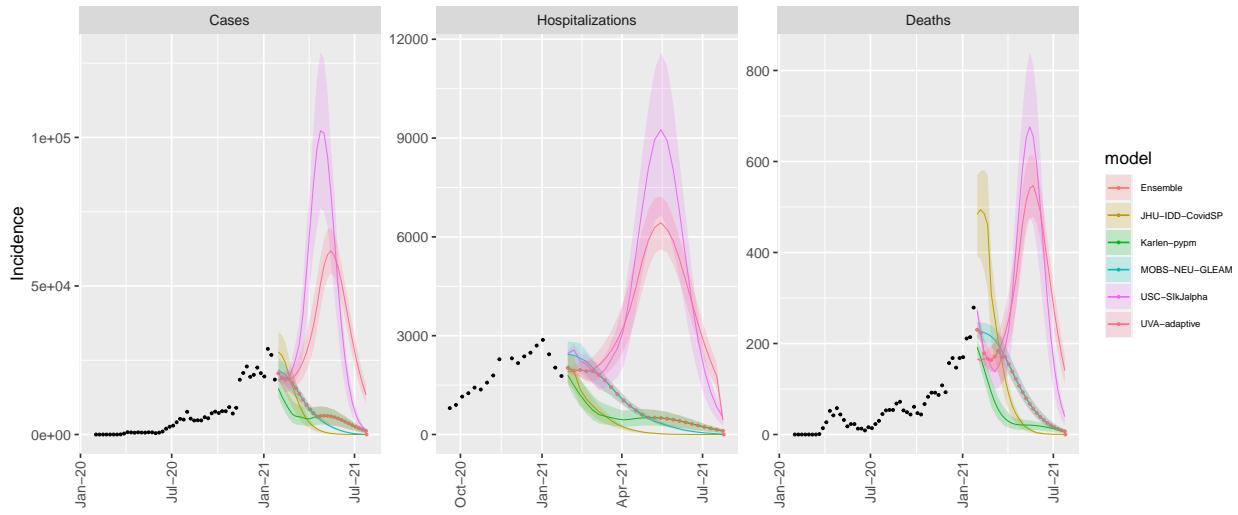
ND model variance & 50% projection intervals – fatigue_no_var



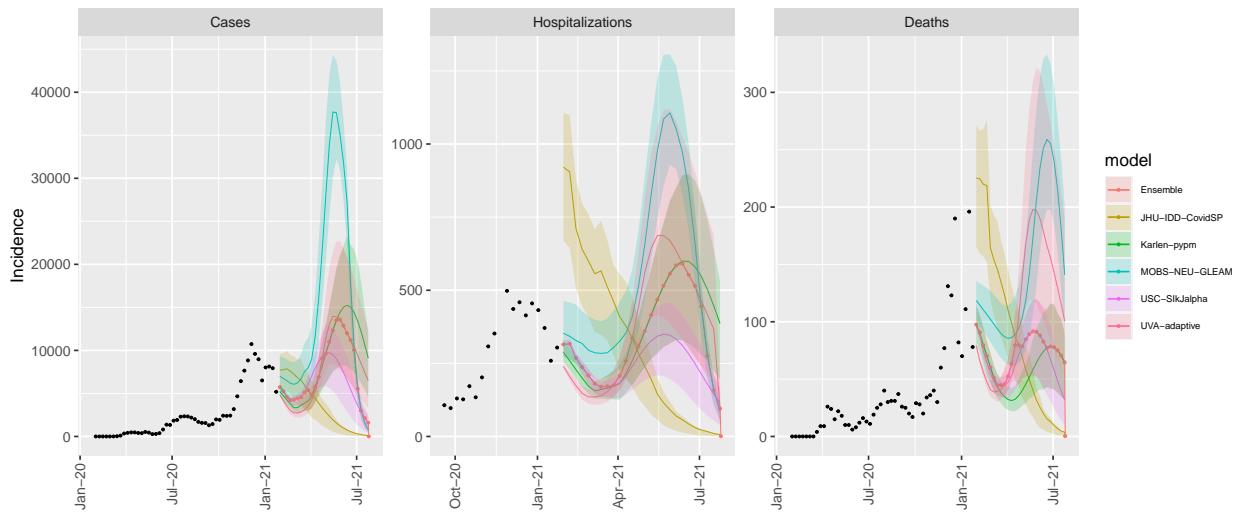
OH model variance & 50% projection intervals – fatigue_no_var



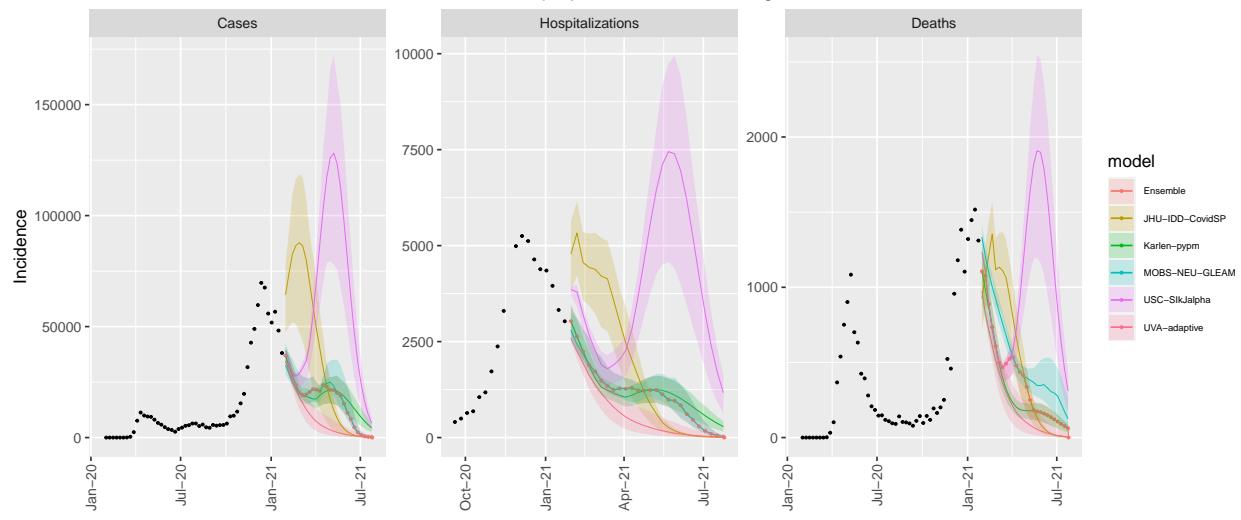
OK model variance & 50% projection intervals – fatigue_no_var



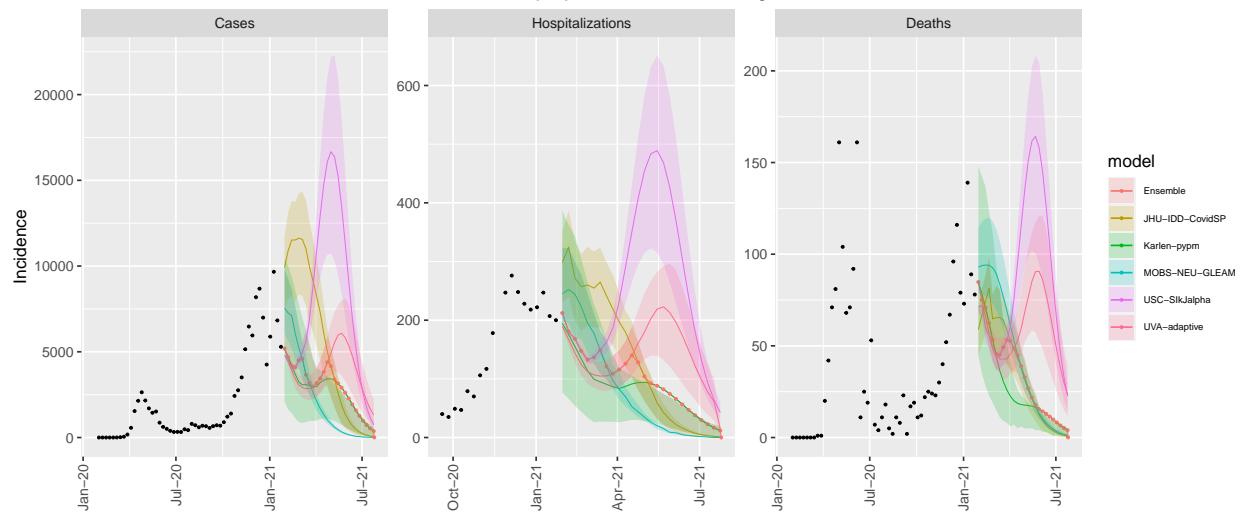
OR model variance & 50% projection intervals – fatigue_no_var



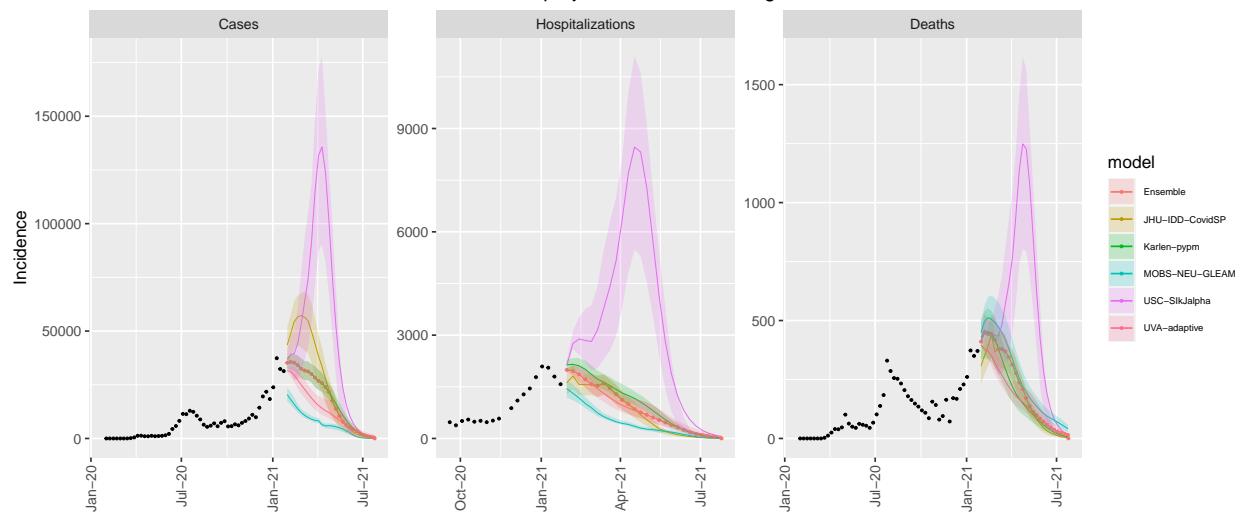
PA model variance & 50% projection intervals – fatigue_no_var



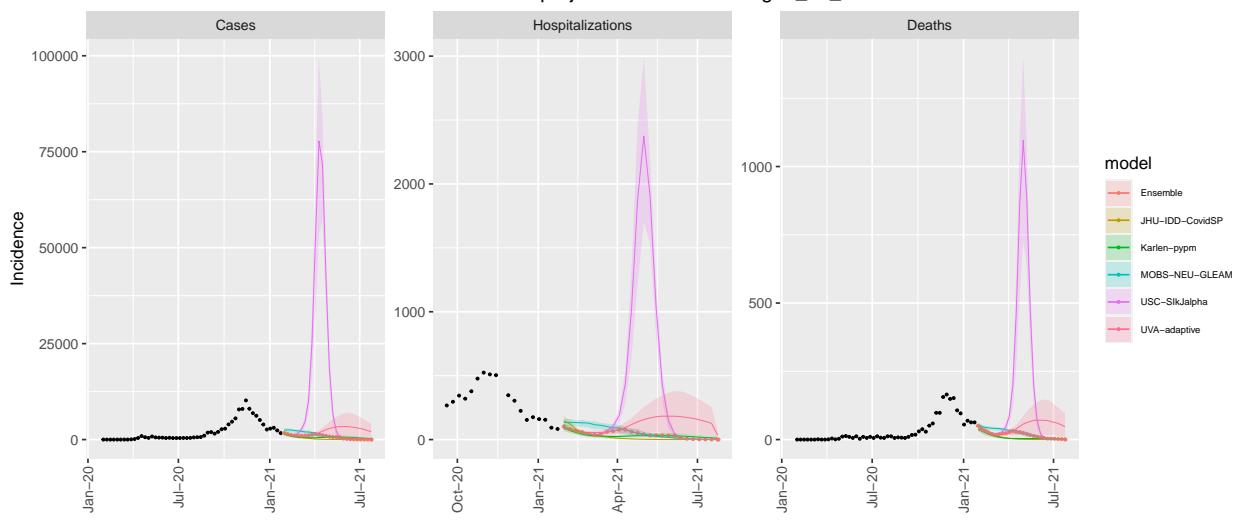
RI model variance & 50% projection intervals – fatigue_no_var



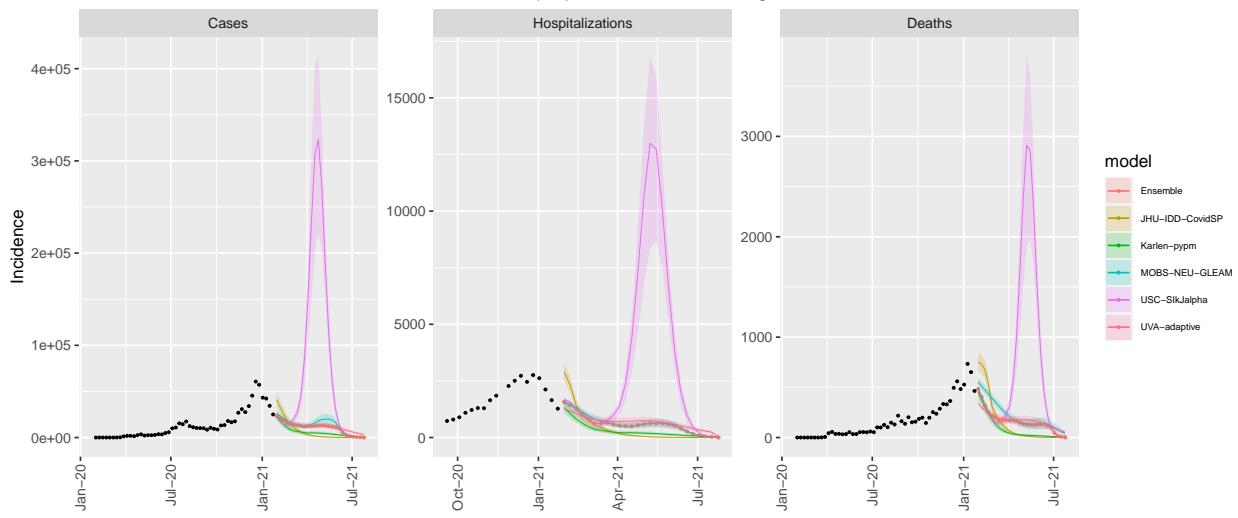
SC model variance & 50% projection intervals – fatigue_no_var



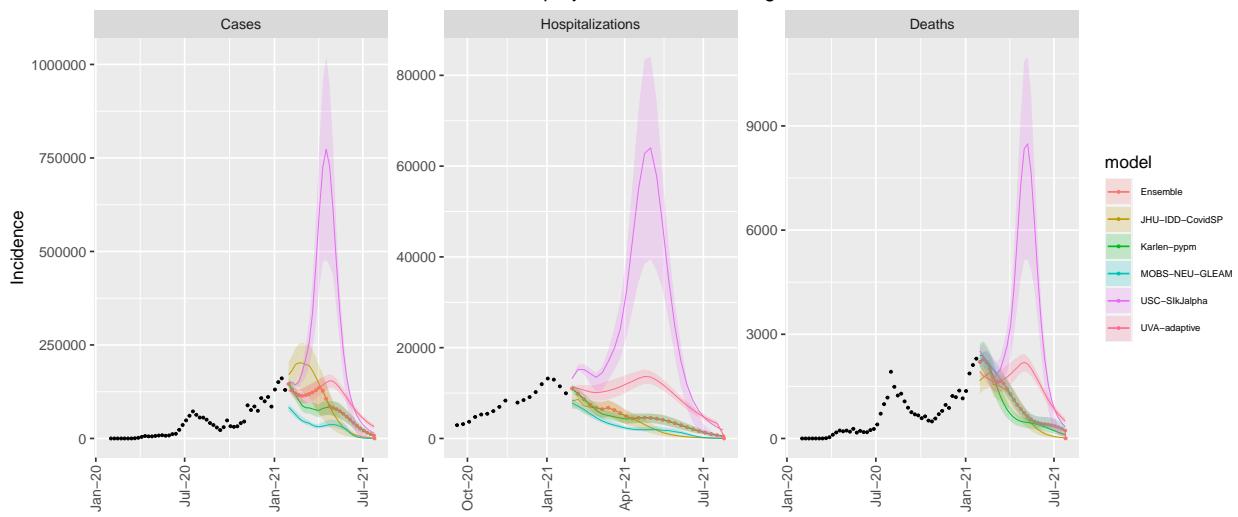
SD model variance & 50% projection intervals – fatigue_no_var



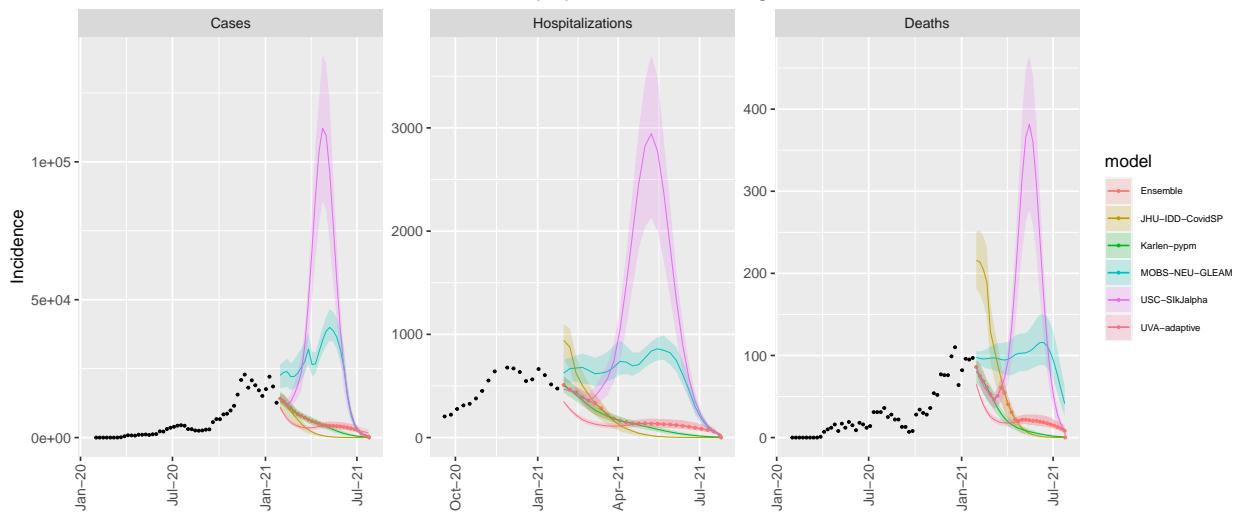
TN model variance & 50% projection intervals – fatigue_no_var



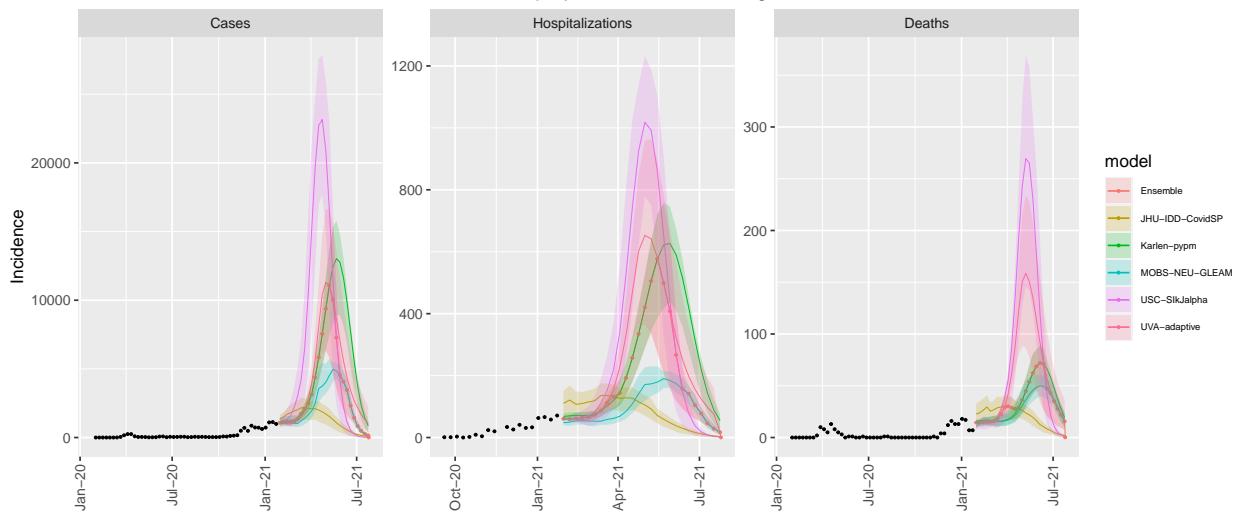
TX model variance & 50% projection intervals – fatigue_no_var



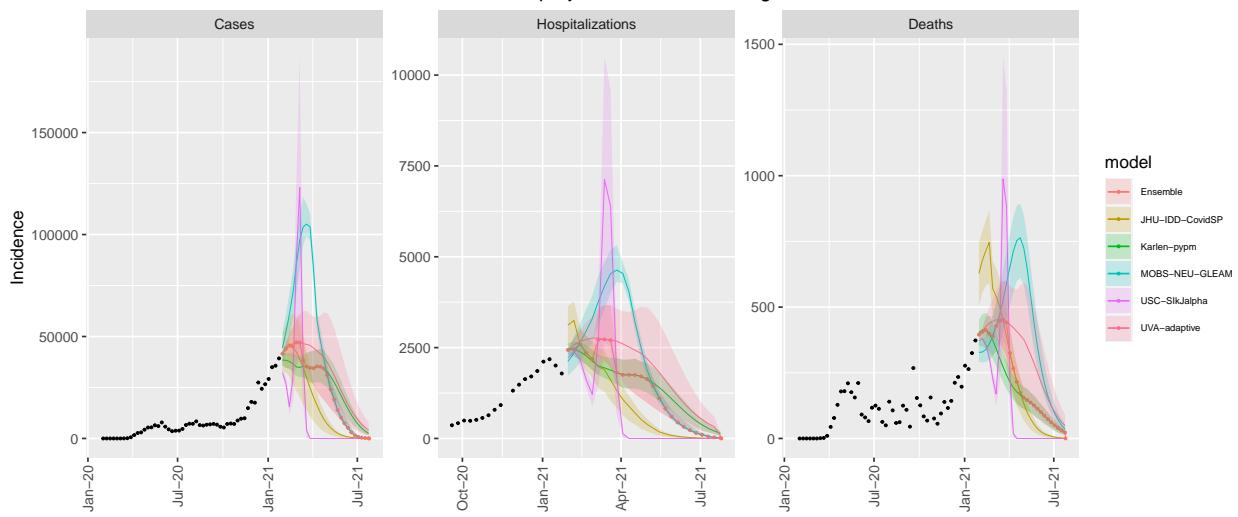
UT model variance & 50% projection intervals – fatigue_no_var



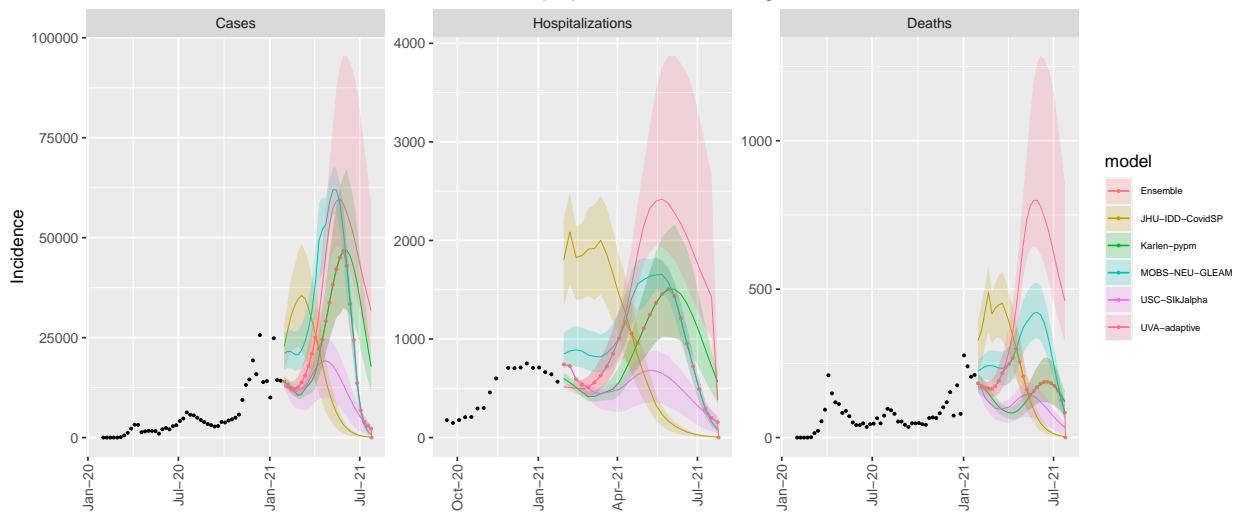
VT model variance & 50% projection intervals – fatigue_no_var



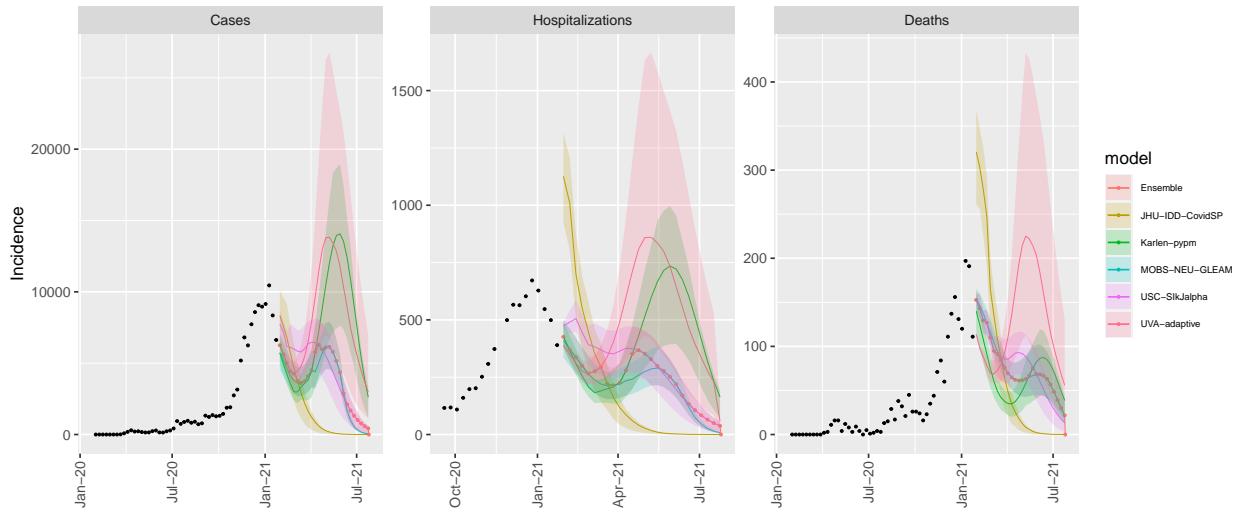
VA model variance & 50% projection intervals – fatigue_no_var



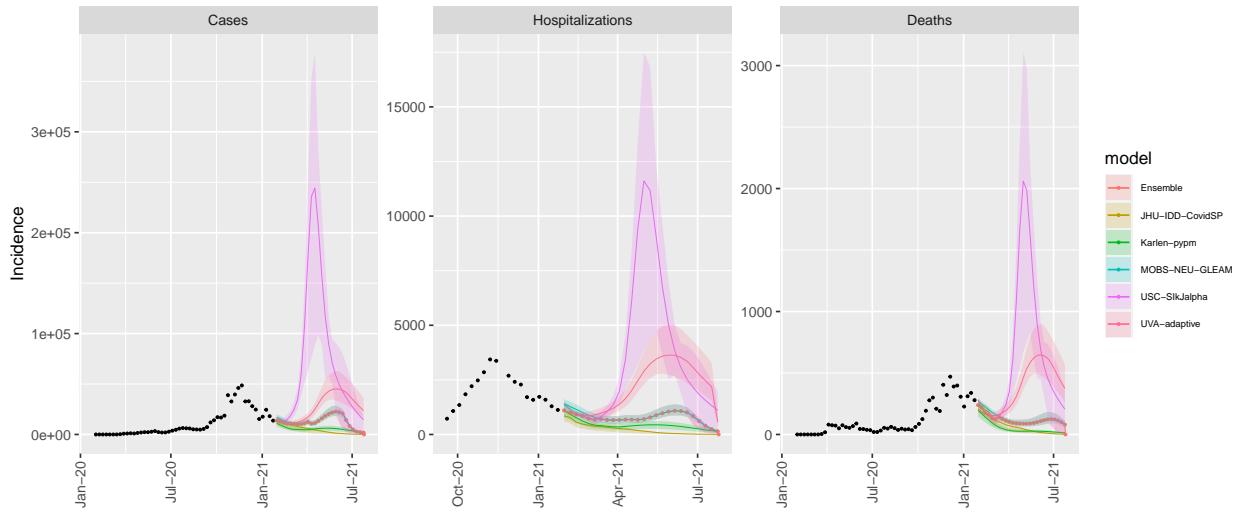
WA model variance & 50% projection intervals – fatigue_no_var



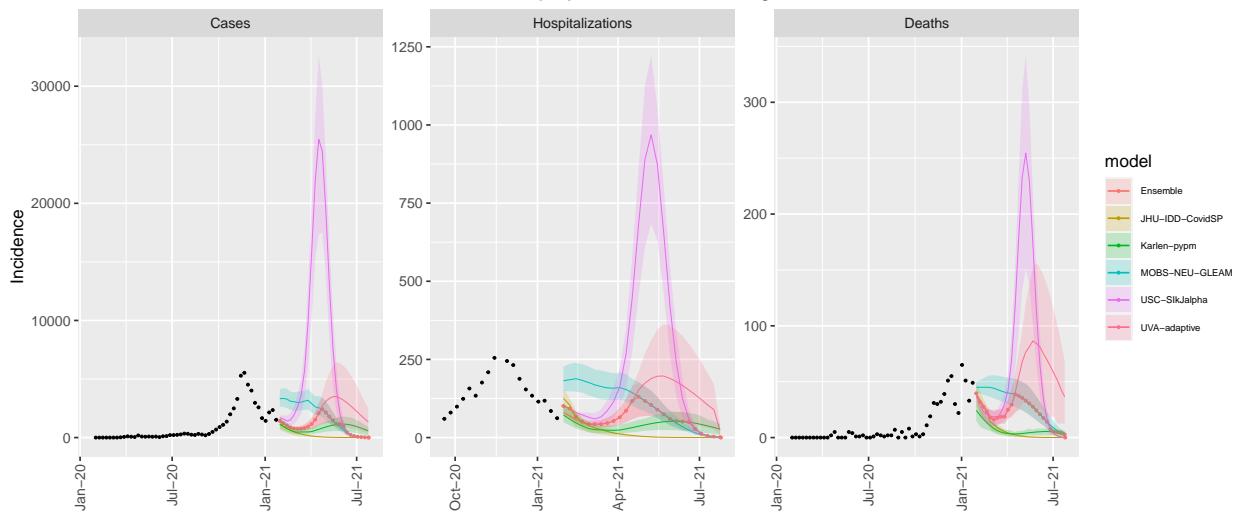
WV model variance & 50% projection intervals – fatigue_no_var



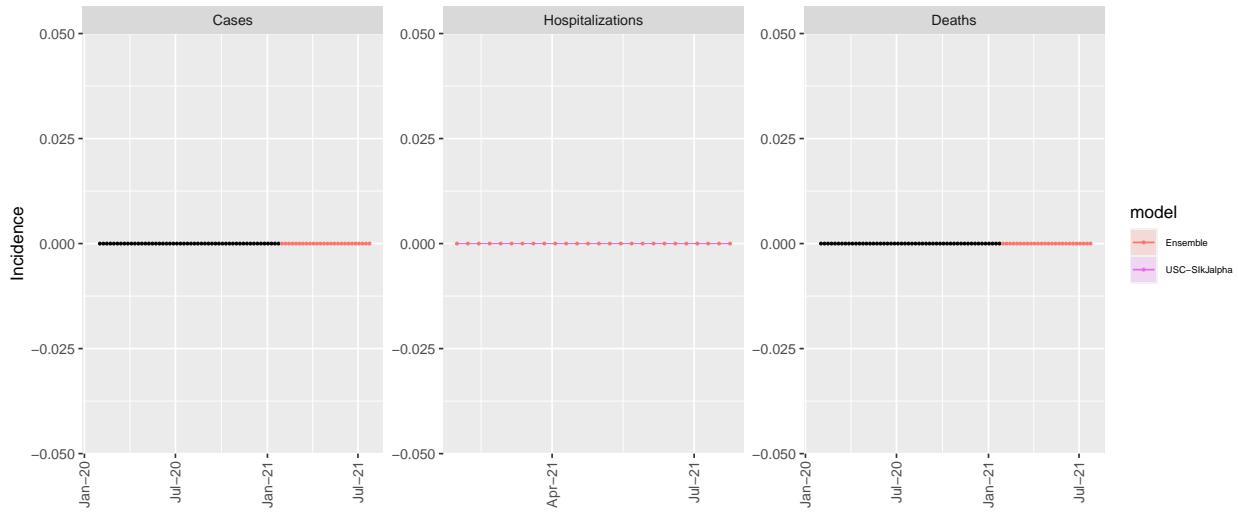
WI model variance & 50% projection intervals – fatigue_no_var



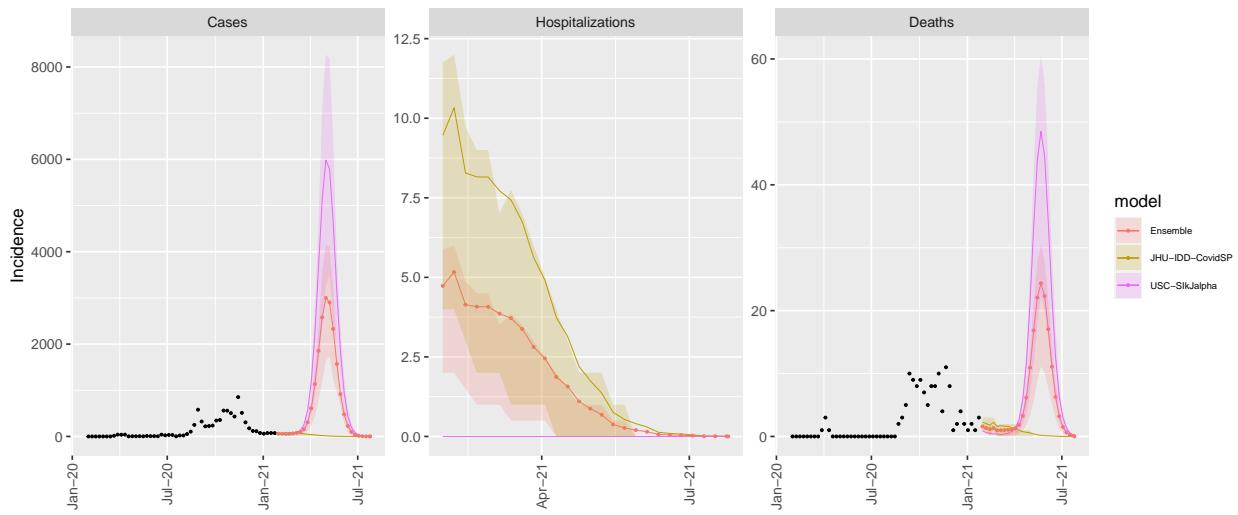
WY model variance & 50% projection intervals – fatigue_no_var



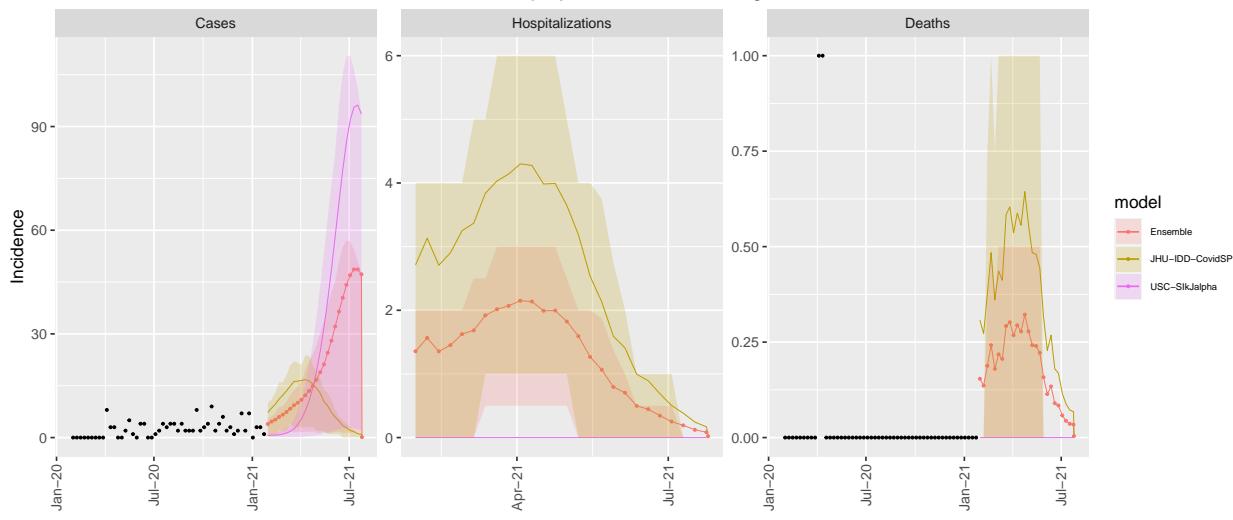
AS model variance & 50% projection intervals – fatigue_no_var



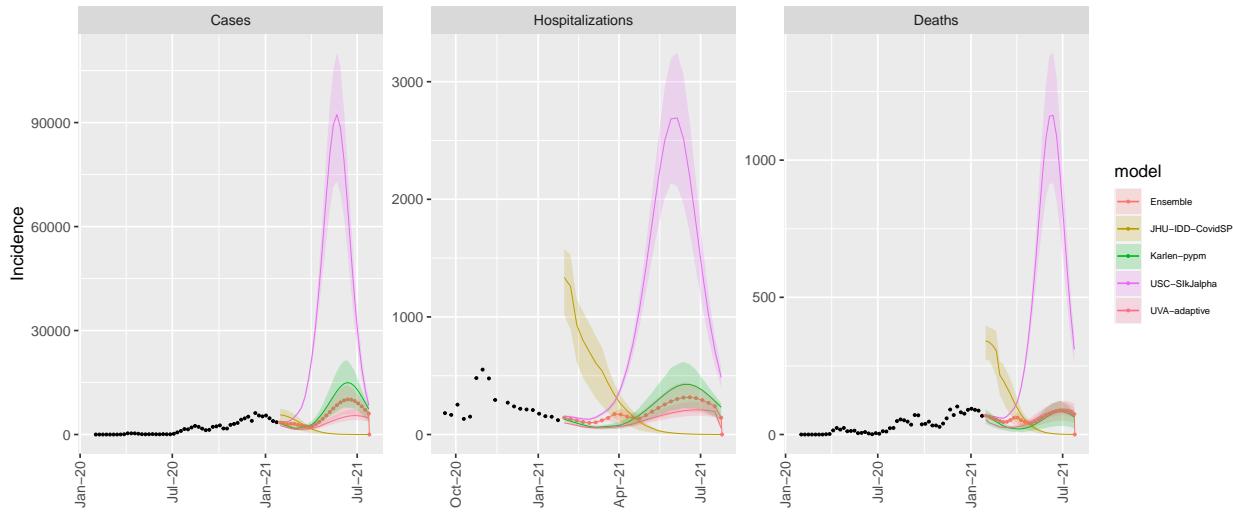
GU model variance & 50% projection intervals – fatigue_no_var



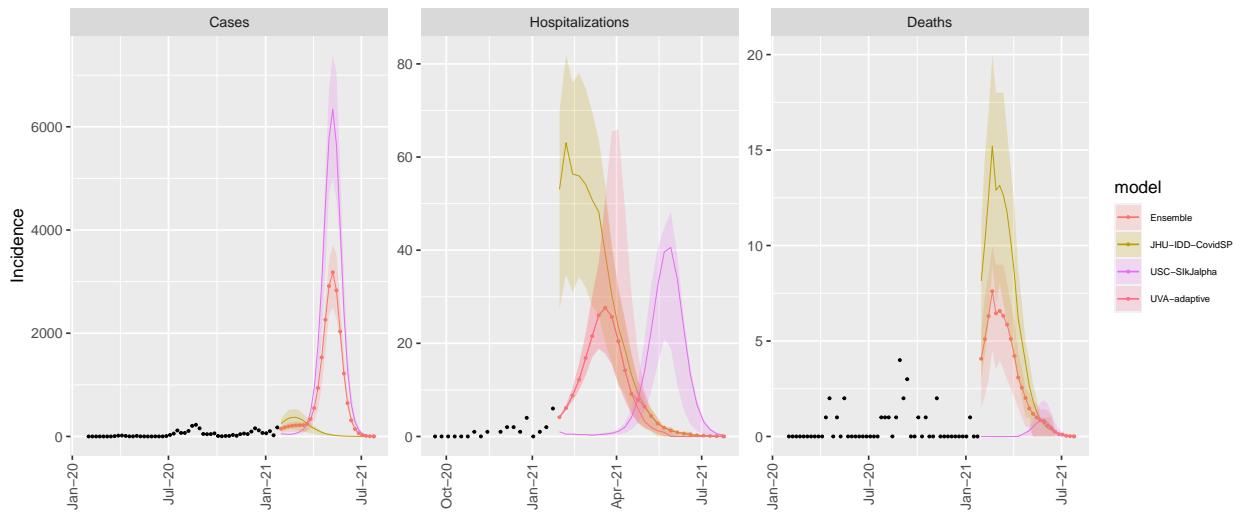
MP model variance & 50% projection intervals – fatigue_no_var



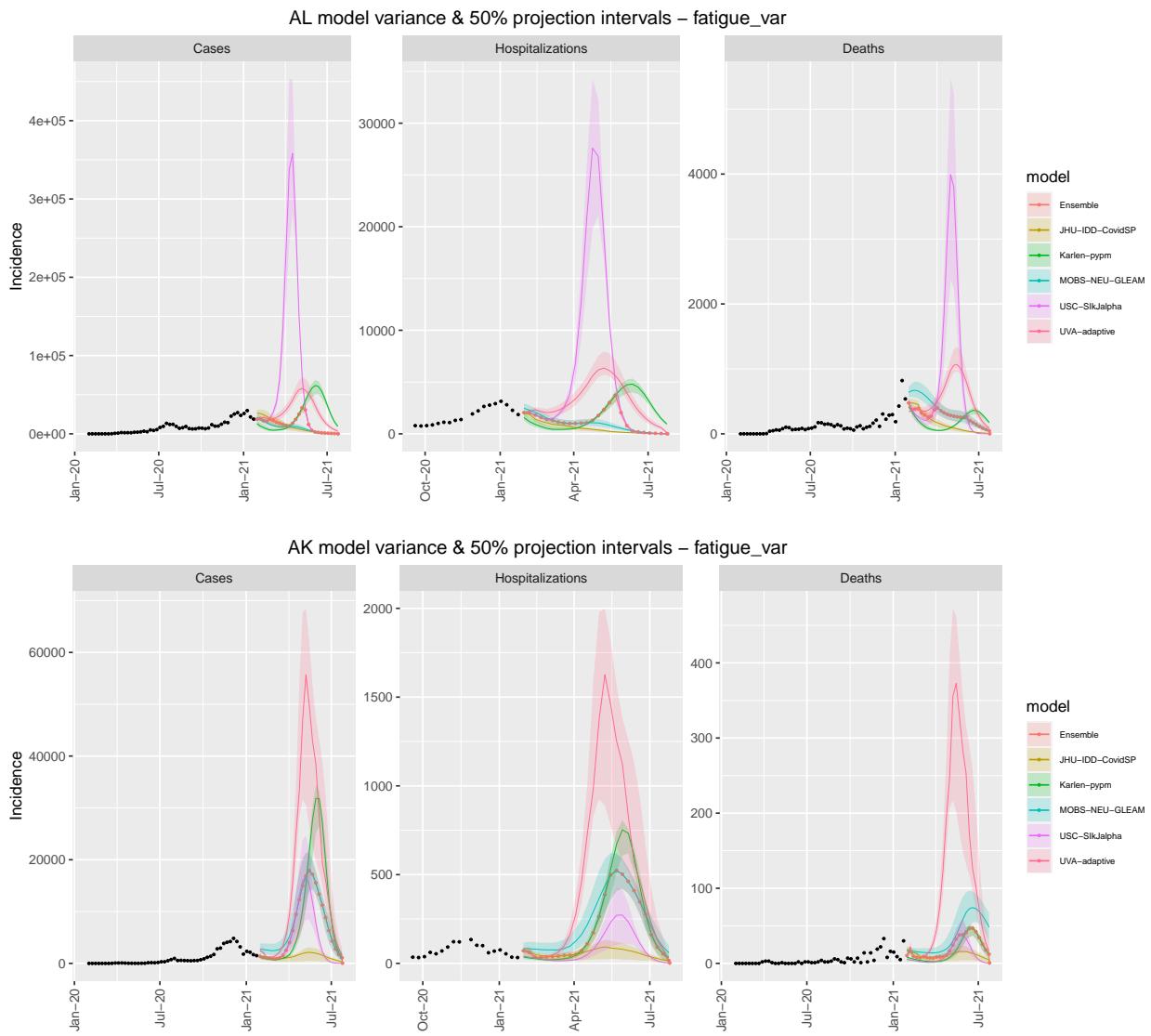
PR model variance & 50% projection intervals – fatigue_no_var



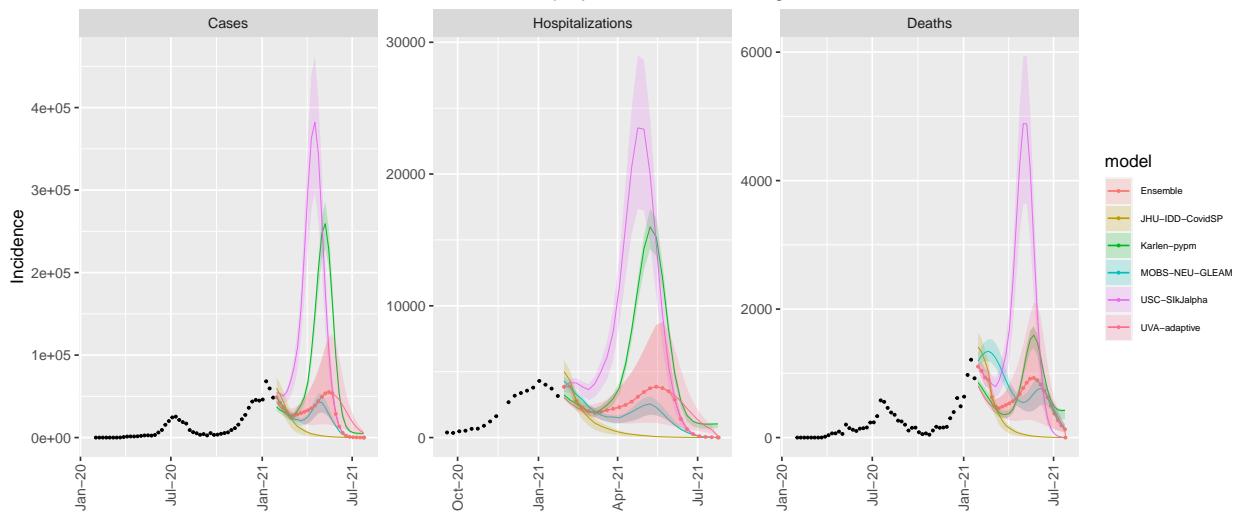
VI model variance & 50% projection intervals – fatigue_no_var



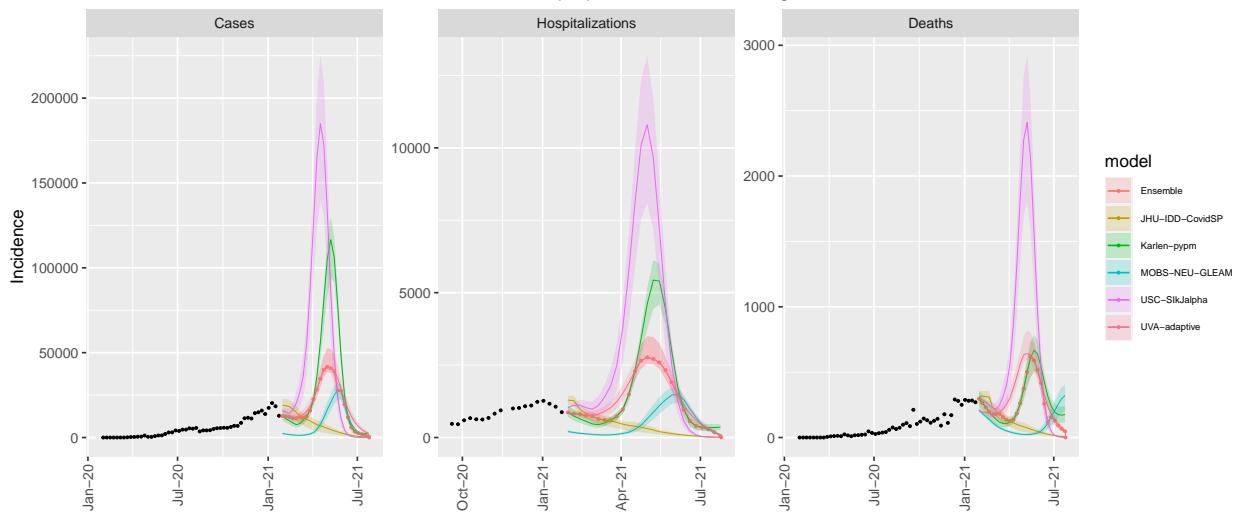
National model variation for the fatigue variant scenario



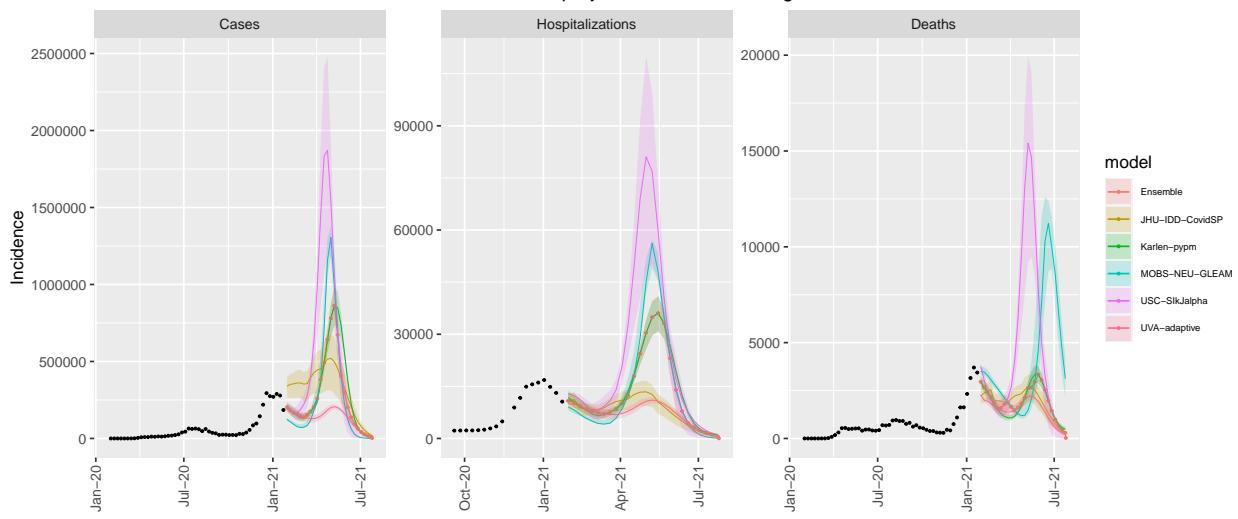
AZ model variance & 50% projection intervals – fatigue_var



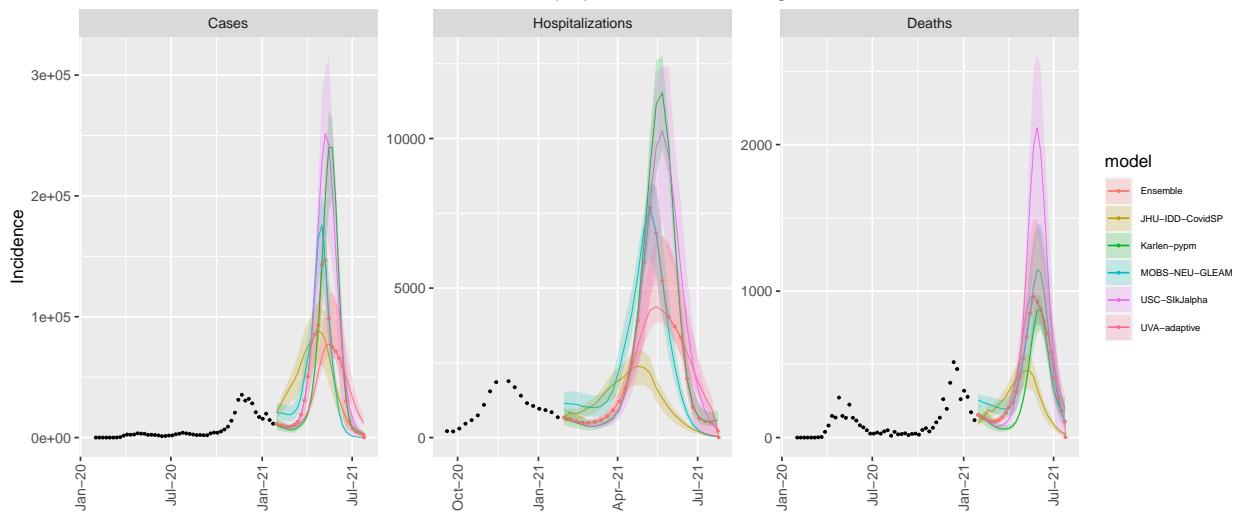
AR model variance & 50% projection intervals – fatigue_var



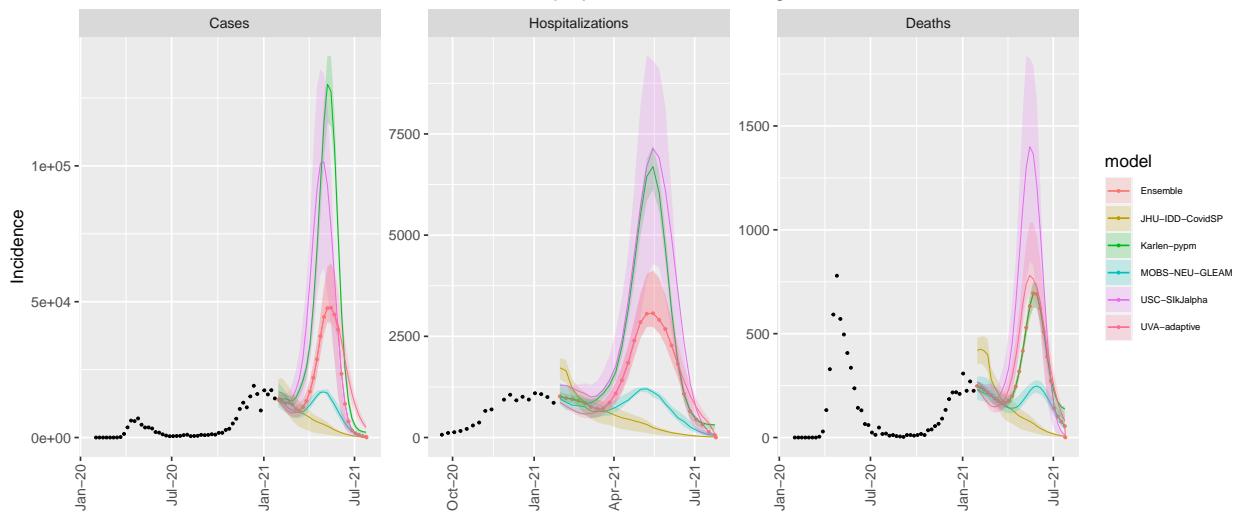
CA model variance & 50% projection intervals – fatigue_var



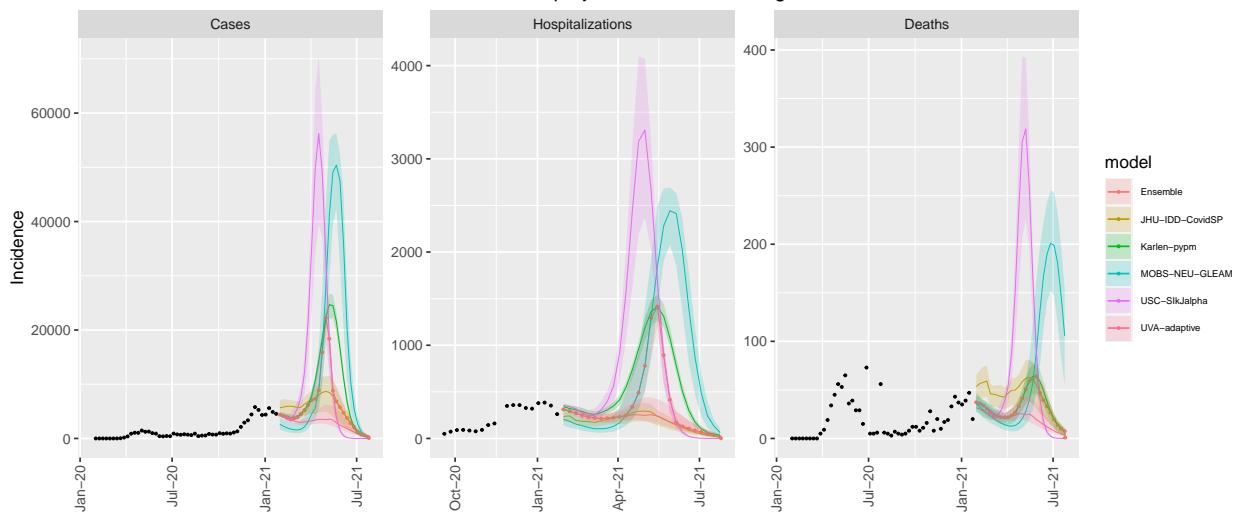
CO model variance & 50% projection intervals – fatigue_var



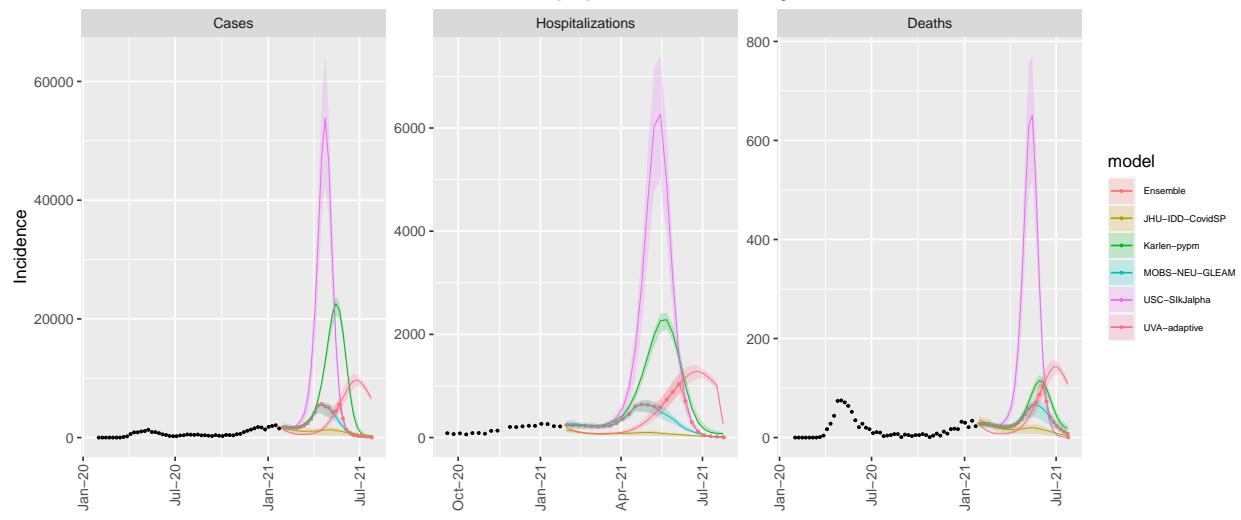
CT model variance & 50% projection intervals – fatigue_var



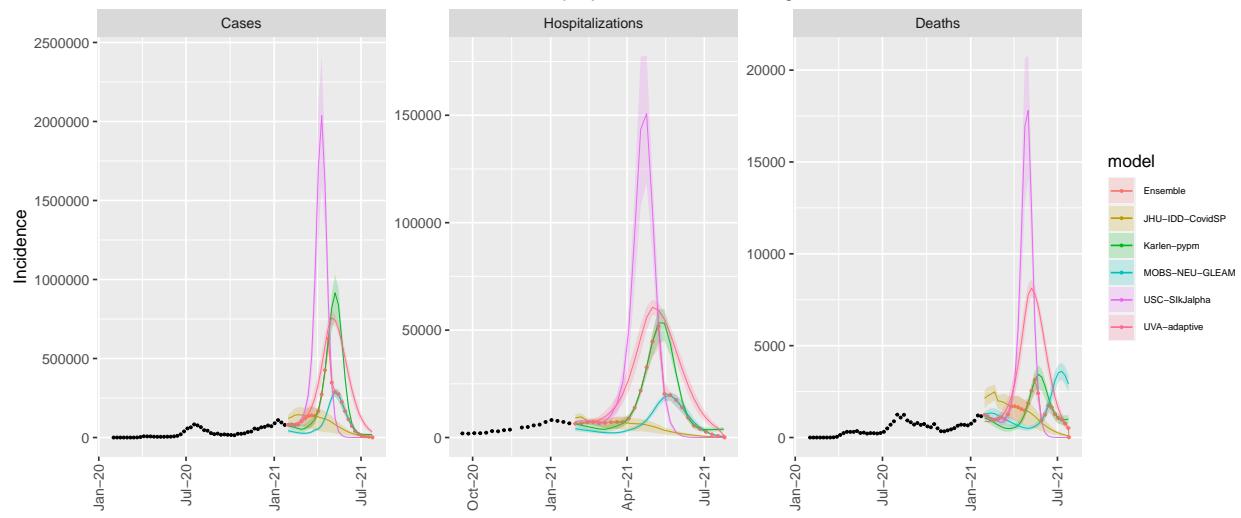
DE model variance & 50% projection intervals – fatigue_var



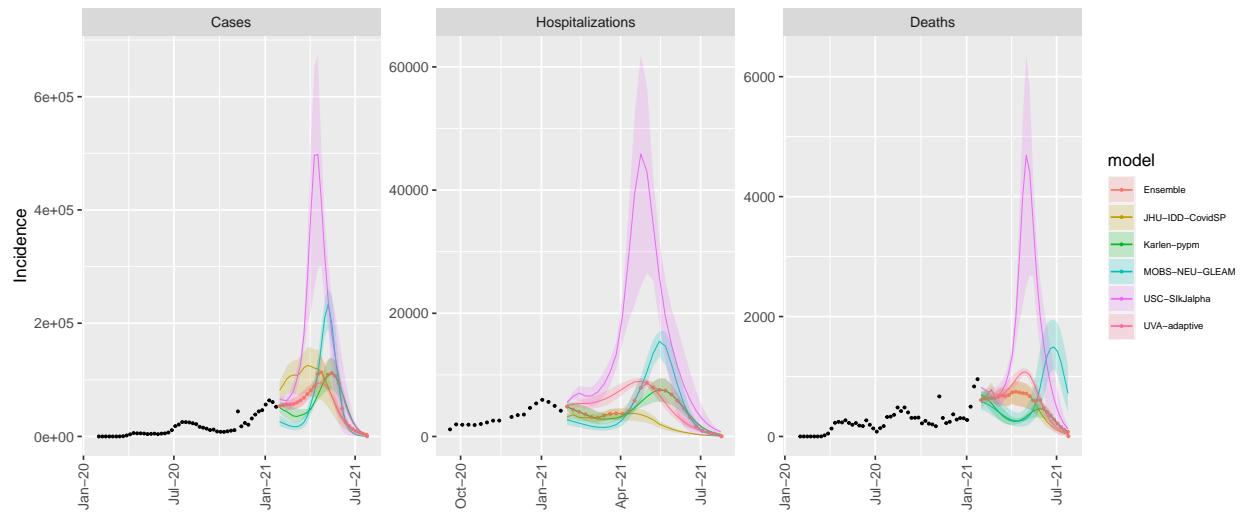
DC model variance & 50% projection intervals – fatigue_var



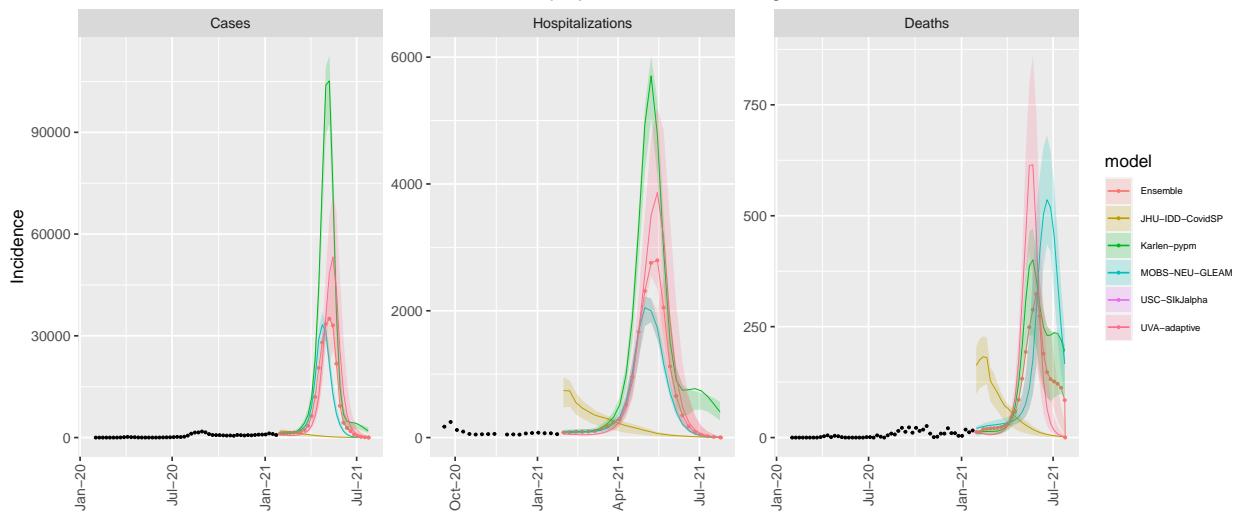
FL model variance & 50% projection intervals – fatigue_var



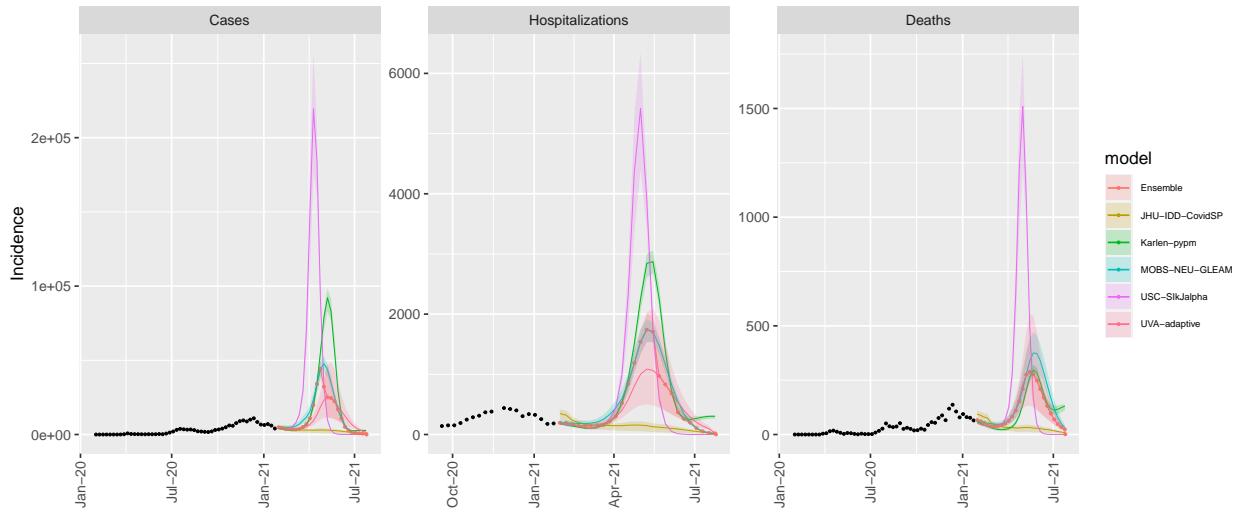
GA model variance & 50% projection intervals – fatigue_var



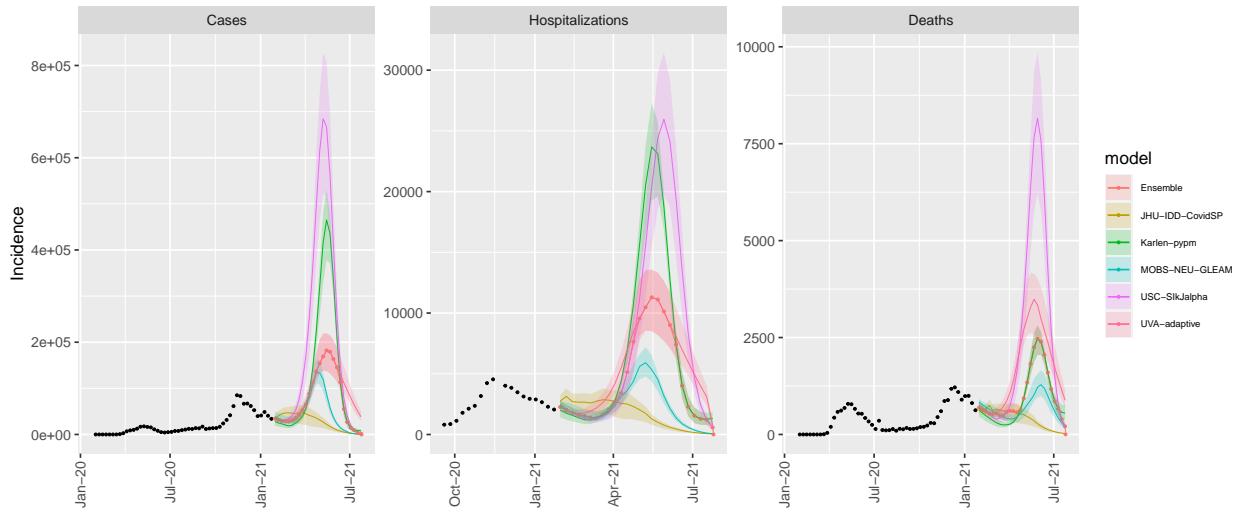
HI model variance & 50% projection intervals – fatigue_var



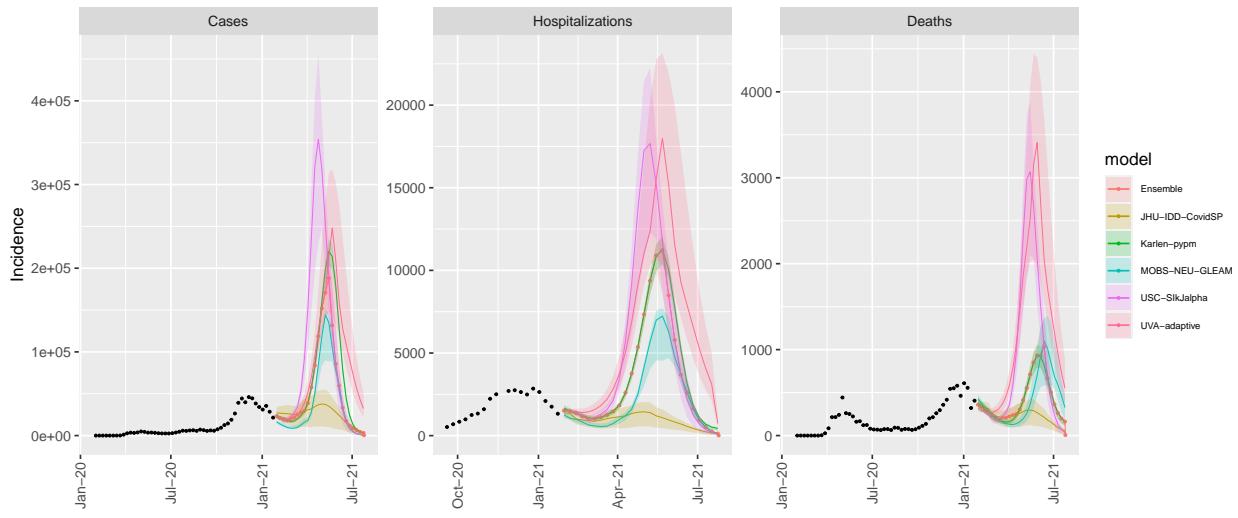
ID model variance & 50% projection intervals – fatigue_var



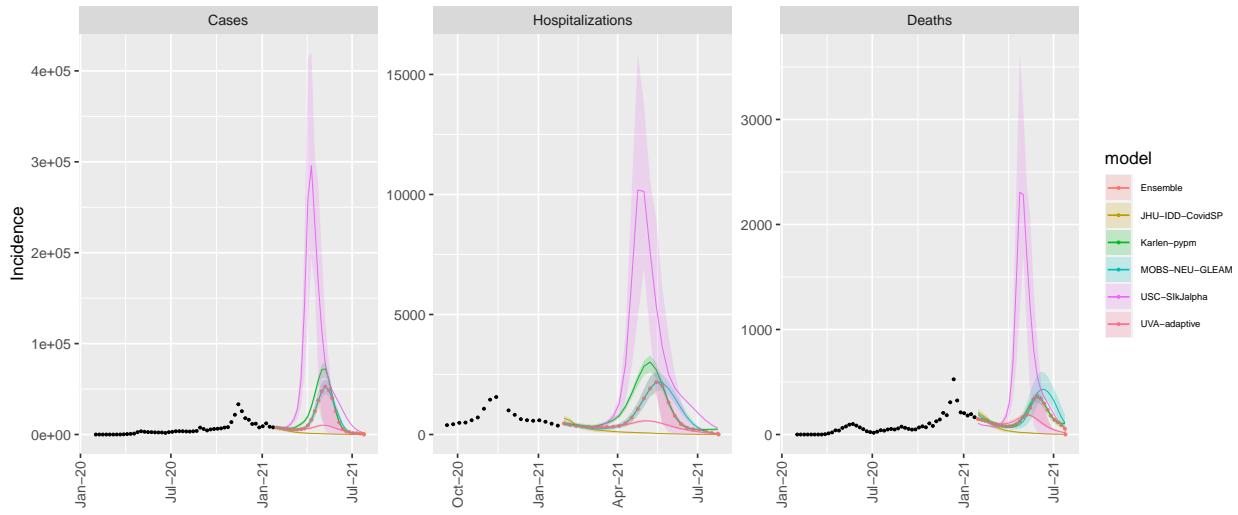
IL model variance & 50% projection intervals – fatigue_var



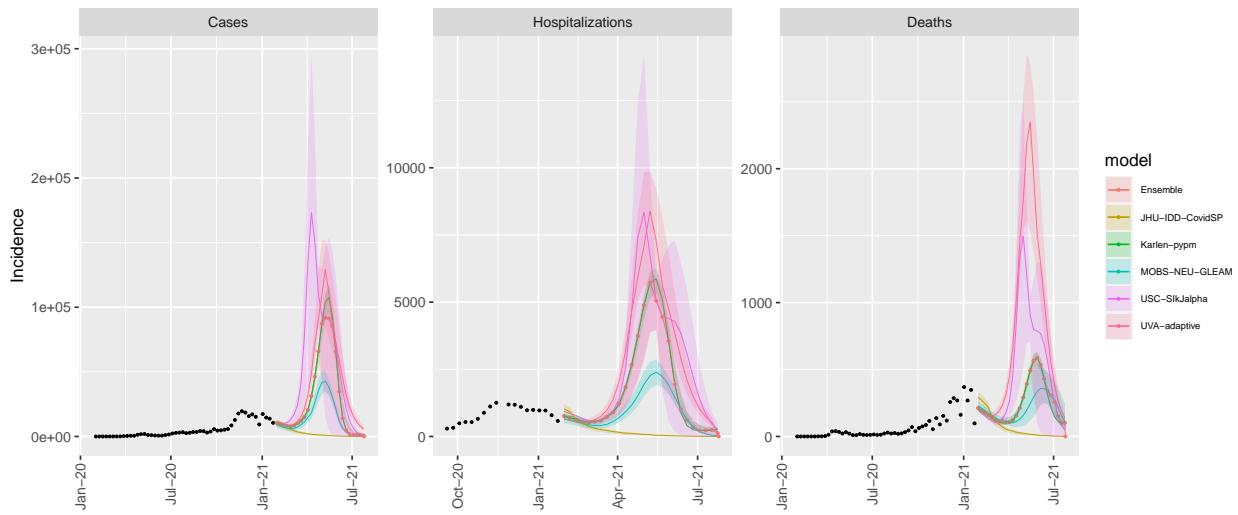
IN model variance & 50% projection intervals – fatigue_var



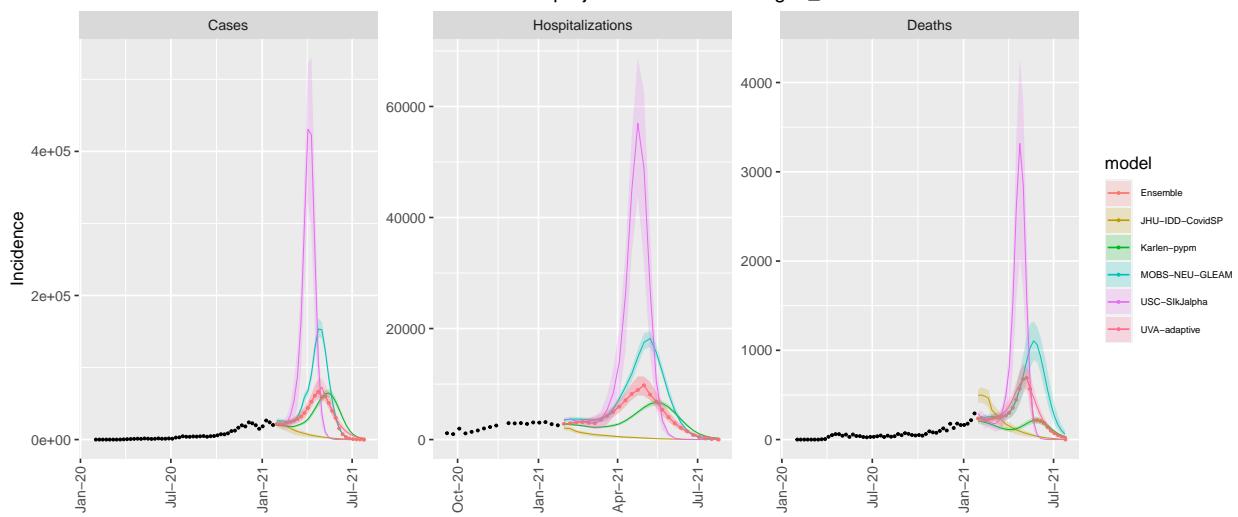
IA model variance & 50% projection intervals – fatigue_var



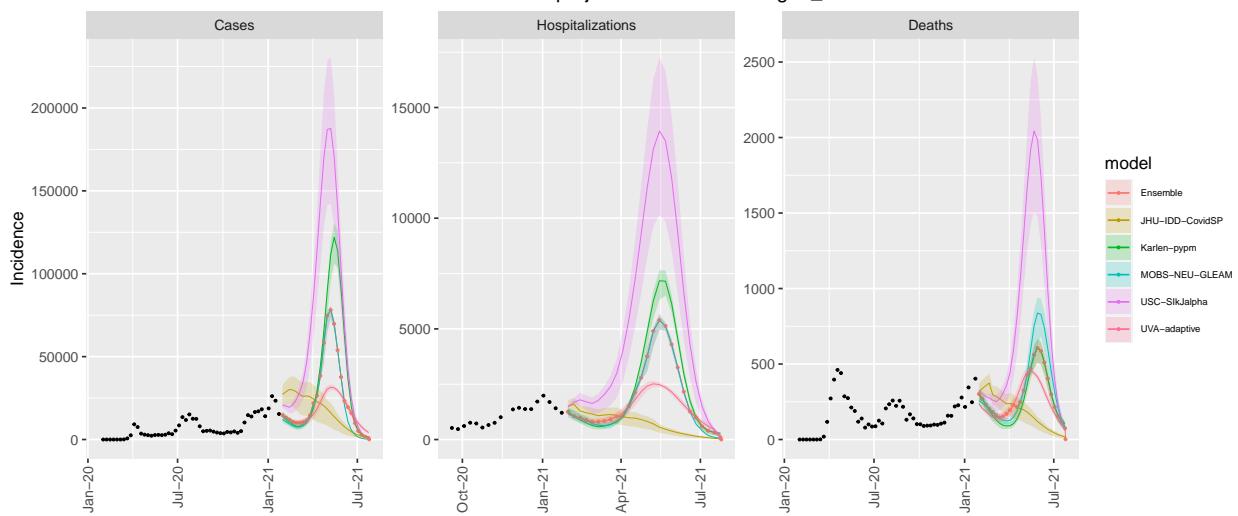
KS model variance & 50% projection intervals – fatigue_var



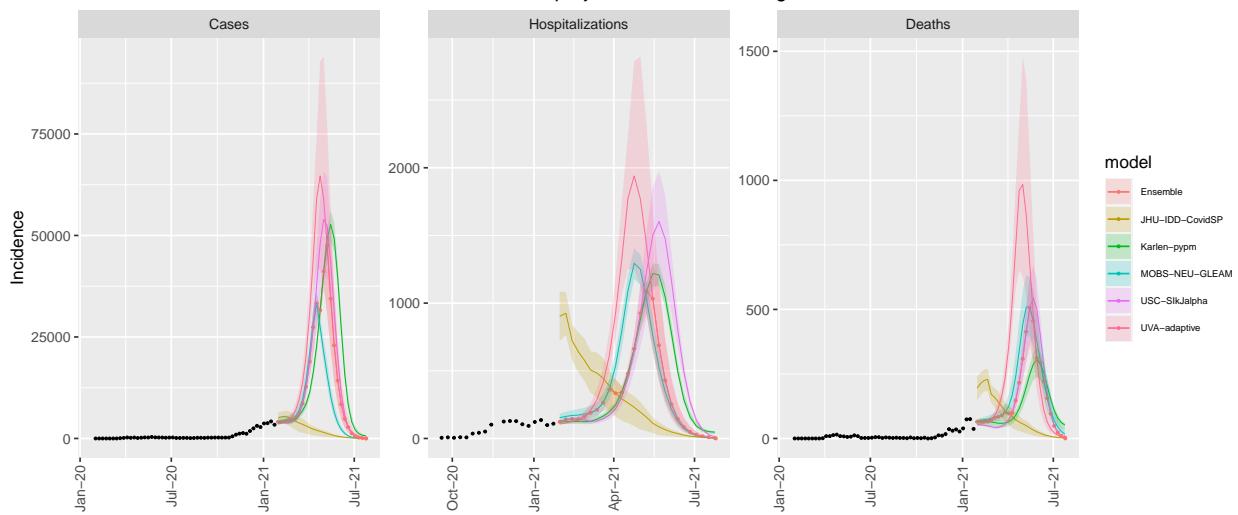
KY model variance & 50% projection intervals – fatigue_var



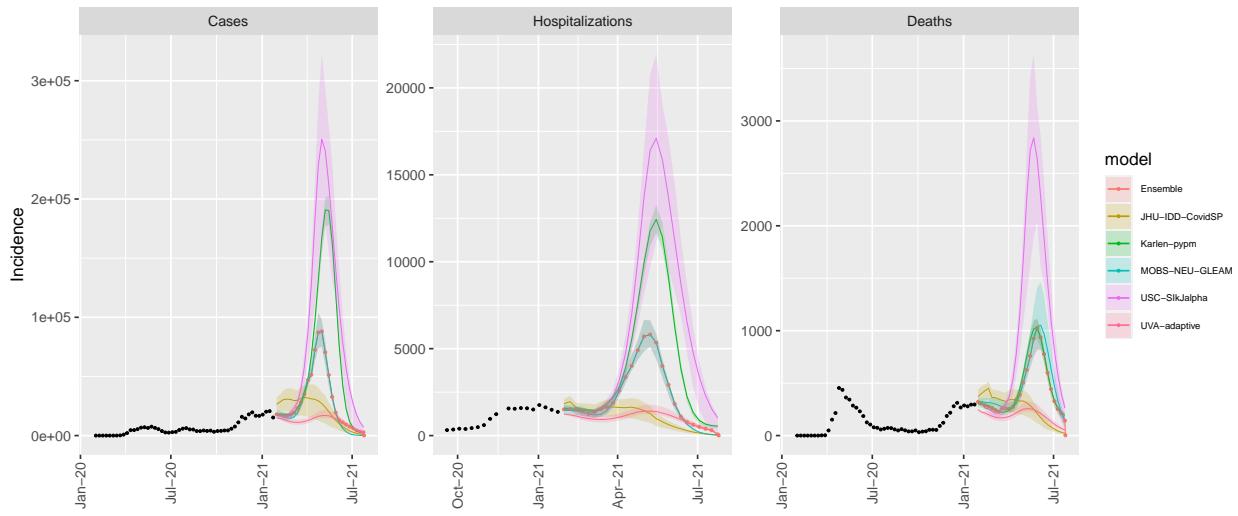
LA model variance & 50% projection intervals – fatigue_var



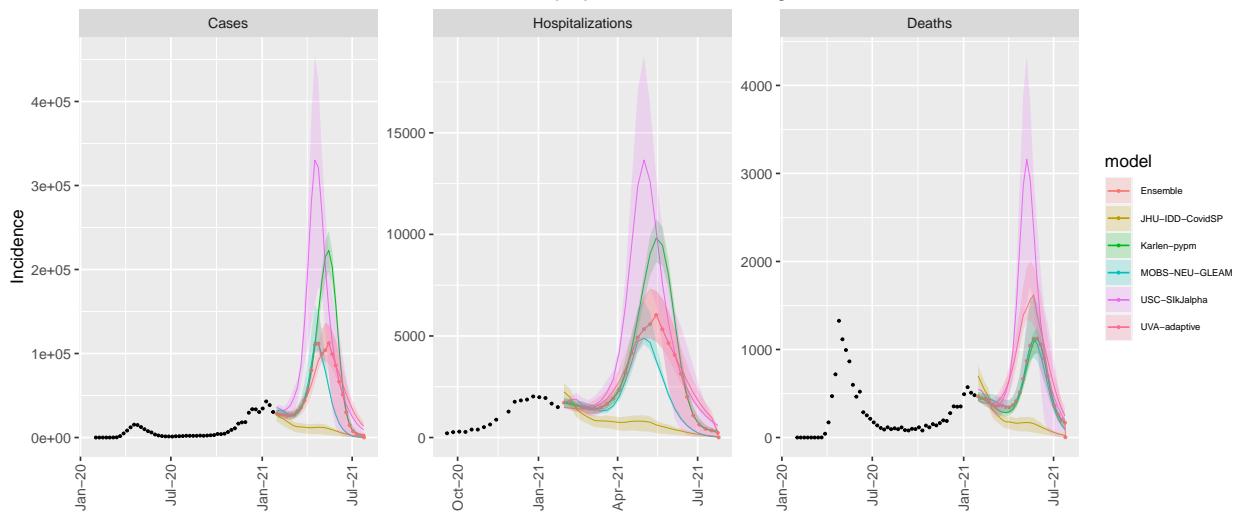
ME model variance & 50% projection intervals – fatigue_var



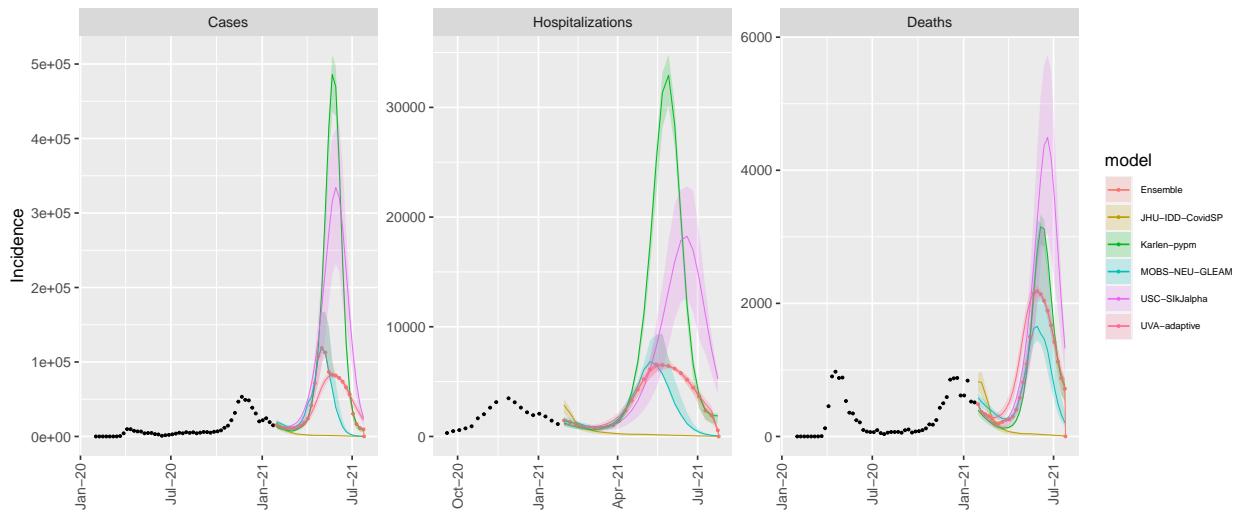
MD model variance & 50% projection intervals – fatigue_var



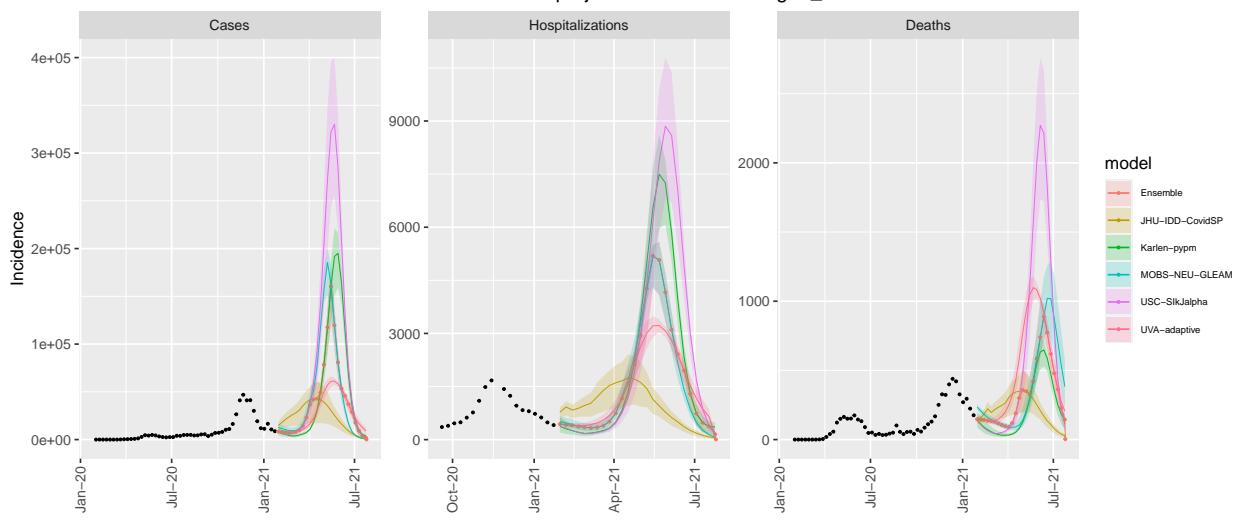
MA model variance & 50% projection intervals – fatigue_var



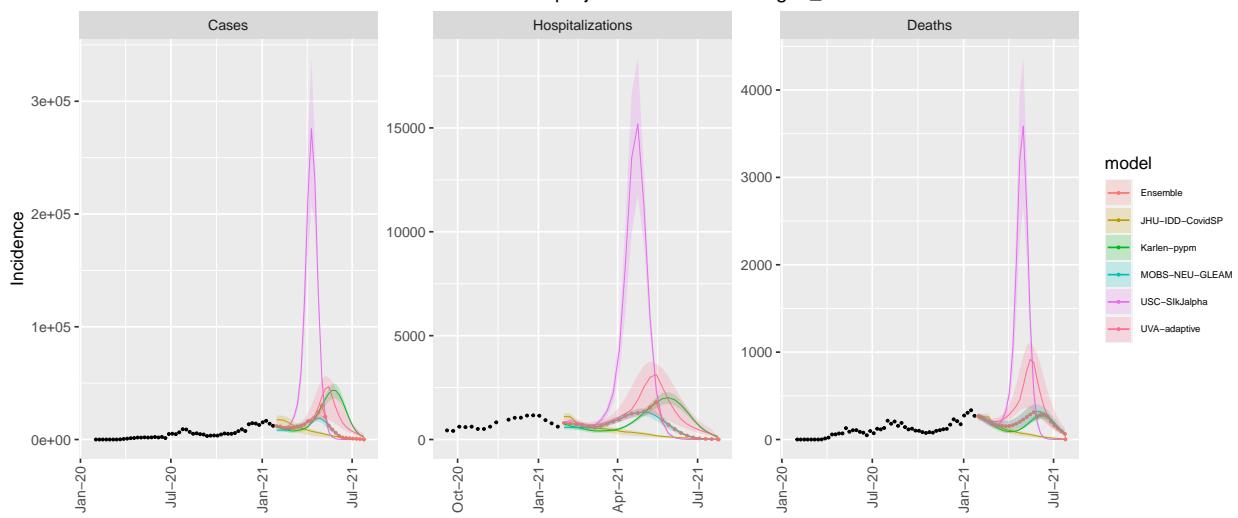
MI model variance & 50% projection intervals – fatigue_var



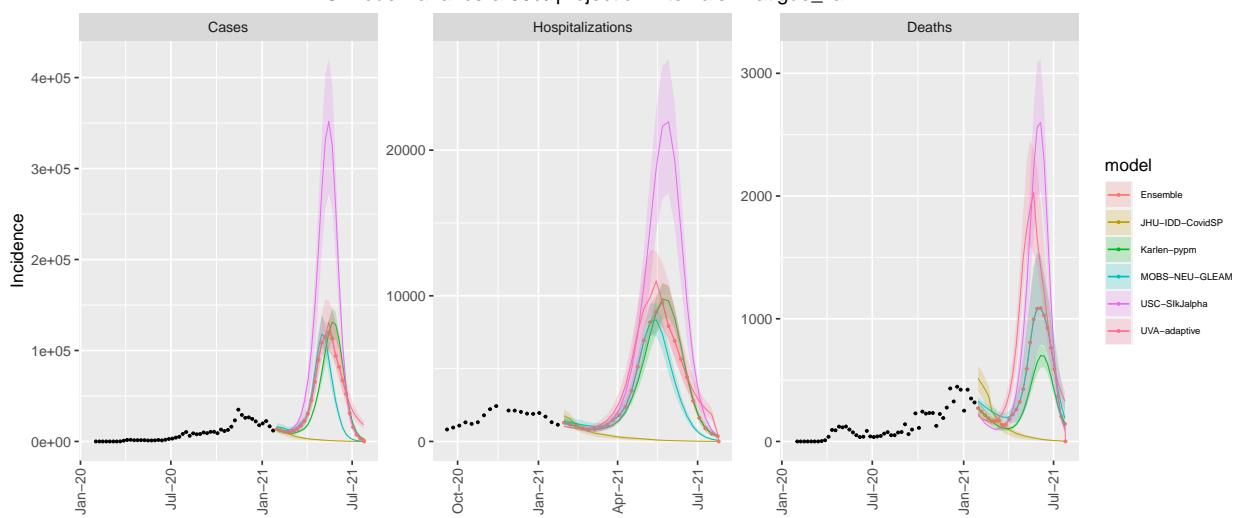
MN model variance & 50% projection intervals – fatigue_var



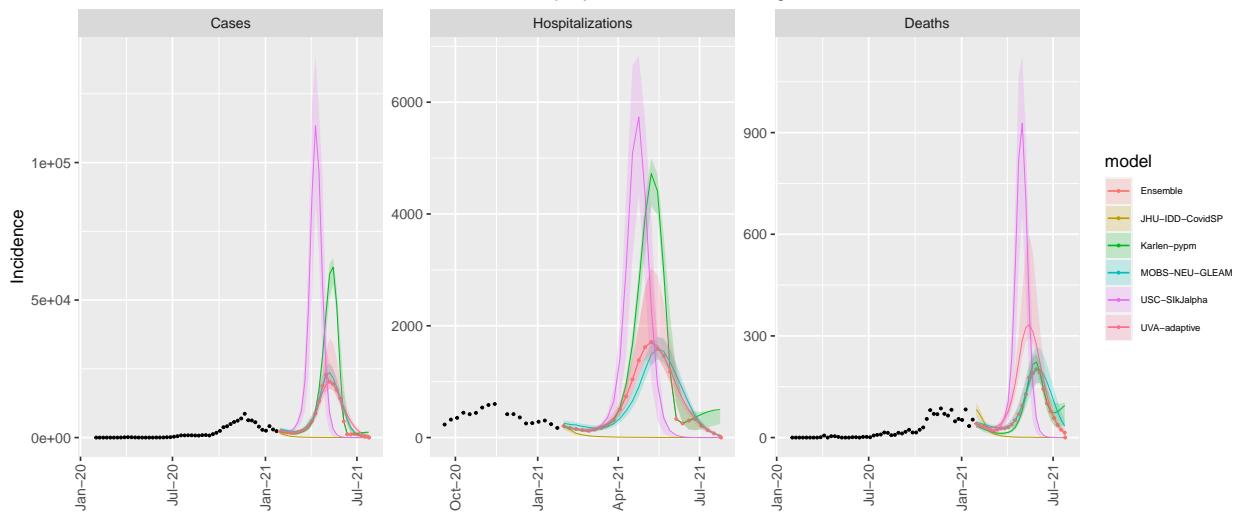
MS model variance & 50% projection intervals – fatigue_var



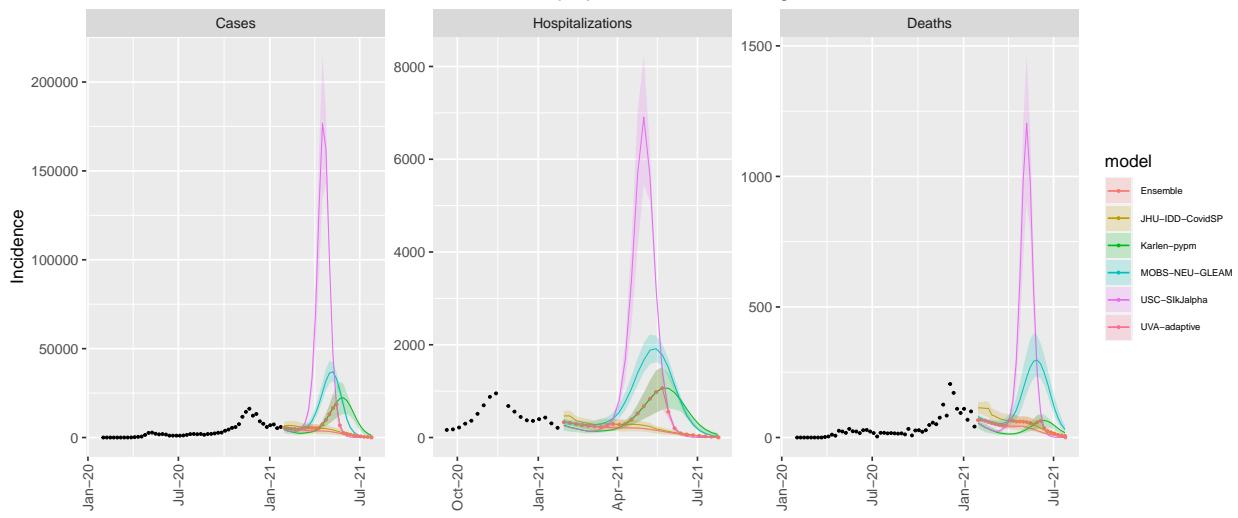
MO model variance & 50% projection intervals – fatigue_var



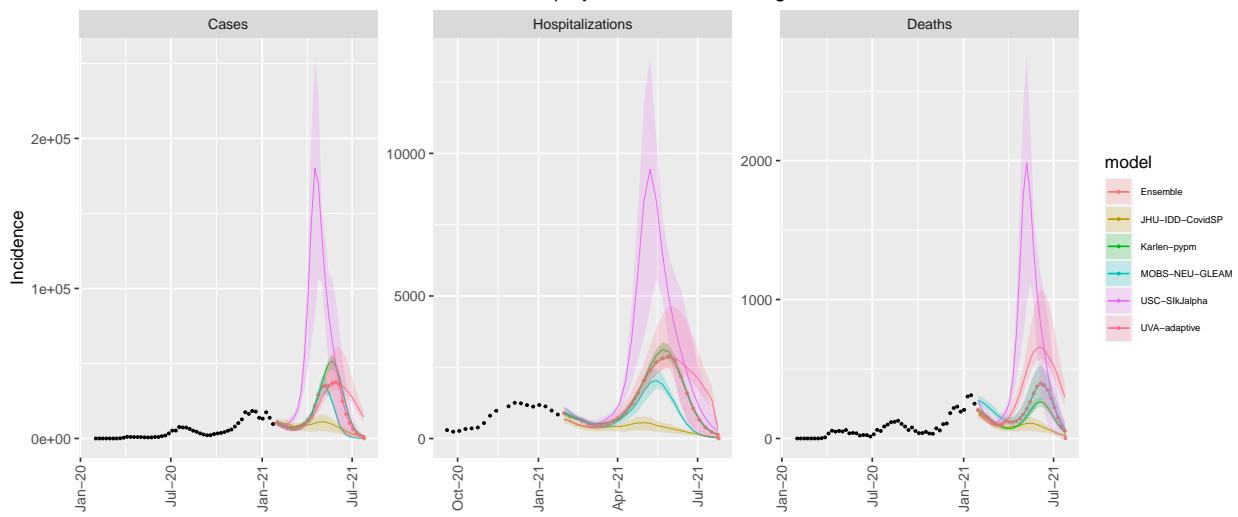
MT model variance & 50% projection intervals – fatigue_var



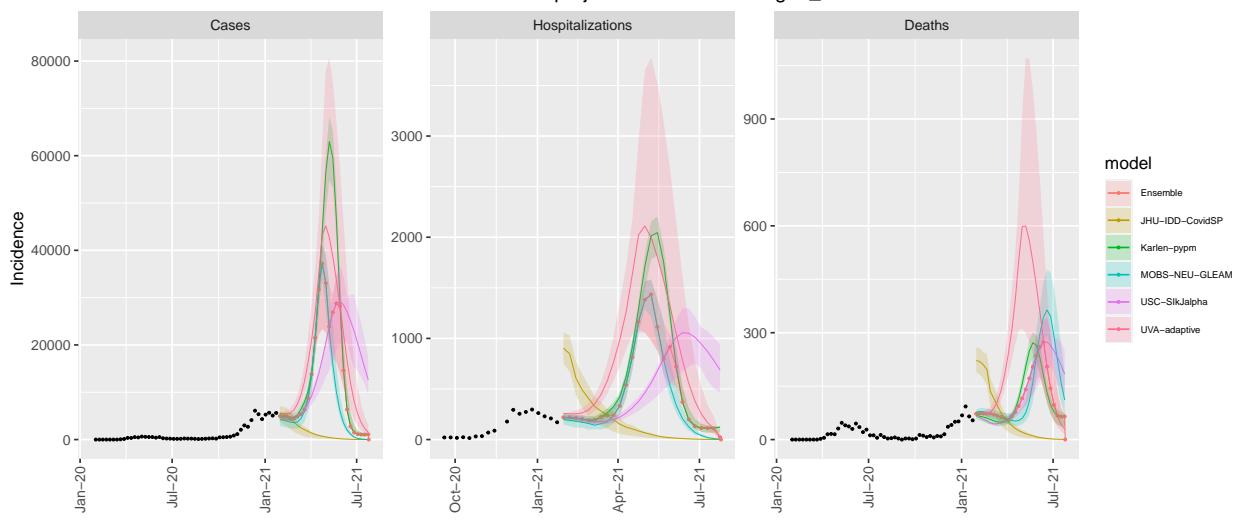
NE model variance & 50% projection intervals – fatigue_var



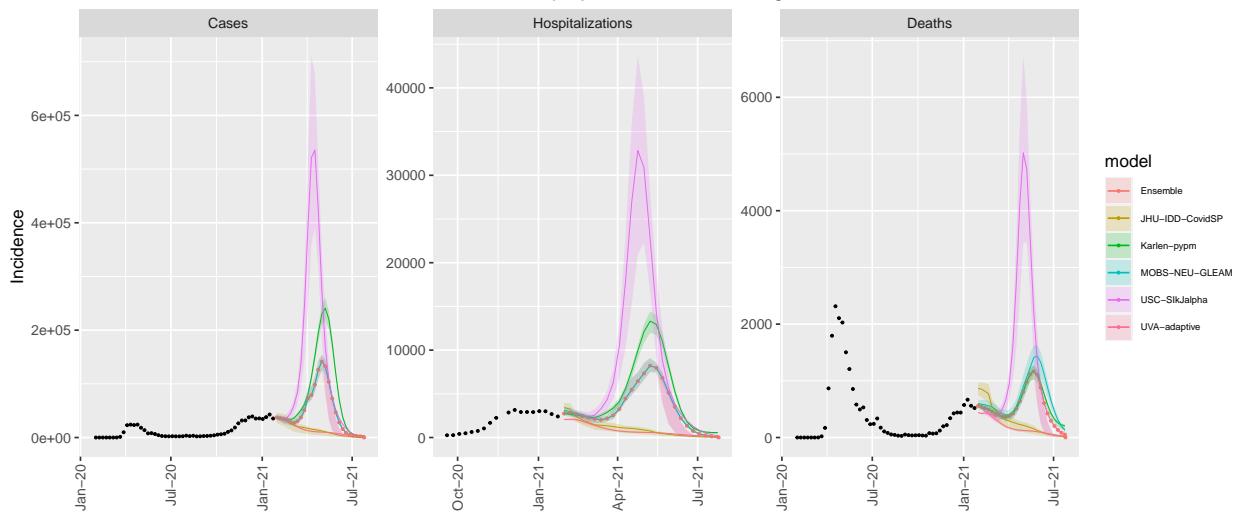
NV model variance & 50% projection intervals – fatigue_var



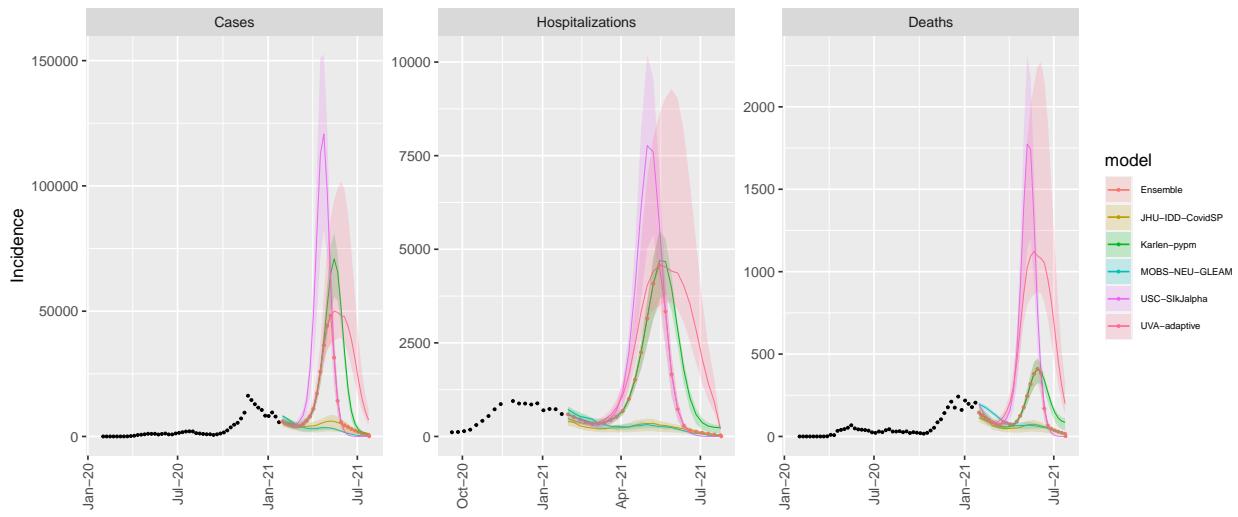
NH model variance & 50% projection intervals – fatigue_var



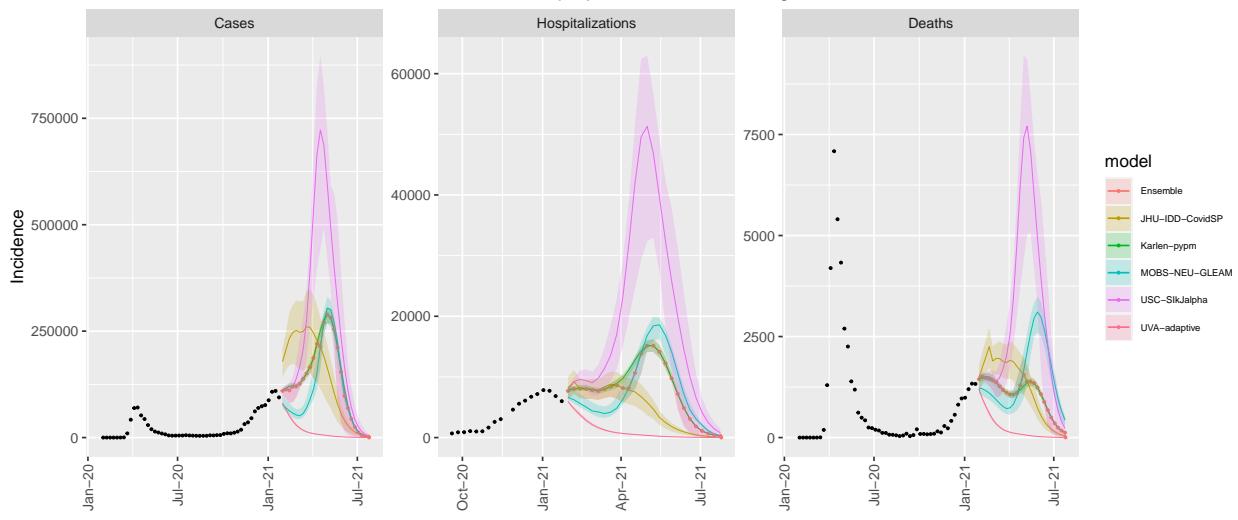
NJ model variance & 50% projection intervals – fatigue_var



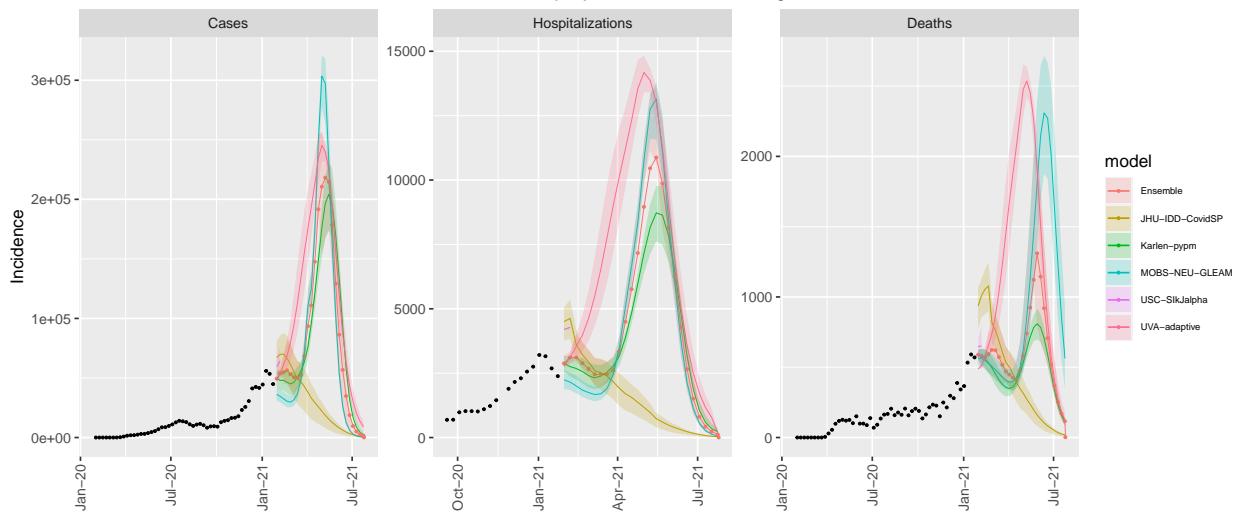
NM model variance & 50% projection intervals – fatigue_var



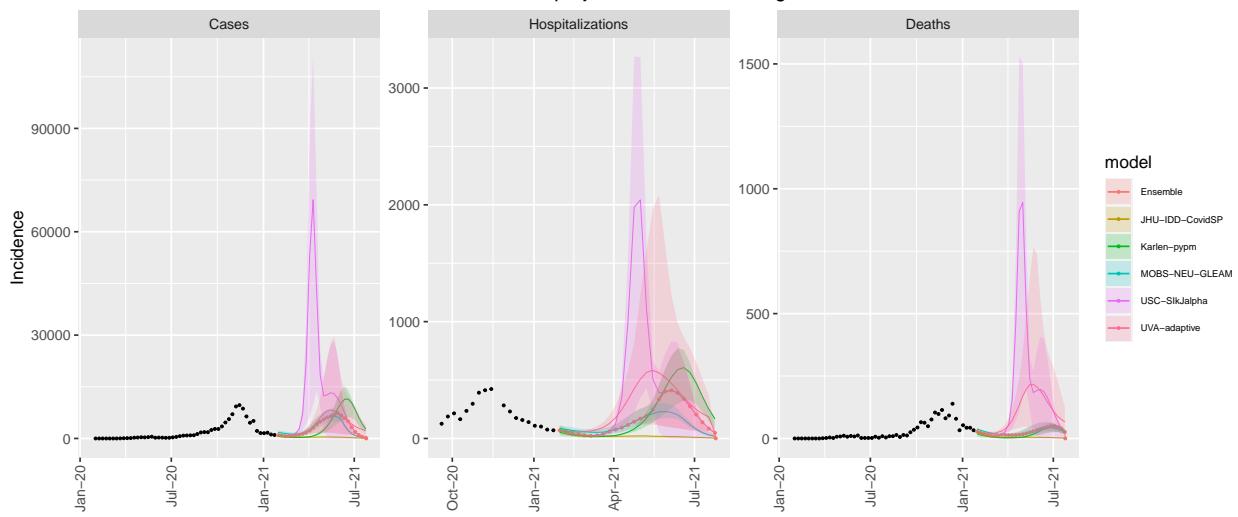
NY model variance & 50% projection intervals – fatigue_var



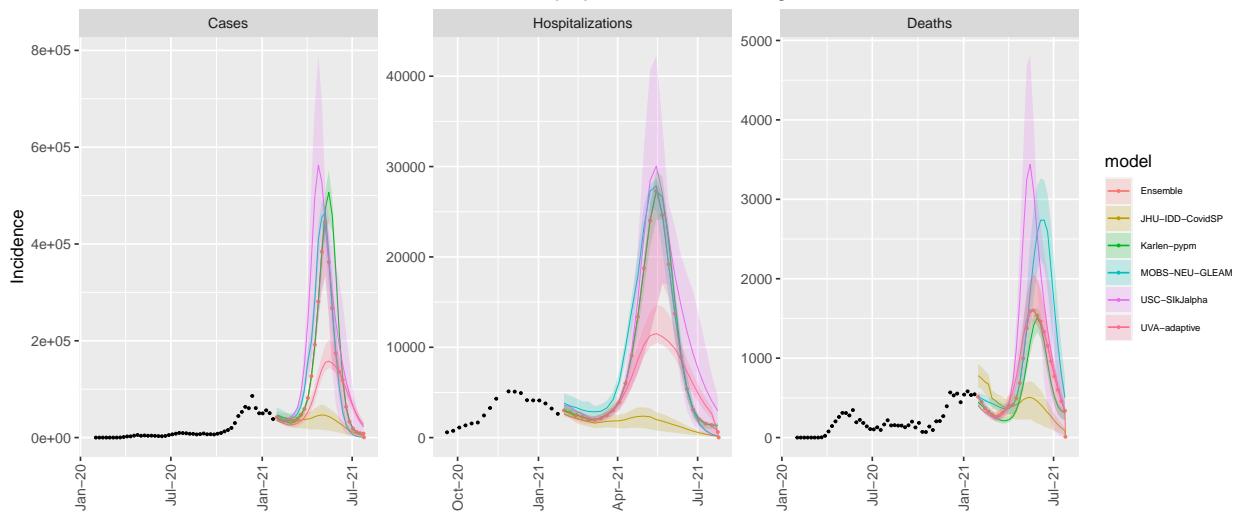
NC model variance & 50% projection intervals – fatigue_var



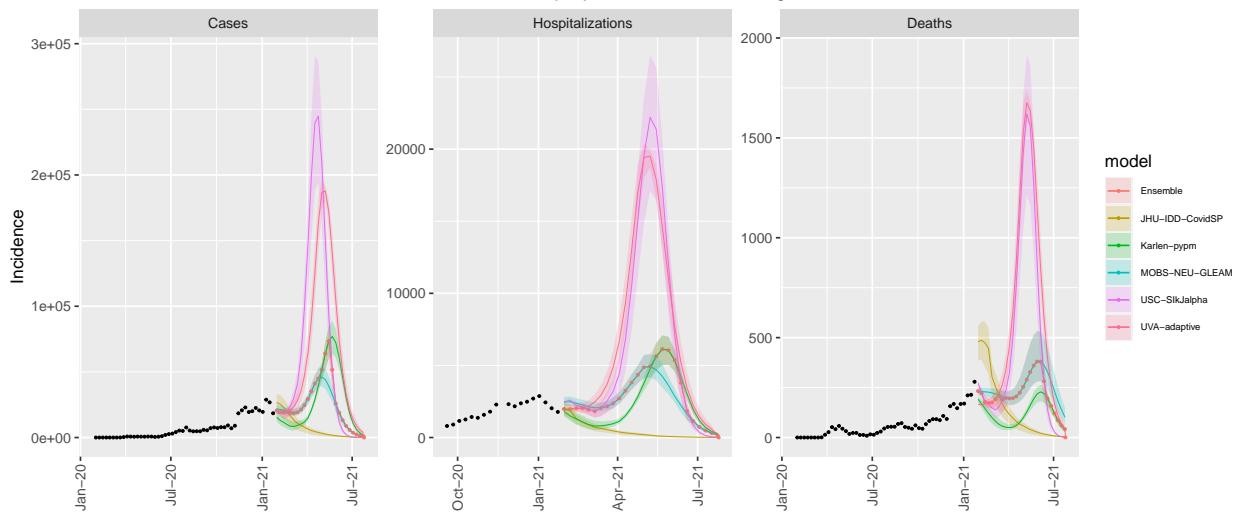
ND model variance & 50% projection intervals – fatigue_var



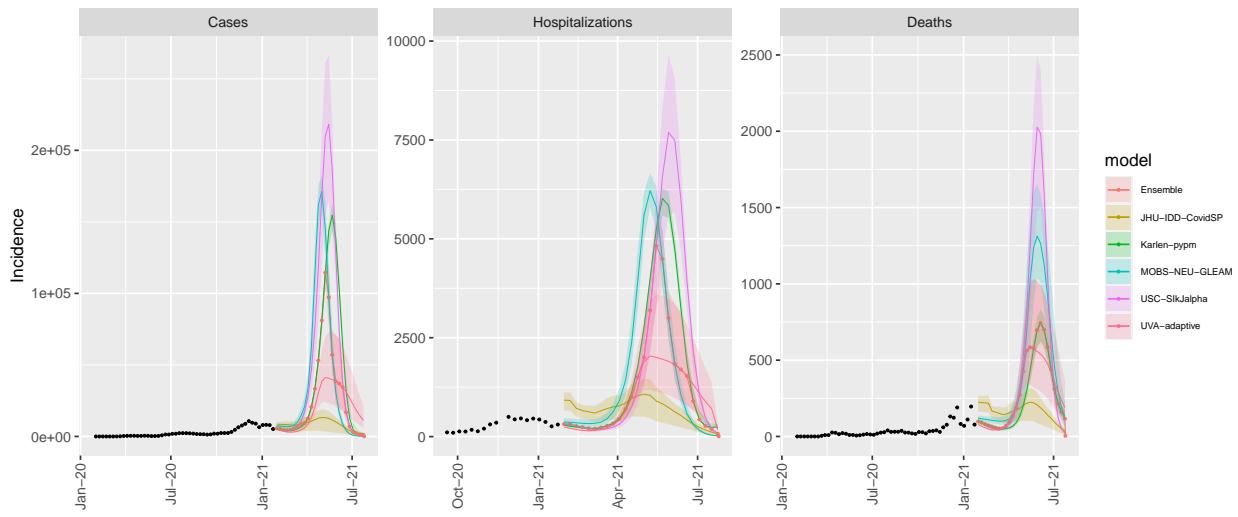
OH model variance & 50% projection intervals – fatigue_var



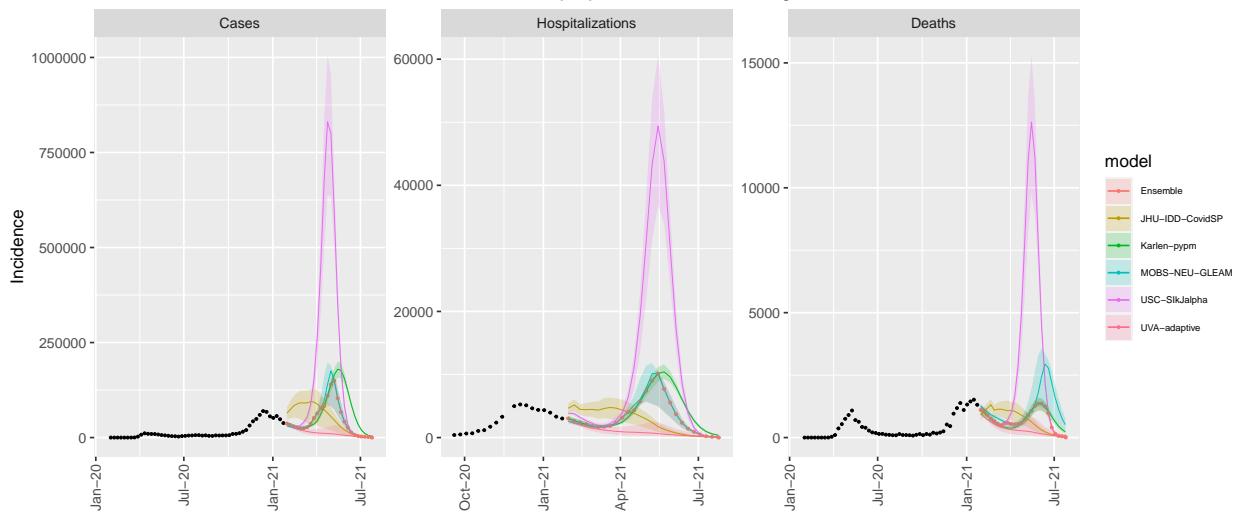
OK model variance & 50% projection intervals – fatigue_var



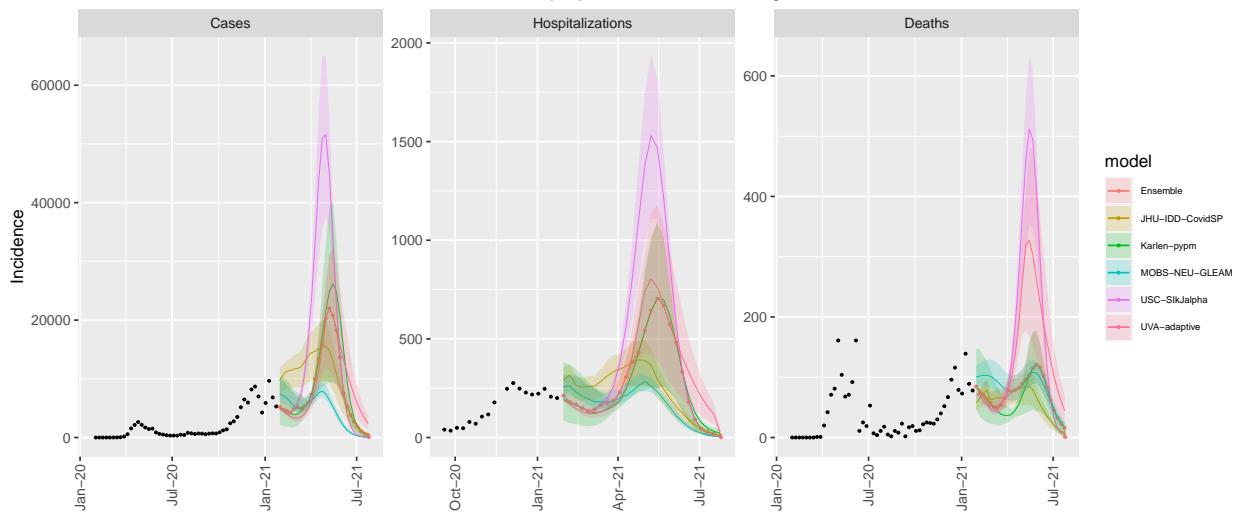
OR model variance & 50% projection intervals – fatigue_var



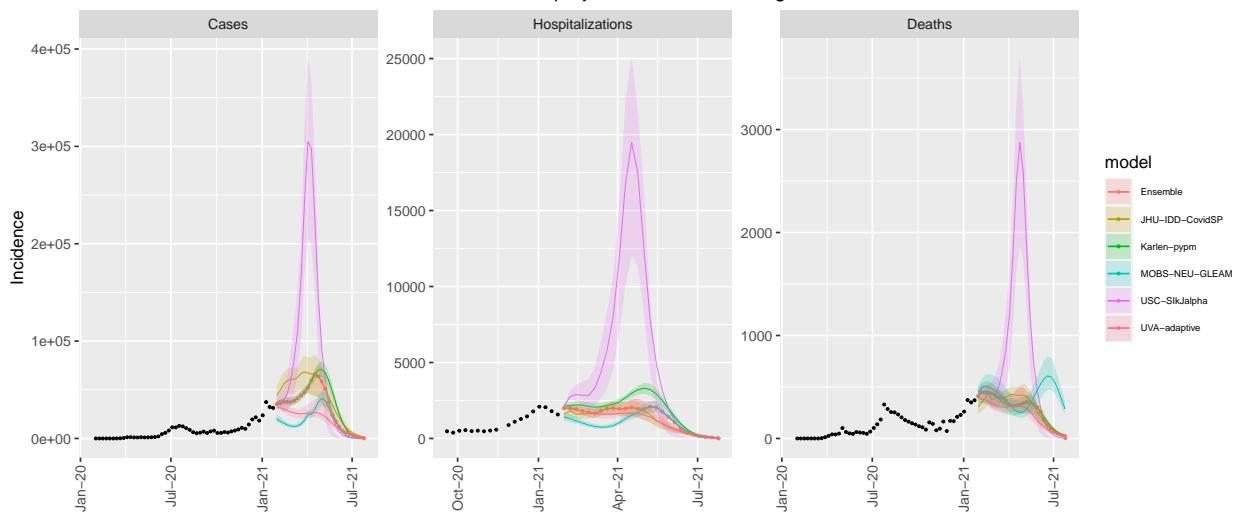
PA model variance & 50% projection intervals – fatigue_var



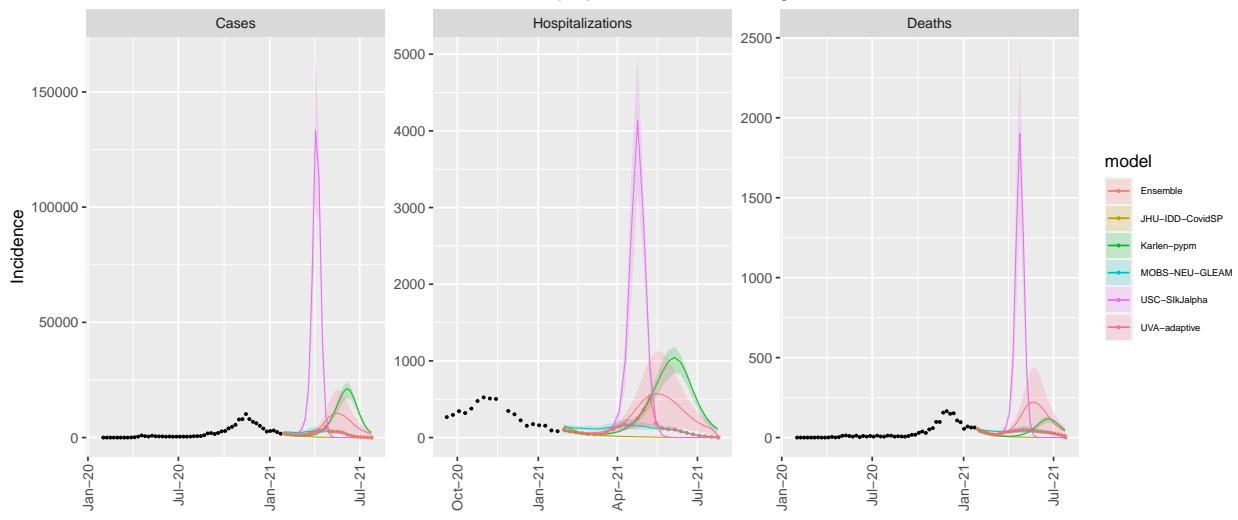
RI model variance & 50% projection intervals – fatigue_var



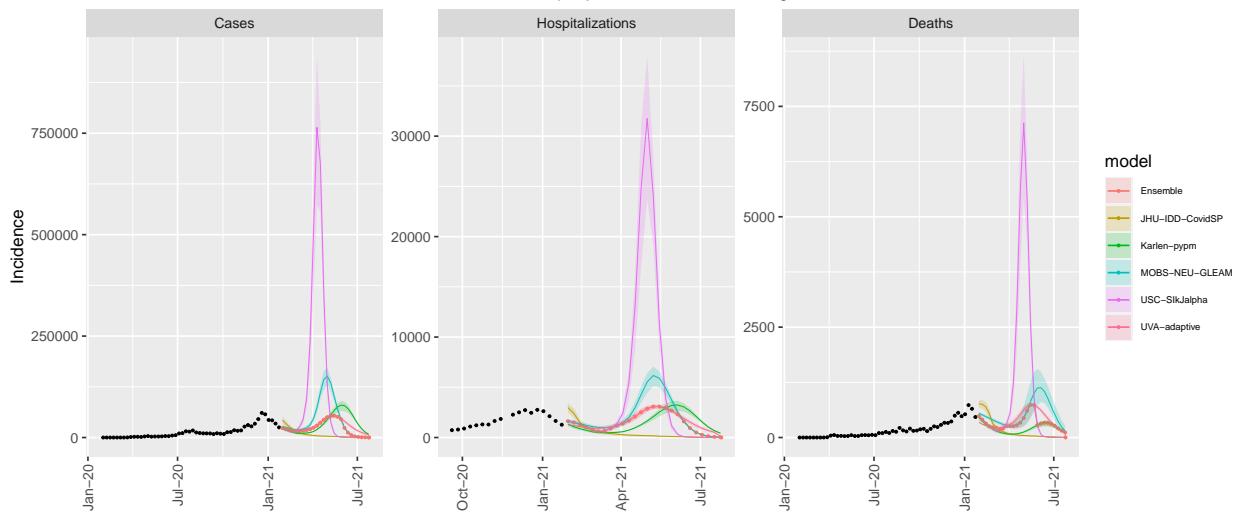
SC model variance & 50% projection intervals – fatigue_var



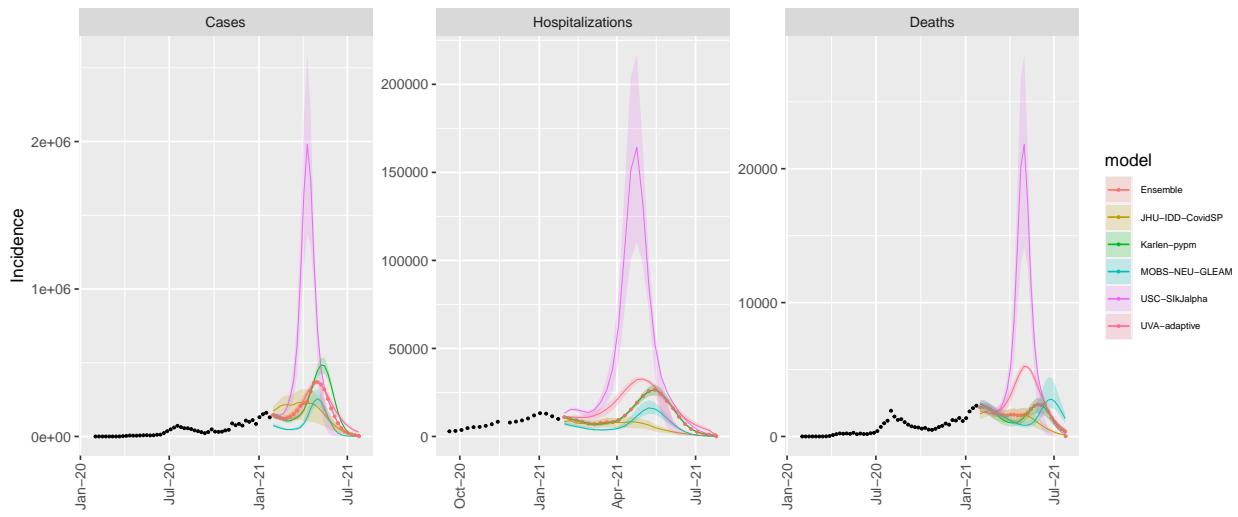
SD model variance & 50% projection intervals – fatigue_var



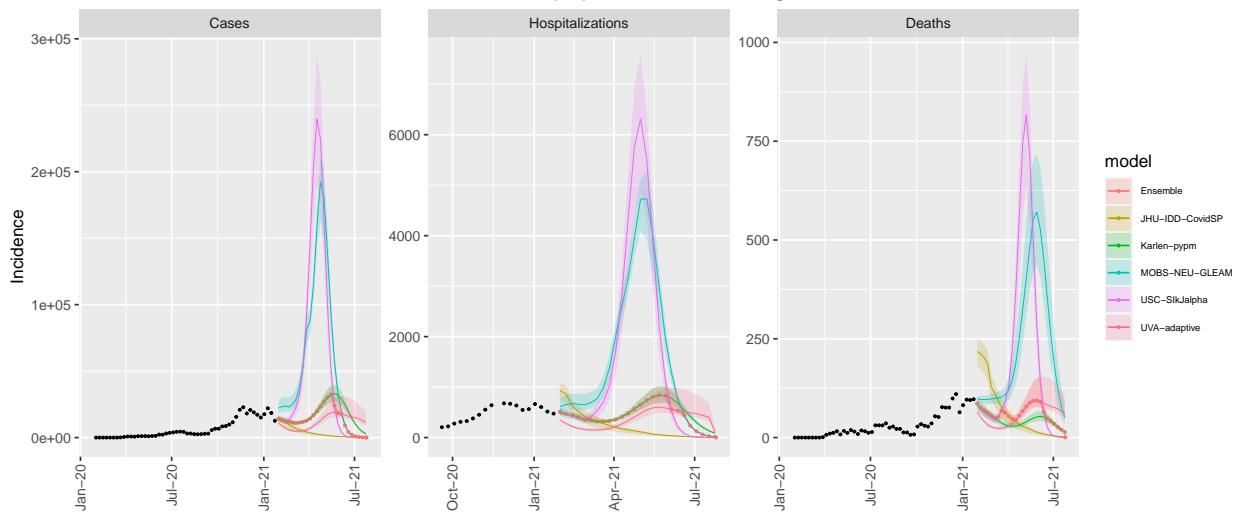
TN model variance & 50% projection intervals – fatigue_var



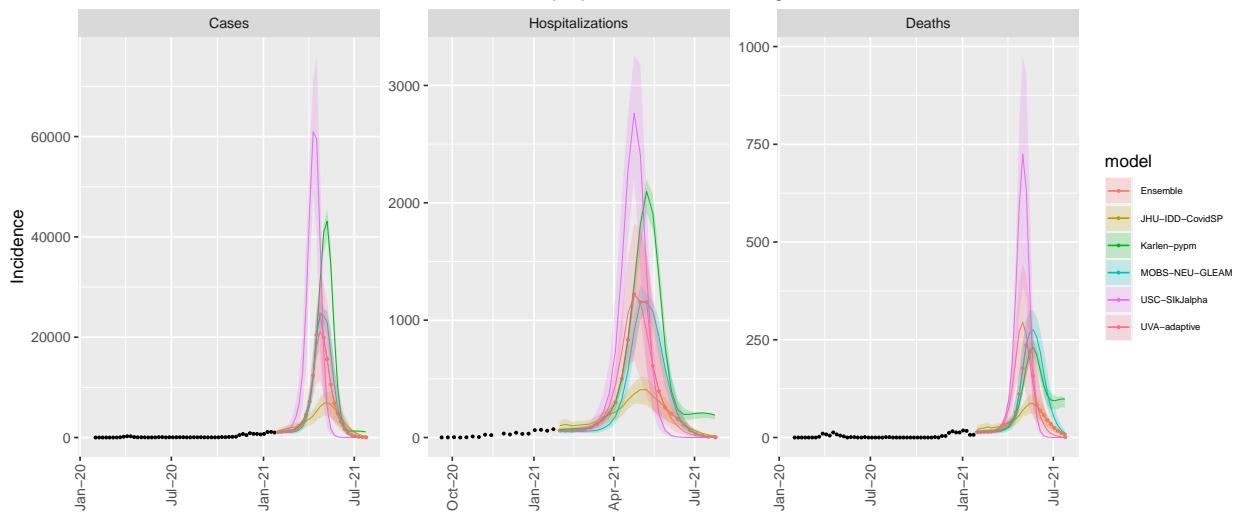
TX model variance & 50% projection intervals – fatigue_var



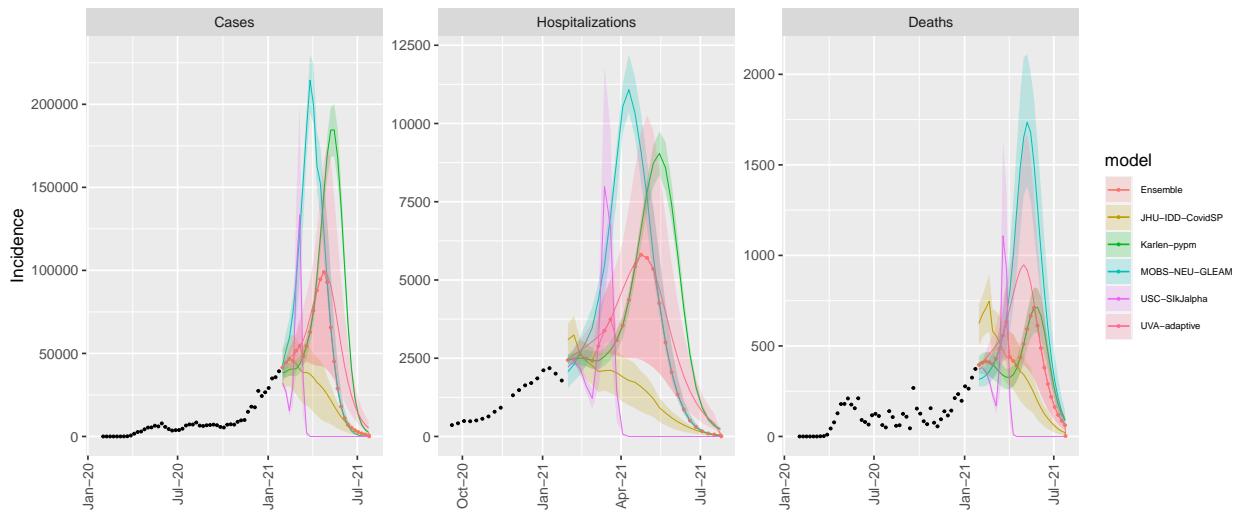
UT model variance & 50% projection intervals – fatigue_var



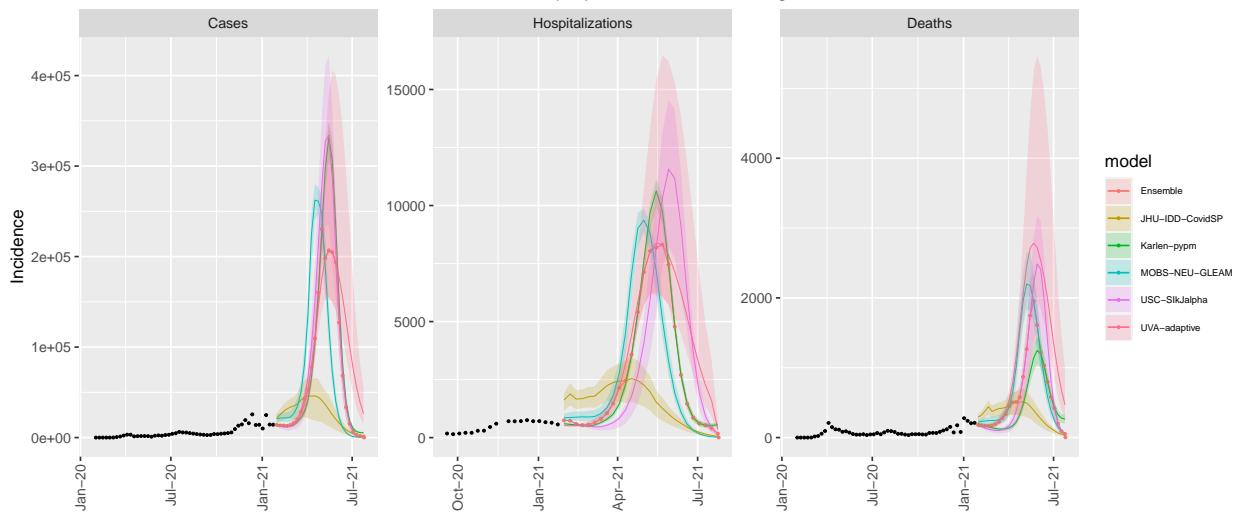
VT model variance & 50% projection intervals – fatigue_var



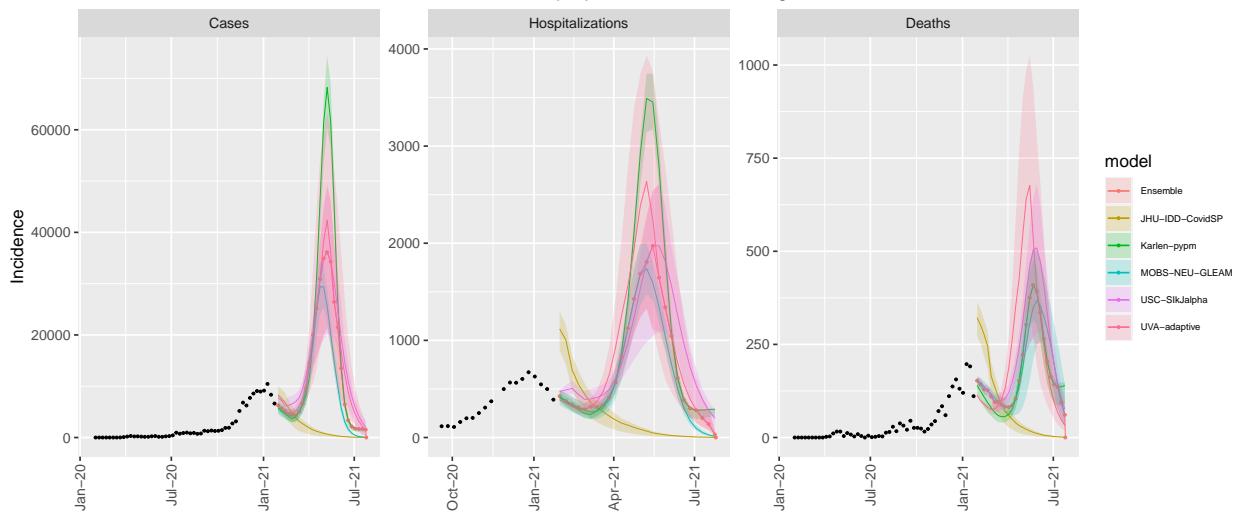
VA model variance & 50% projection intervals – fatigue_var



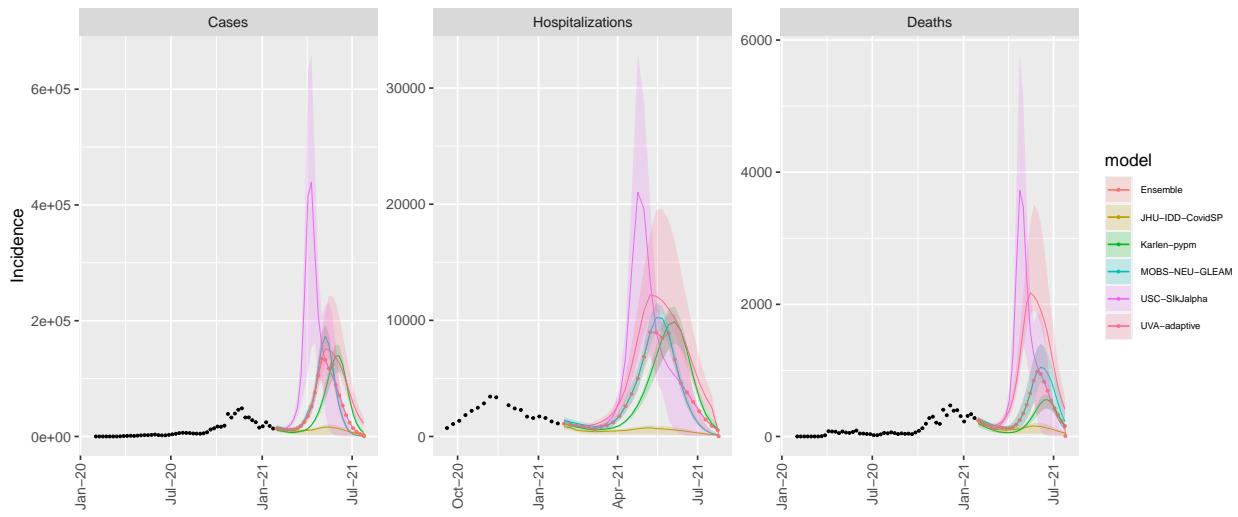
WA model variance & 50% projection intervals – fatigue_var

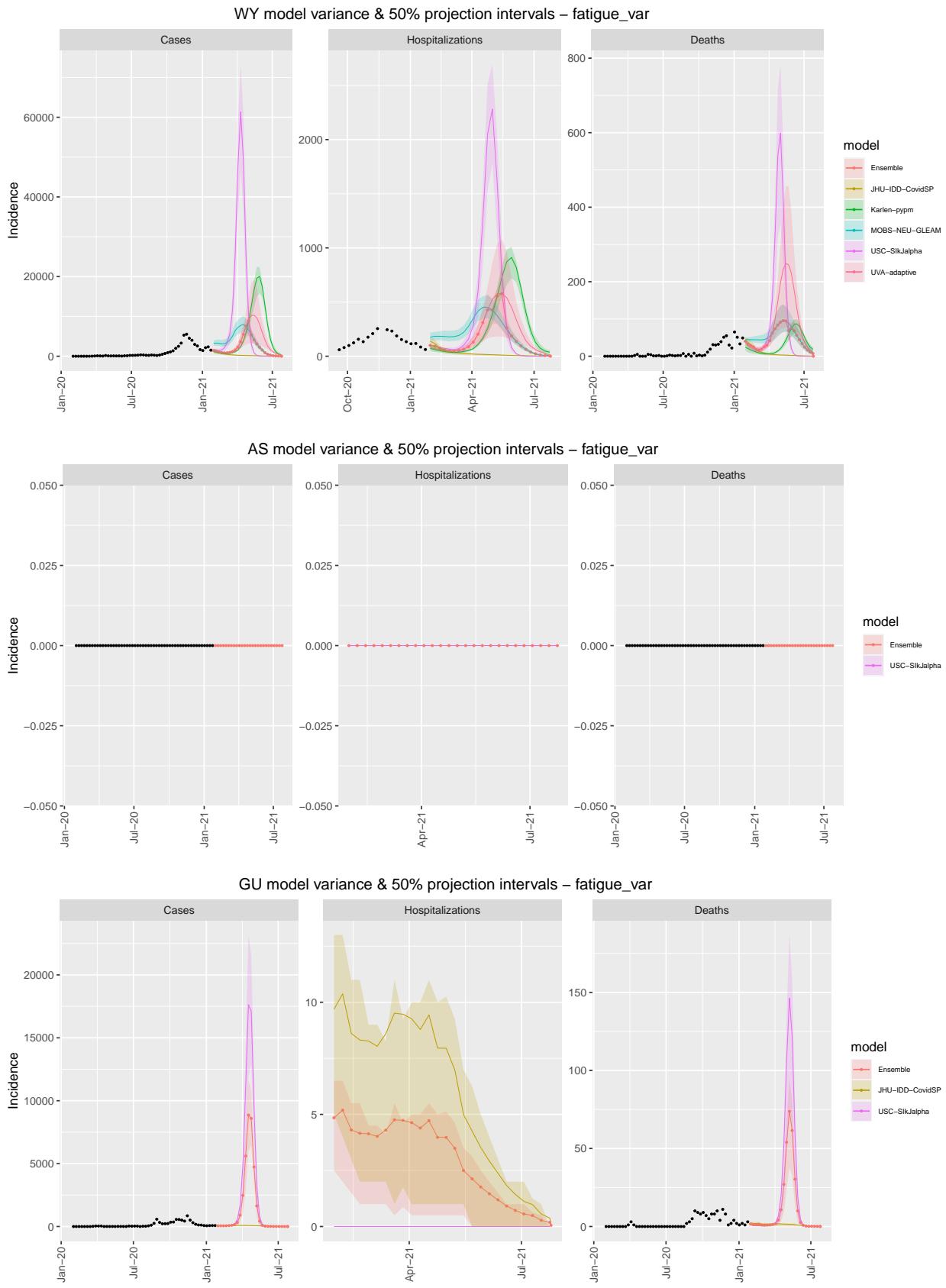


WV model variance & 50% projection intervals – fatigue_var

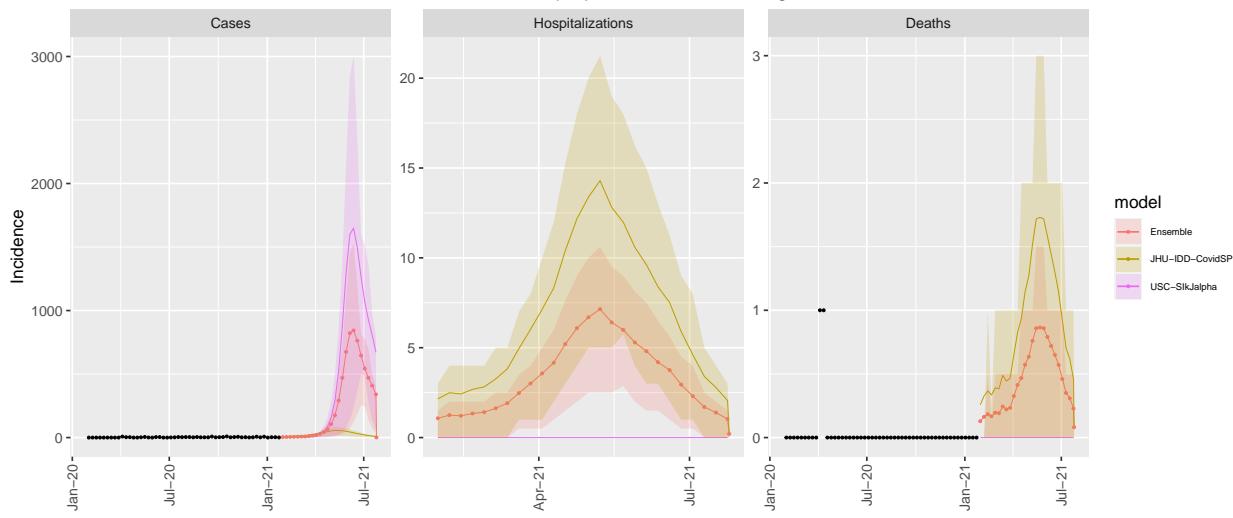


WI model variance & 50% projection intervals – fatigue_var

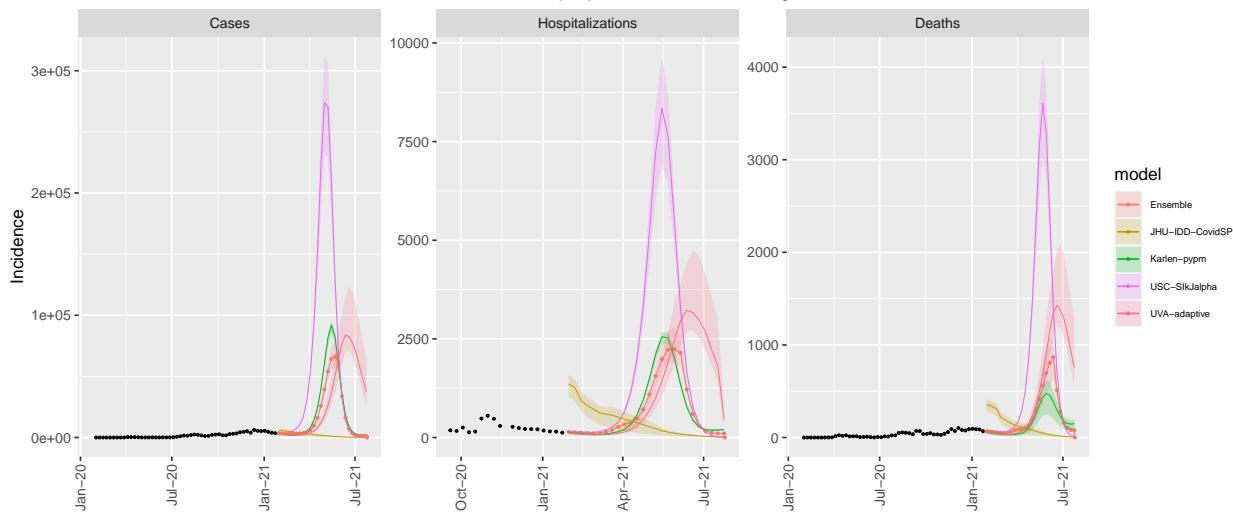




MP model variance & 50% projection intervals – fatigue_var



PR model variance & 50% projection intervals – fatigue_var



VI model variance & 50% projection intervals – fatigue_var

