

# COVID-19 Scenario Modeling Hub Report

29 January, 2021

Scenario Modeling Hub Team<sup>1</sup>

## Executive Summary

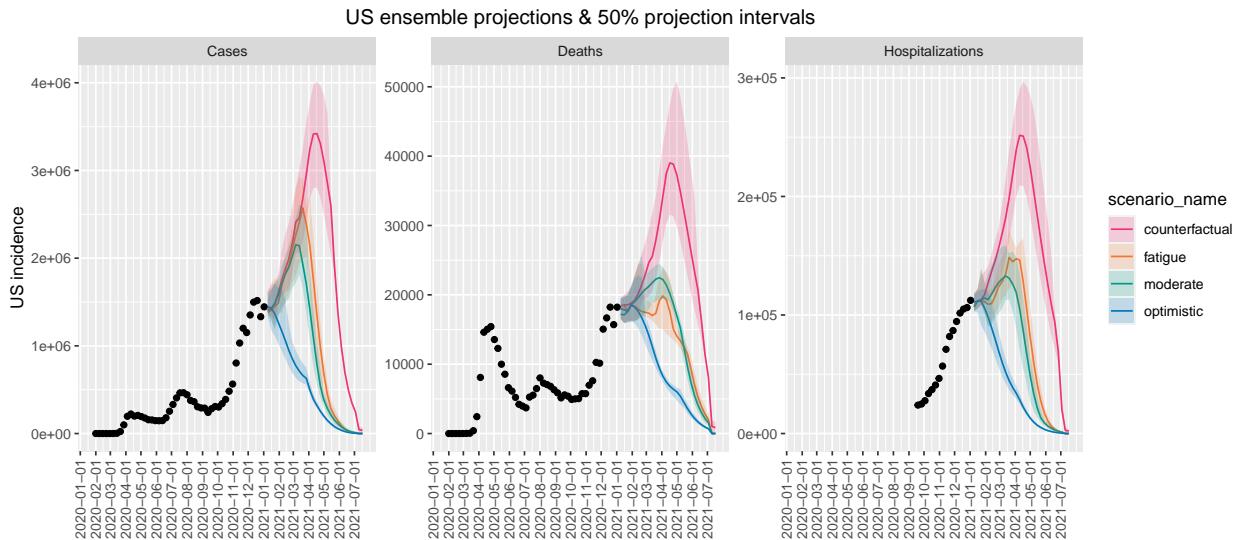
This report presents the results of the first round of projections from the COVID-19 Scenario Modeling Hub. A consortium of six modeling groups convened to make weekly projections of COVID-19 cases, deaths, and hospitalizations given four scenarios. Detailed scenario descriptions and setting assumptions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

## Key Takeaways From First Round

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

## National ensemble projections

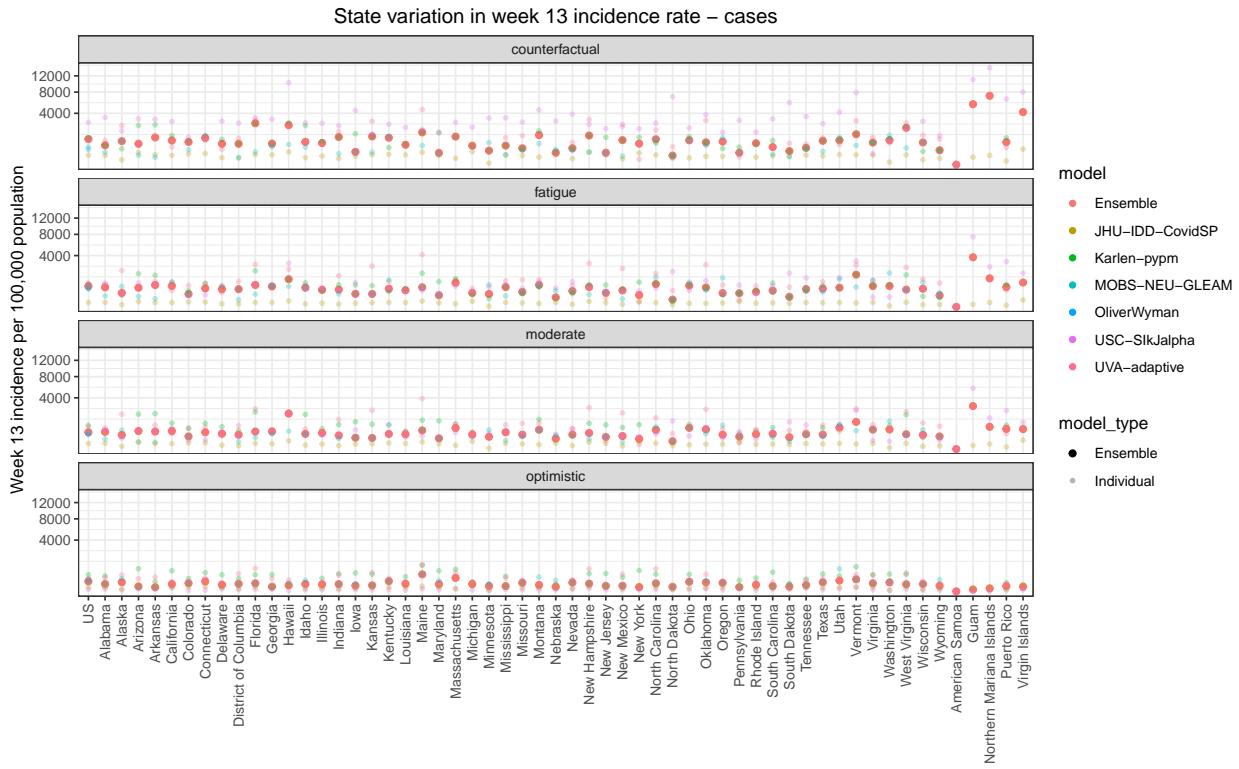
Ensemble projections for national cases, deaths, and hospitalizations, separated by scenario.



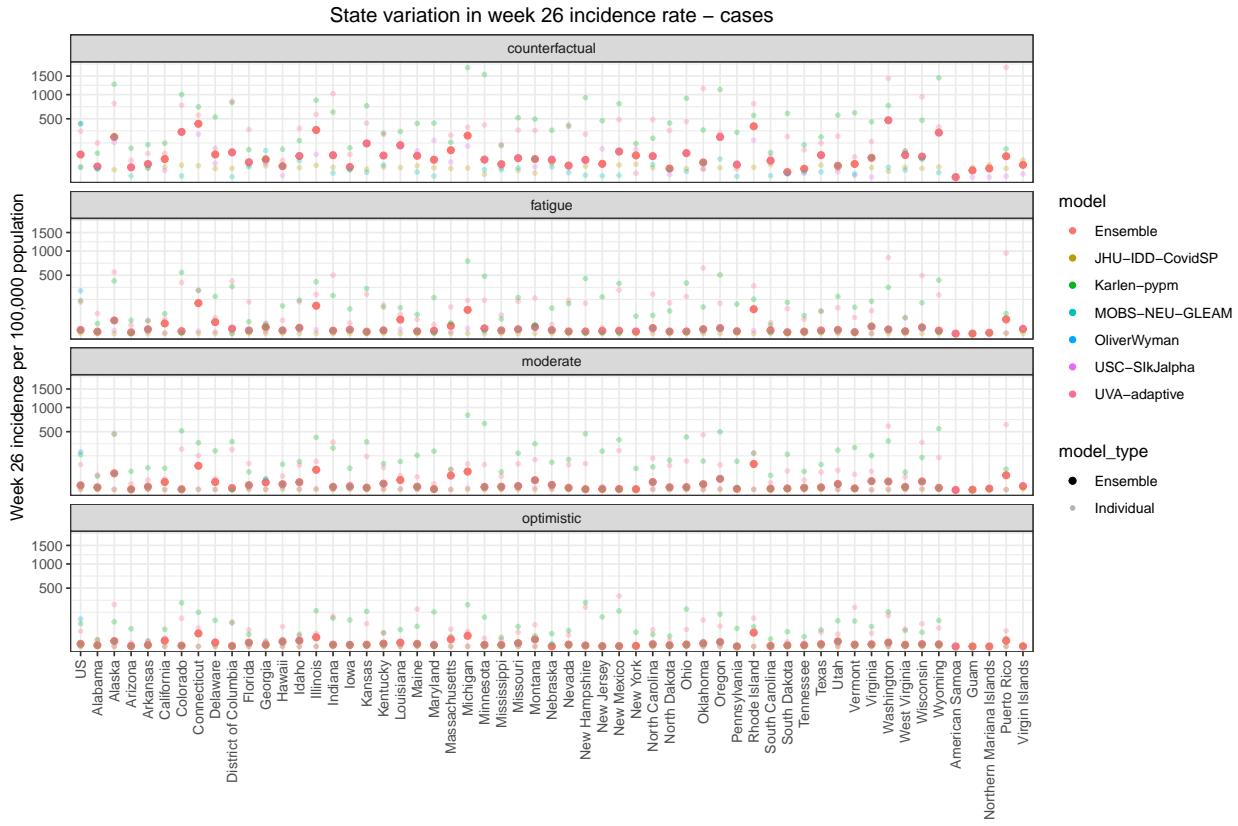
<sup>1</sup>Compiled by Justin Lessler, Rebecca Borchering, and Claire Smith

## State-level deviation from national

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

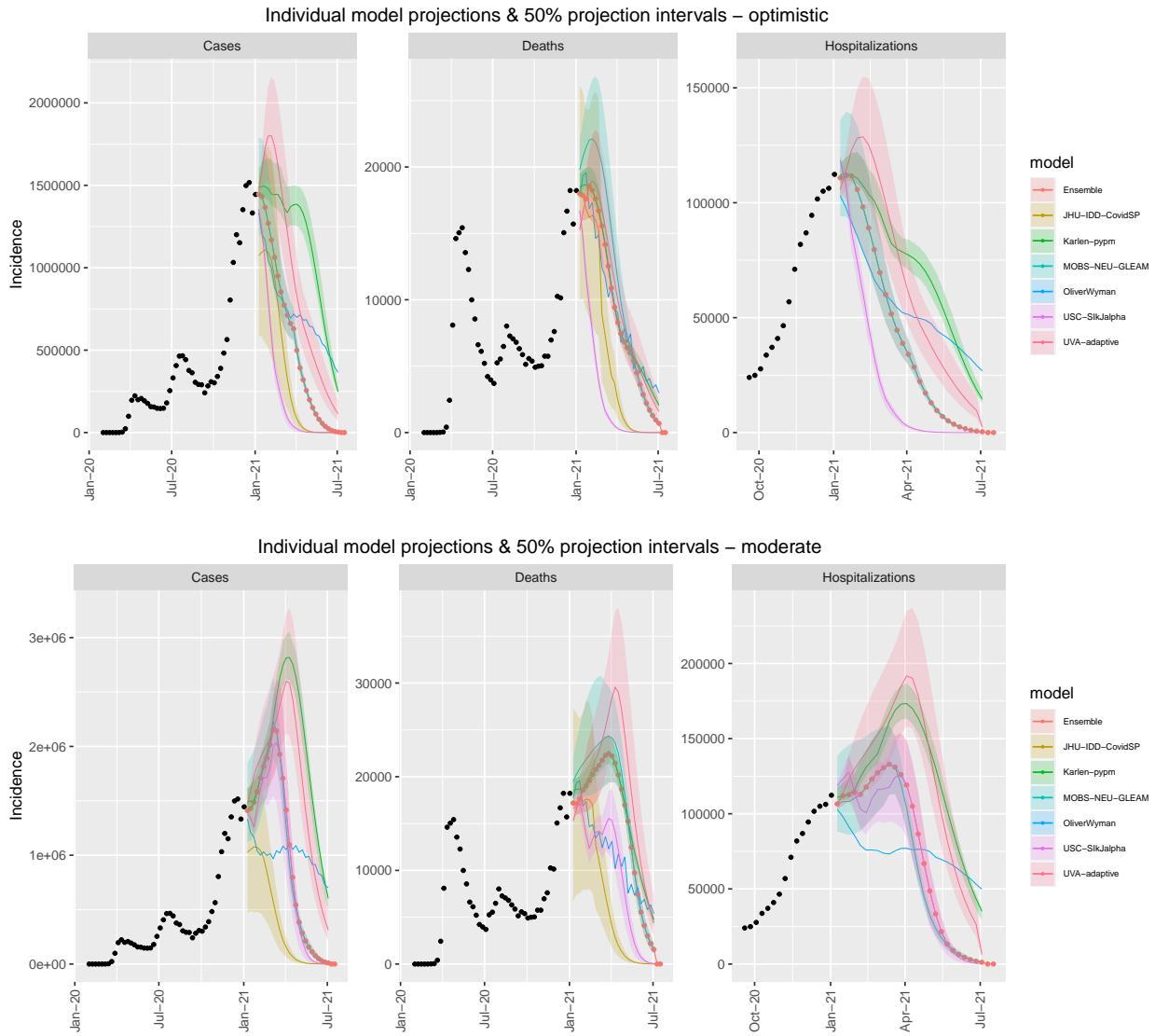


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

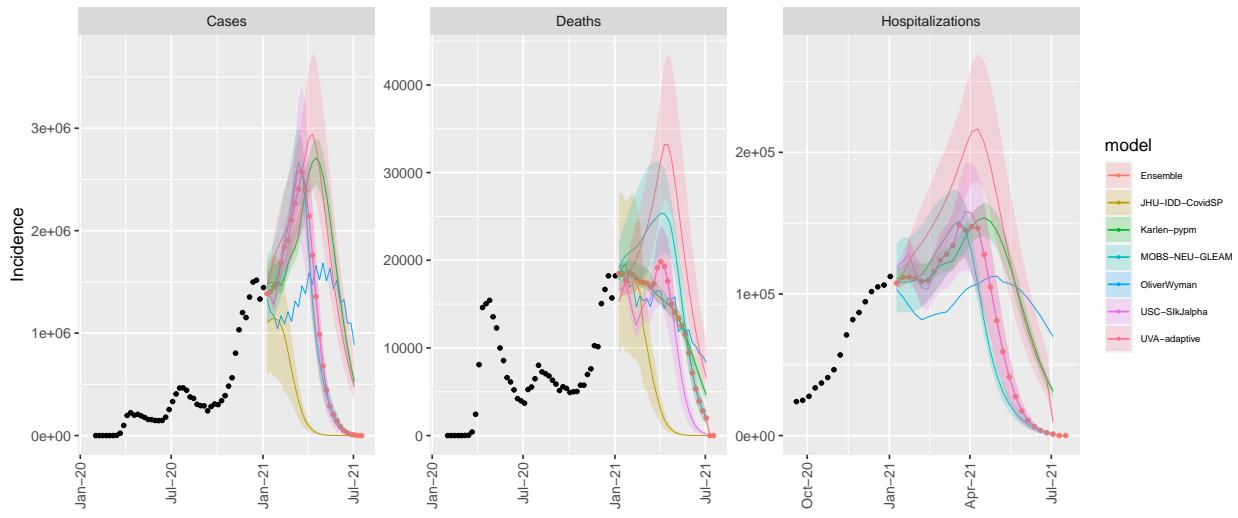


## National model variation

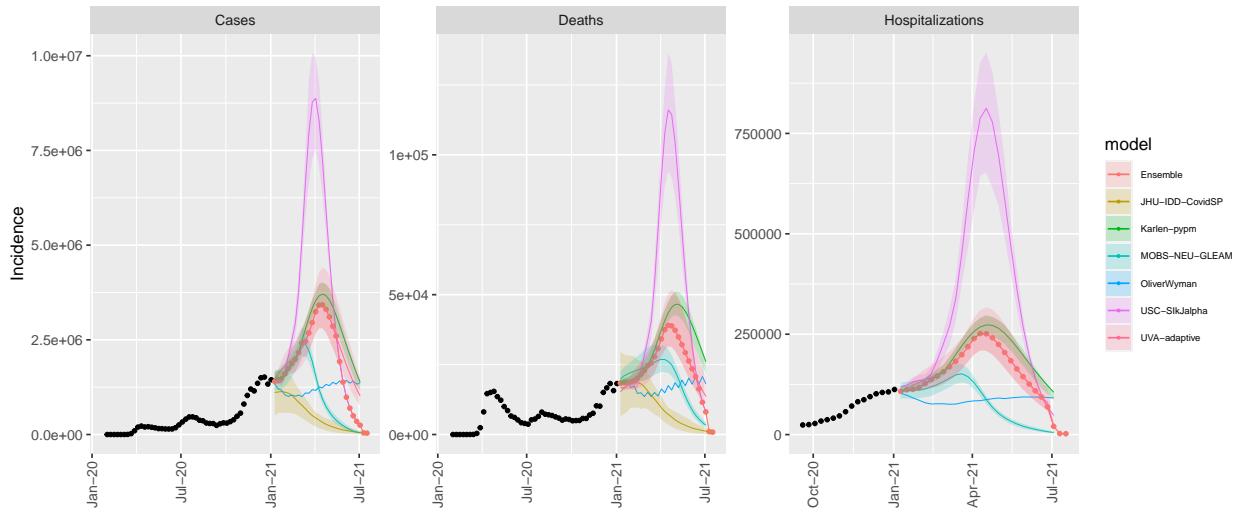
Individual model projections for national incident cases, deaths, and hospitalizations.



Individual model projections & 50% projection intervals – fatigue

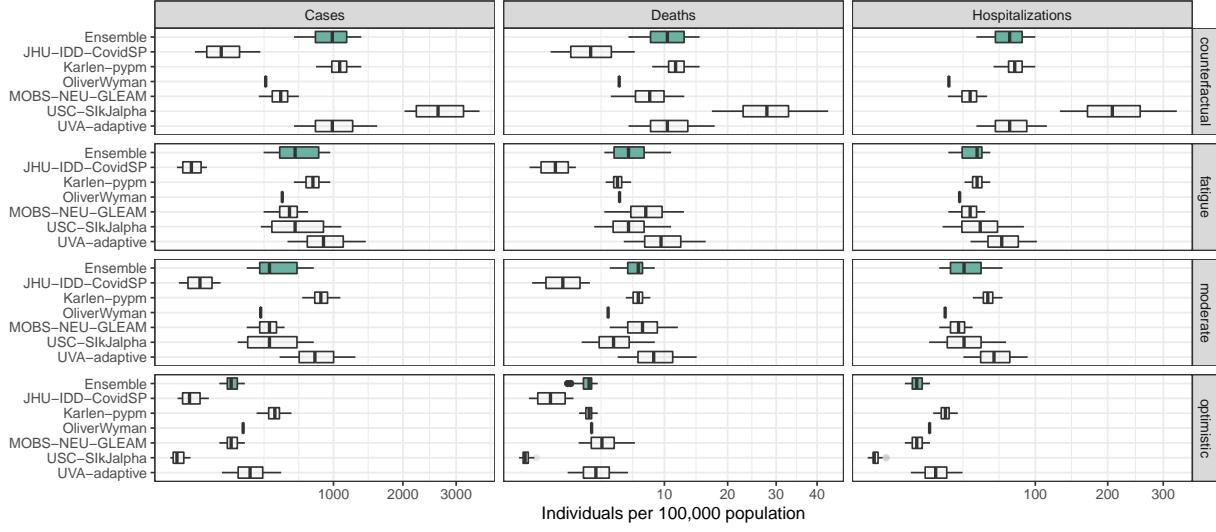


Individual model projections & 50% projection intervals – counterfactual

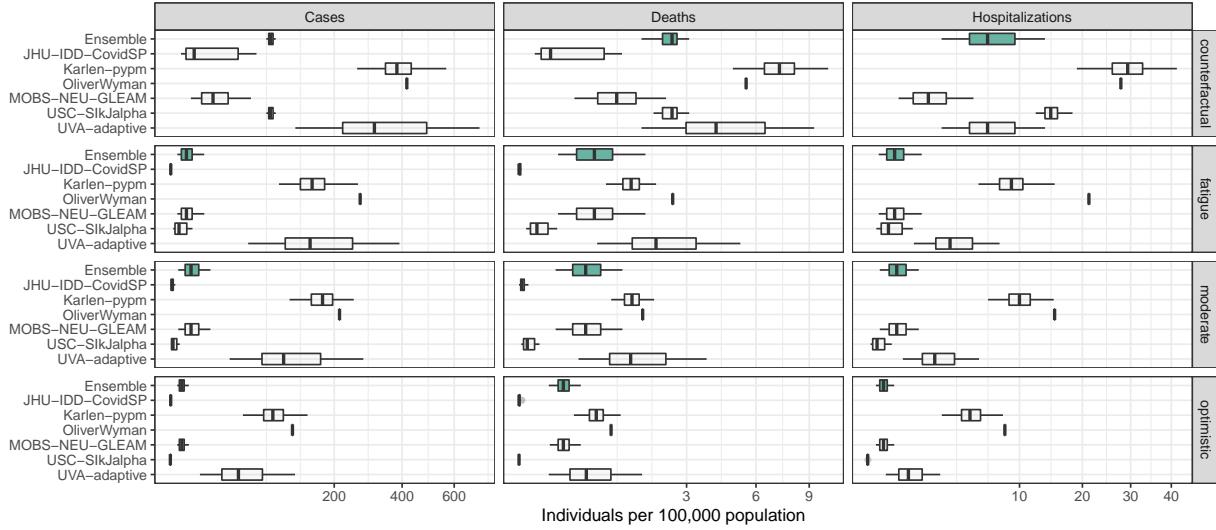


## Projection distributions

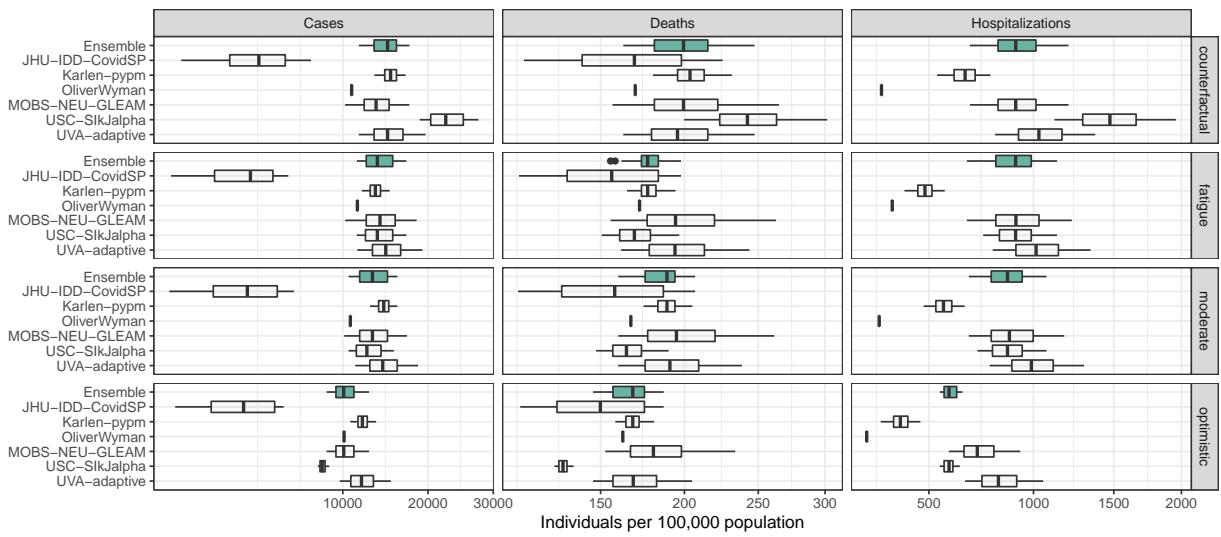
Model variation – 13 week ahead incidence



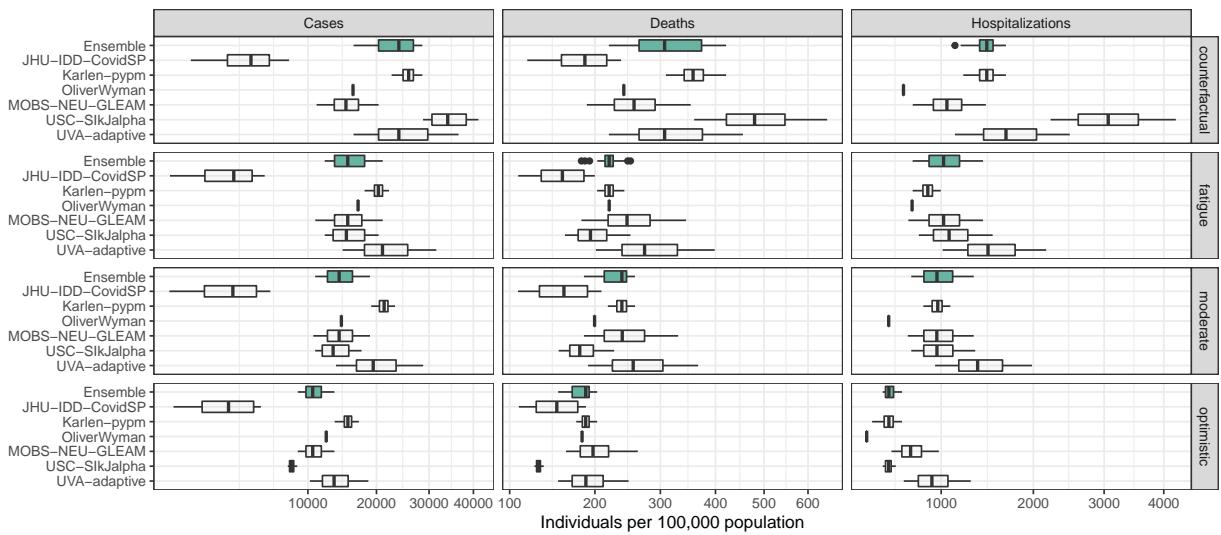
Model variation – 26 week ahead incidence



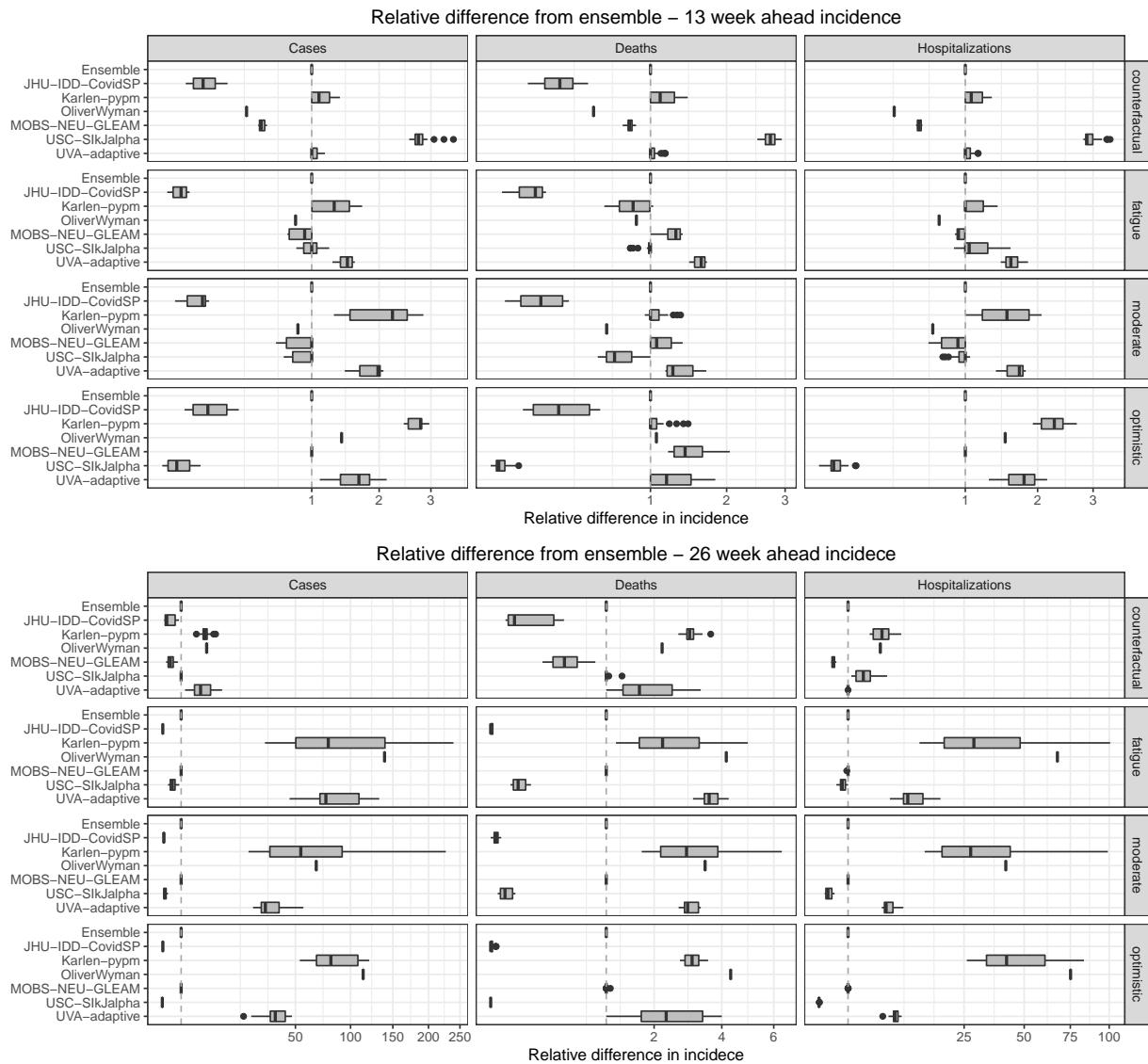
Model variation – 13 week ahead cumulative incidence

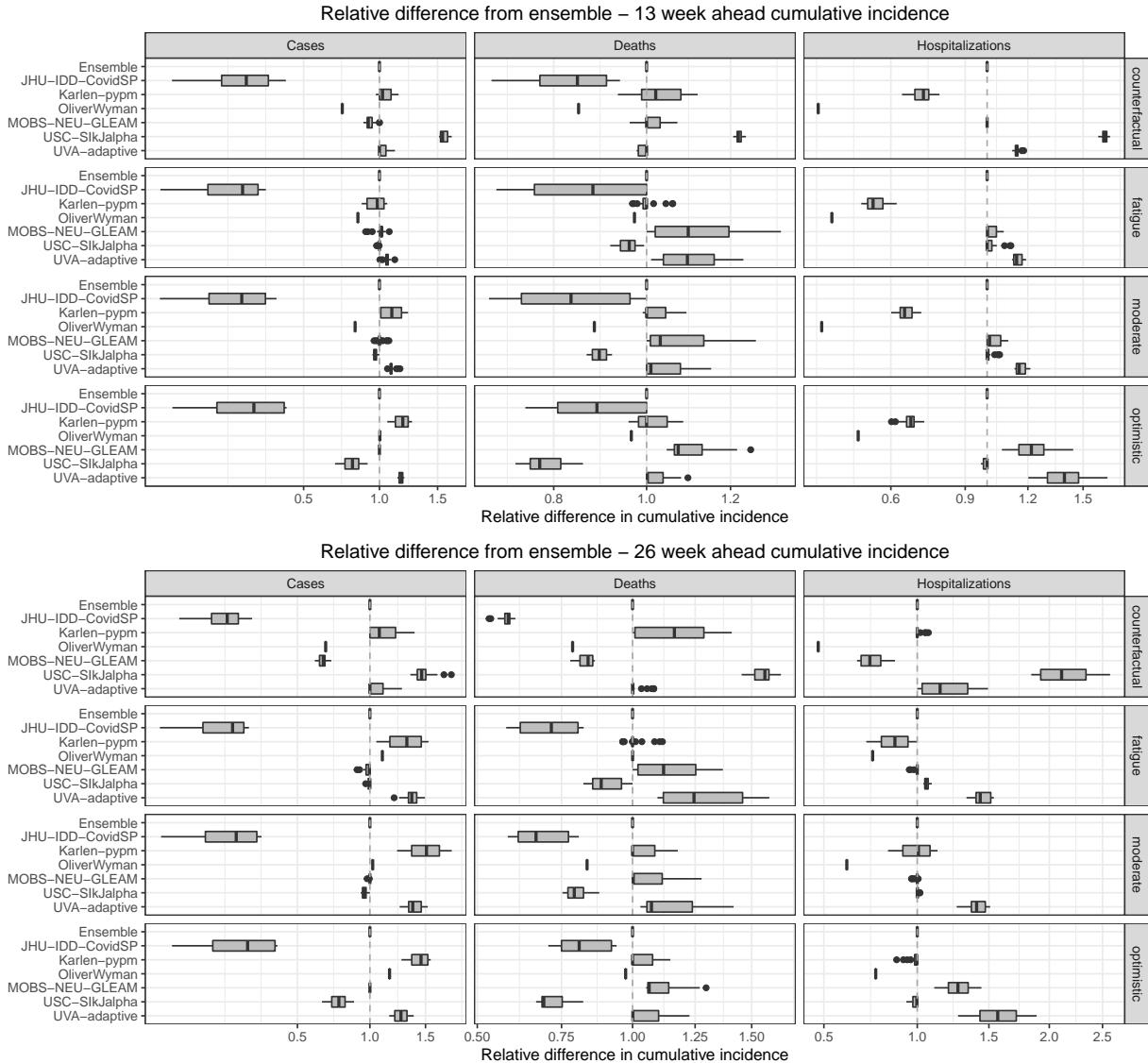


Model variation – 26 week ahead cumulative incidence



## Difference between model and ensemble distributions





## Teams and models

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

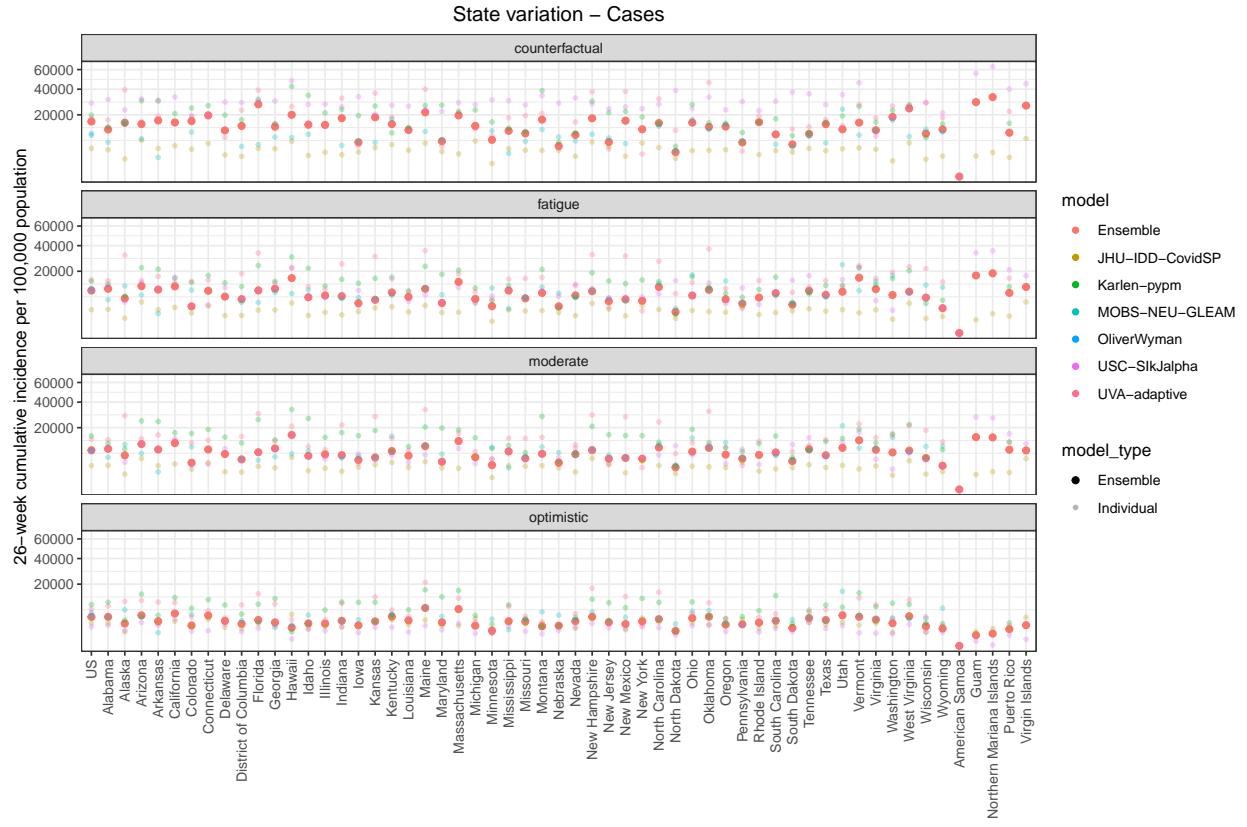
## The COVID-19 Scenario Modeling Hub Team

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

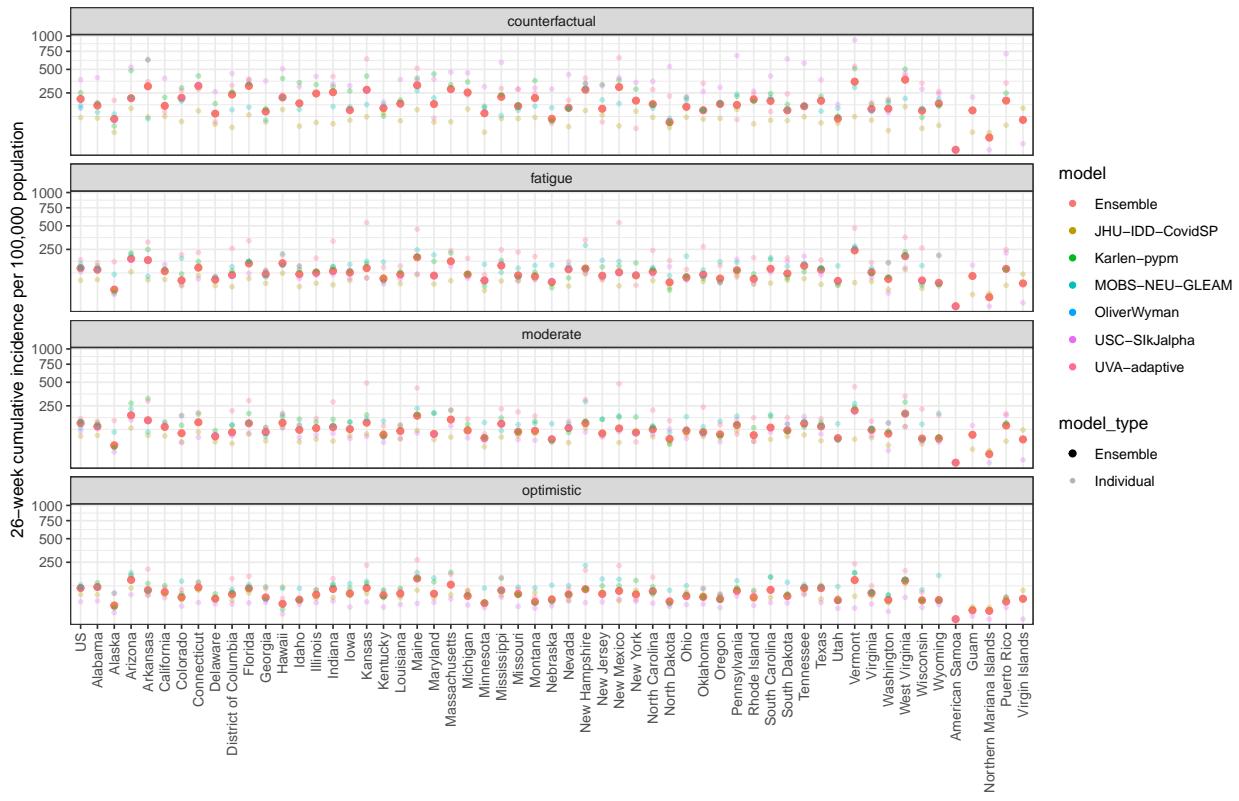
- Claire Smith, Johns Hopkins University
- Nick Reich, University of Massachusetts at Amherst
- Wilbert Van Panhuis, University of Pittsburgh
- Lucie Contamin, University of Pittsburgh
- John Levander, University of Pittsburgh
- Jessica Salerno, University of Pittsburgh

## Supplemental Plots

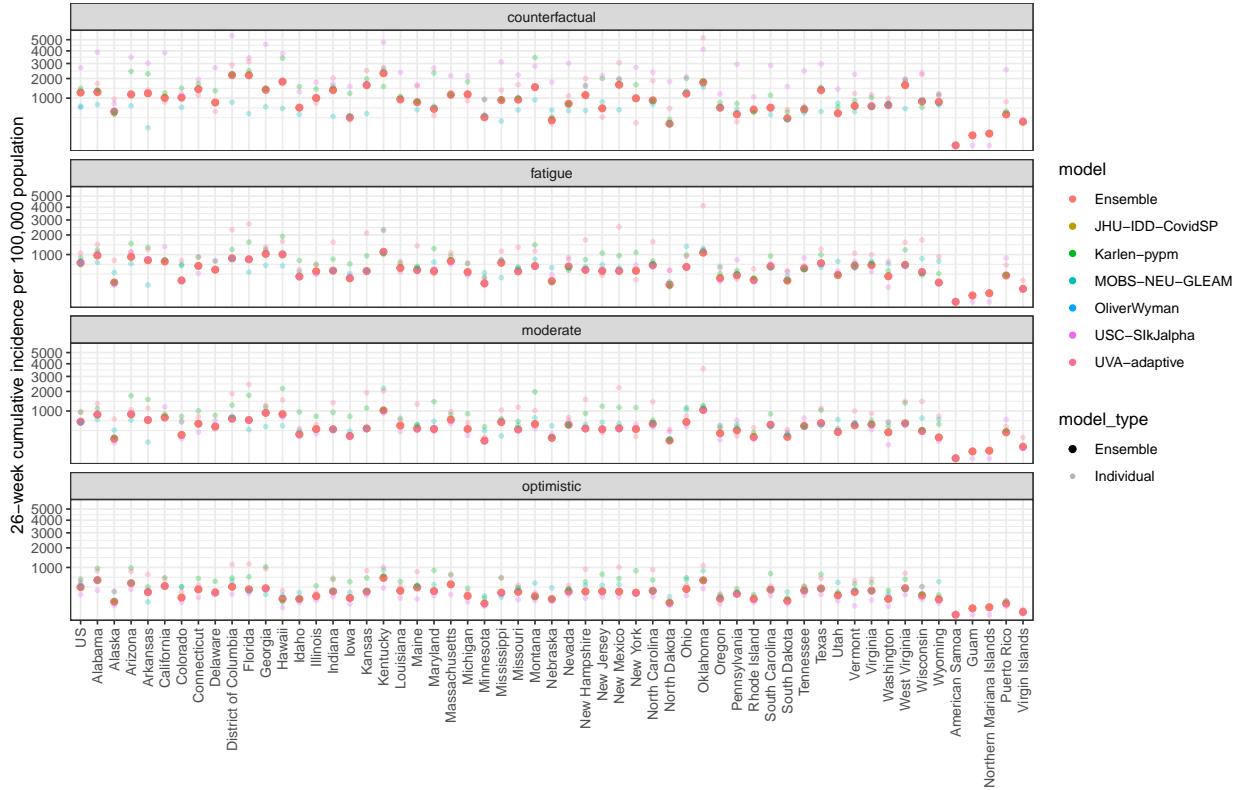
Individual model and ensembles projections for state-level cumulative incidence per 100,000 population over 26-week projection period. Please note the relatively small number of models incorporated in the ensemble at this stage, particularly states and territories for which only one or two models have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



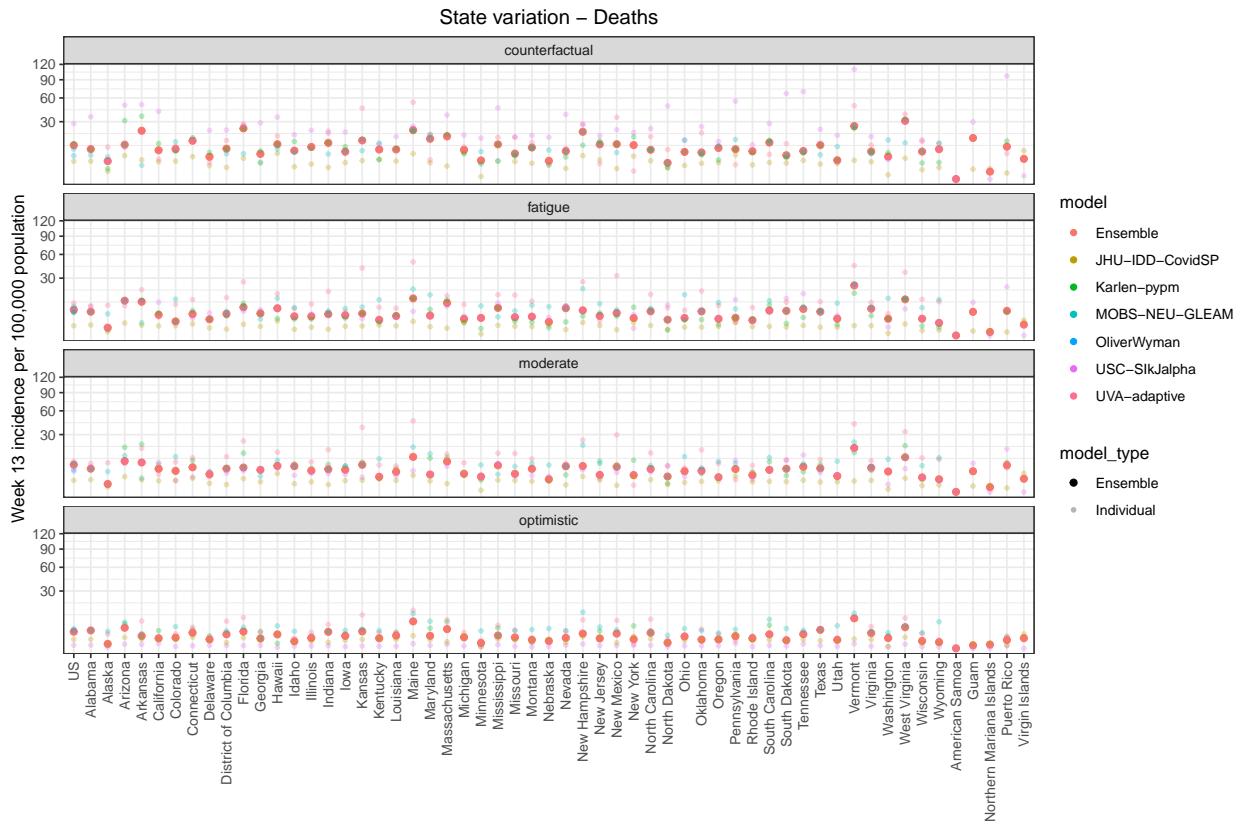
### State variation – Deaths

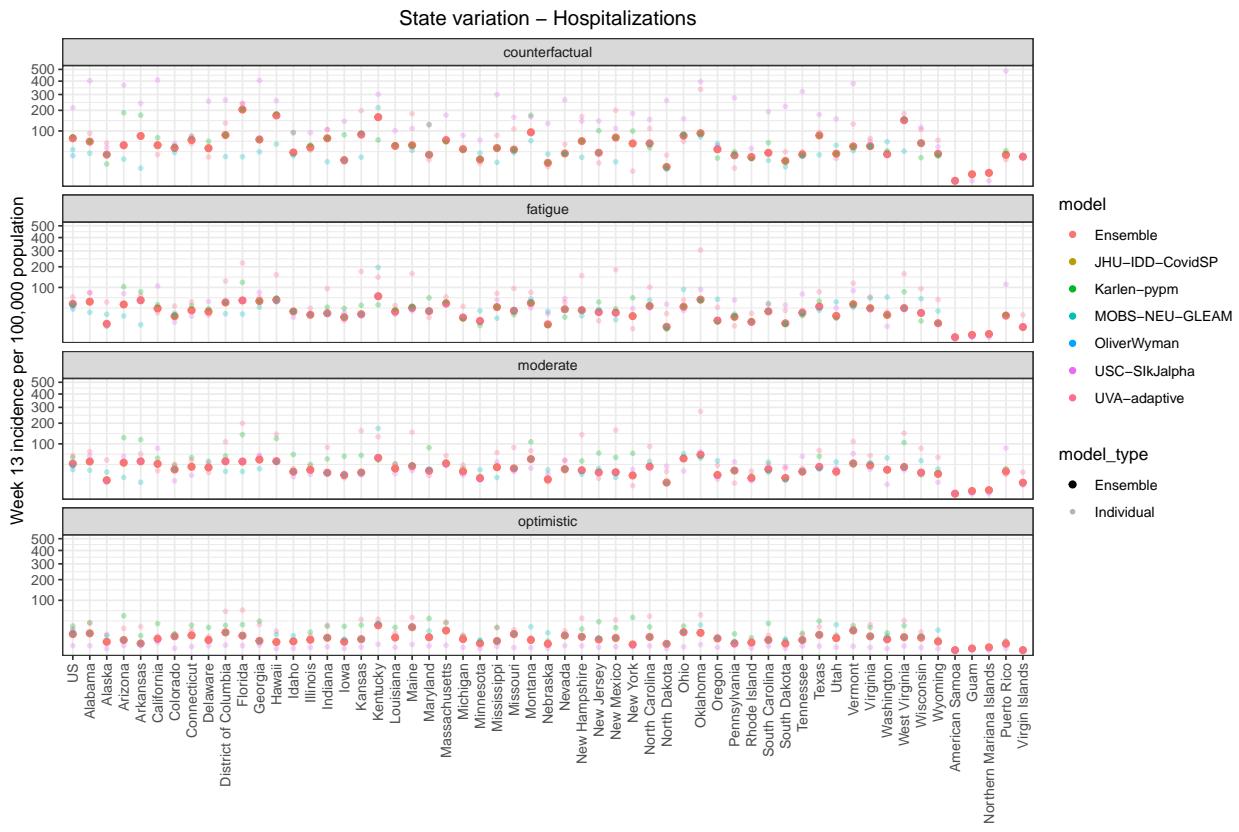


### State variation – Hospitalizations

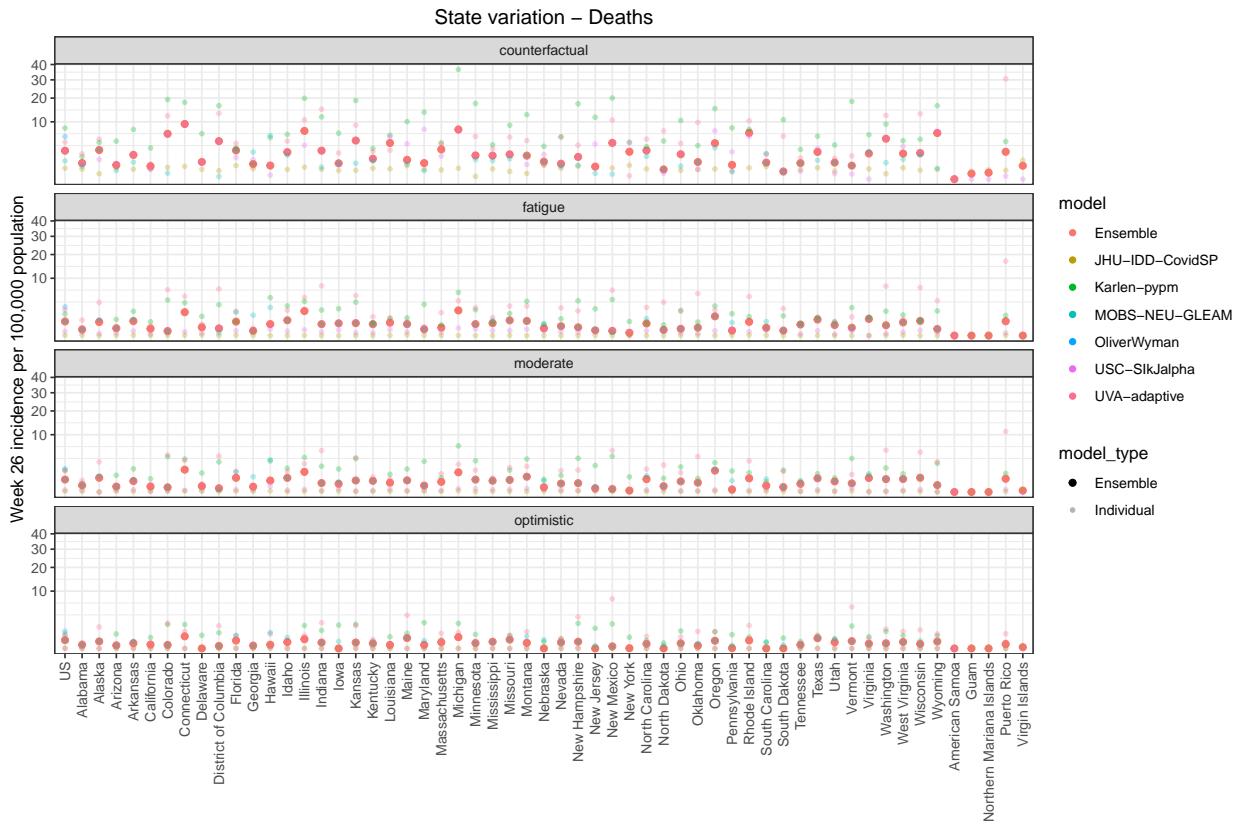


Individual model and ensembles projections for state-level death and hospitalization incidence per 100,000 population at week 13.

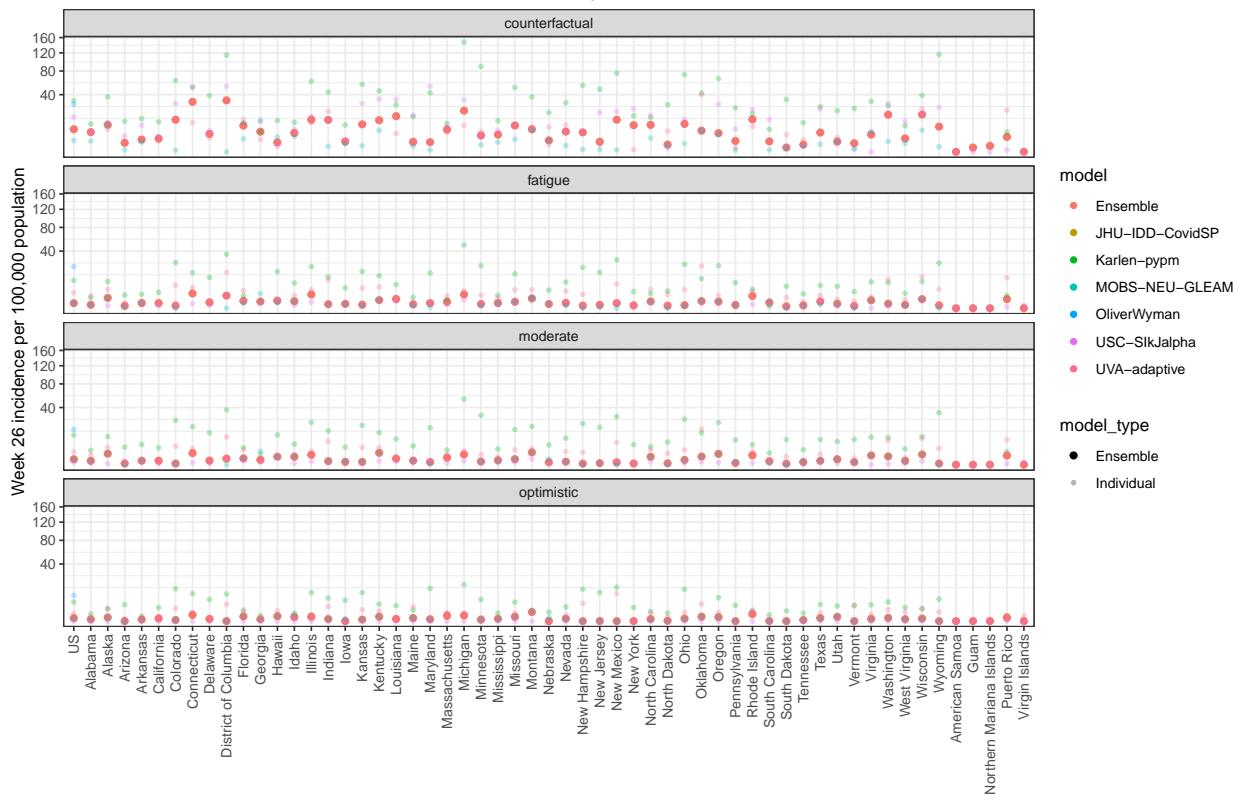




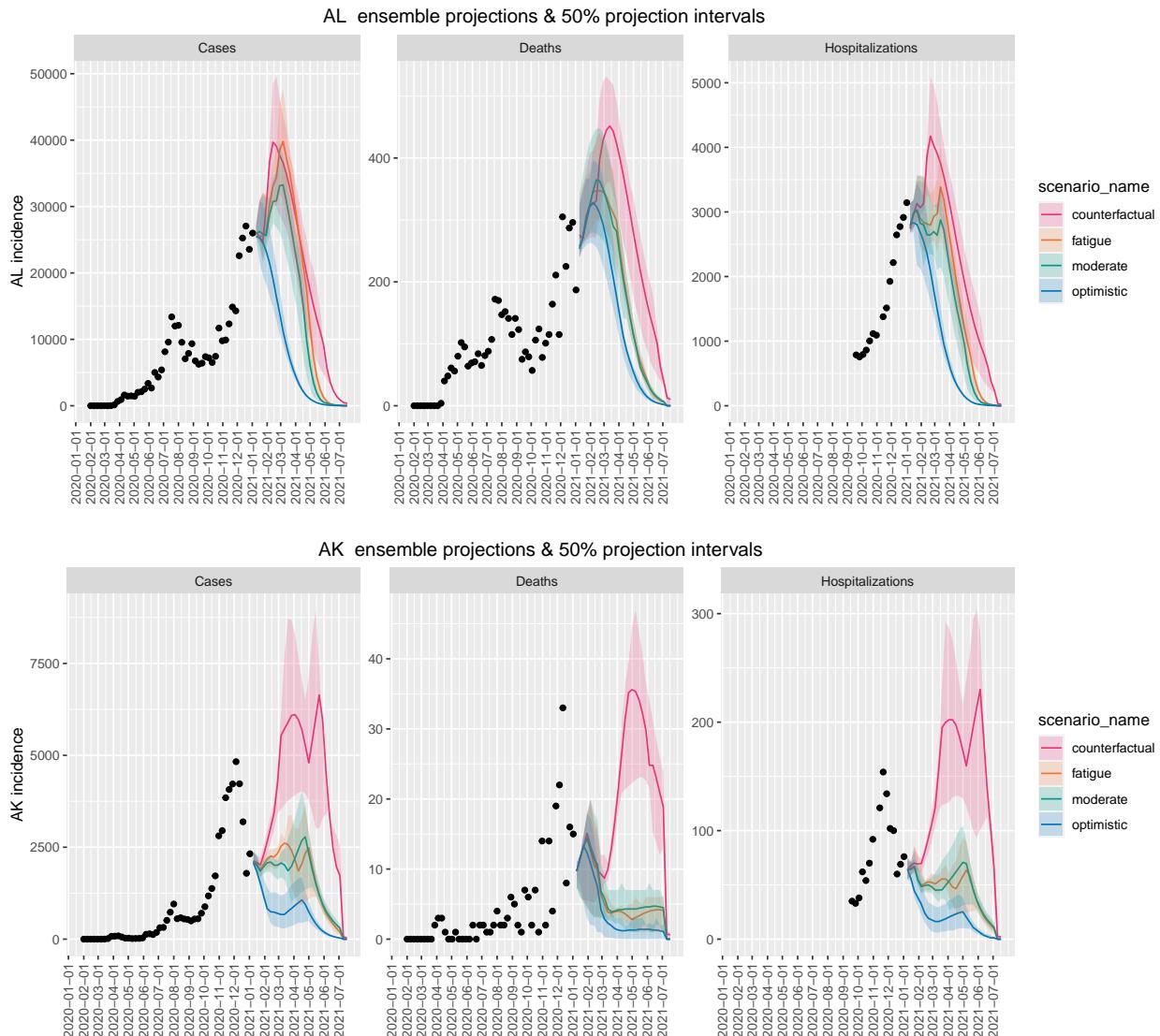
Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.



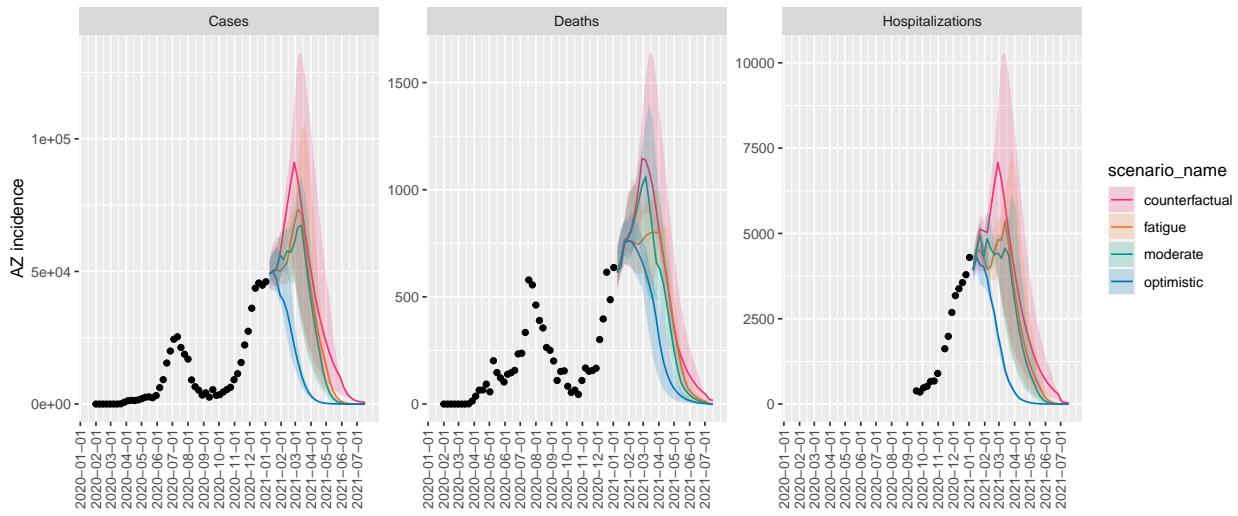
### State variation – Hospitalizations



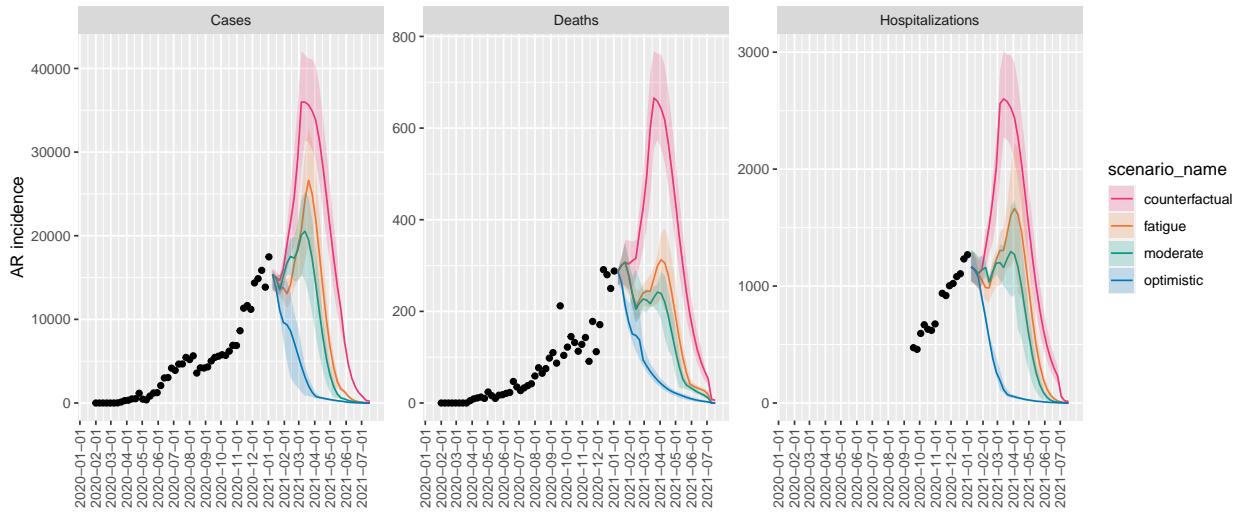
## State-level ensemble plots



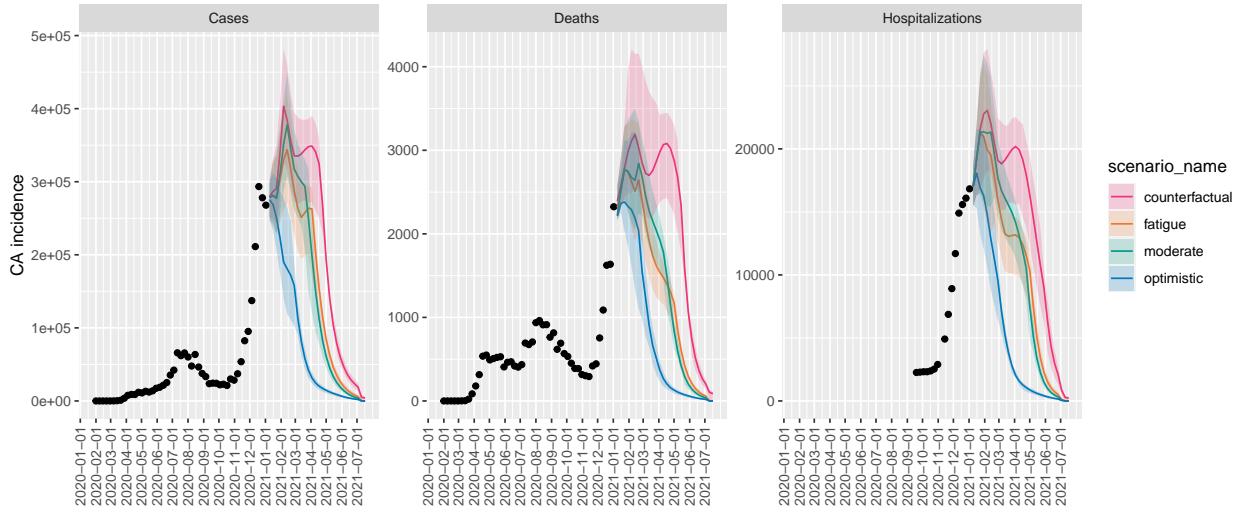
### AZ ensemble projections & 50% projection intervals



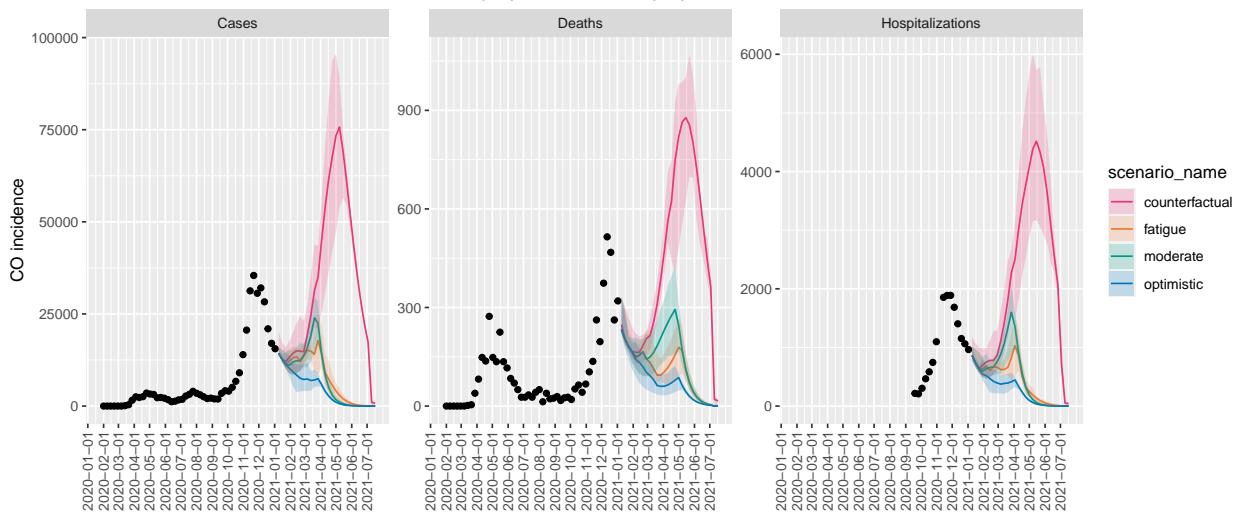
### AR ensemble projections & 50% projection intervals



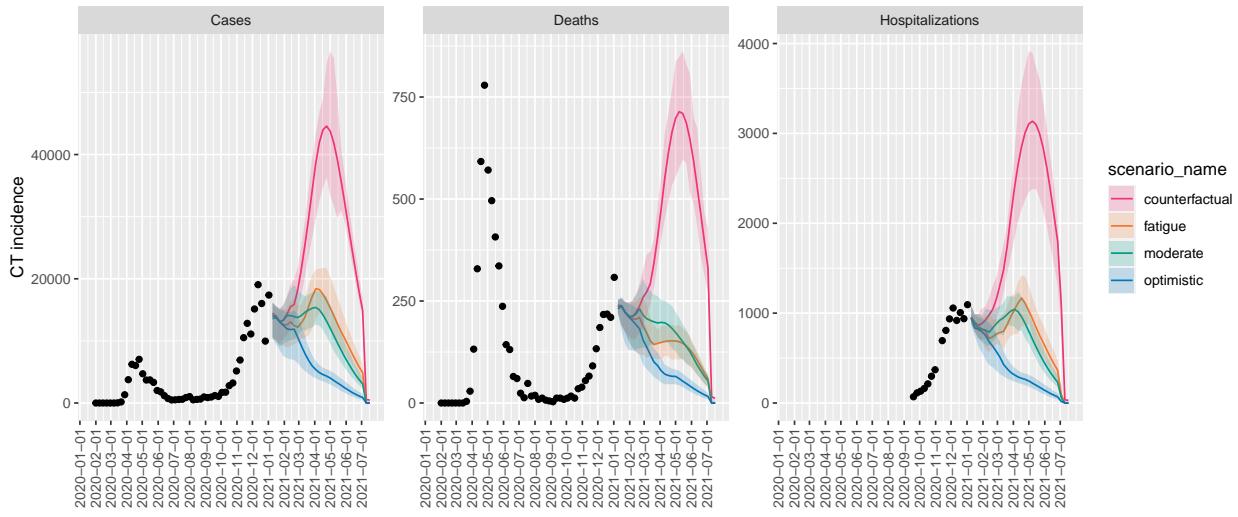
### CA ensemble projections & 50% projection intervals



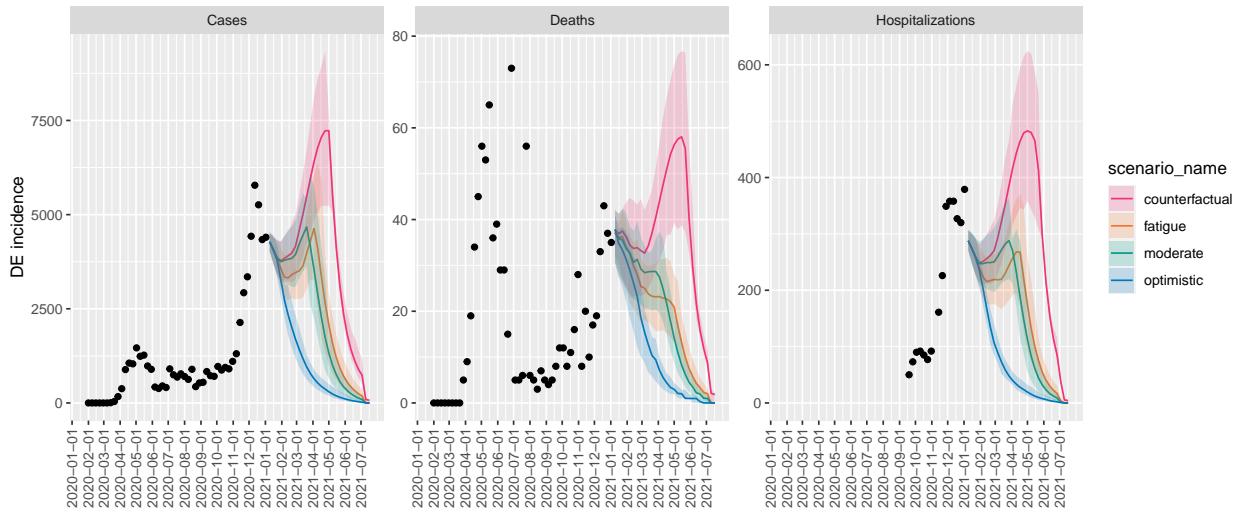
### CO ensemble projections & 50% projection intervals



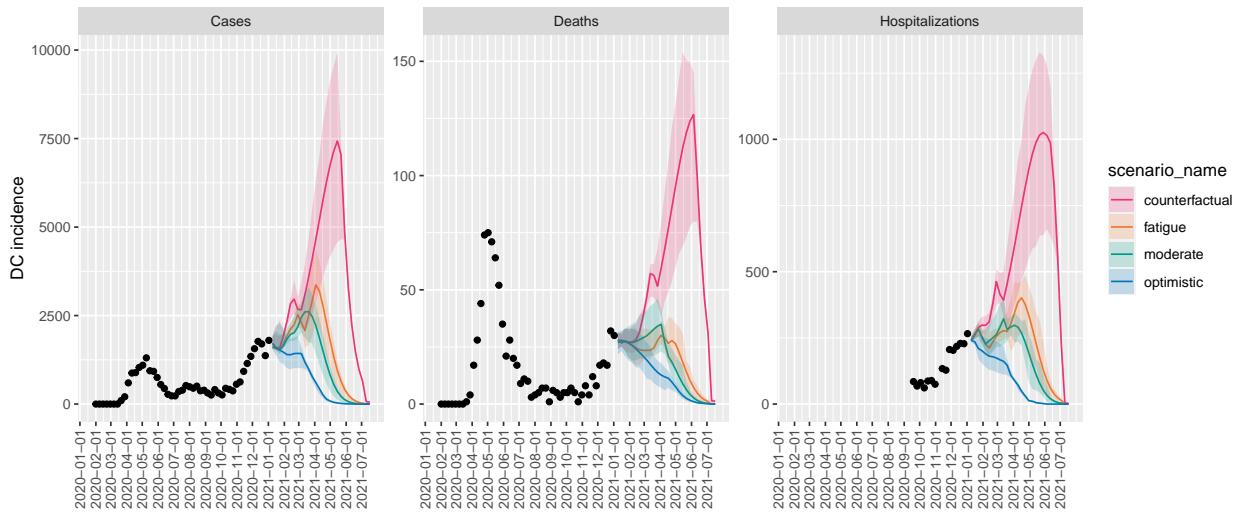
### CT ensemble projections & 50% projection intervals



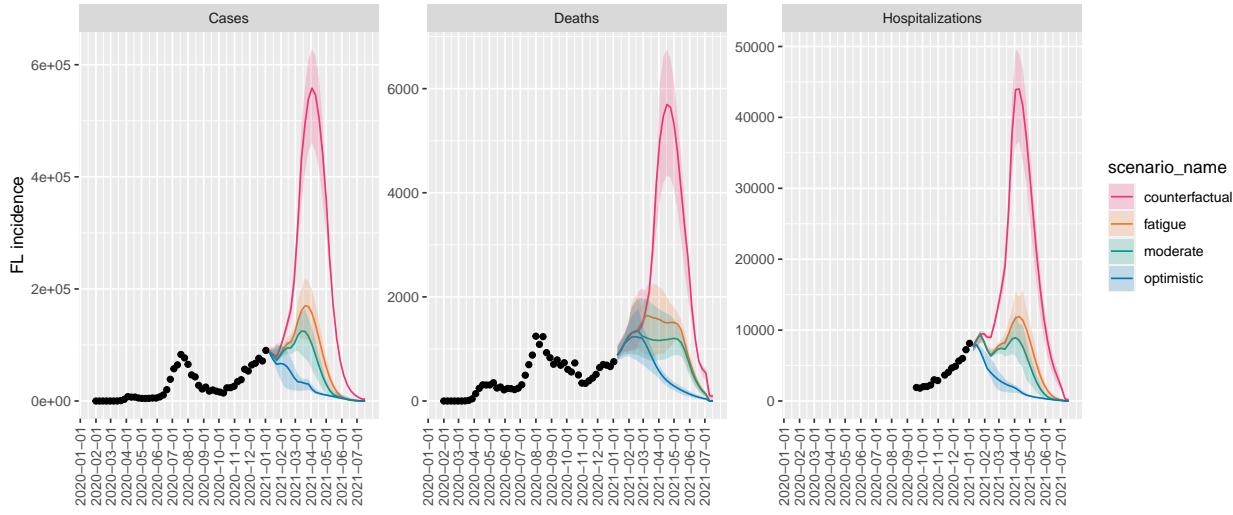
### DE ensemble projections & 50% projection intervals



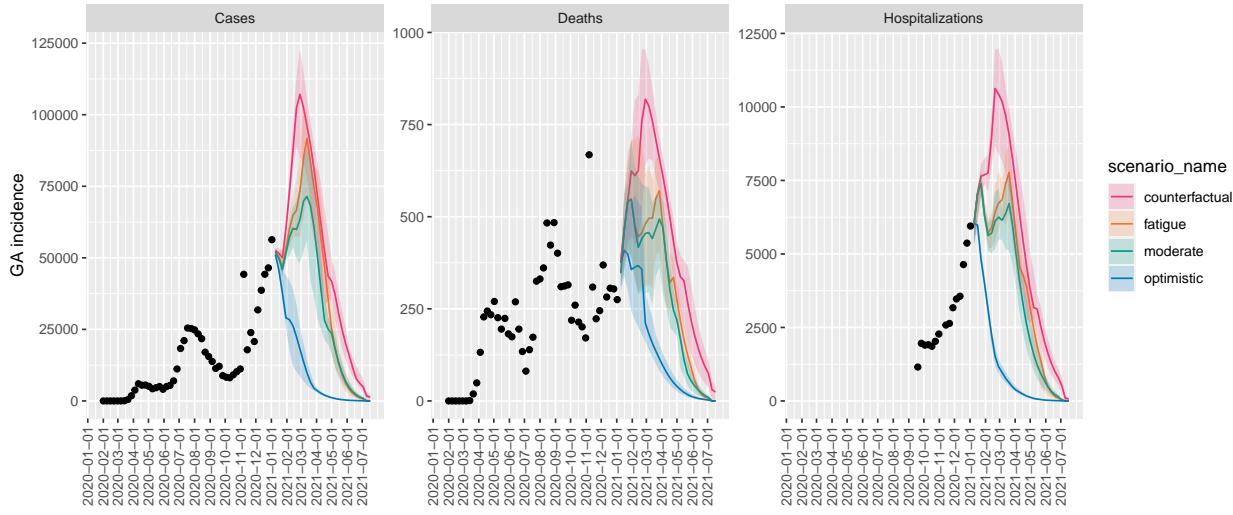
### DC ensemble projections & 50% projection intervals



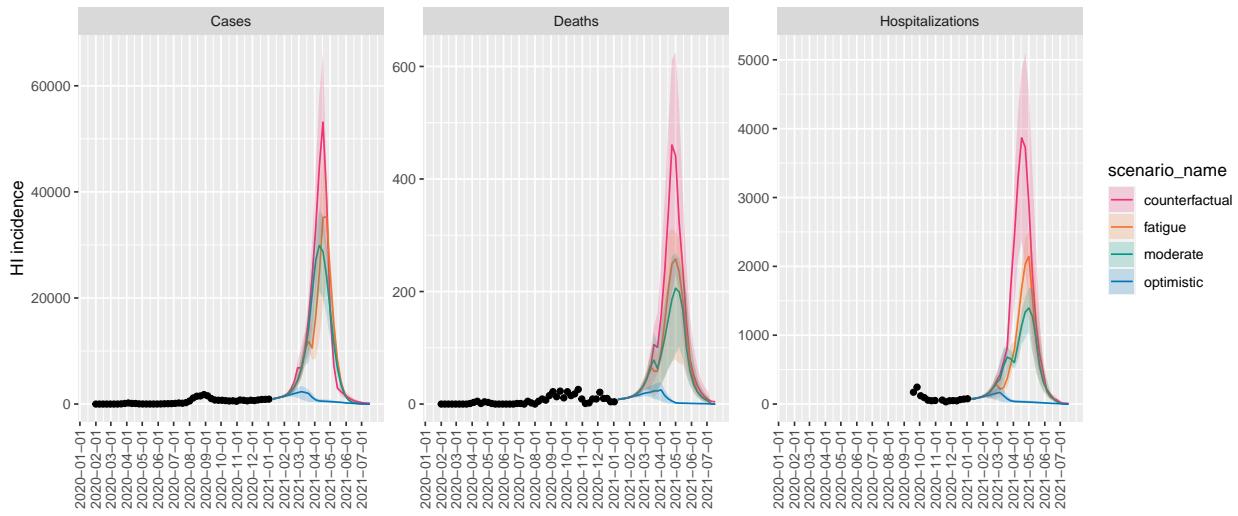
### FL ensemble projections & 50% projection intervals



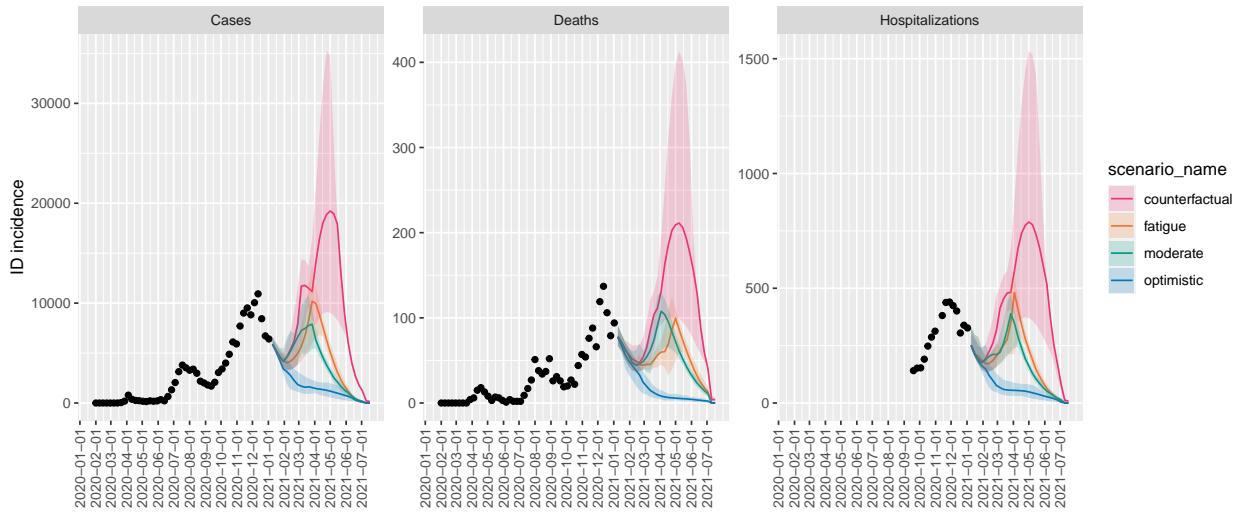
### GA ensemble projections & 50% projection intervals



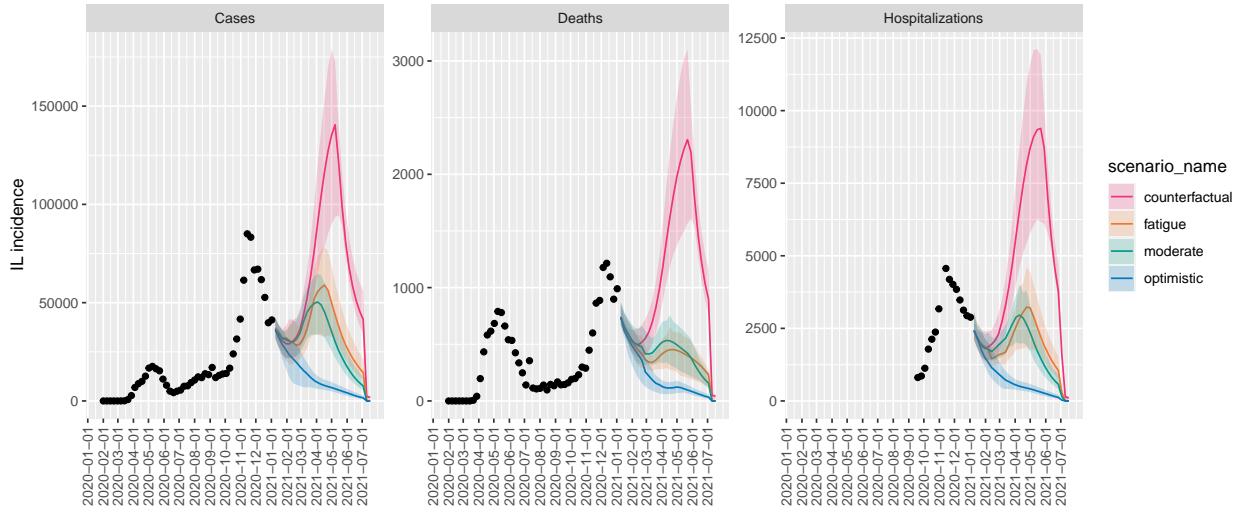
### HI ensemble projections & 50% projection intervals



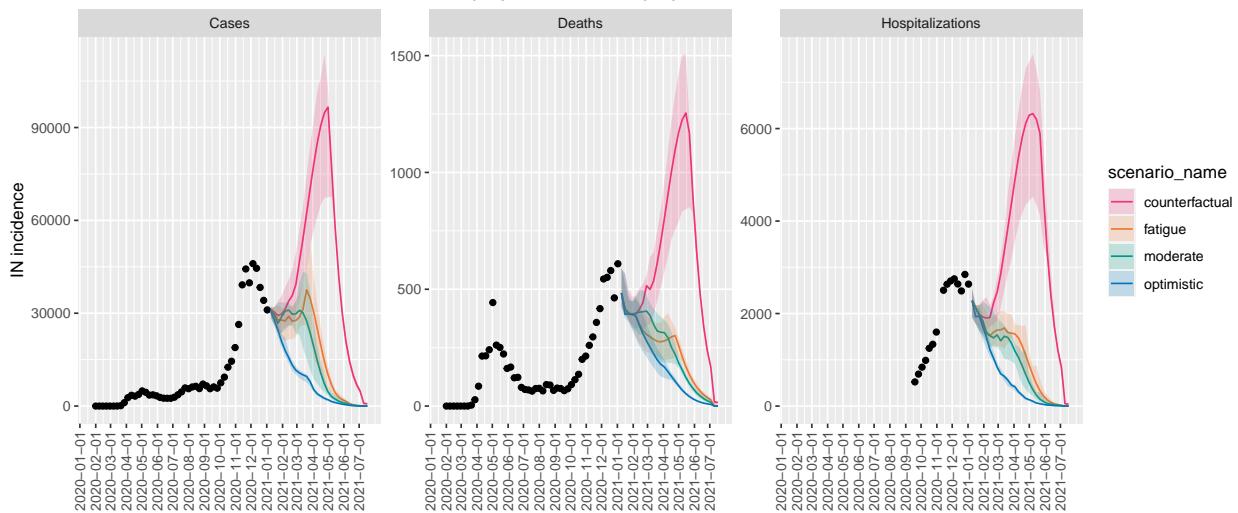
### ID ensemble projections & 50% projection intervals



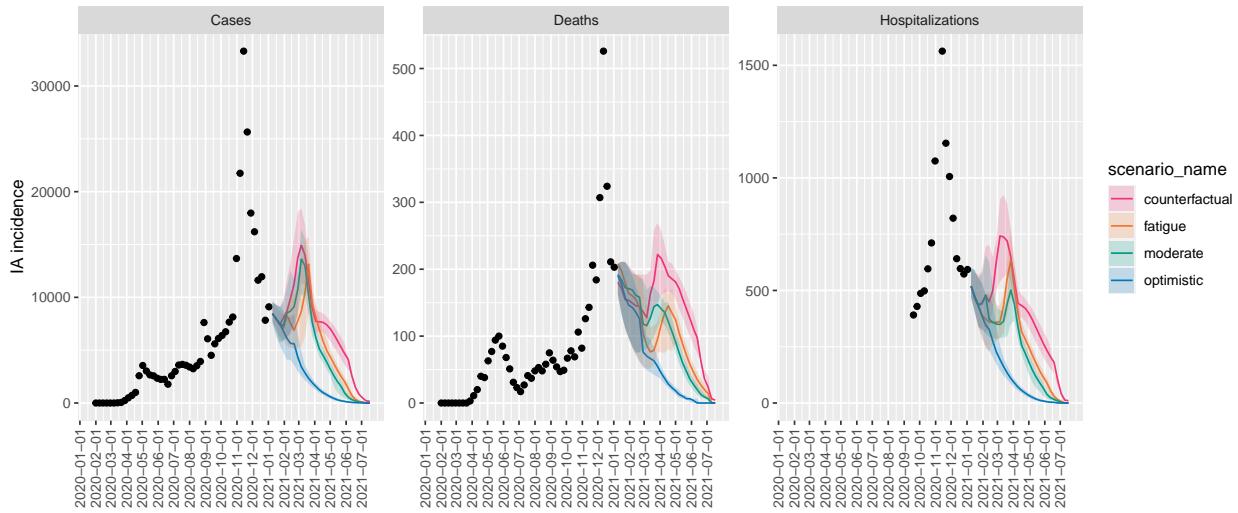
### IL ensemble projections & 50% projection intervals



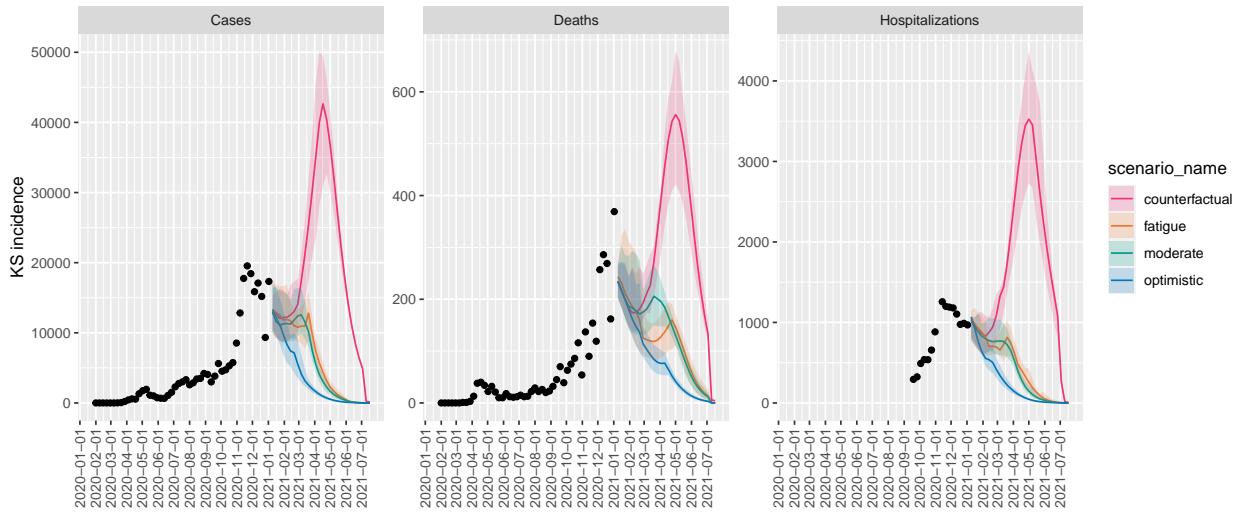
### IN ensemble projections & 50% projection intervals



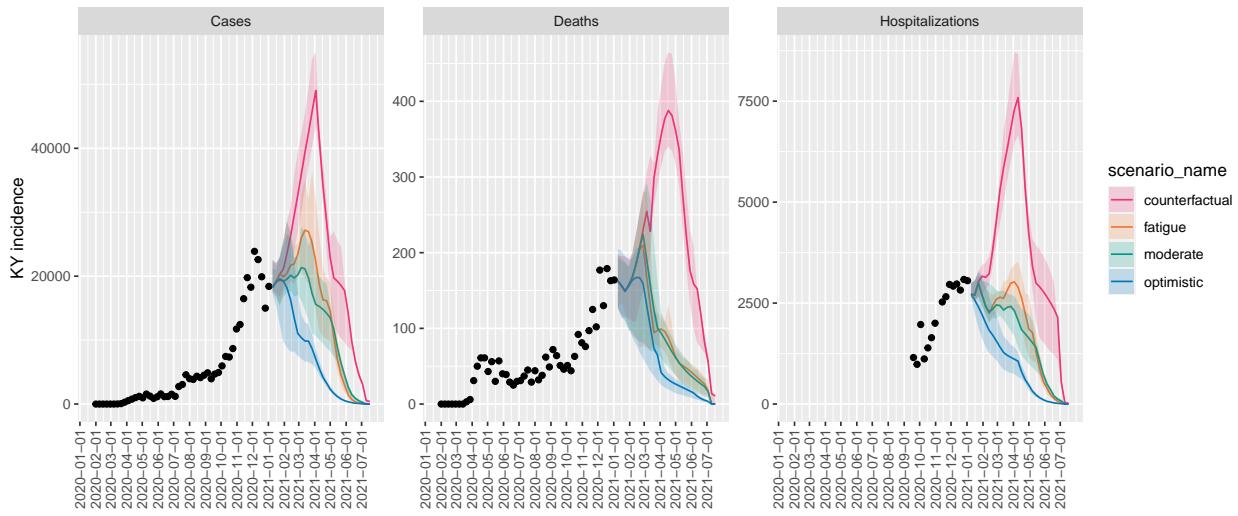
### IA ensemble projections & 50% projection intervals



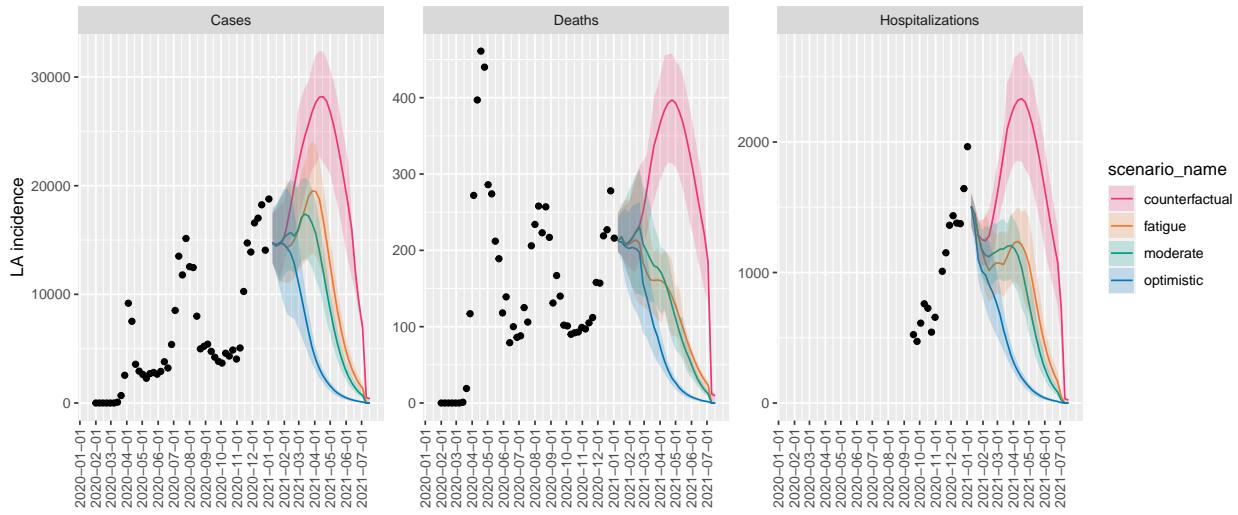
### KS ensemble projections & 50% projection intervals



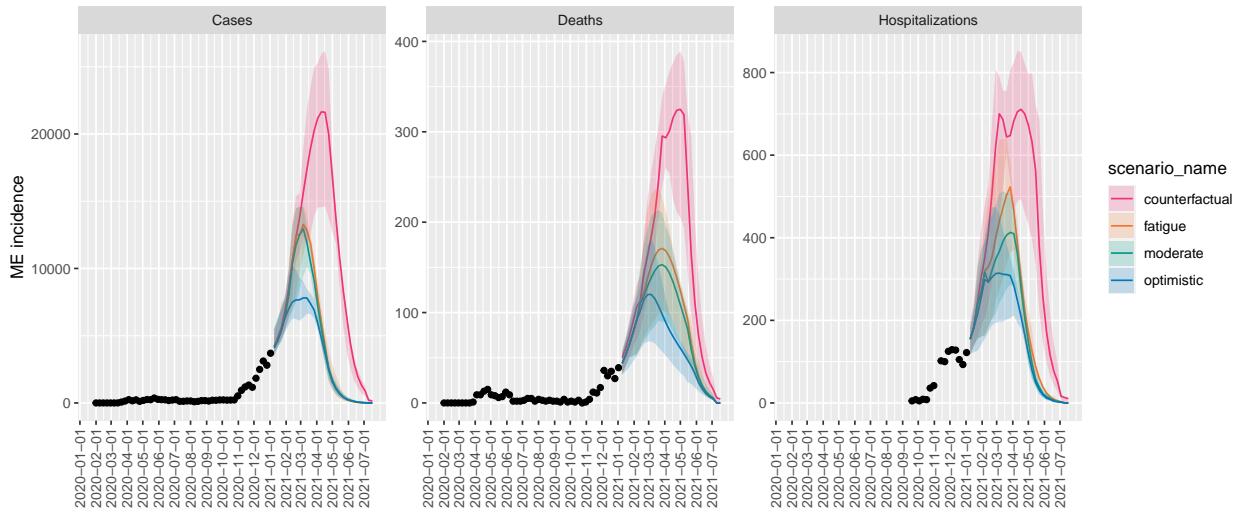
### KY ensemble projections & 50% projection intervals



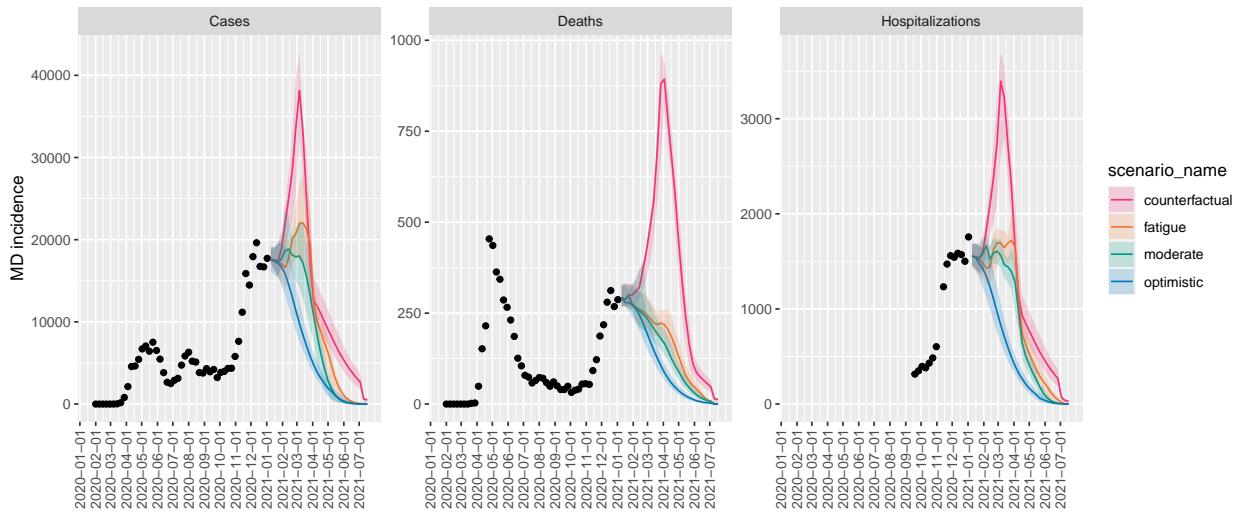
### LA ensemble projections & 50% projection intervals



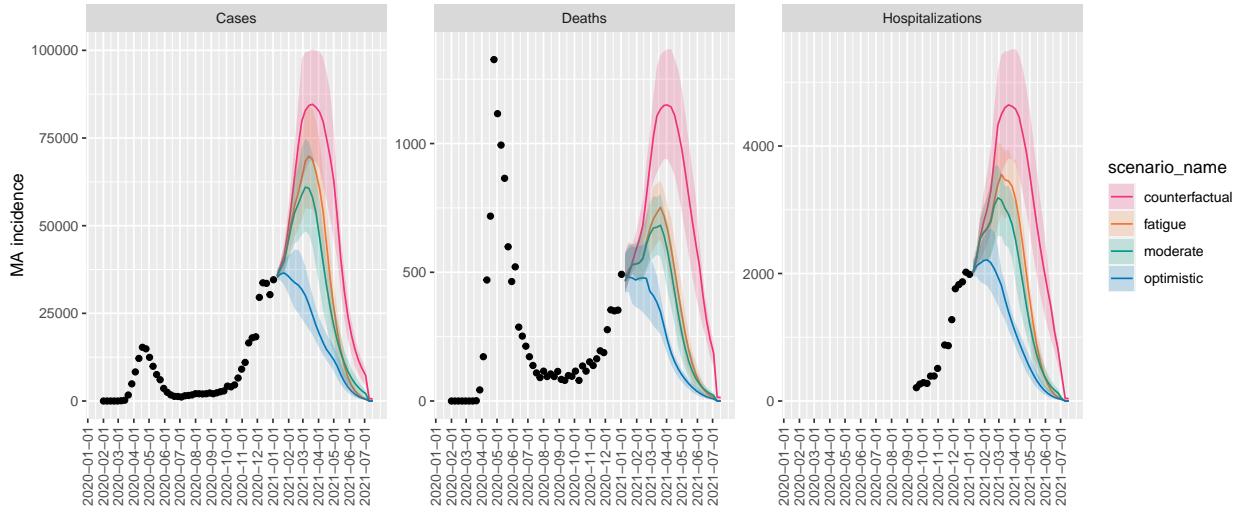
### ME ensemble projections & 50% projection intervals



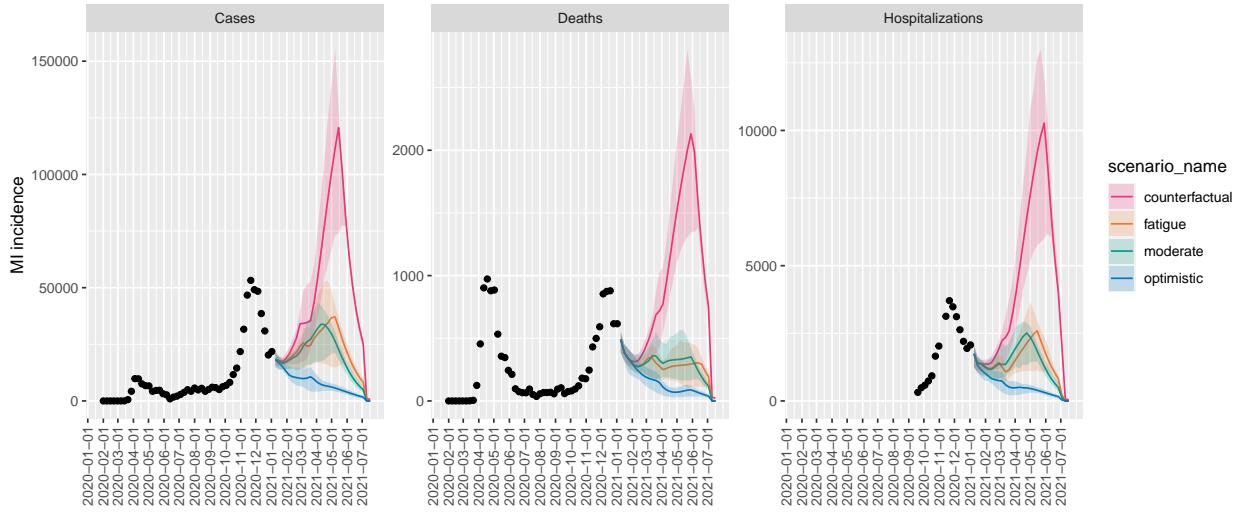
### MD ensemble projections & 50% projection intervals



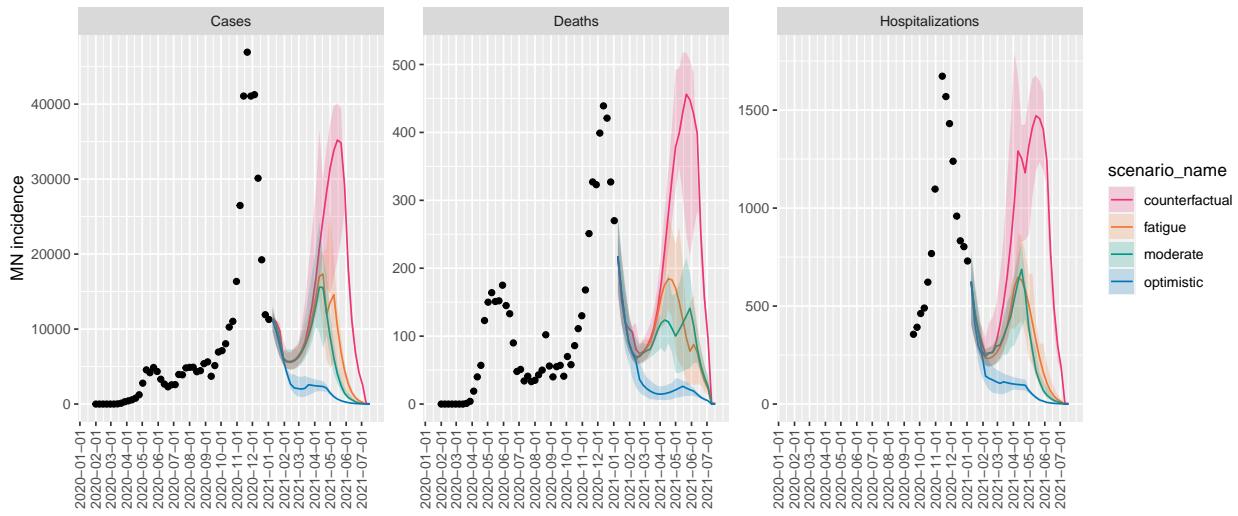
### MA ensemble projections & 50% projection intervals



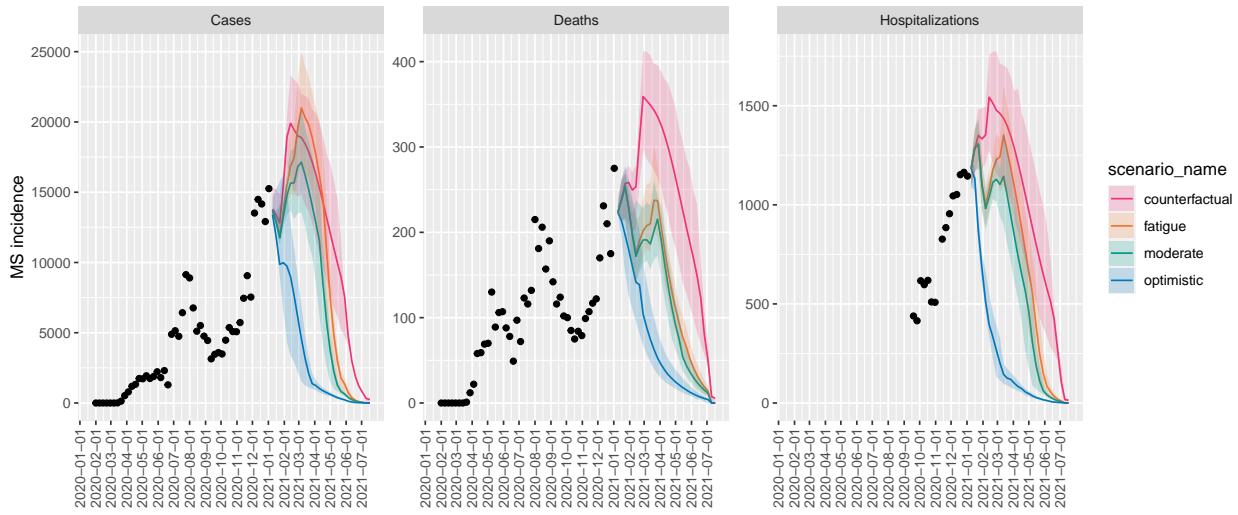
### MI ensemble projections & 50% projection intervals



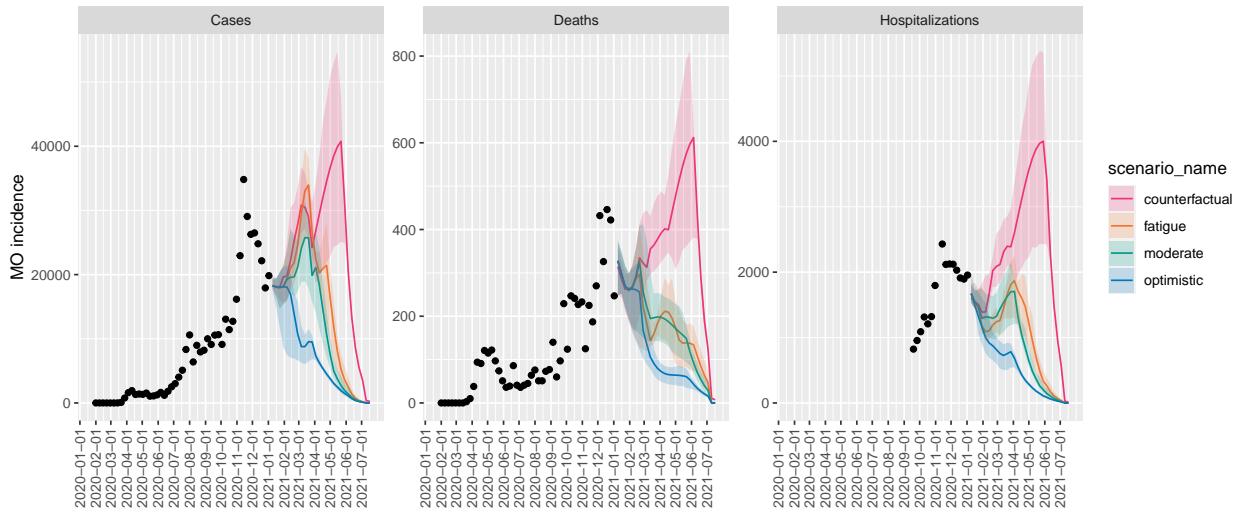
### MN ensemble projections & 50% projection intervals



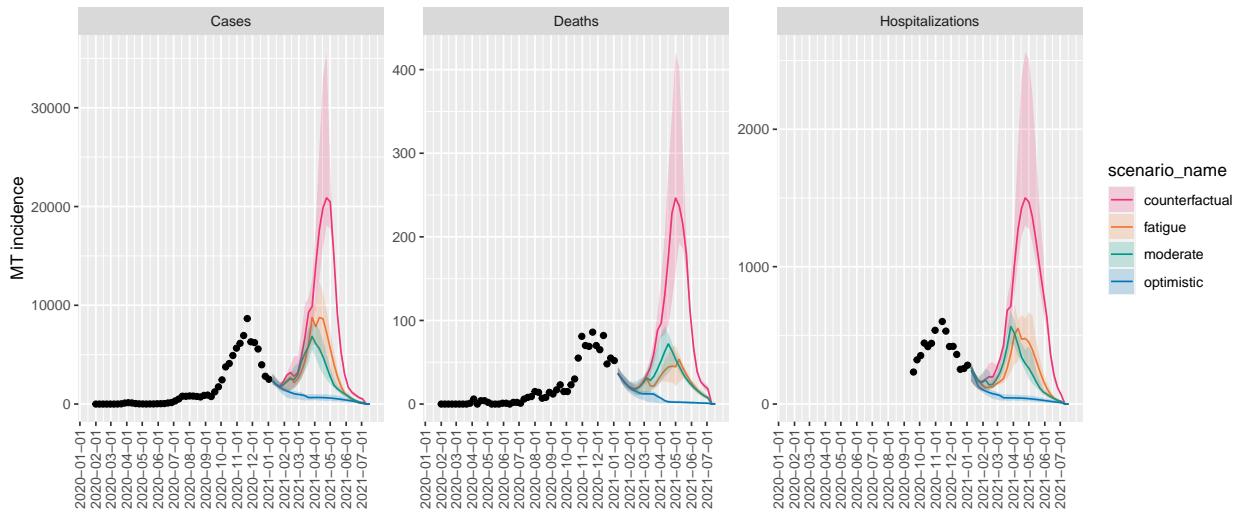
### MS ensemble projections & 50% projection intervals



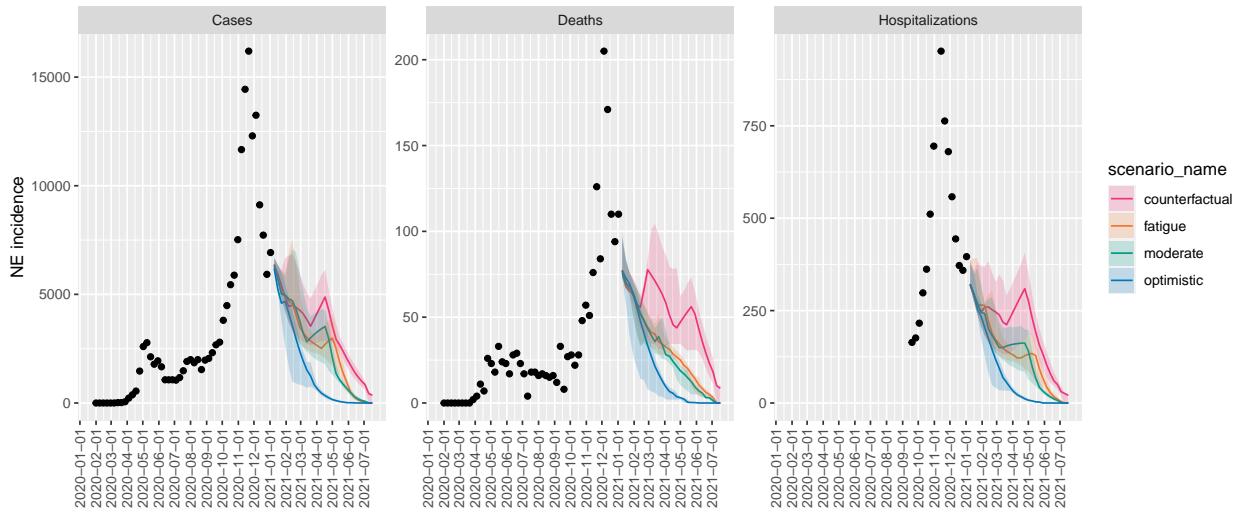
### MO ensemble projections & 50% projection intervals



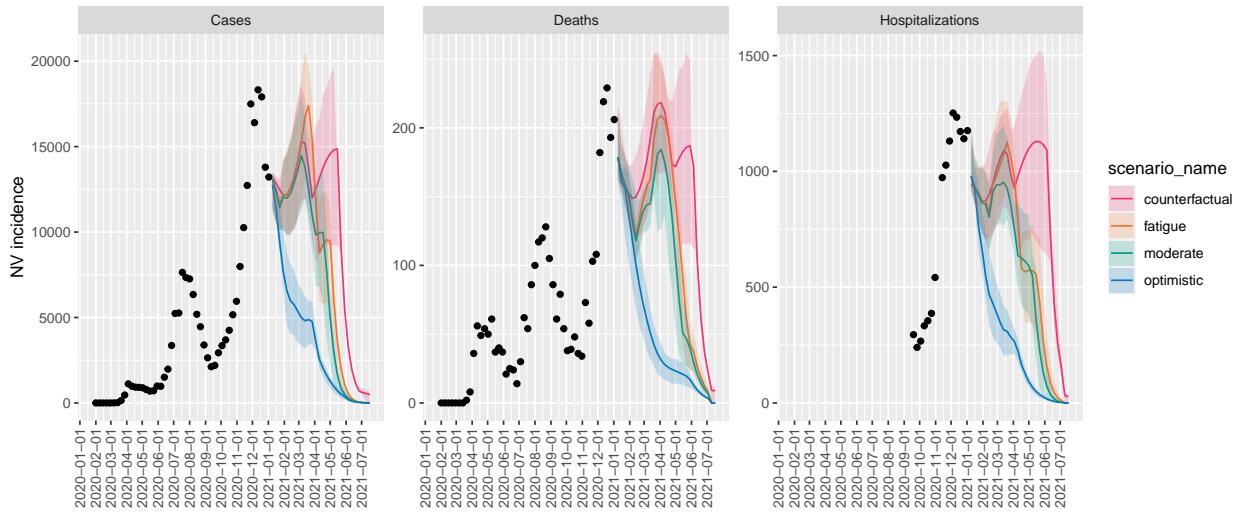
### MT ensemble projections & 50% projection intervals



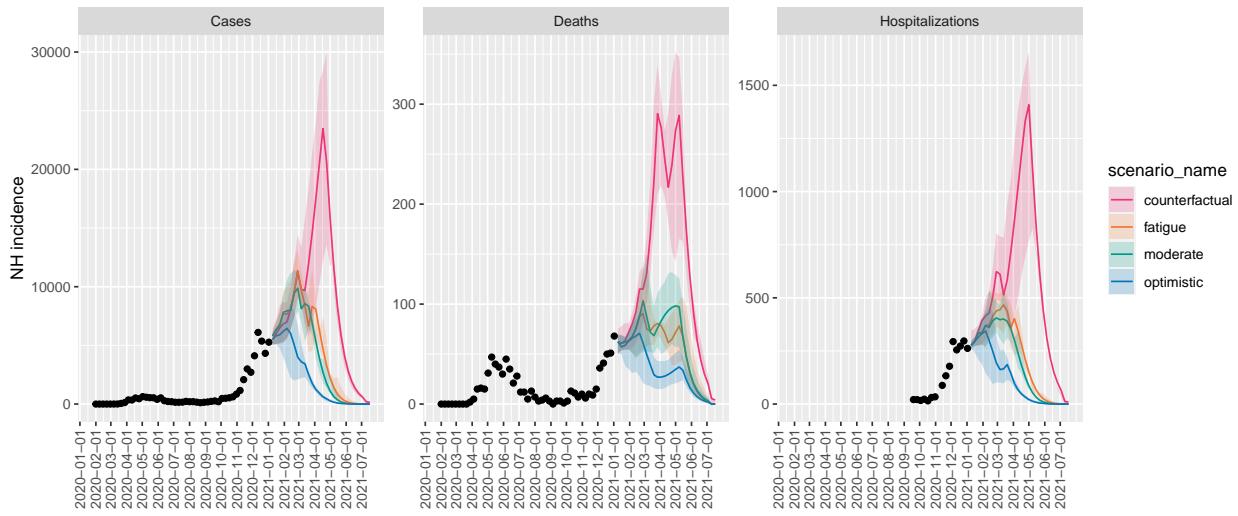
### NE ensemble projections & 50% projection intervals



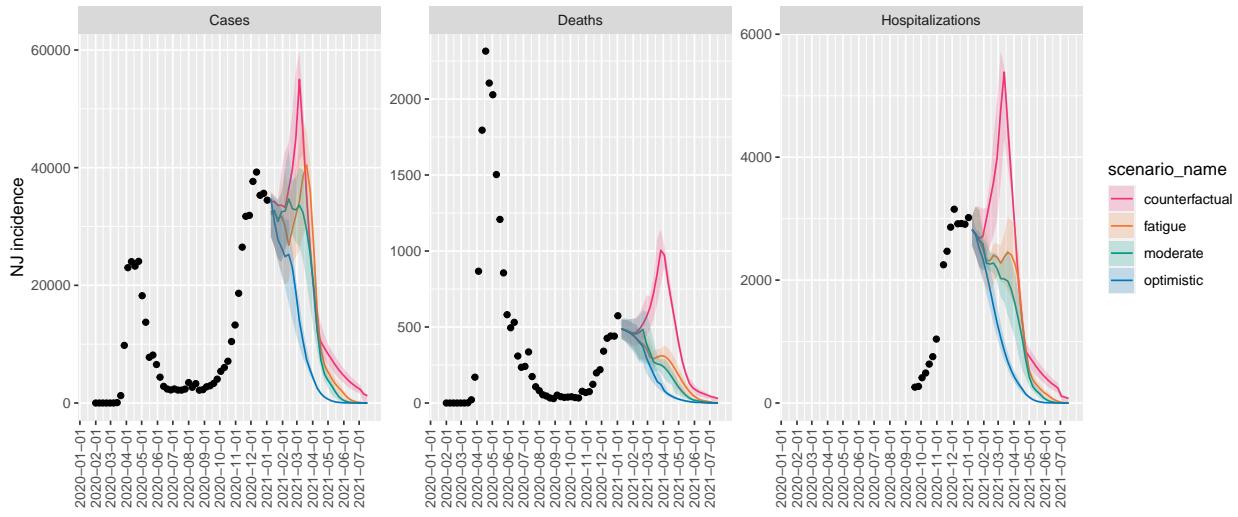
### NV ensemble projections & 50% projection intervals



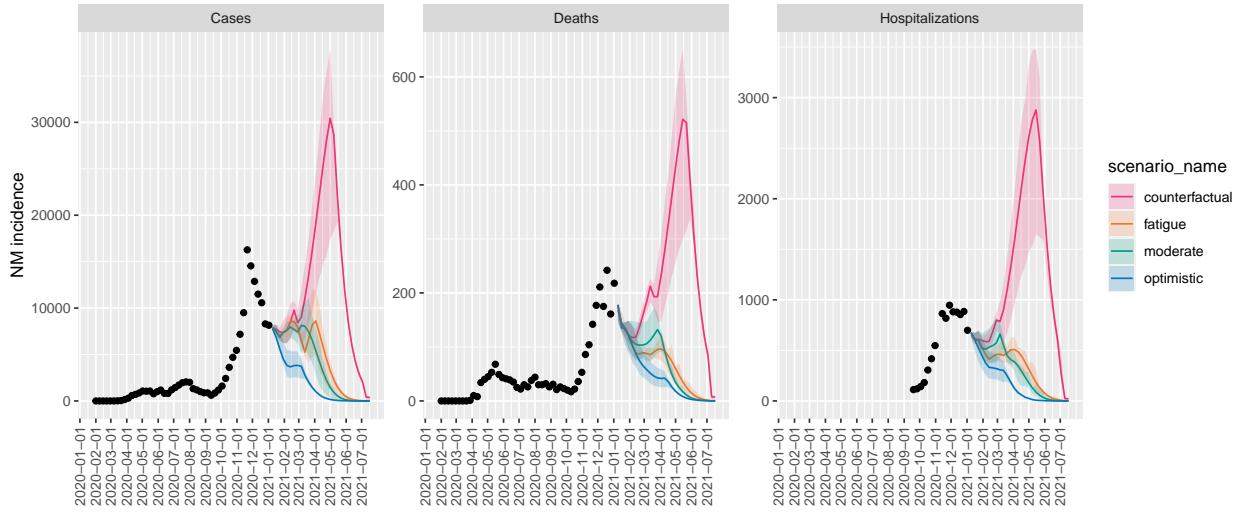
### NH ensemble projections & 50% projection intervals



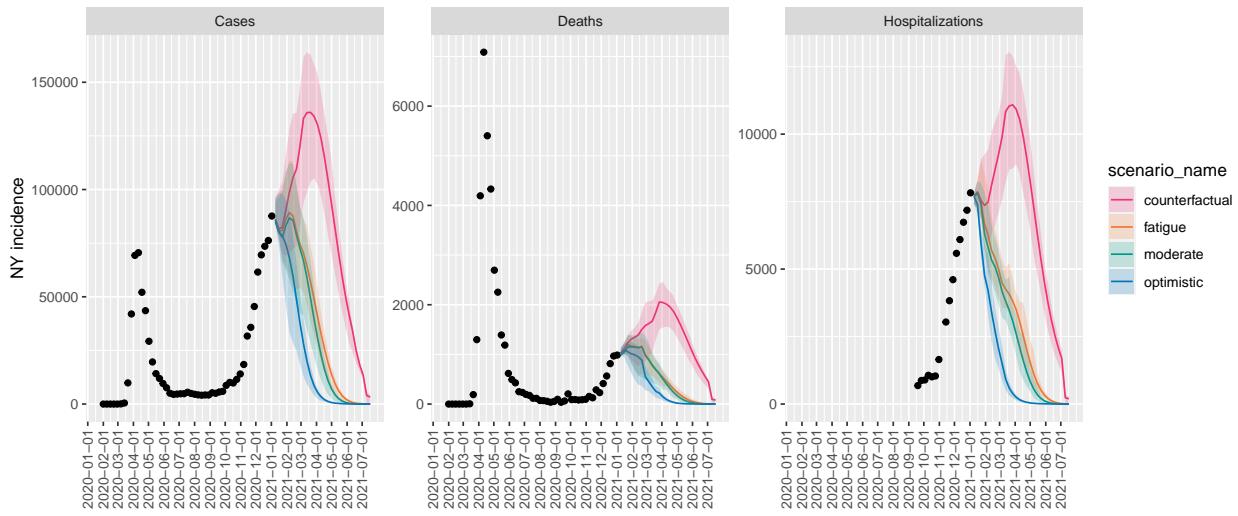
### NJ ensemble projections & 50% projection intervals



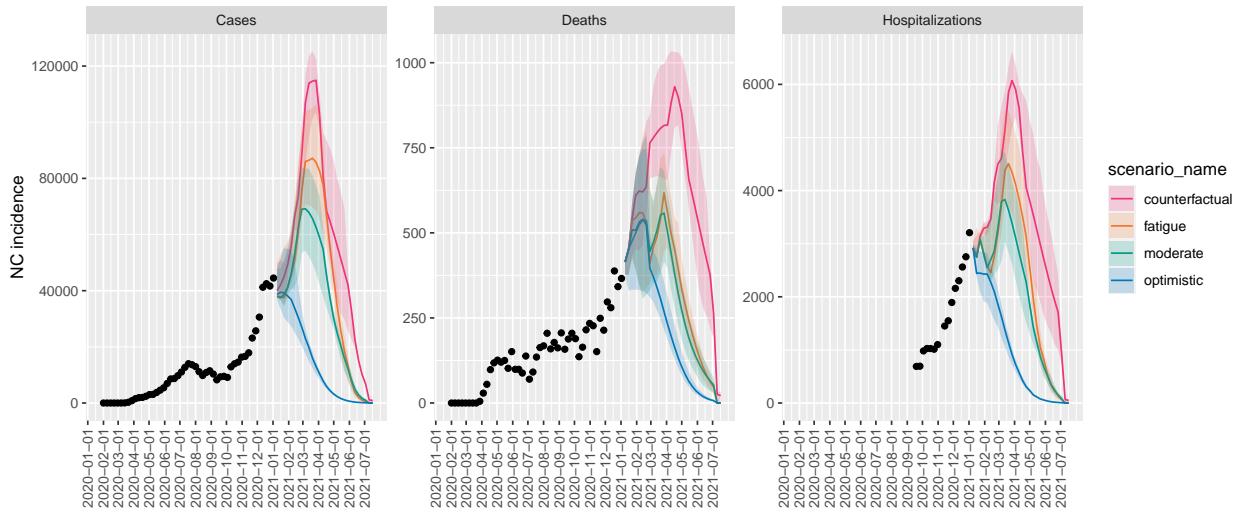
### NM ensemble projections & 50% projection intervals



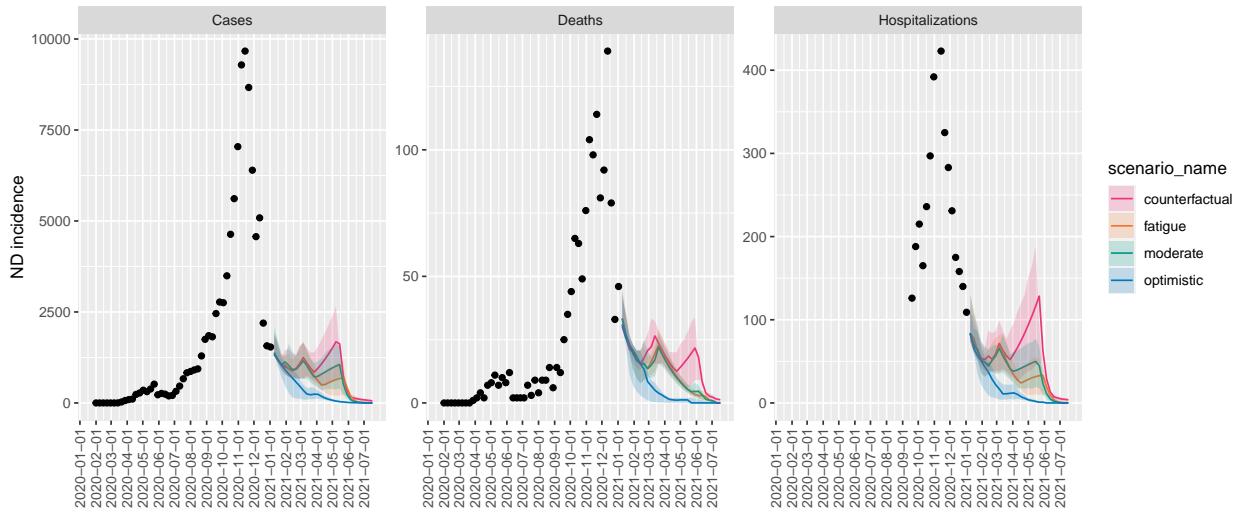
### NY ensemble projections & 50% projection intervals



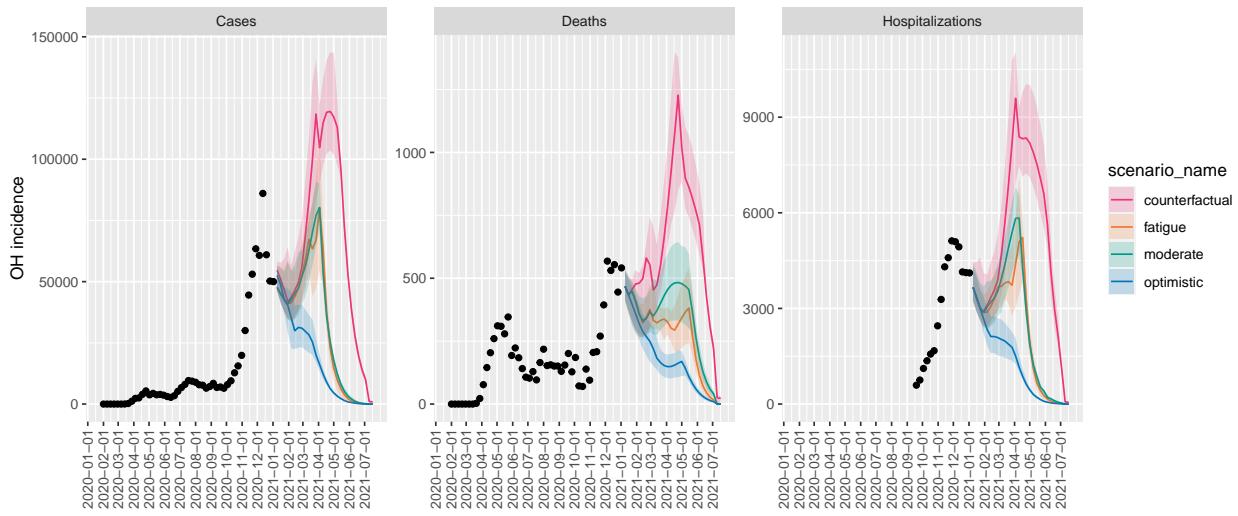
### NC ensemble projections & 50% projection intervals



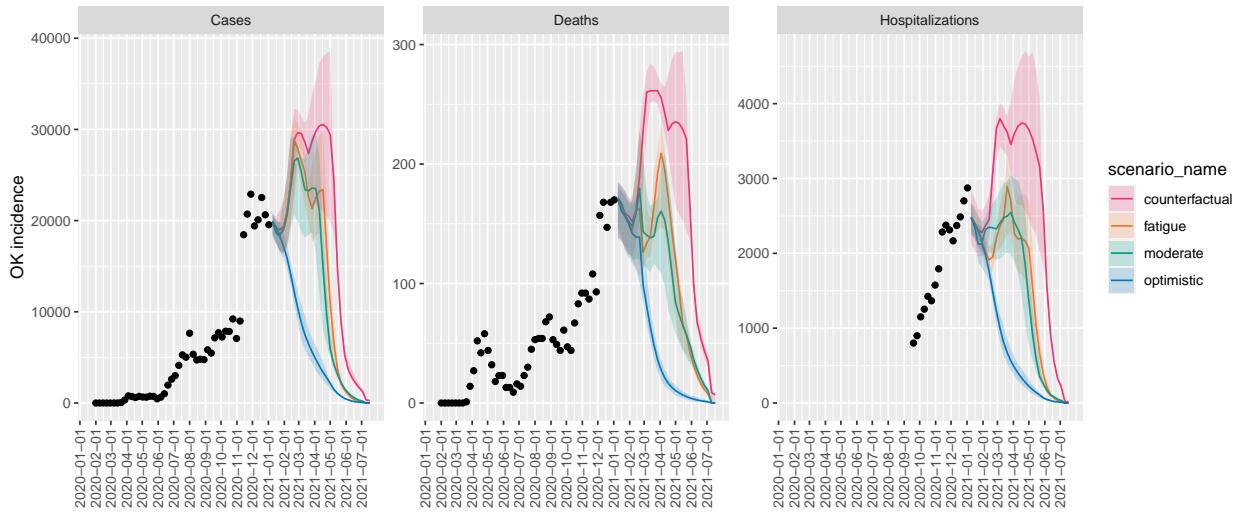
### ND ensemble projections & 50% projection intervals



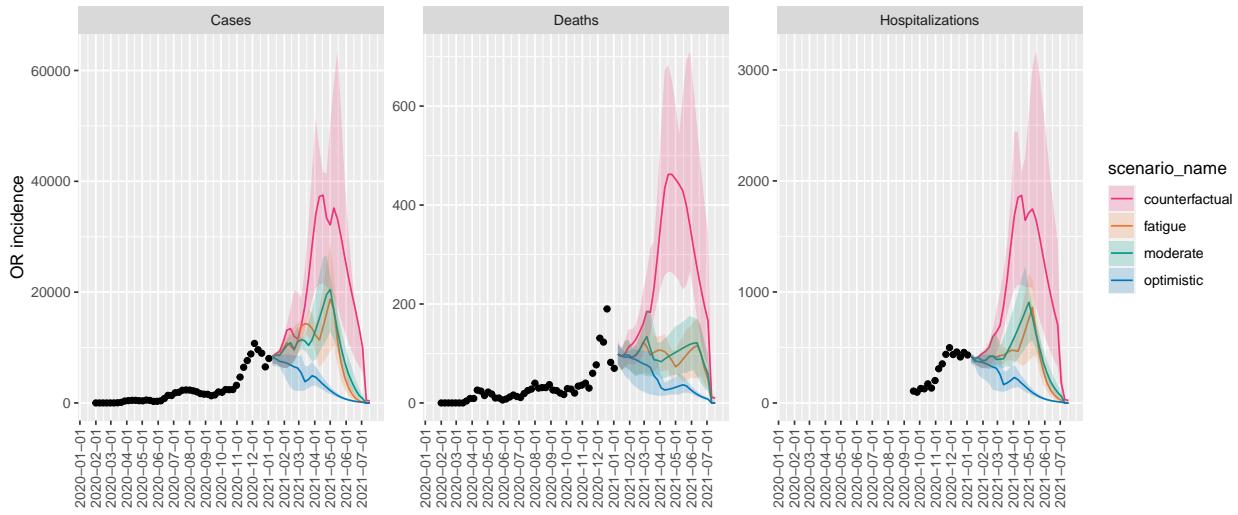
### OH ensemble projections & 50% projection intervals



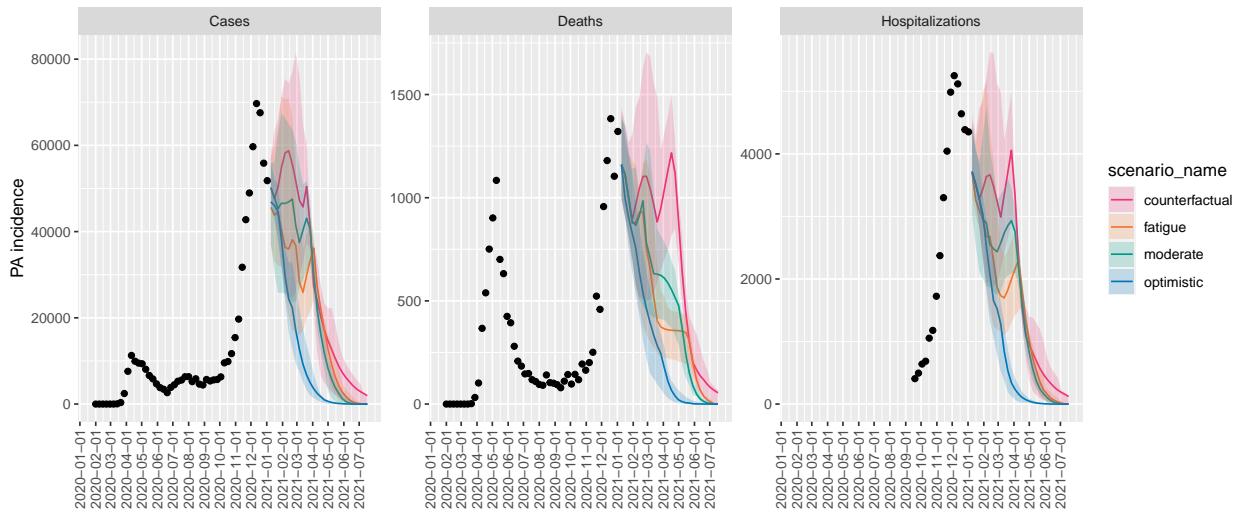
### OK ensemble projections & 50% projection intervals



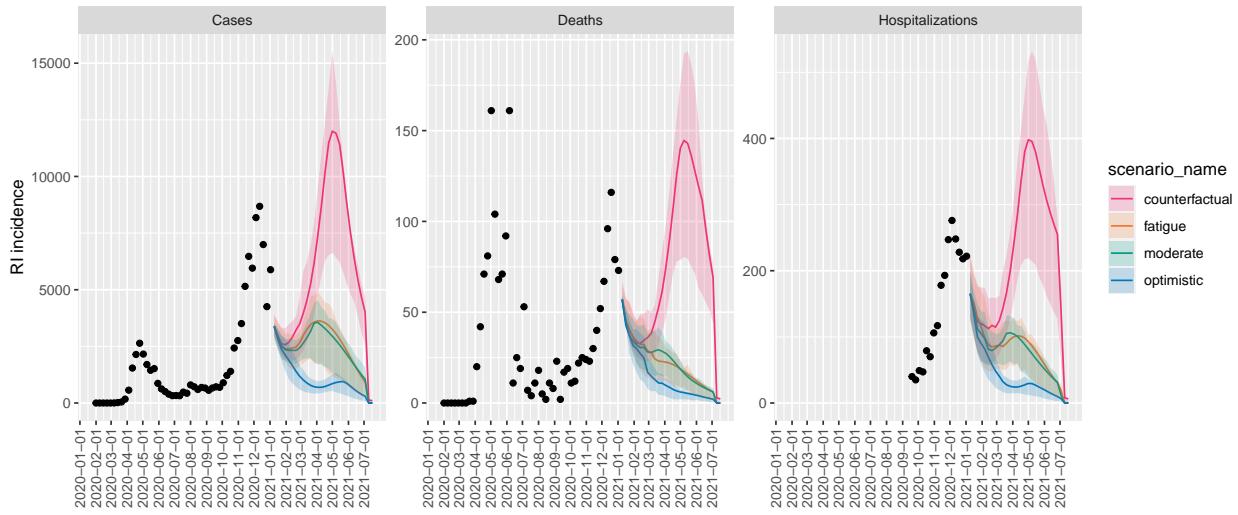
### OR ensemble projections & 50% projection intervals



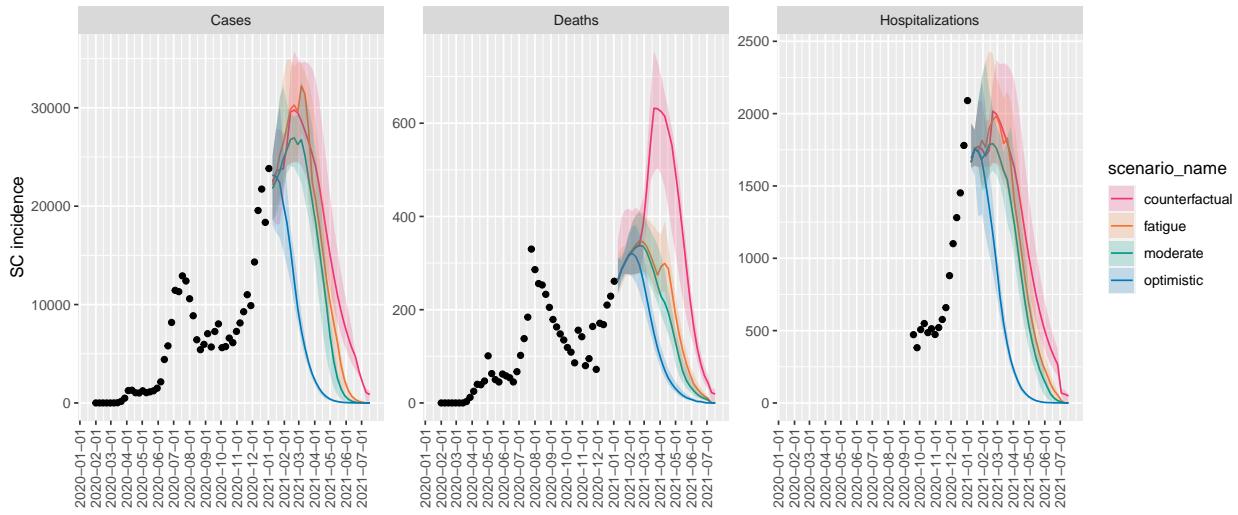
### PA ensemble projections & 50% projection intervals



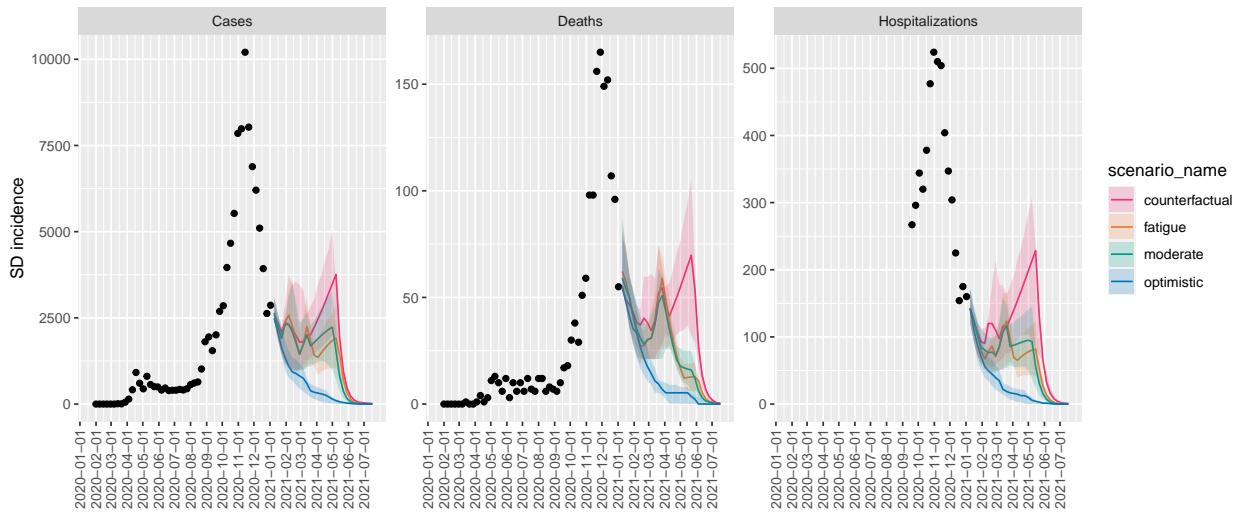
### RI ensemble projections & 50% projection intervals



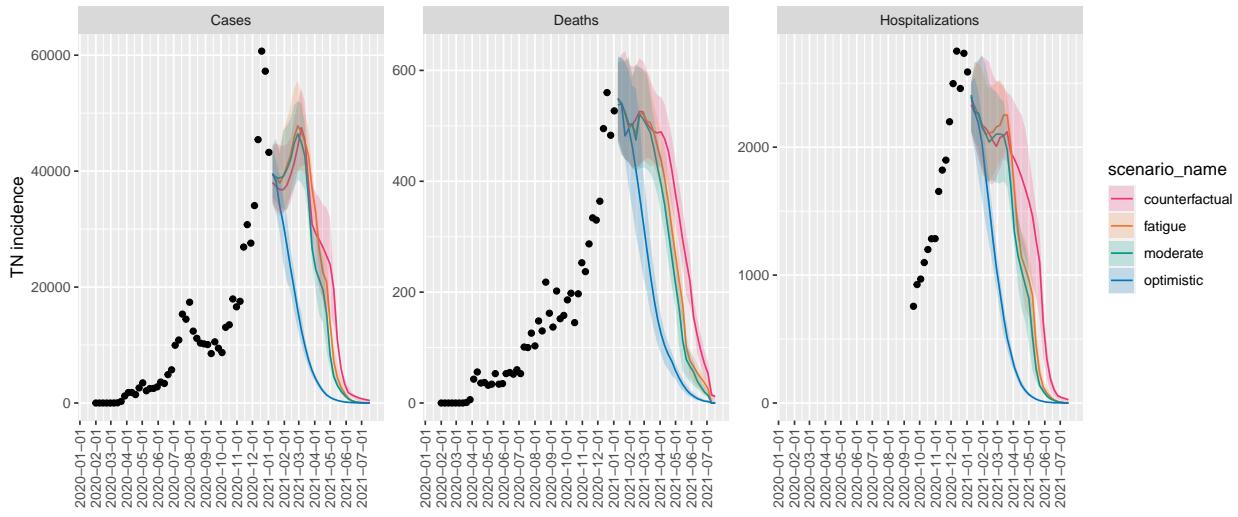
### SC ensemble projections & 50% projection intervals



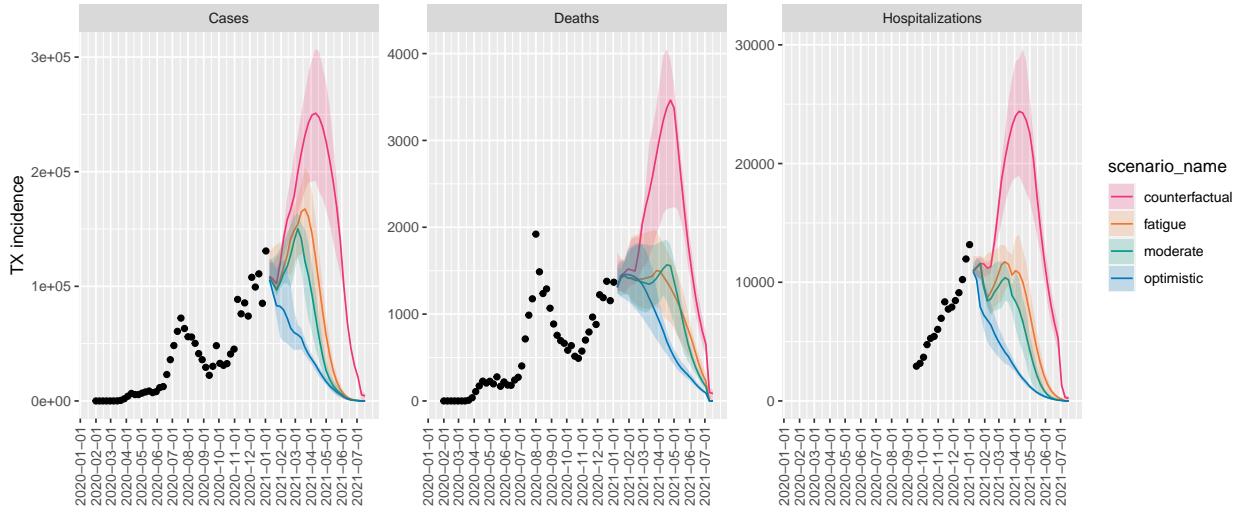
### SD ensemble projections & 50% projection intervals



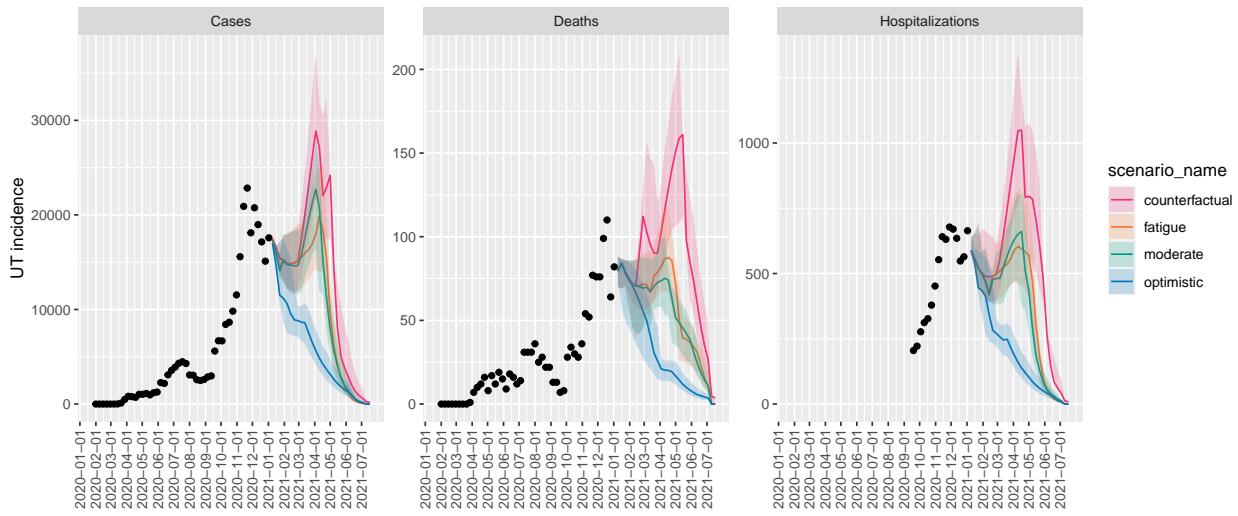
### TN ensemble projections & 50% projection intervals



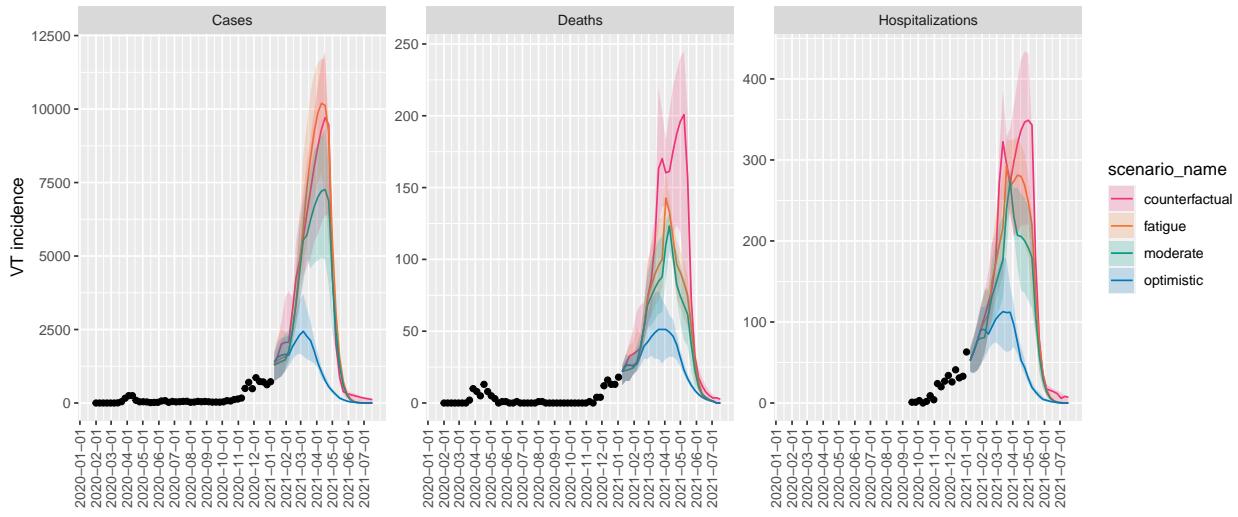
### TX ensemble projections & 50% projection intervals



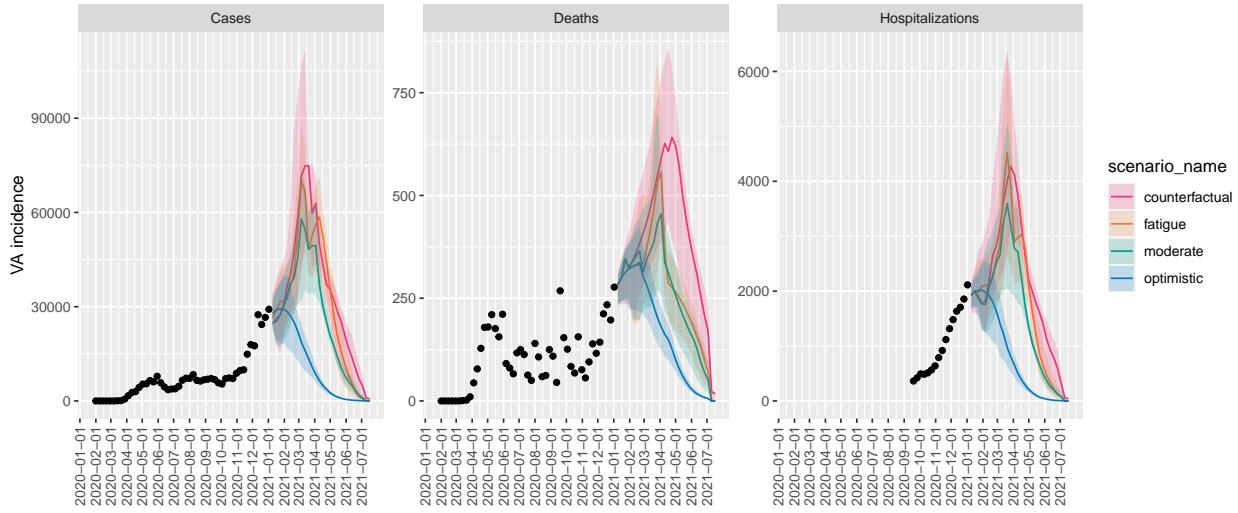
### UT ensemble projections & 50% projection intervals



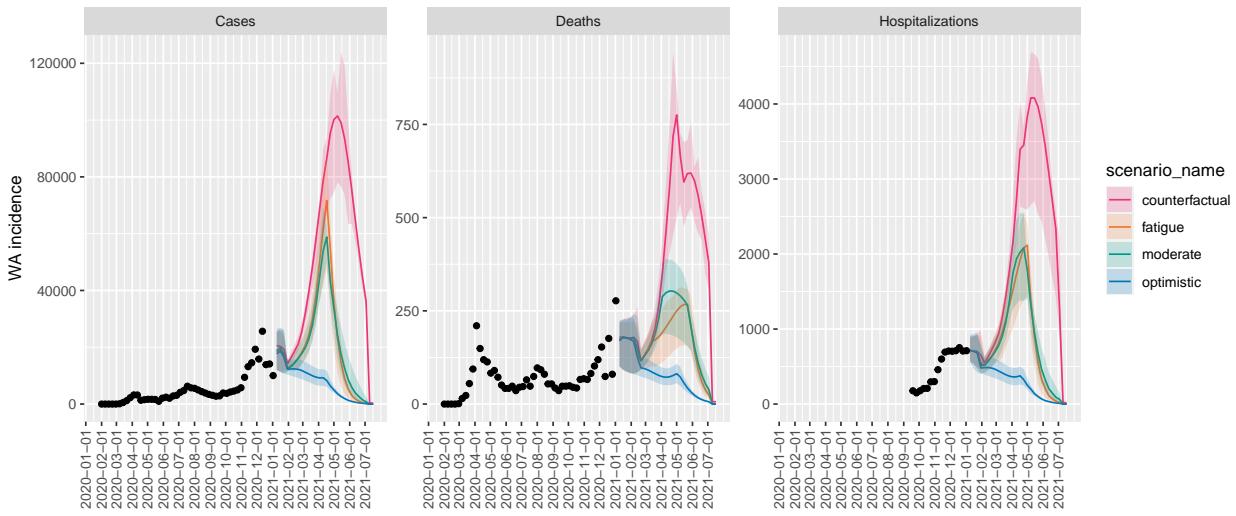
### VT ensemble projections & 50% projection intervals



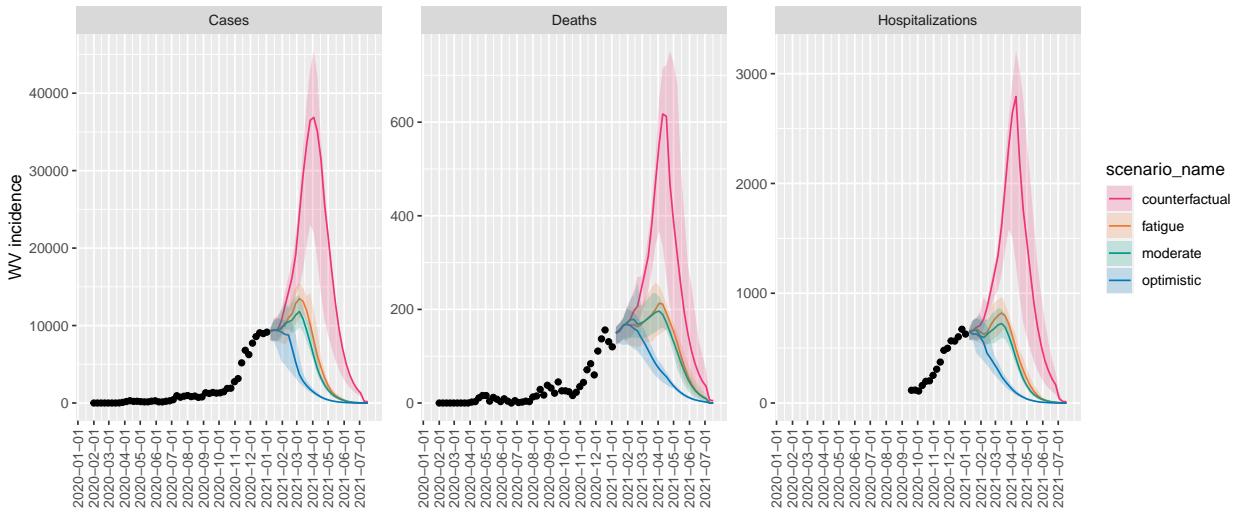
### VA ensemble projections & 50% projection intervals



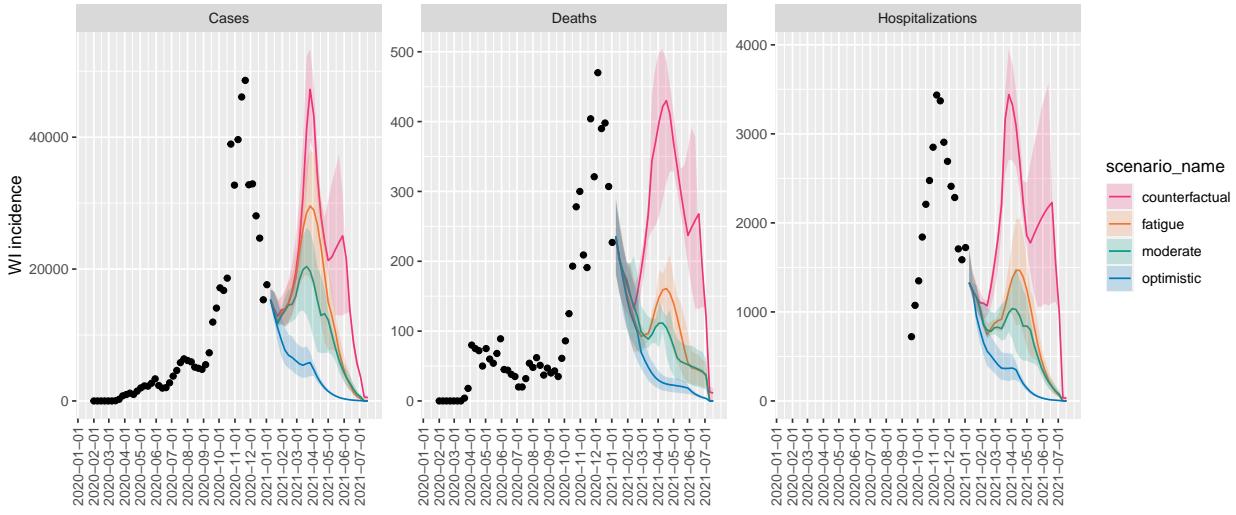
### WA ensemble projections & 50% projection intervals



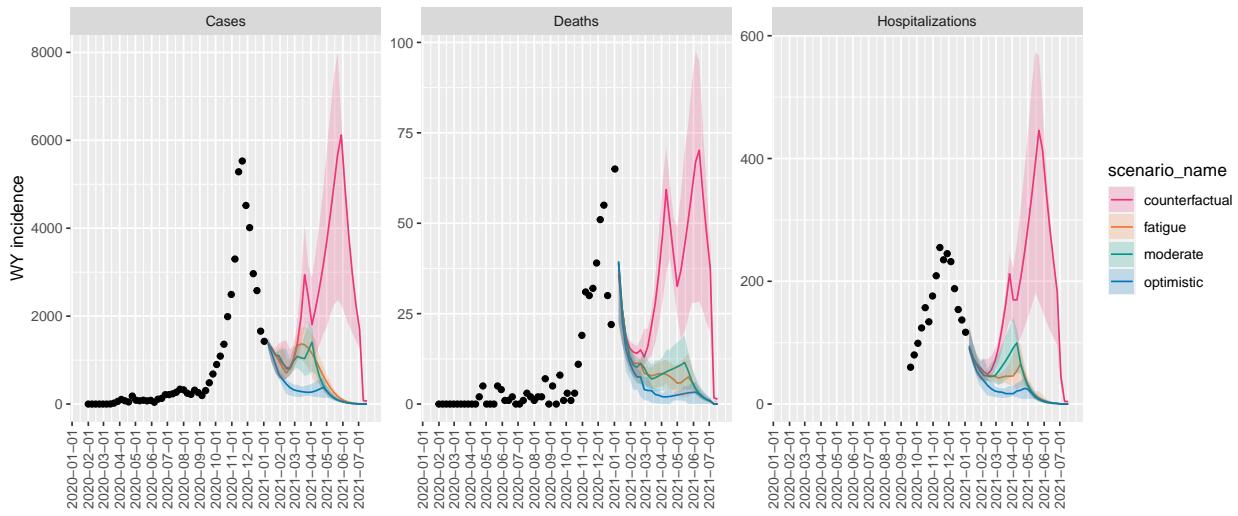
### WV ensemble projections & 50% projection intervals



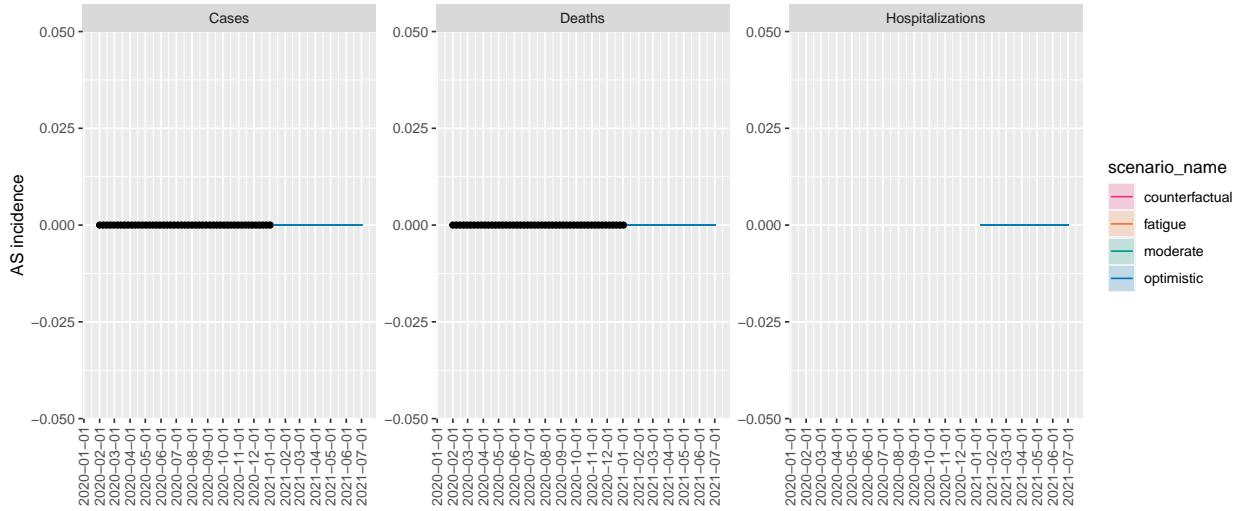
### WI ensemble projections & 50% projection intervals



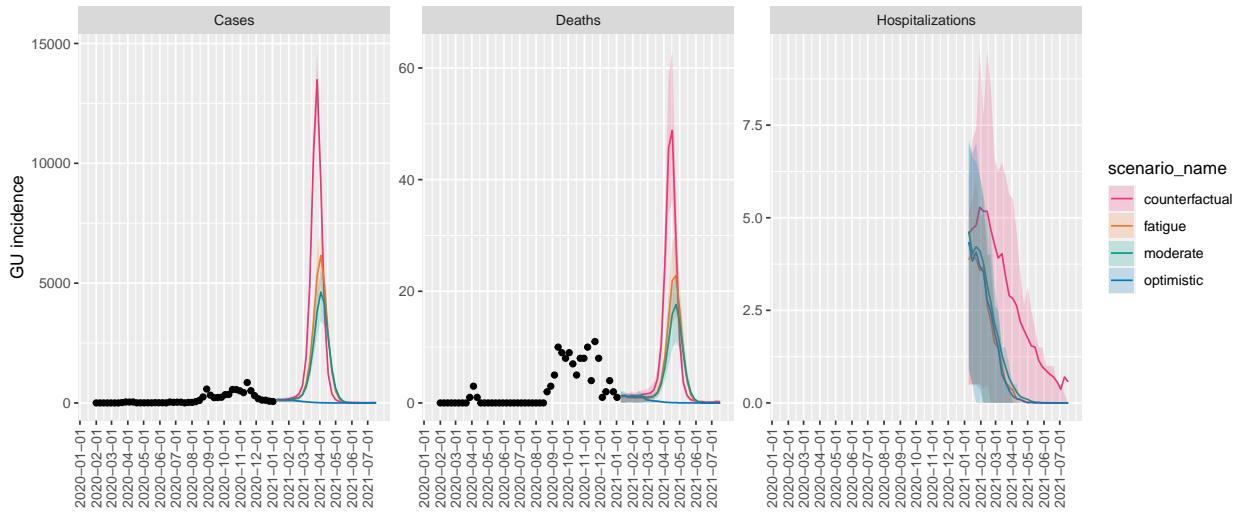
### WY ensemble projections & 50% projection intervals



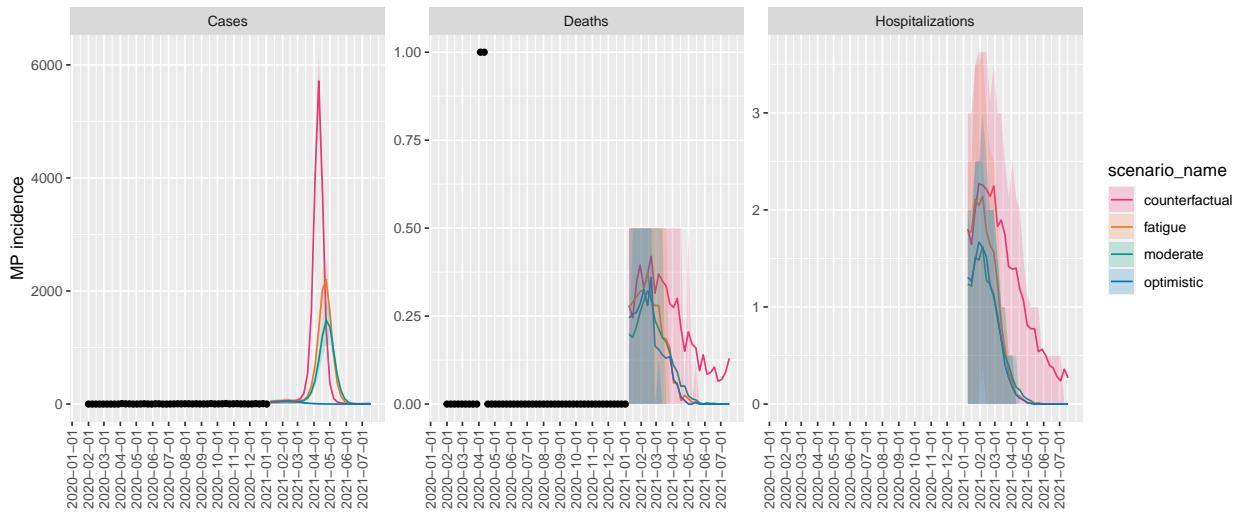
### AS ensemble projections & 50% projection intervals



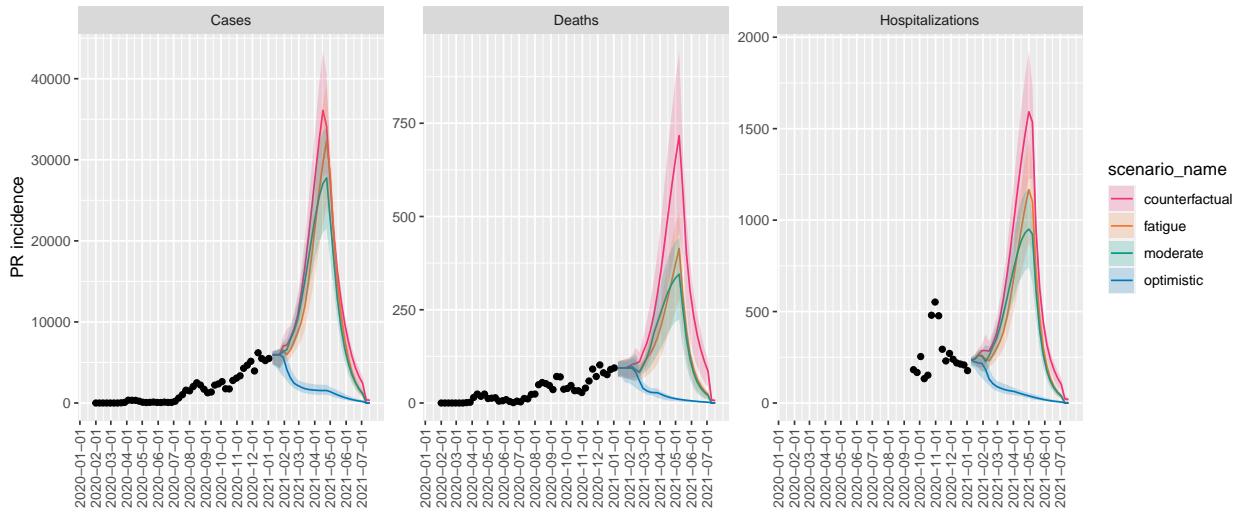
### GU ensemble projections & 50% projection intervals



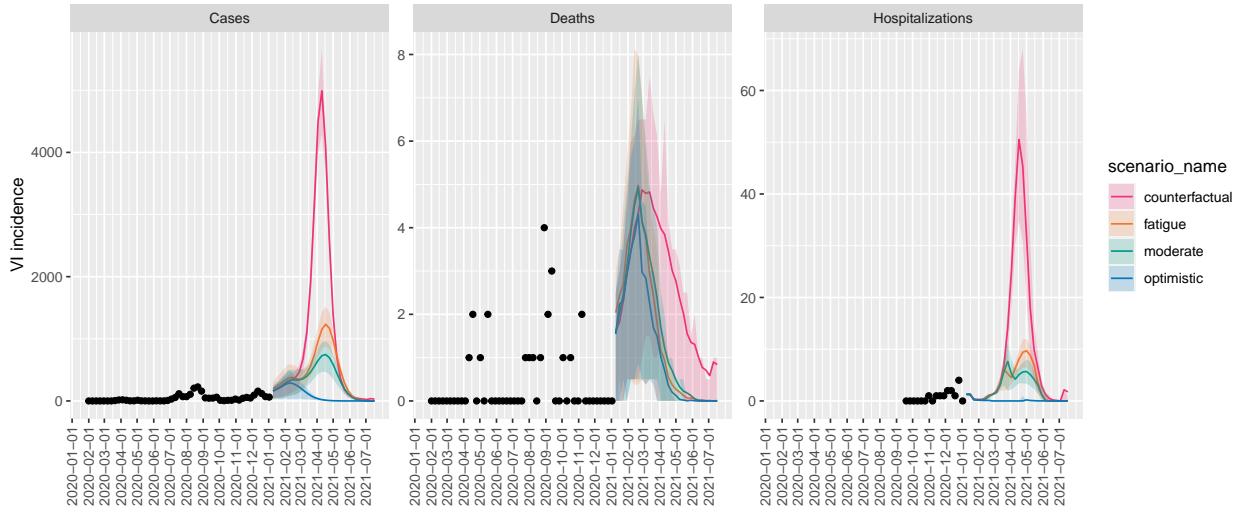
### MP ensemble projections & 50% projection intervals



### PR ensemble projections & 50% projection intervals

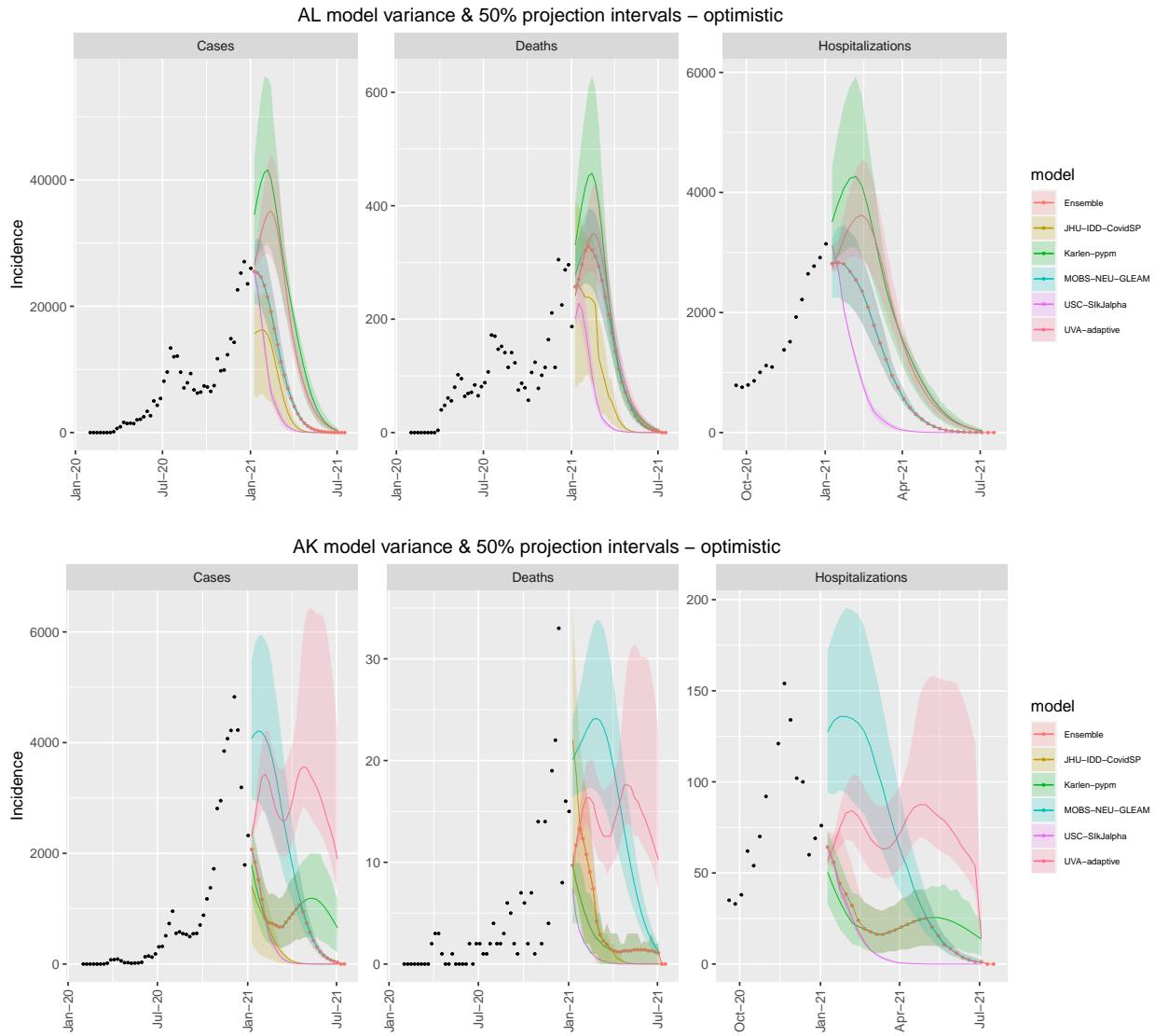


### VI ensemble projections & 50% projection intervals

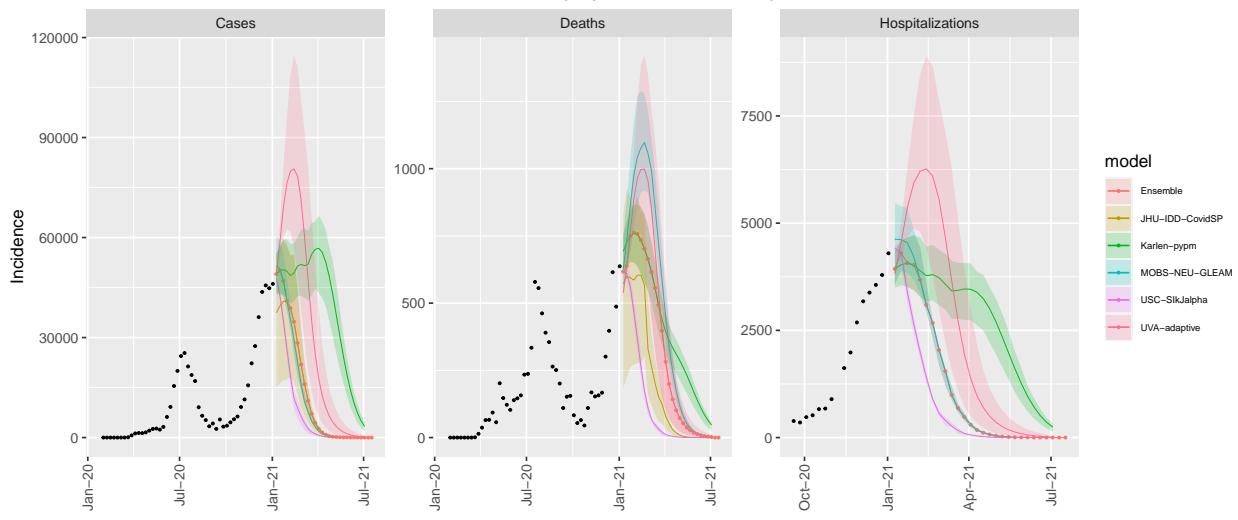


## State-level model variation

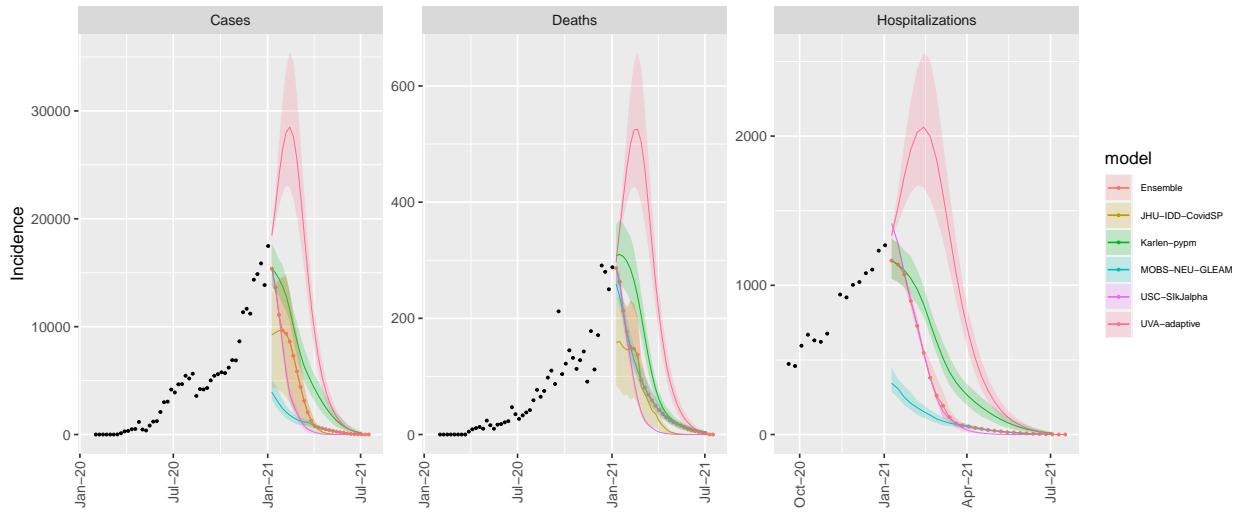
National model variation for the optimistic scenario



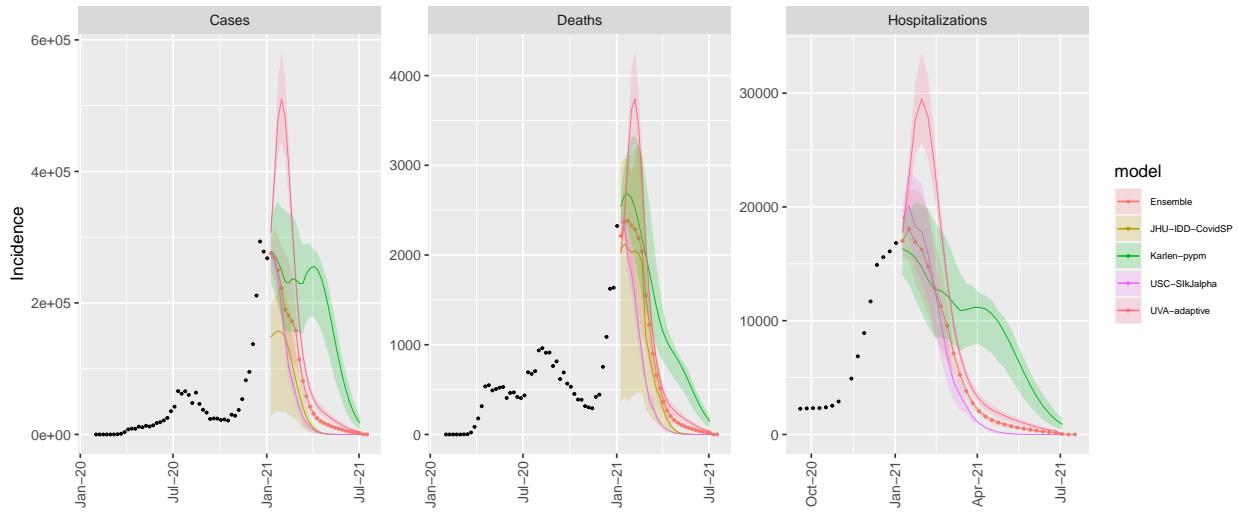
AZ model variance & 50% projection intervals – optimistic



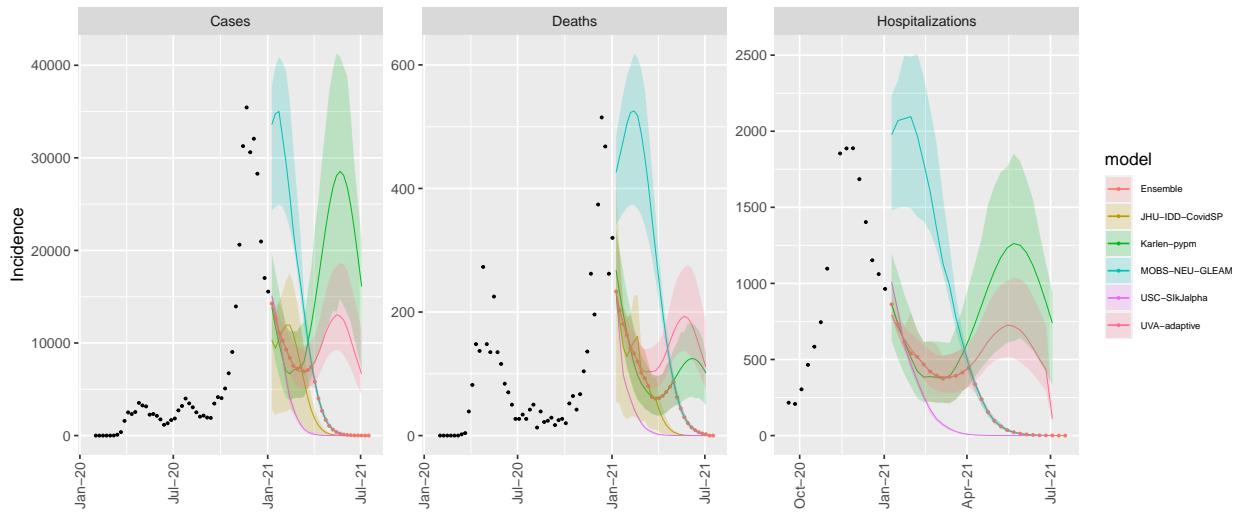
AR model variance & 50% projection intervals – optimistic



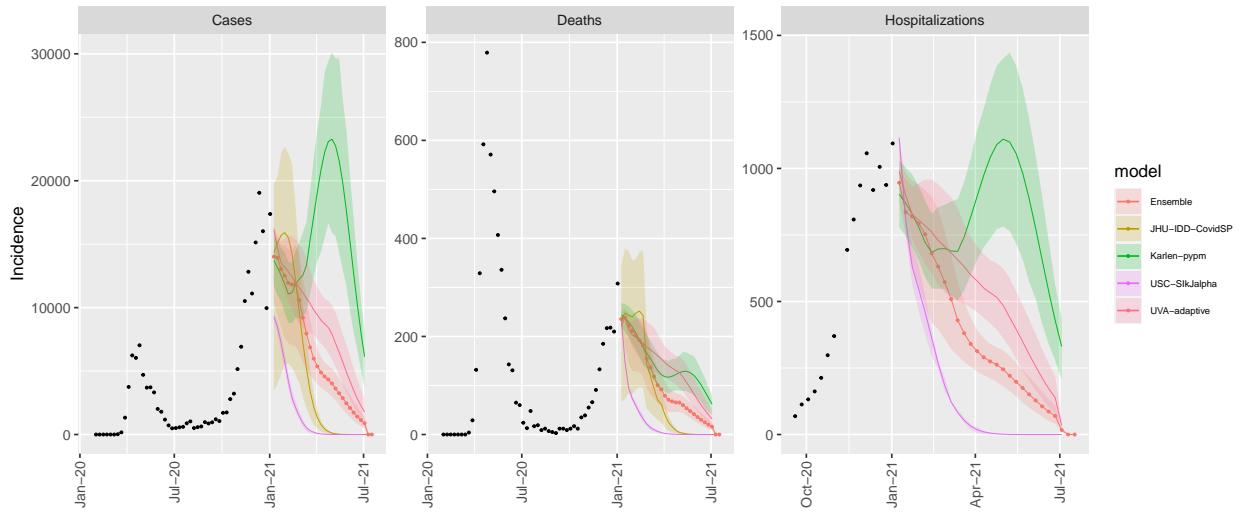
CA model variance & 50% projection intervals – optimistic



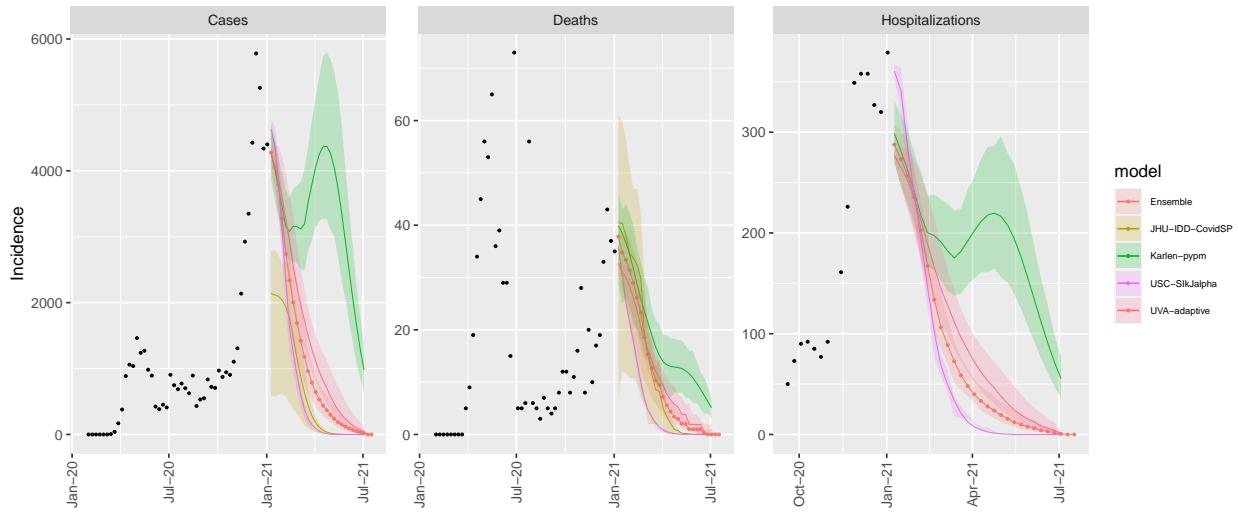
CO model variance & 50% projection intervals – optimistic



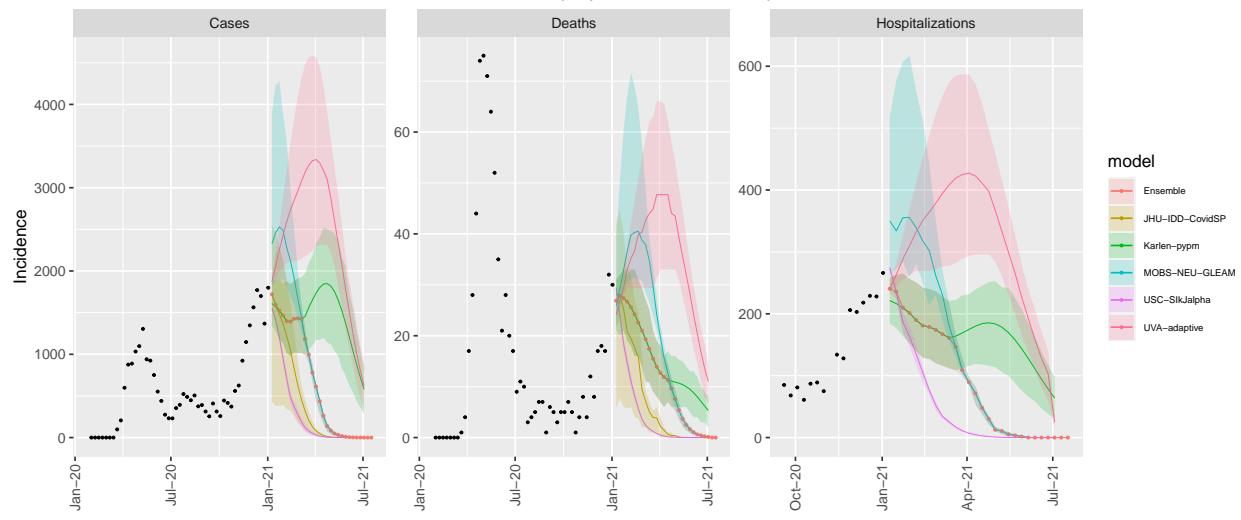
CT model variance & 50% projection intervals – optimistic



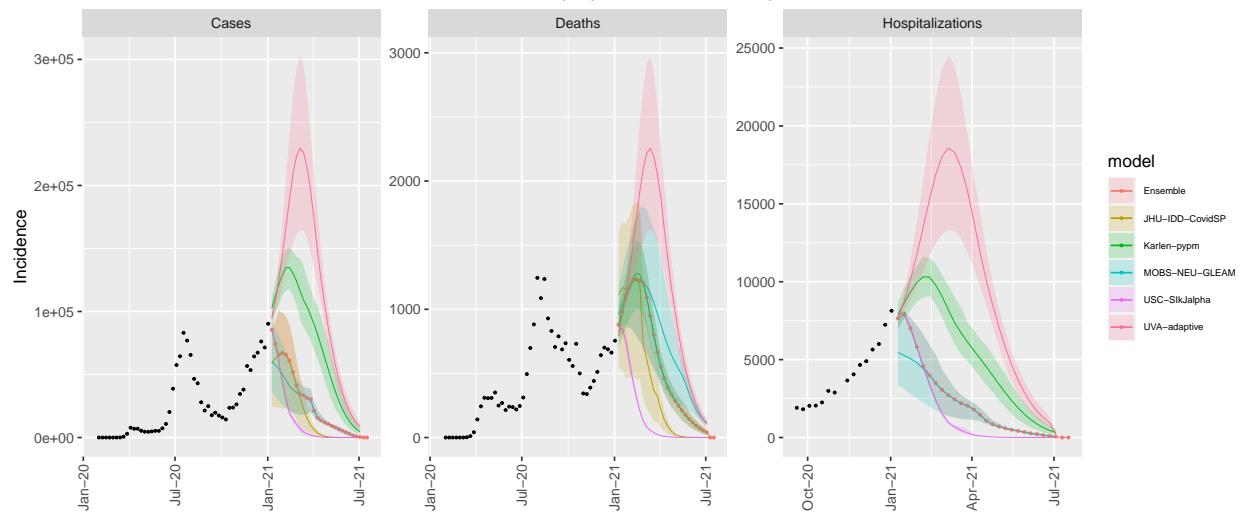
DE model variance & 50% projection intervals – optimistic



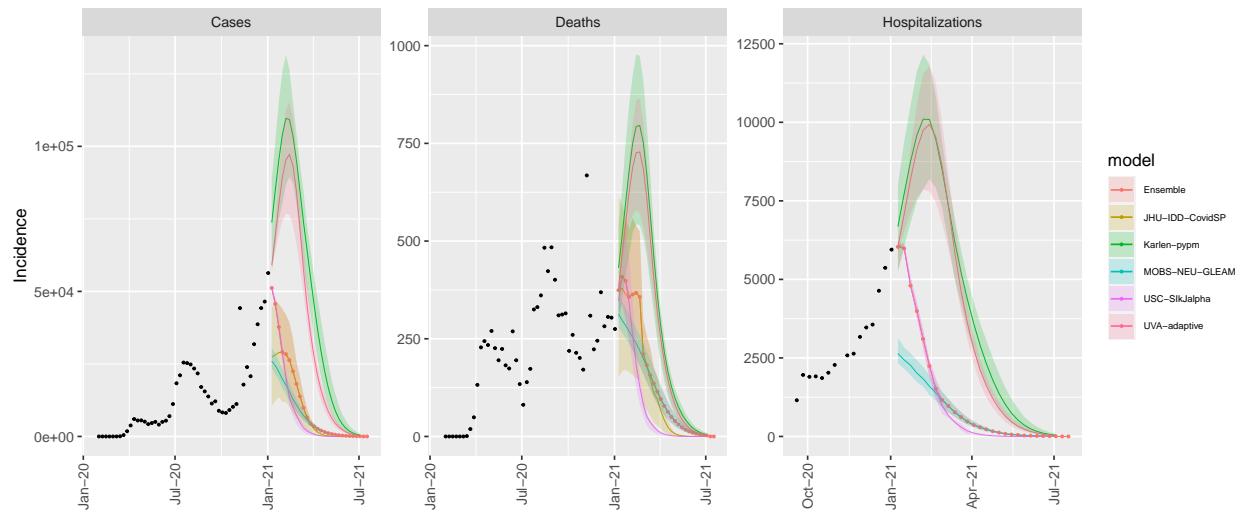
DC model variance & 50% projection intervals – optimistic



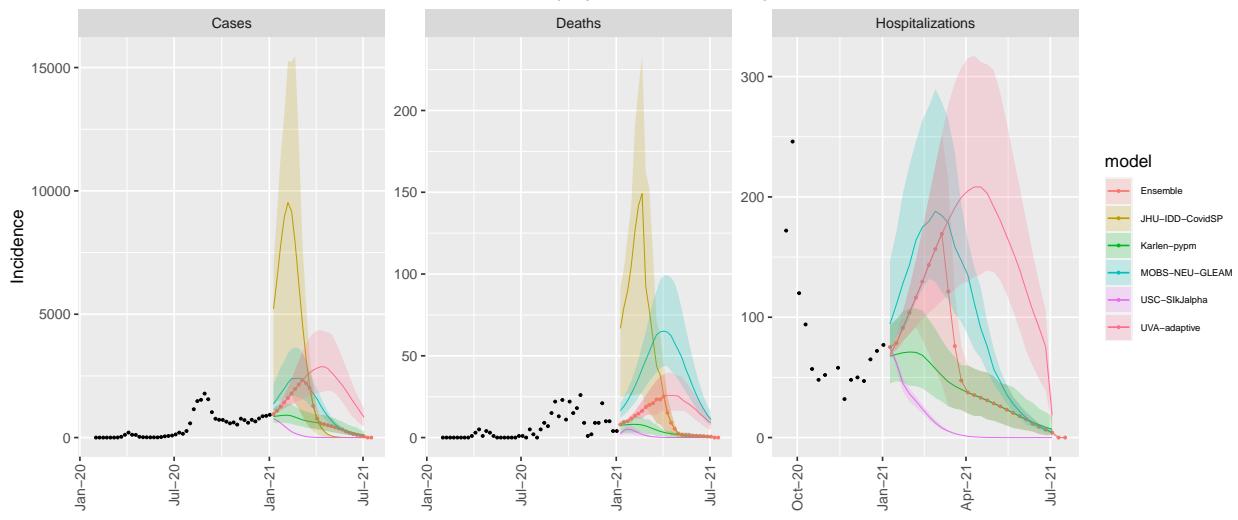
FL model variance & 50% projection intervals – optimistic



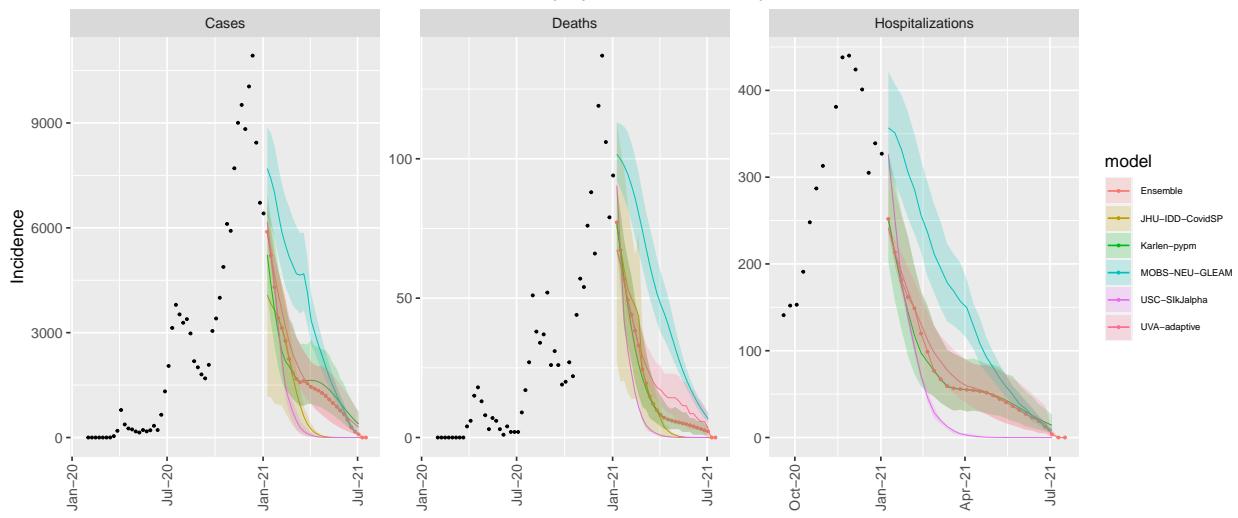
GA model variance & 50% projection intervals – optimistic



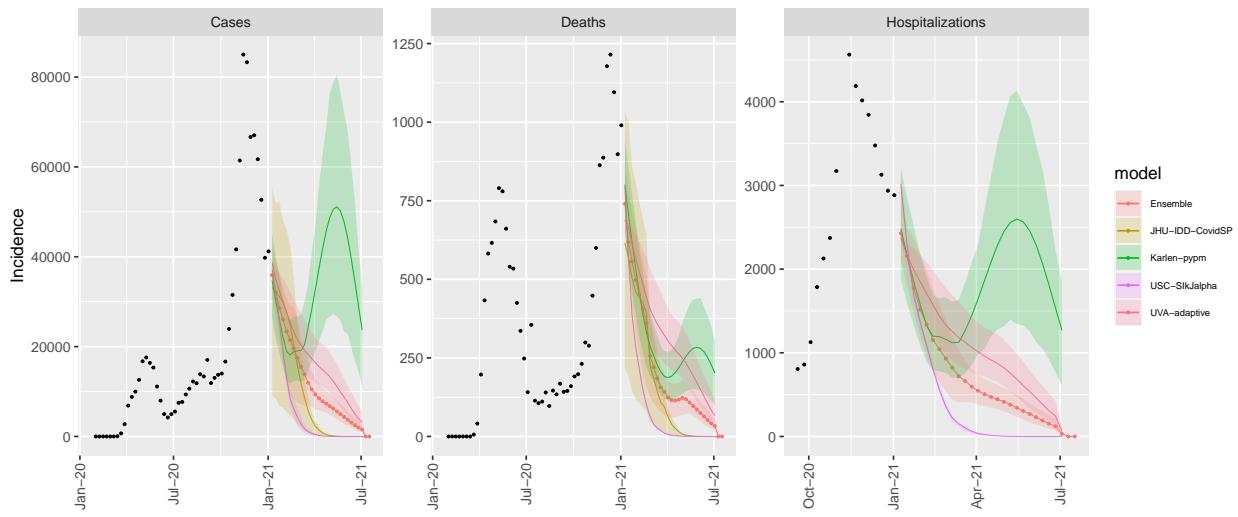
HI model variance & 50% projection intervals – optimistic



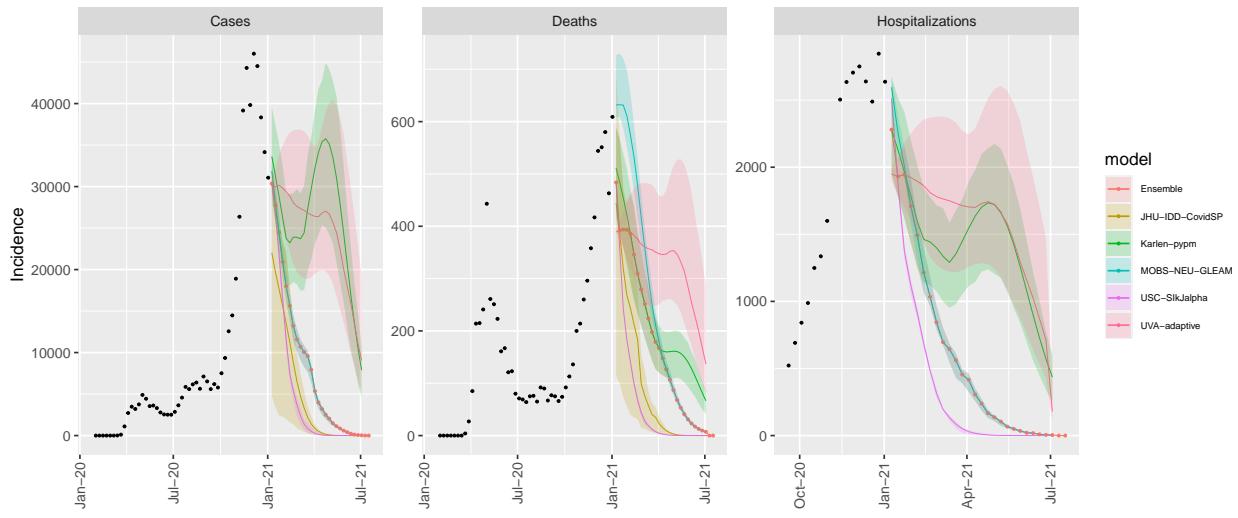
ID model variance & 50% projection intervals – optimistic



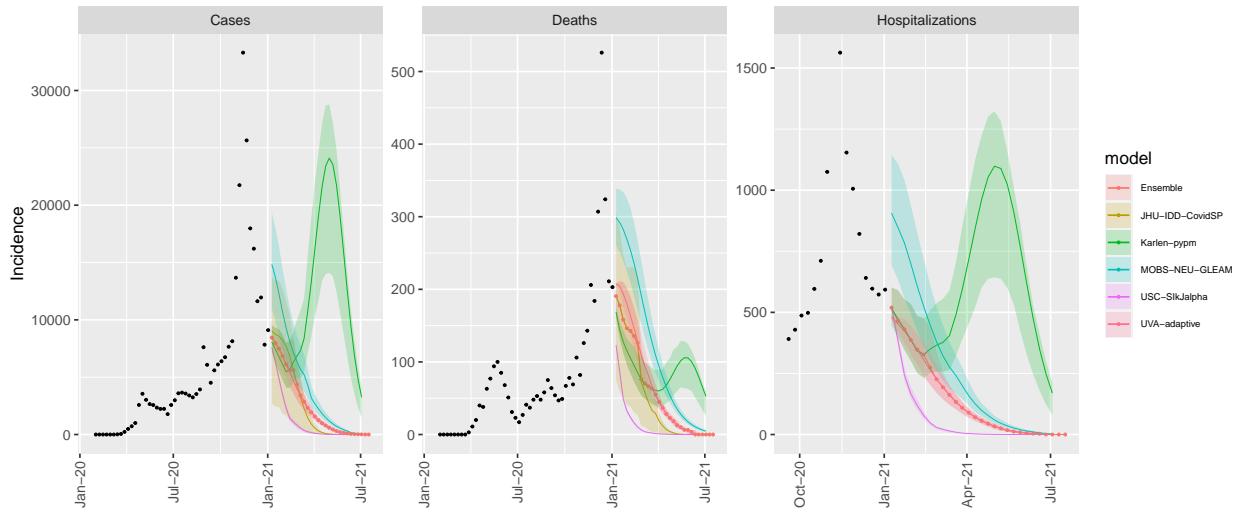
IL model variance & 50% projection intervals – optimistic



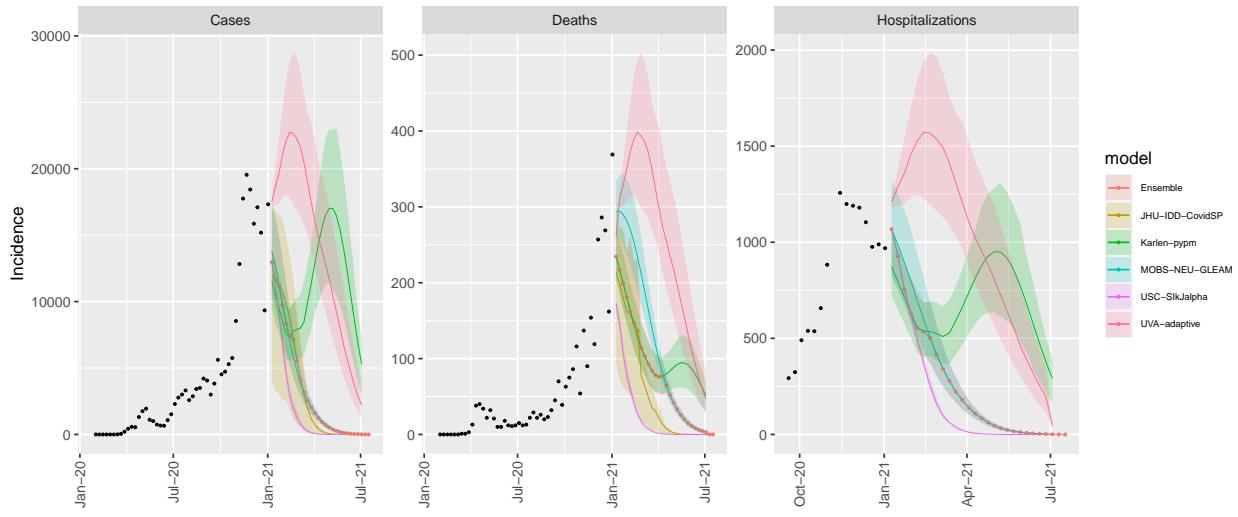
IN model variance & 50% projection intervals – optimistic



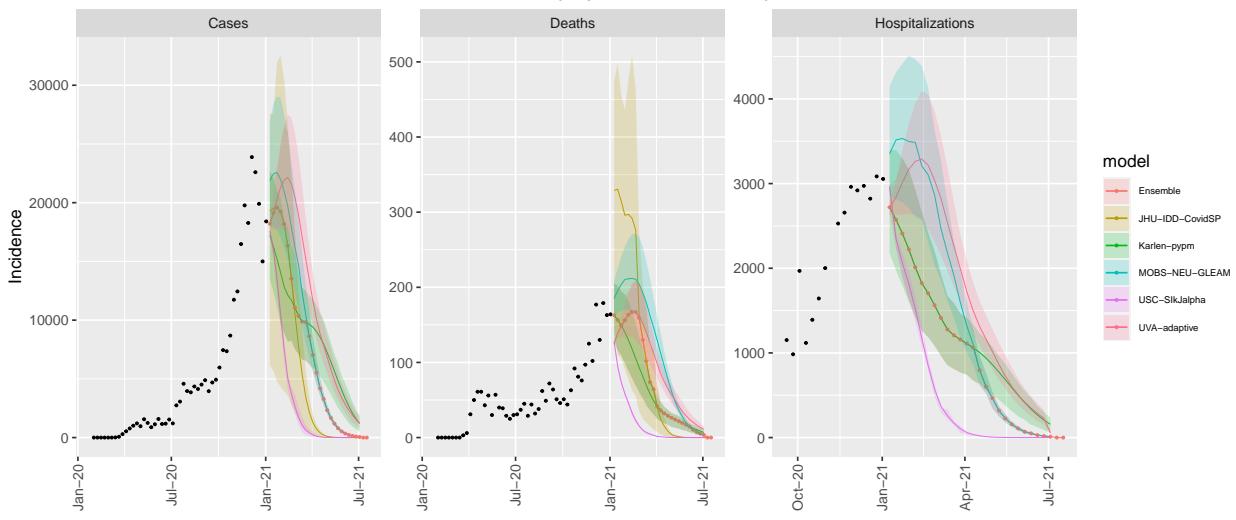
IA model variance & 50% projection intervals – optimistic



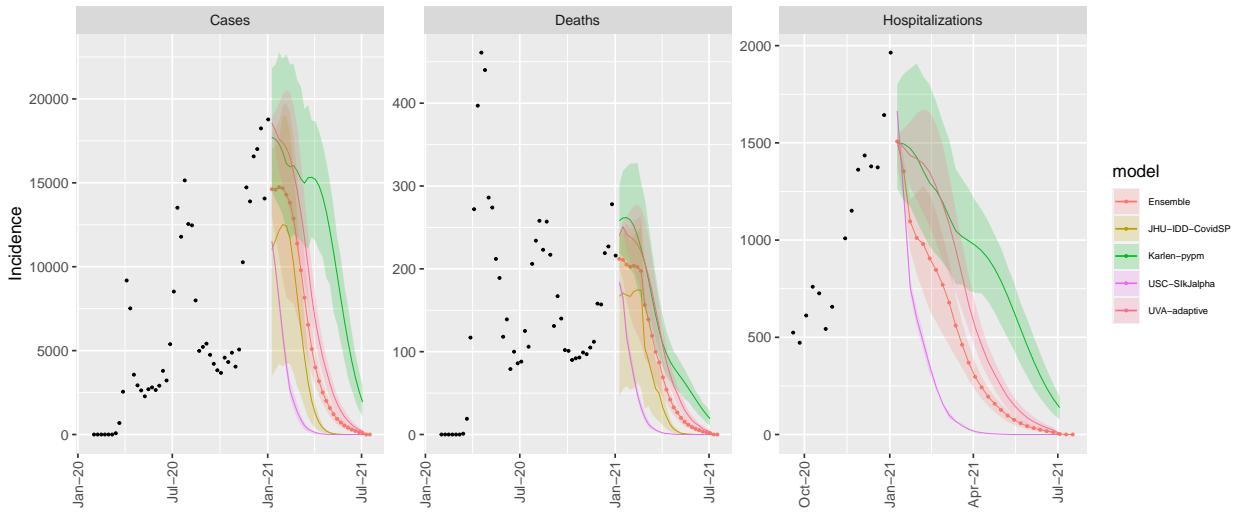
KS model variance & 50% projection intervals – optimistic



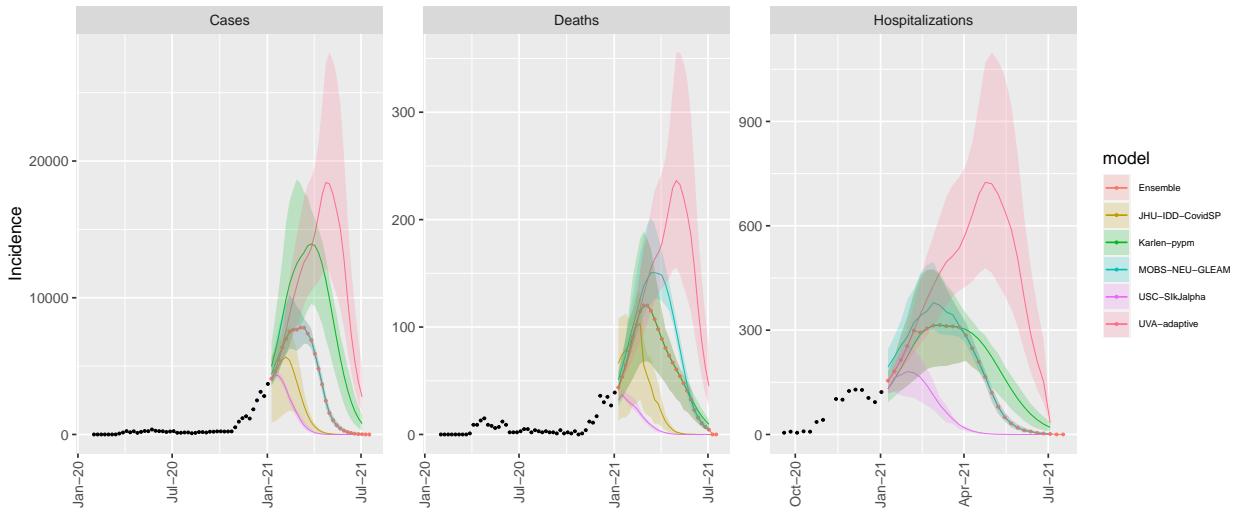
### KY model variance & 50% projection intervals – optimistic



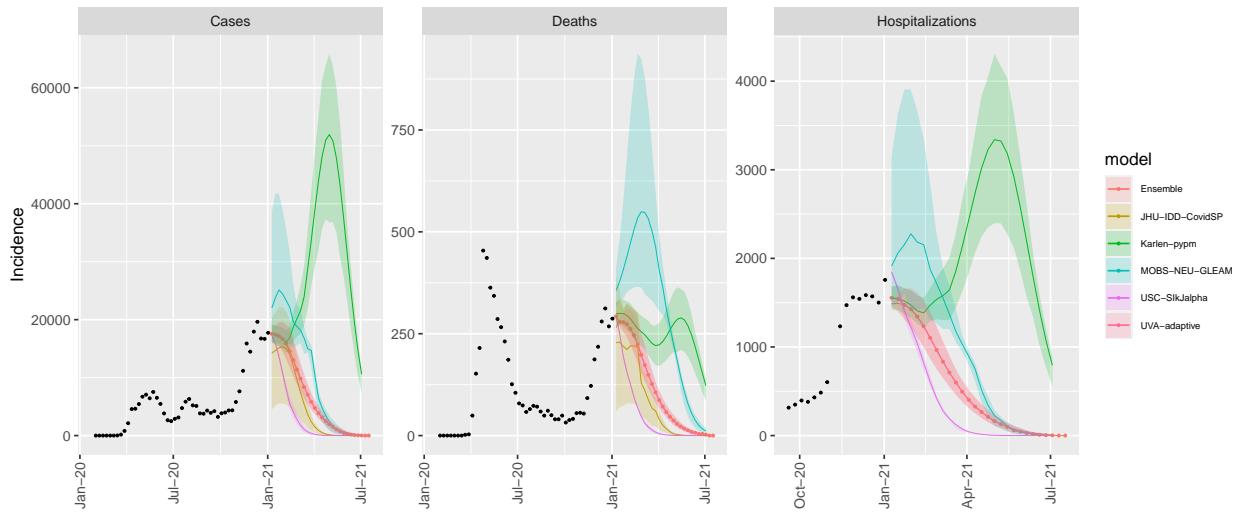
### LA model variance & 50% projection intervals – optimistic



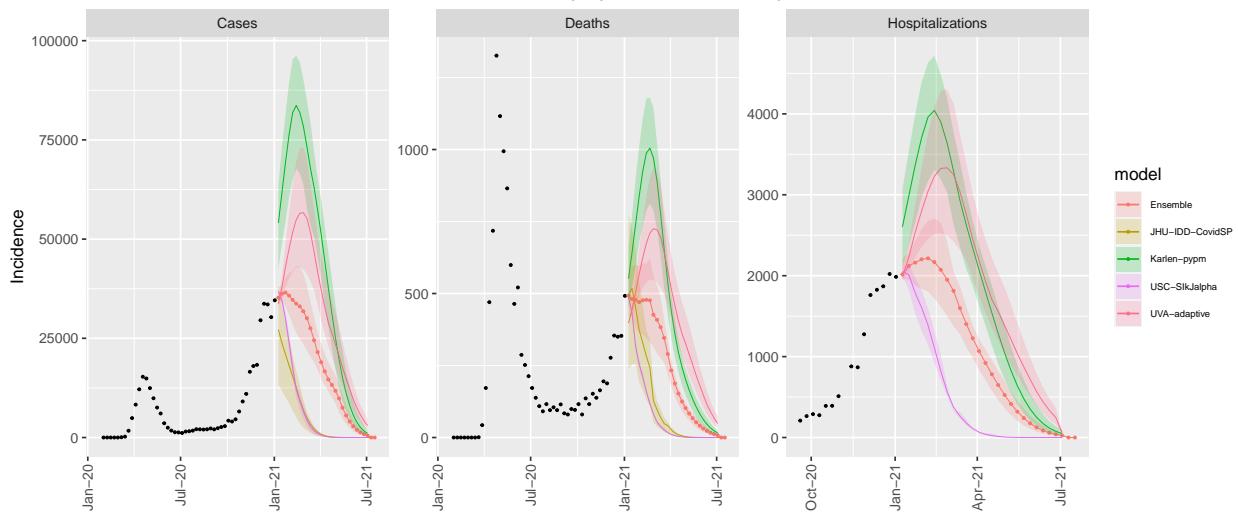
### ME model variance & 50% projection intervals – optimistic



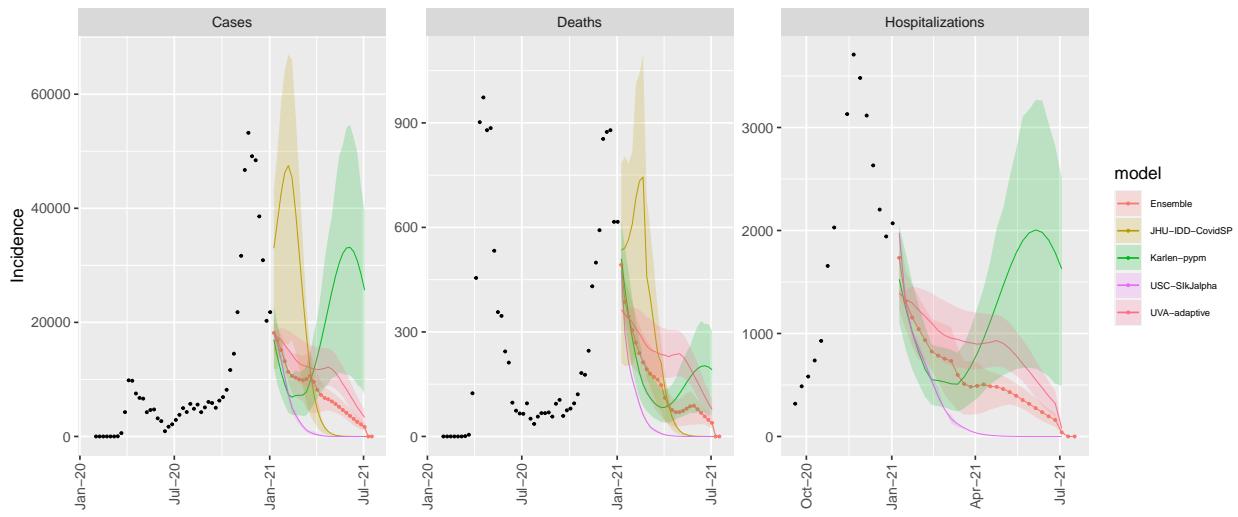
### MD model variance & 50% projection intervals – optimistic



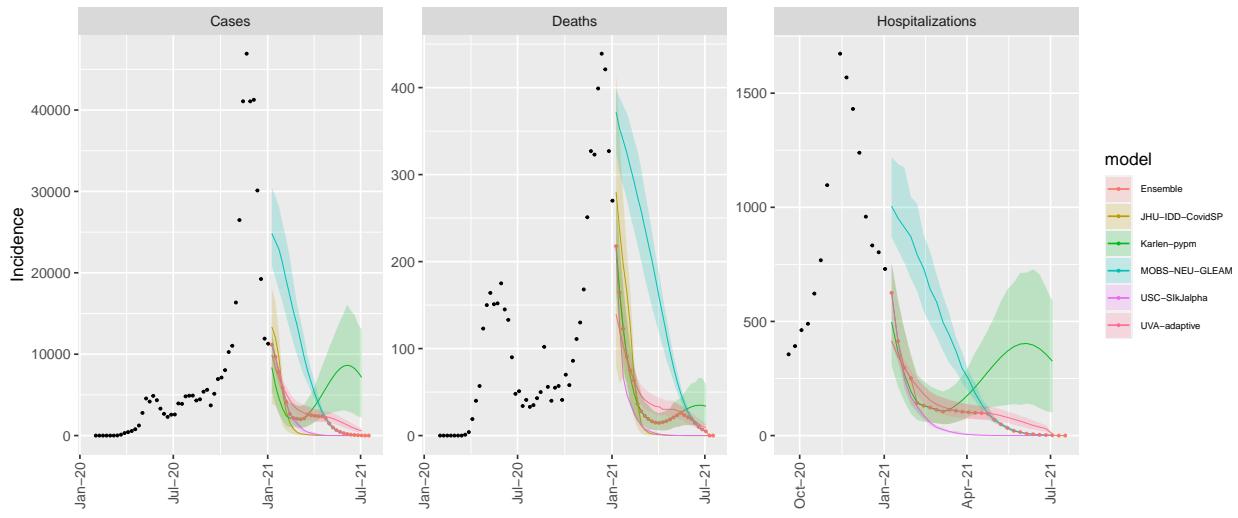
### MA model variance & 50% projection intervals – optimistic



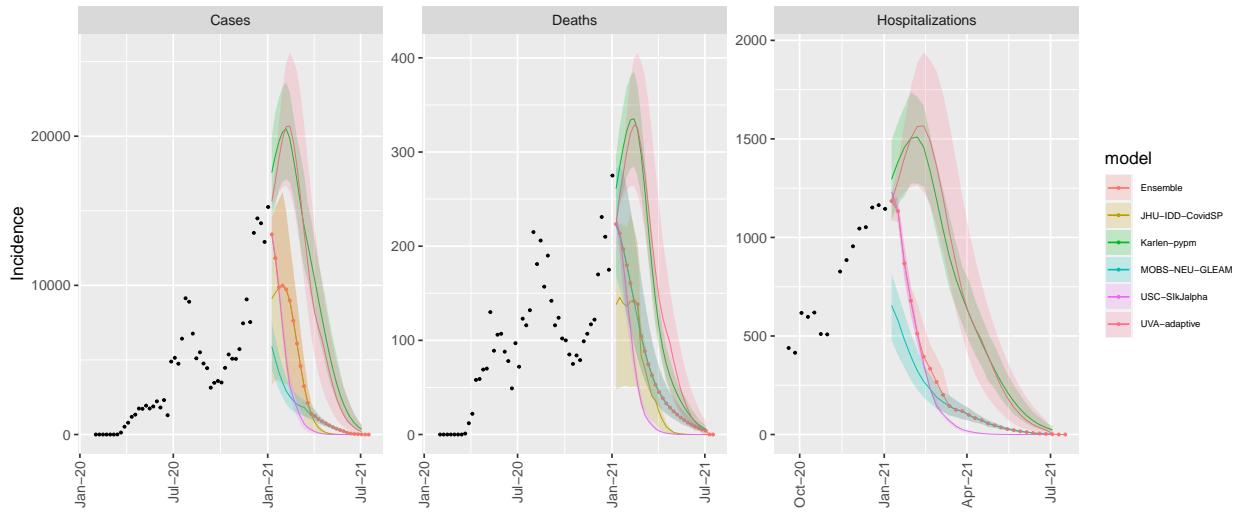
### MI model variance & 50% projection intervals – optimistic



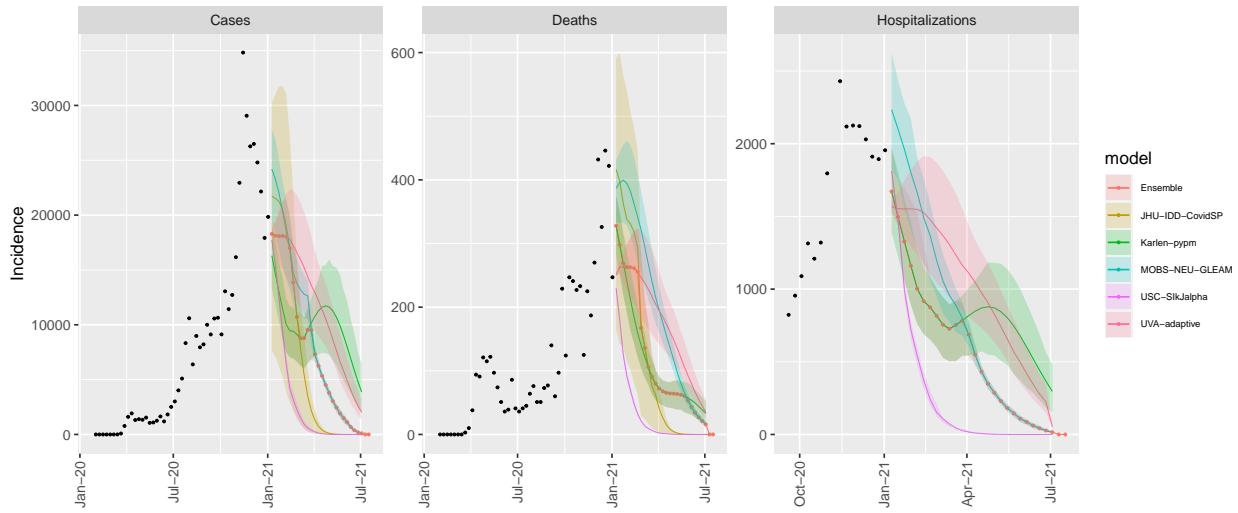
MN model variance & 50% projection intervals – optimistic



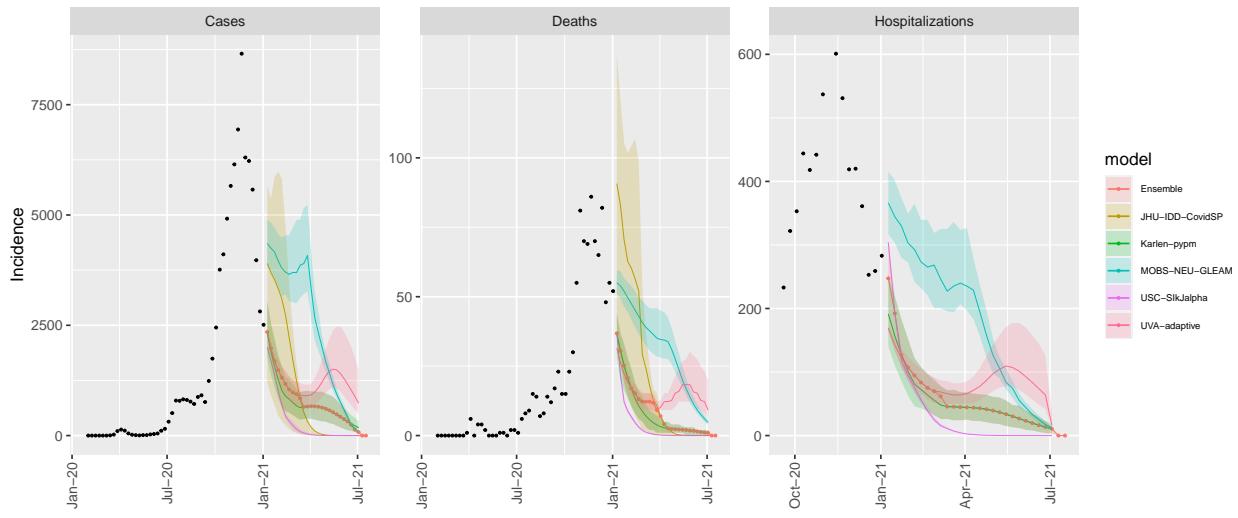
MS model variance & 50% projection intervals – optimistic



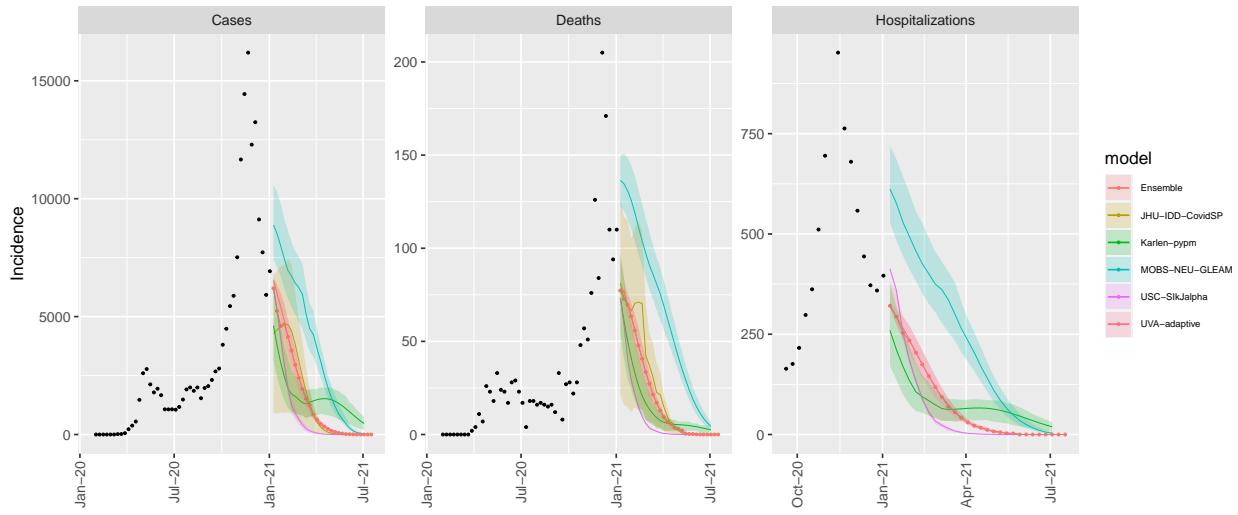
MO model variance & 50% projection intervals – optimistic



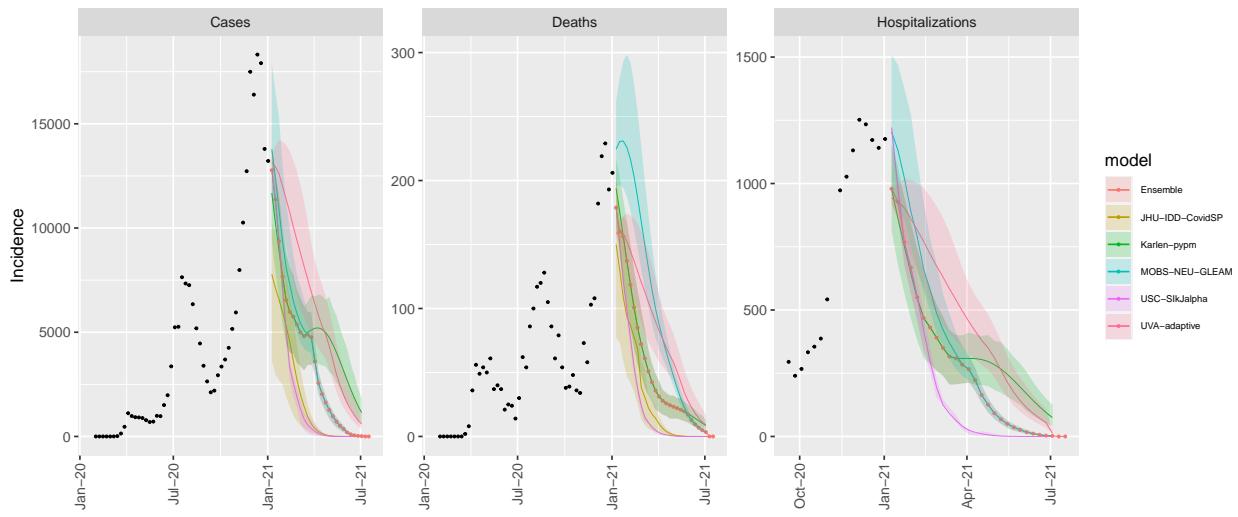
MT model variance & 50% projection intervals – optimistic



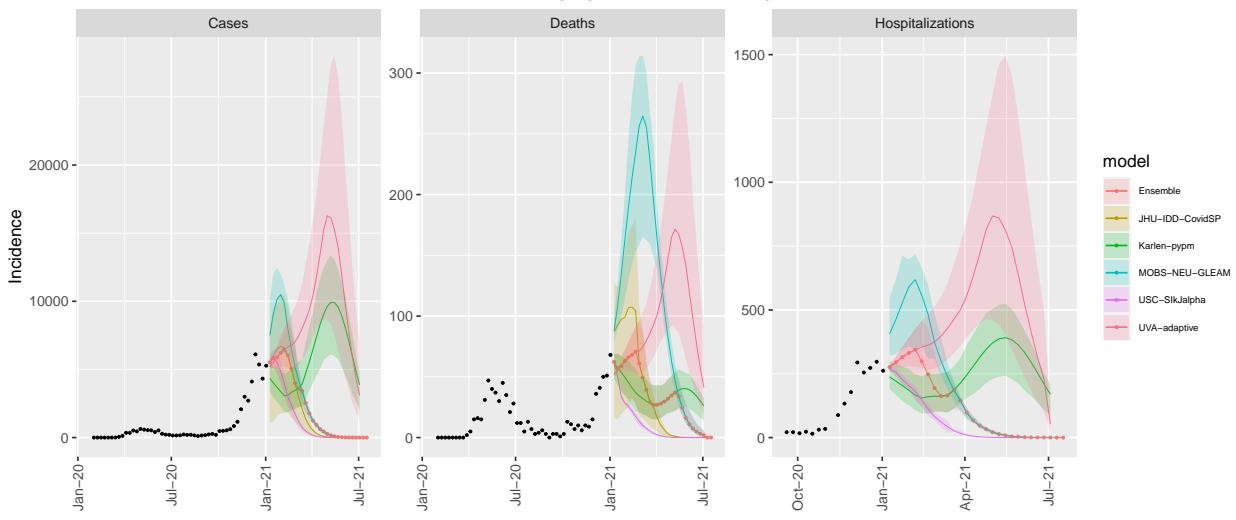
NE model variance & 50% projection intervals – optimistic



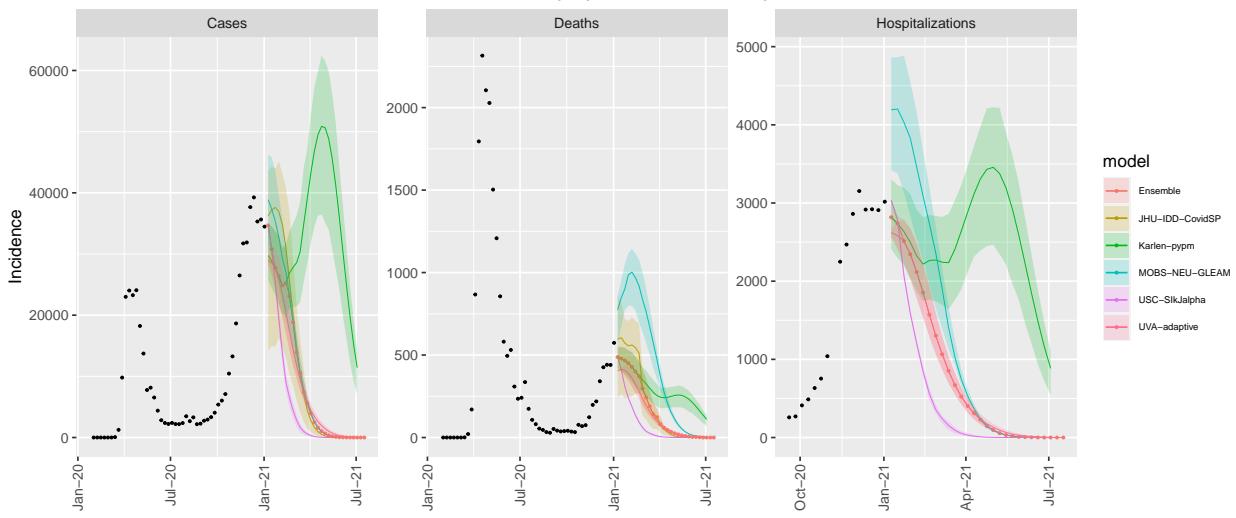
NV model variance & 50% projection intervals – optimistic



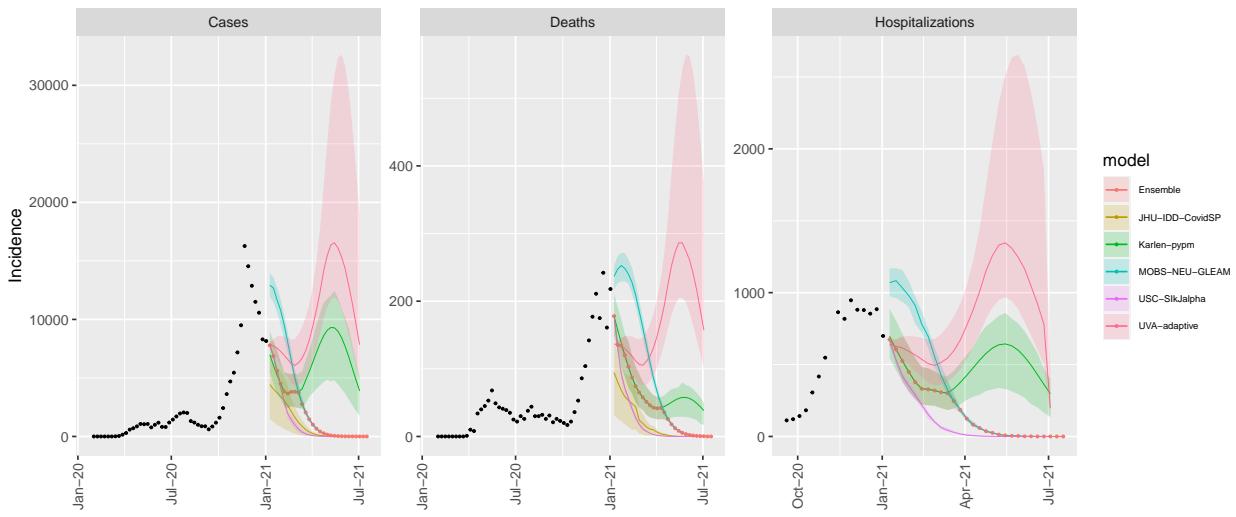
### NH model variance & 50% projection intervals – optimistic



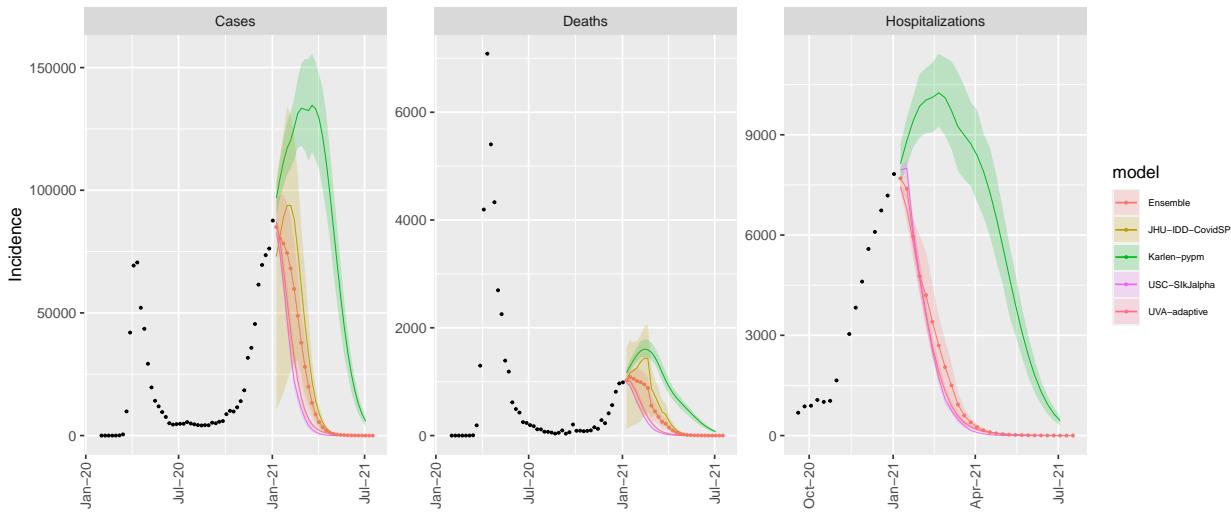
### NJ model variance & 50% projection intervals – optimistic



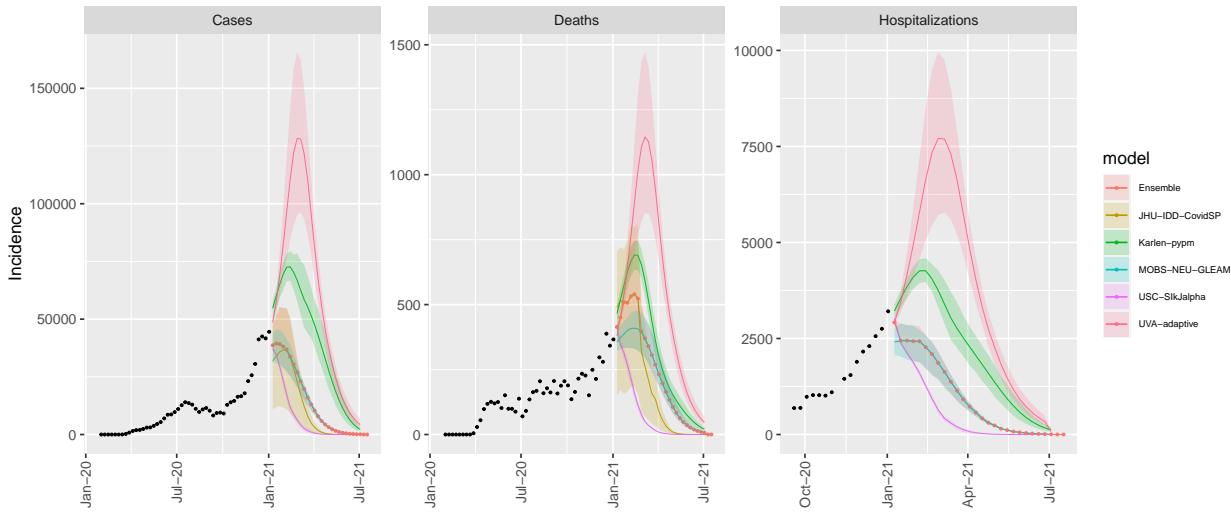
### NM model variance & 50% projection intervals – optimistic



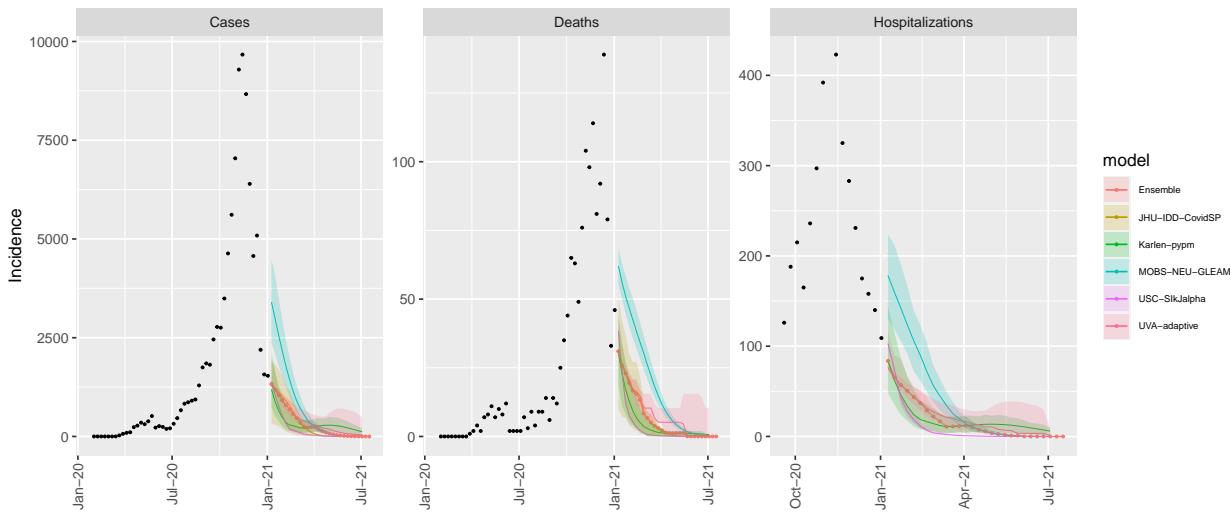
### NY model variance & 50% projection intervals – optimistic



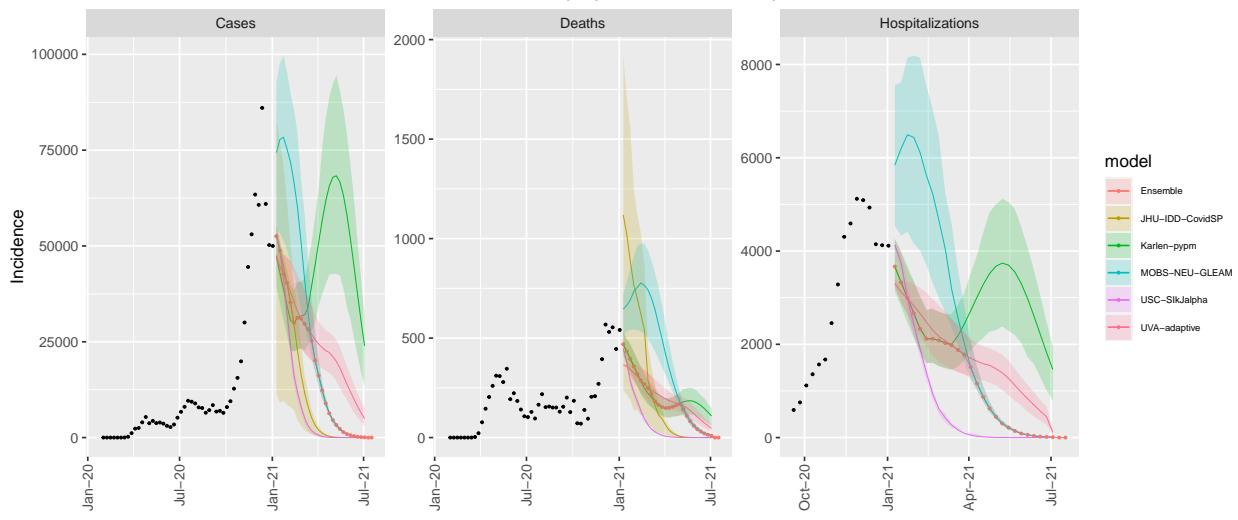
### NC model variance & 50% projection intervals – optimistic



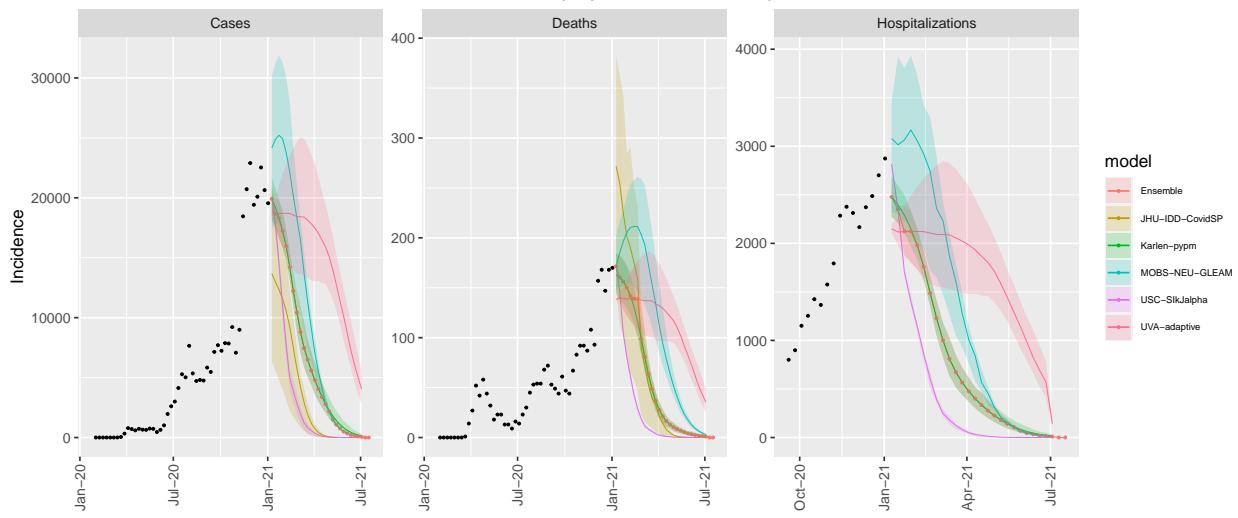
### ND model variance & 50% projection intervals – optimistic



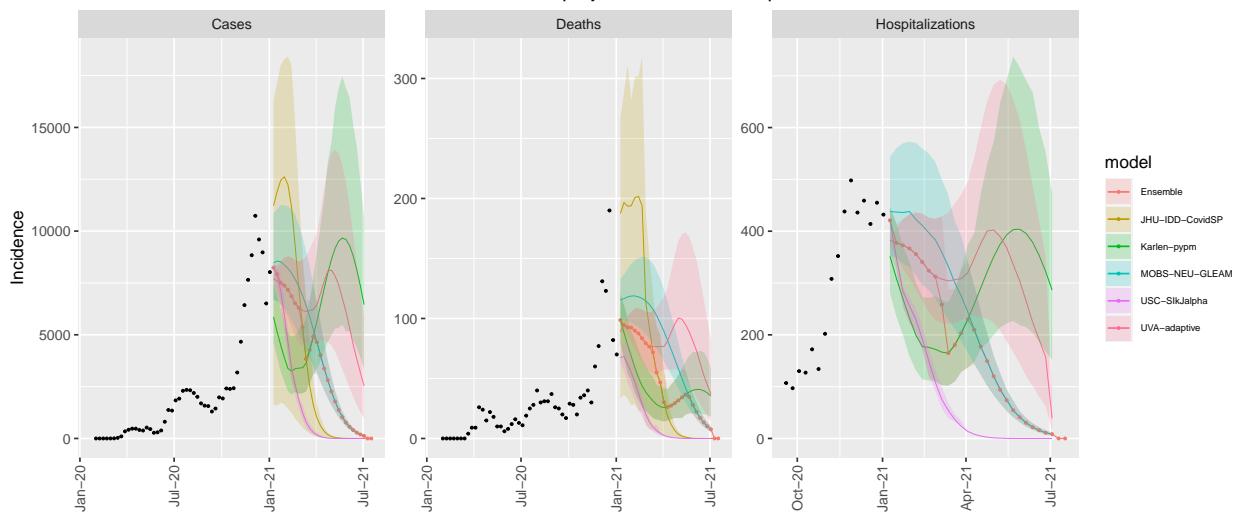
OH model variance & 50% projection intervals – optimistic



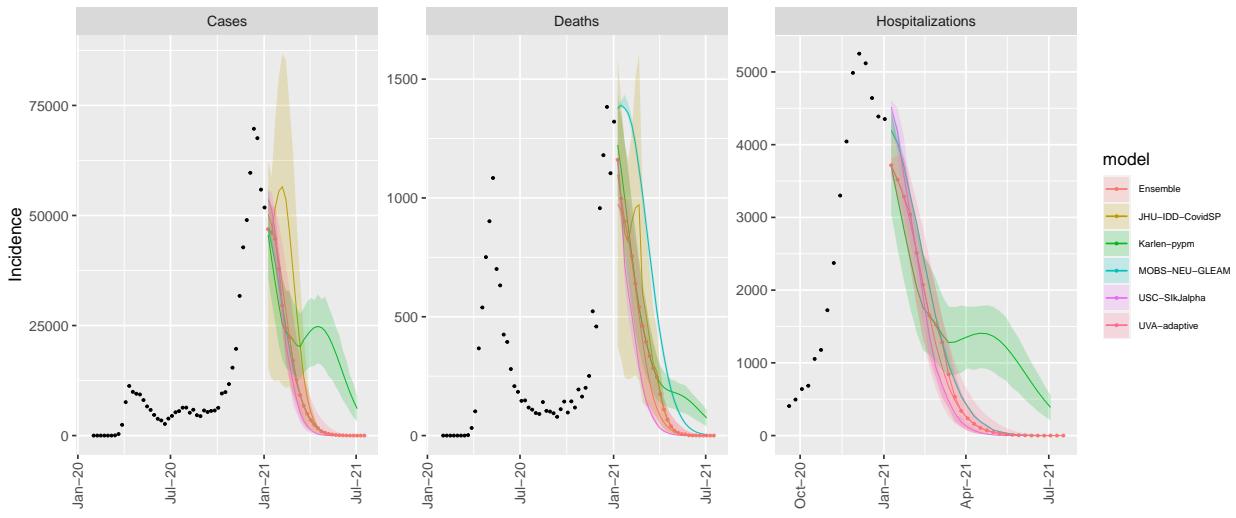
OK model variance & 50% projection intervals – optimistic



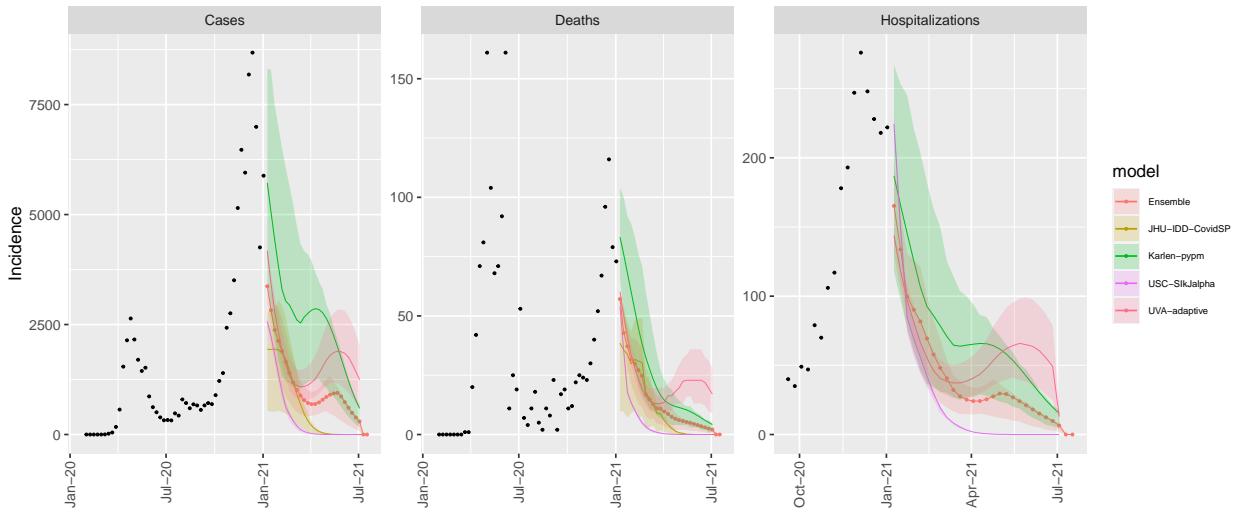
OR model variance & 50% projection intervals – optimistic



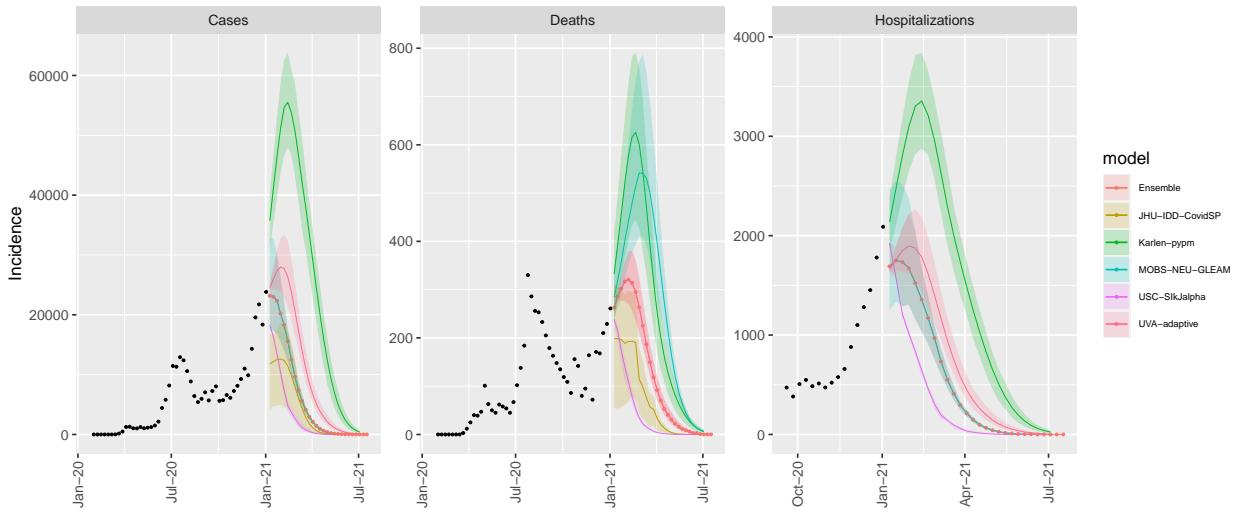
PA model variance & 50% projection intervals – optimistic



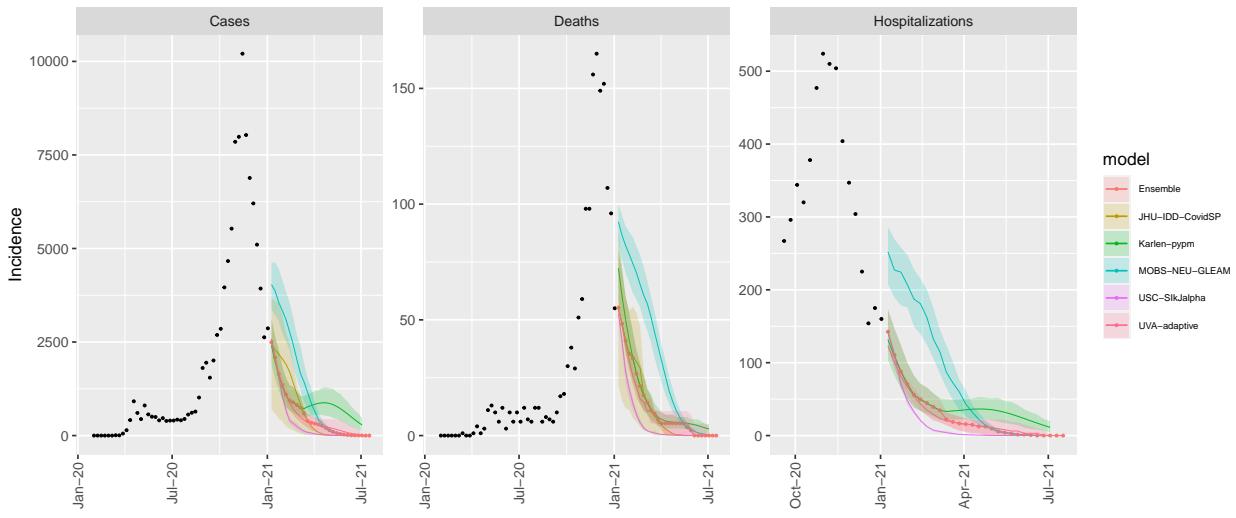
RI model variance & 50% projection intervals – optimistic



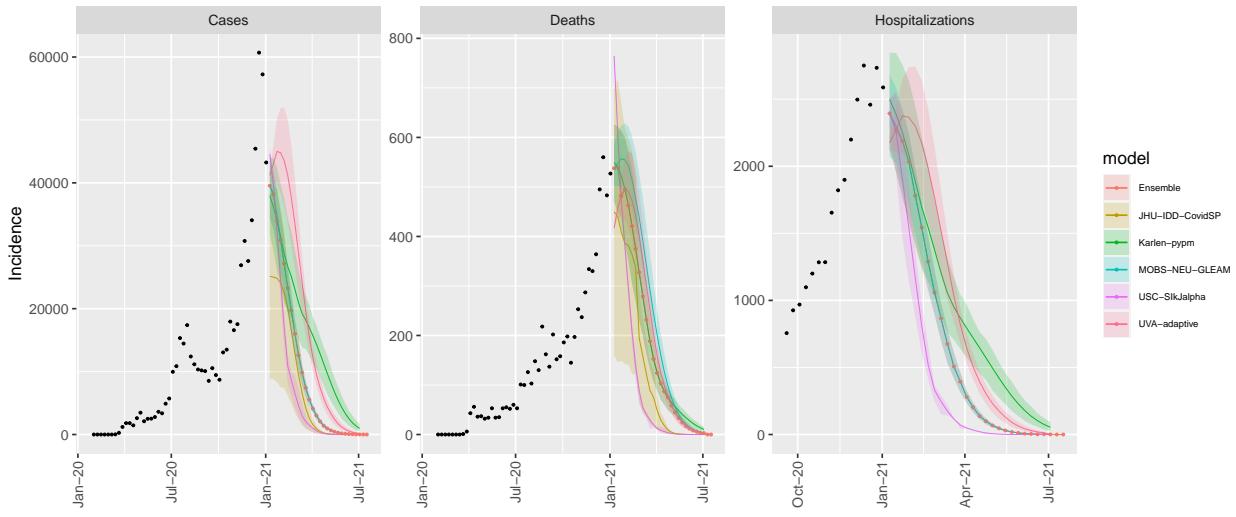
SC model variance & 50% projection intervals – optimistic



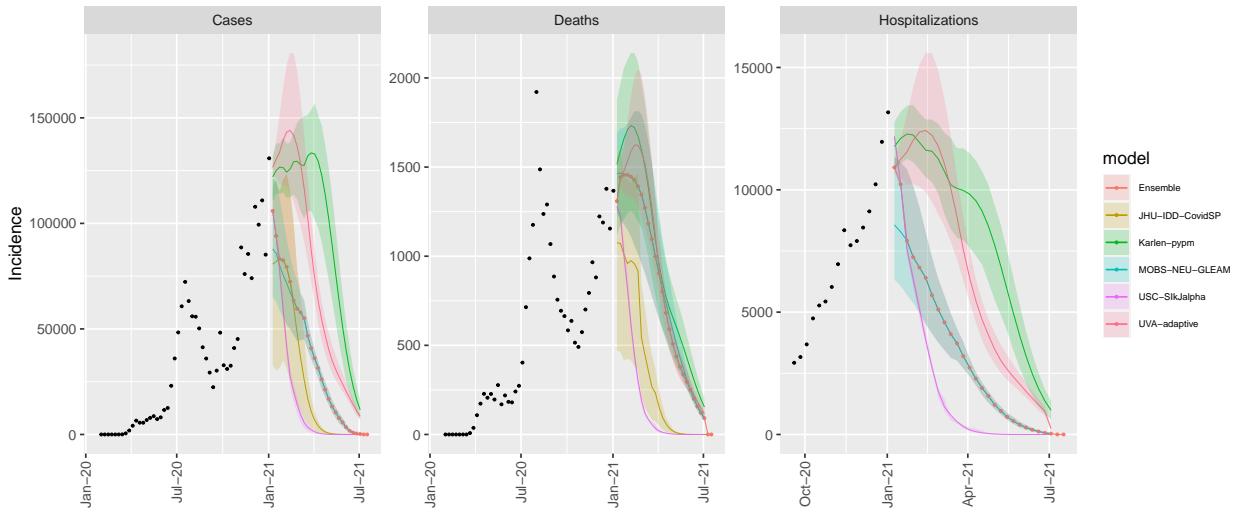
### SD model variance & 50% projection intervals – optimistic



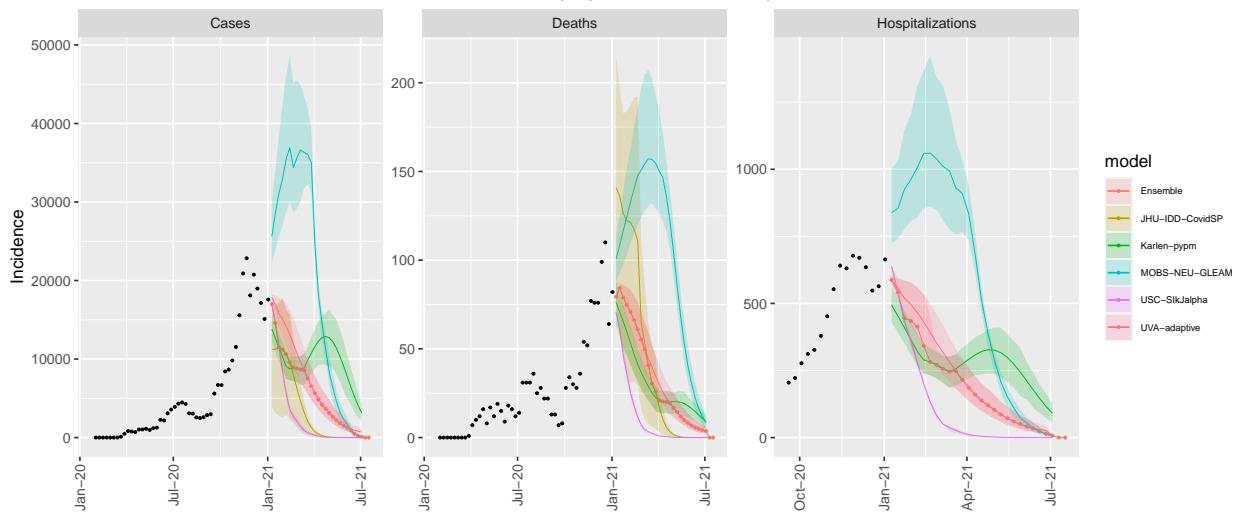
### TN model variance & 50% projection intervals – optimistic



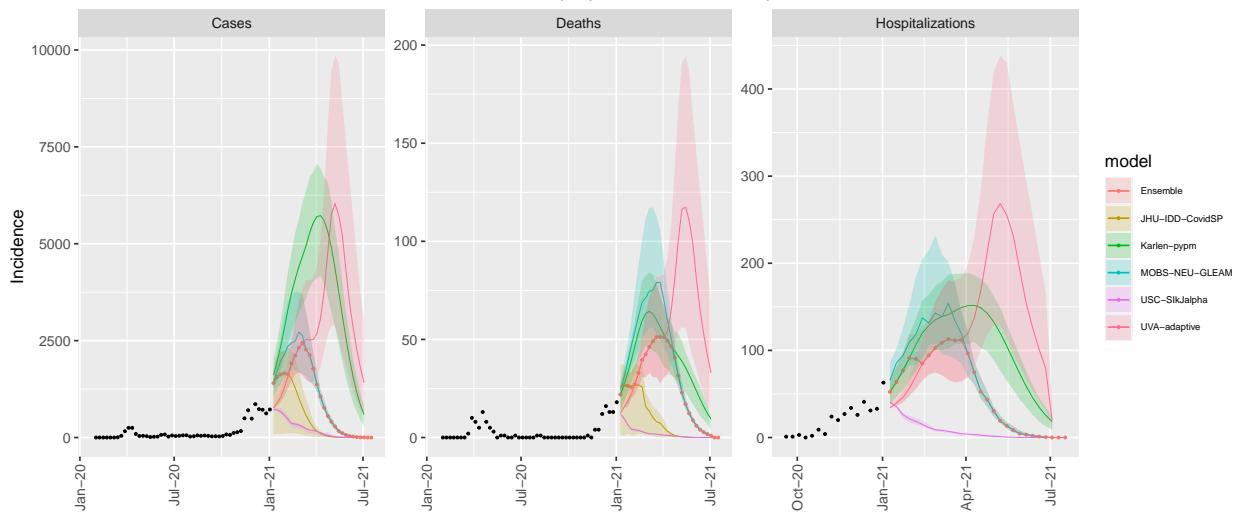
### TX model variance & 50% projection intervals – optimistic



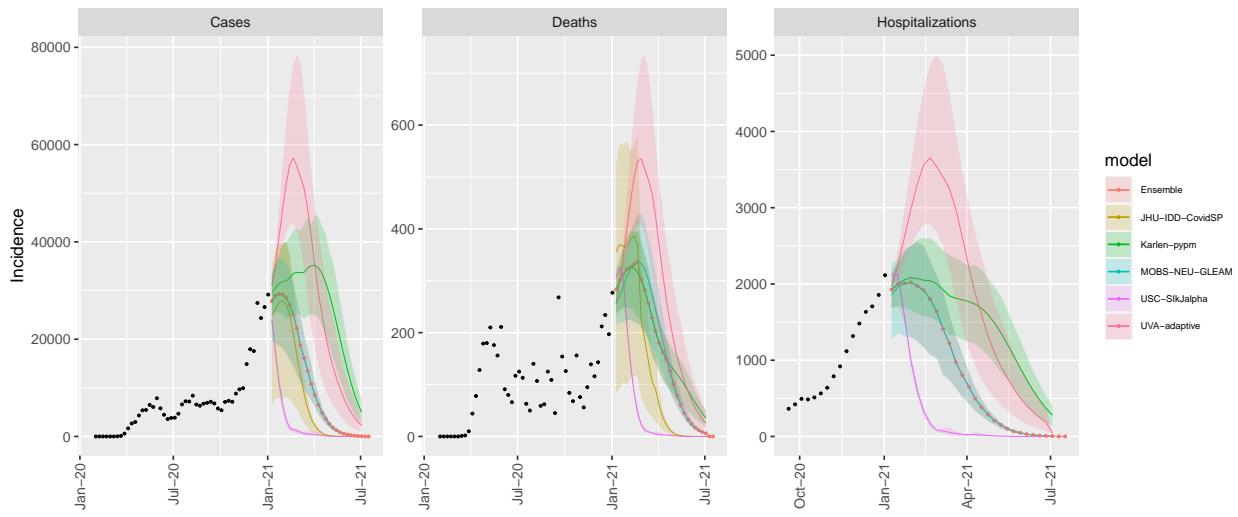
UT model variance & 50% projection intervals – optimistic



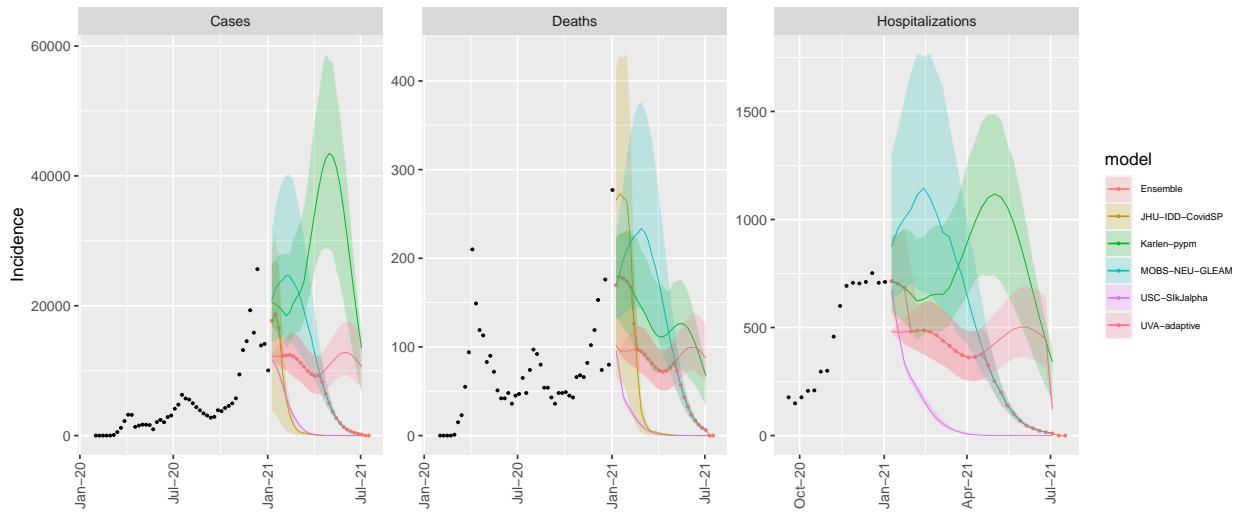
VT model variance & 50% projection intervals – optimistic



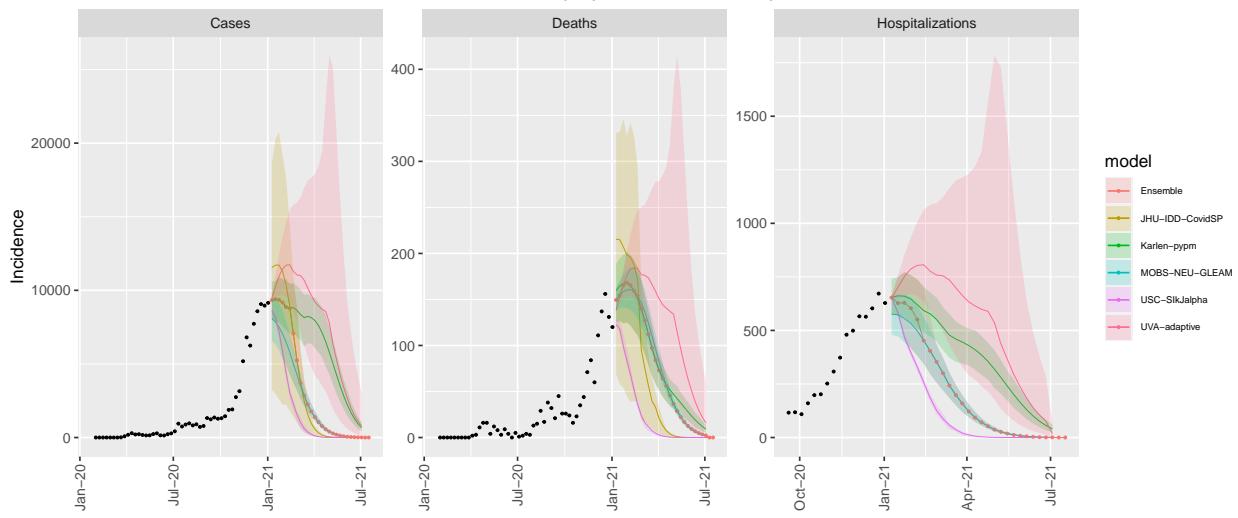
VA model variance & 50% projection intervals – optimistic



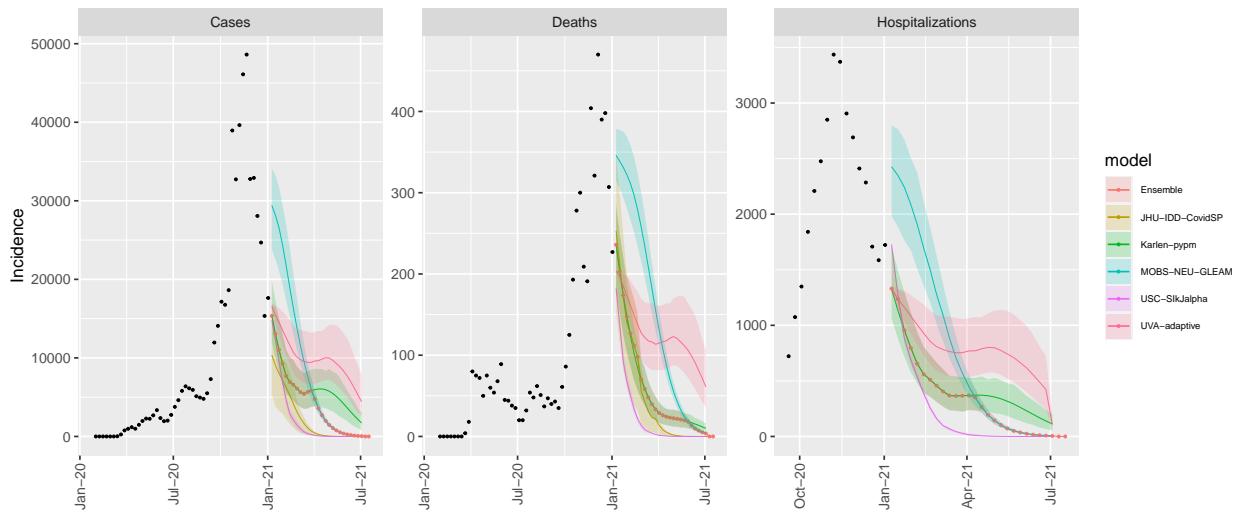
### WA model variance & 50% projection intervals – optimistic



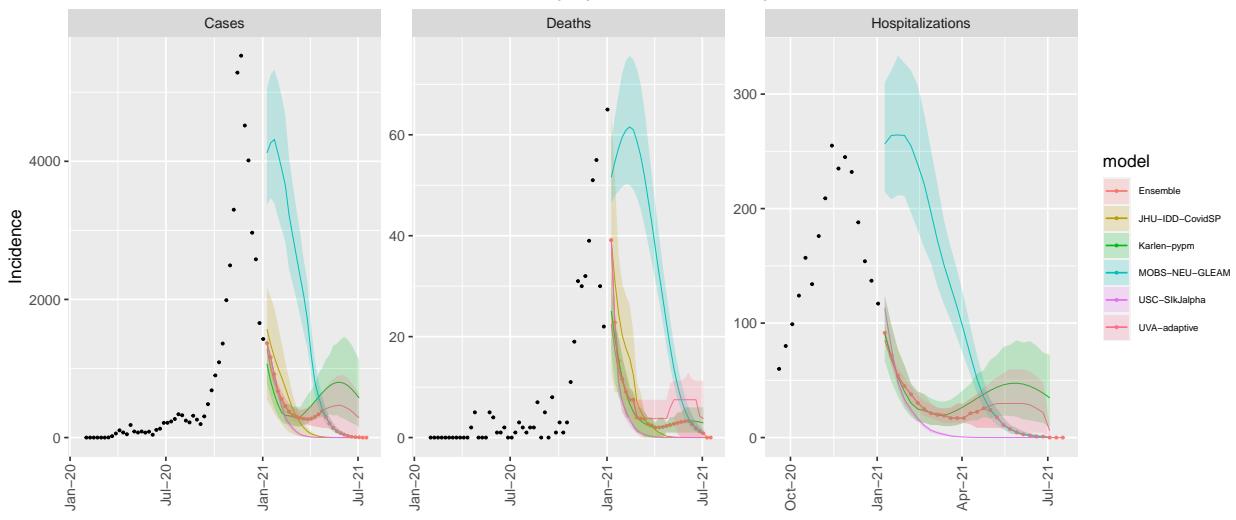
### WV model variance & 50% projection intervals – optimistic



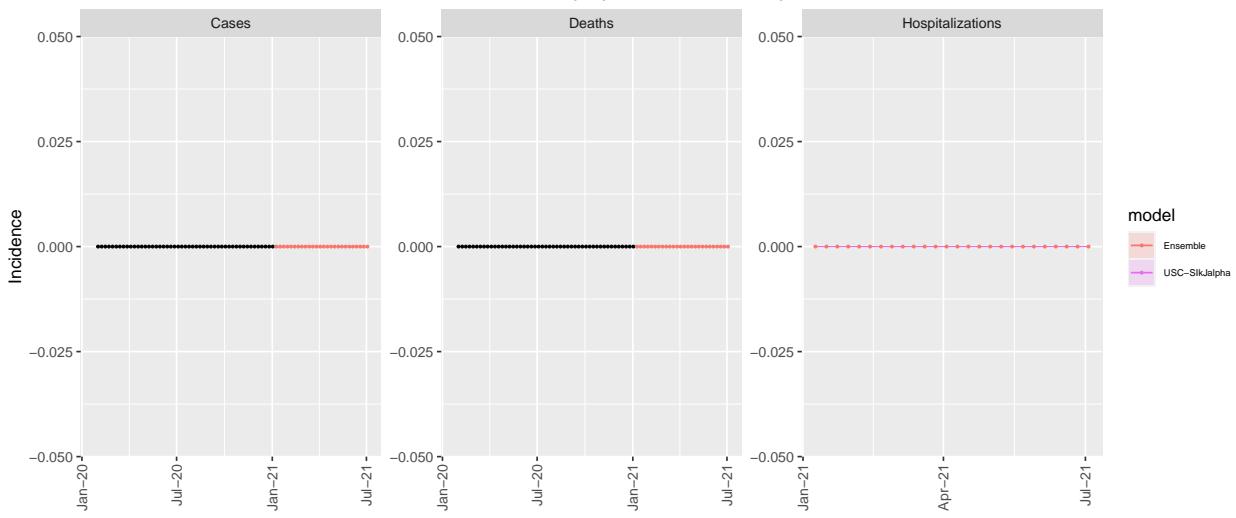
### WI model variance & 50% projection intervals – optimistic



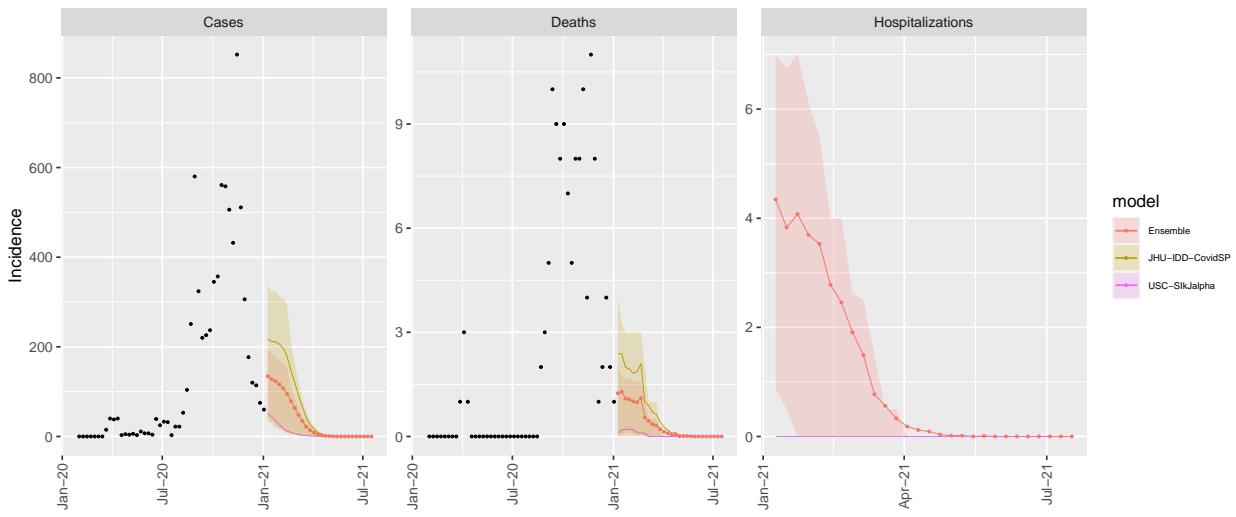
WY model variance & 50% projection intervals – optimistic



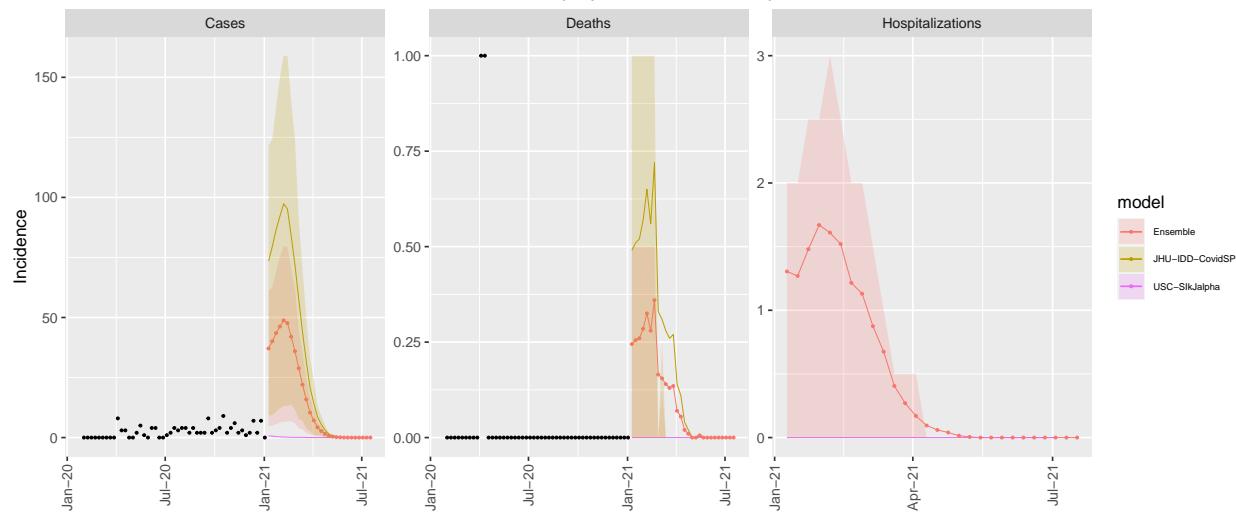
AS model variance & 50% projection intervals – optimistic



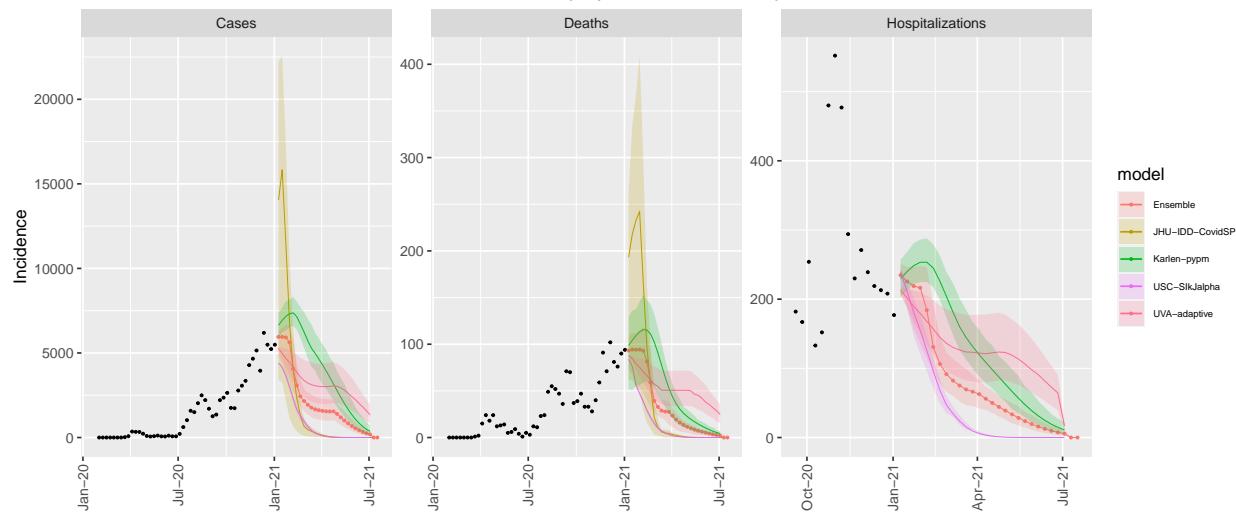
GU model variance & 50% projection intervals – optimistic



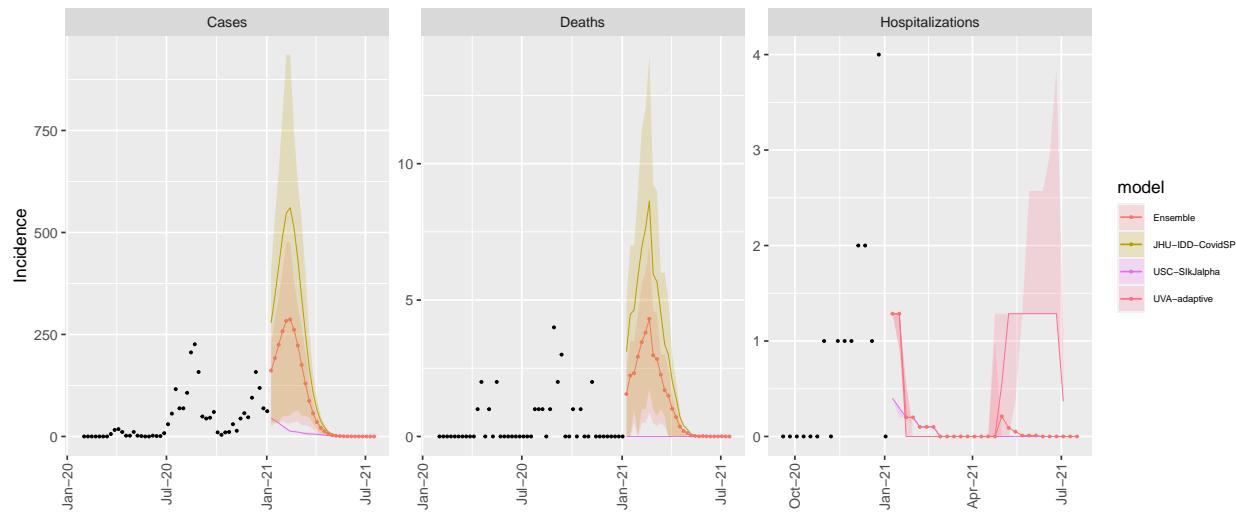
### MP model variance & 50% projection intervals – optimistic



### PR model variance & 50% projection intervals – optimistic

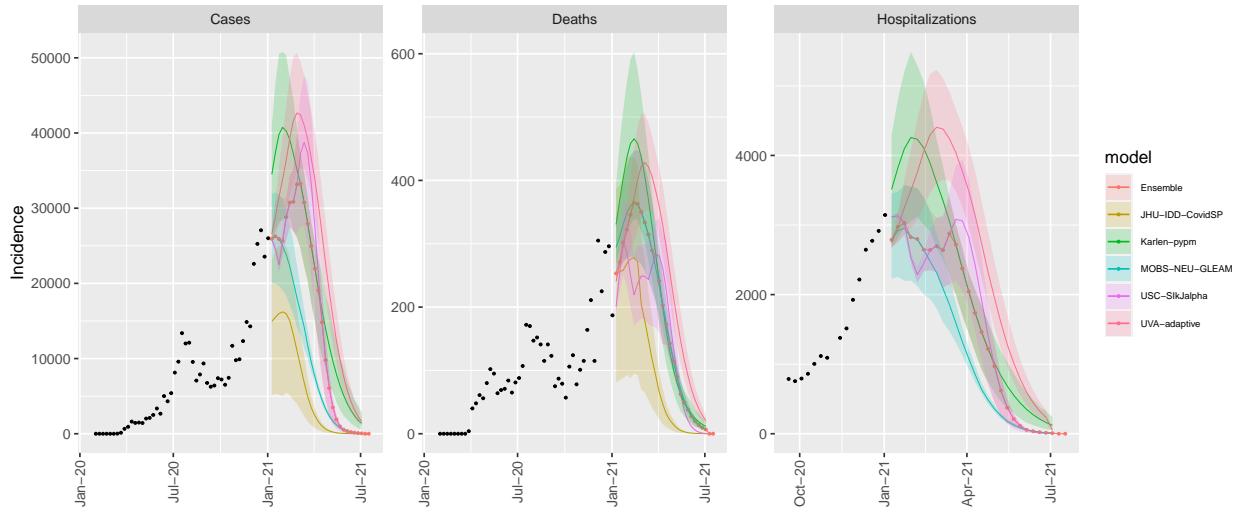


### VI model variance & 50% projection intervals – optimistic

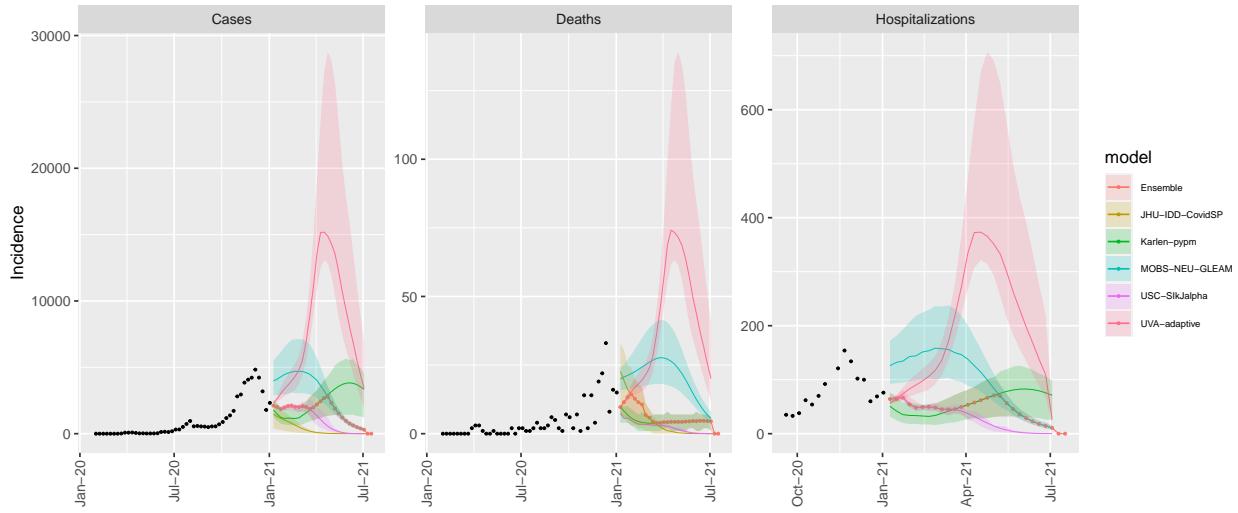


## National model variation for the moderate scenario

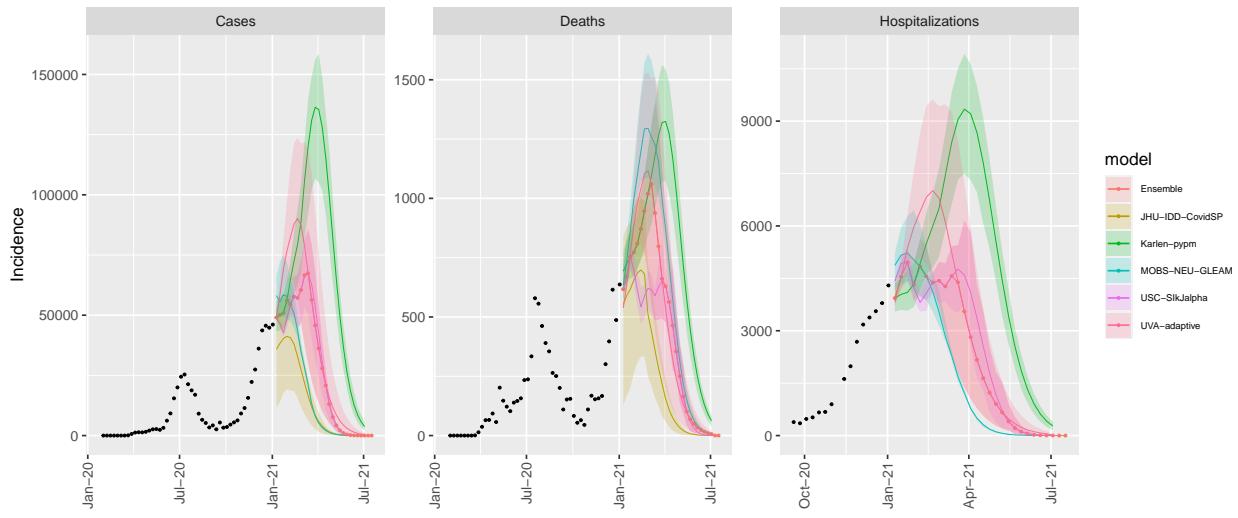
AL model variance & 50% projection intervals – moderate



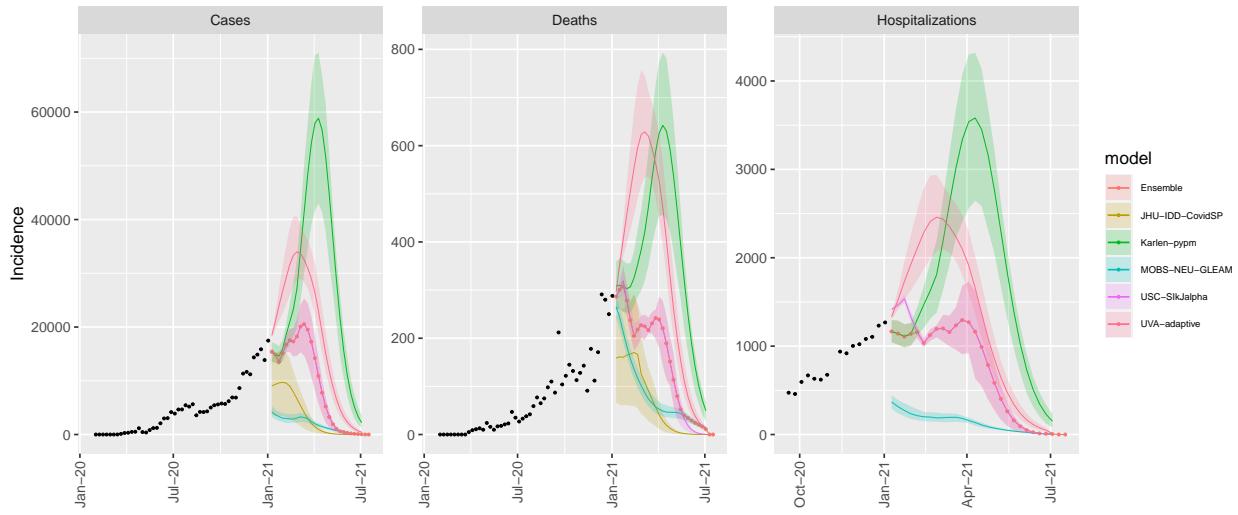
AK model variance & 50% projection intervals – moderate



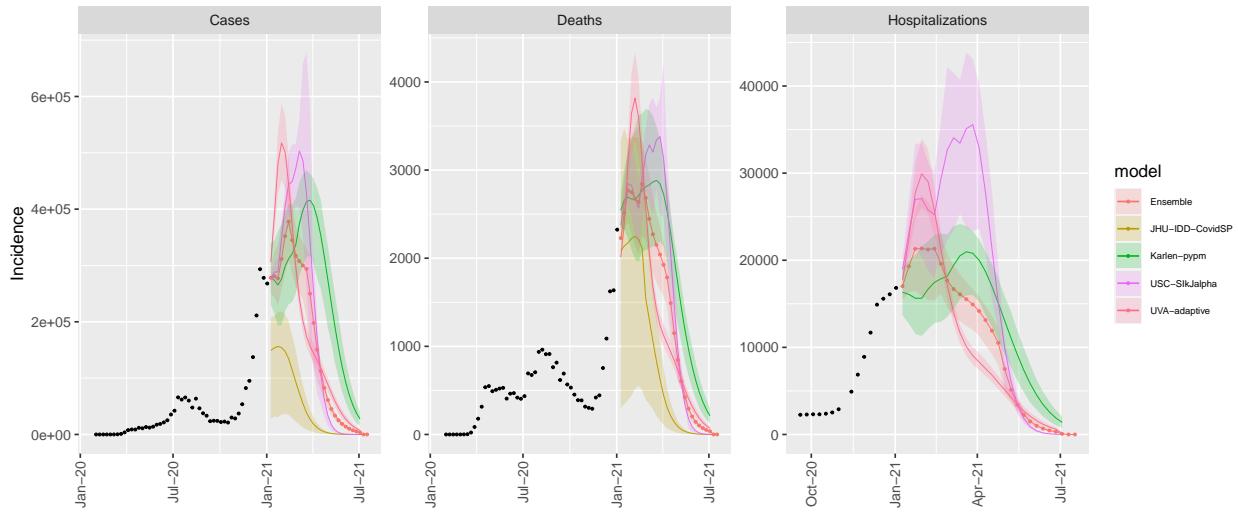
AZ model variance & 50% projection intervals – moderate



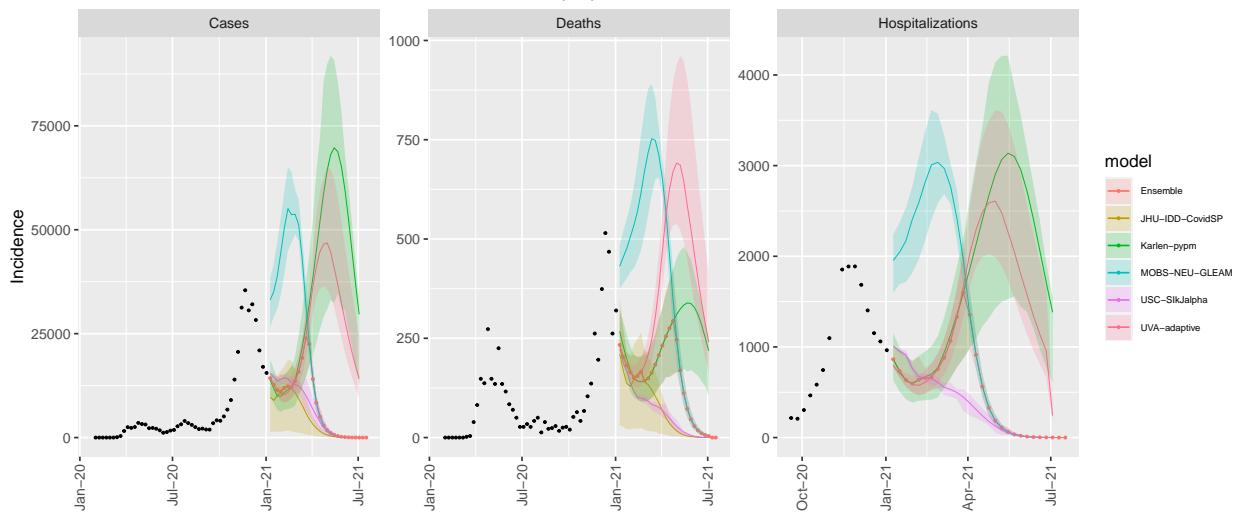
AR model variance & 50% projection intervals – moderate



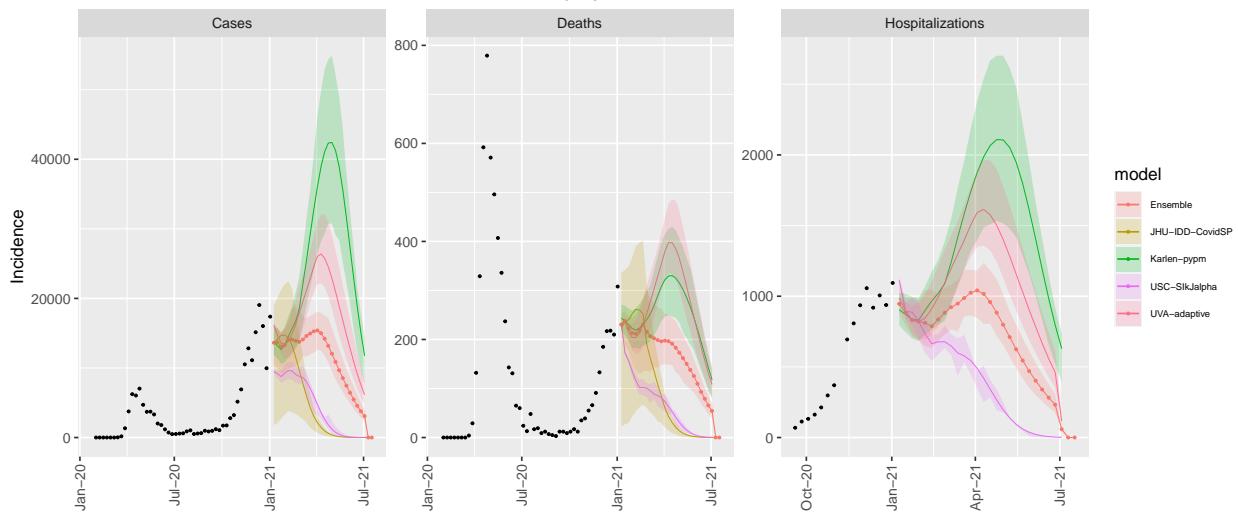
CA model variance & 50% projection intervals – moderate



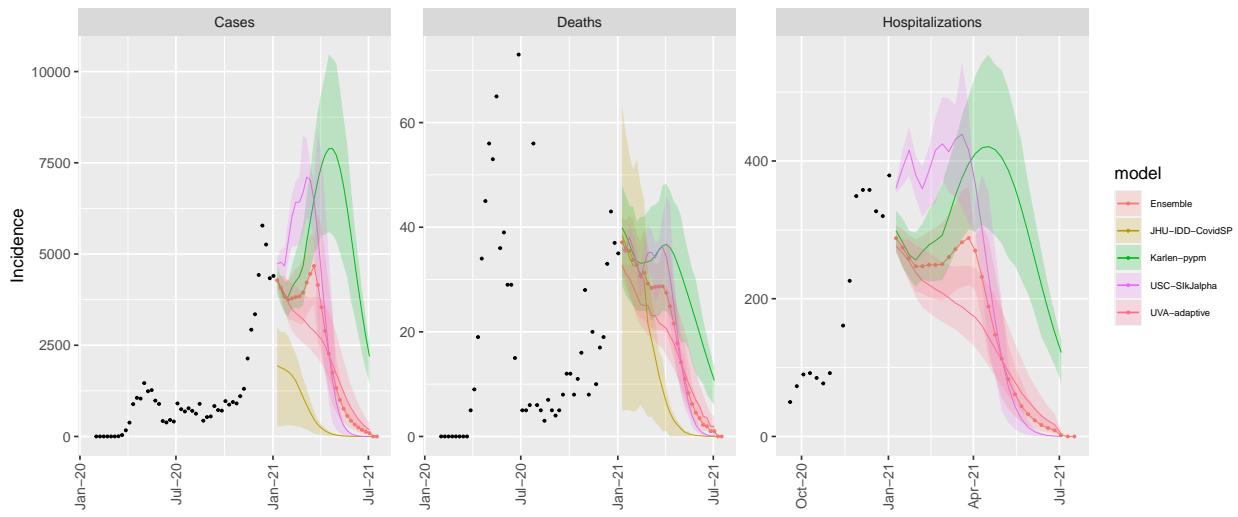
### CO model variance & 50% projection intervals – moderate



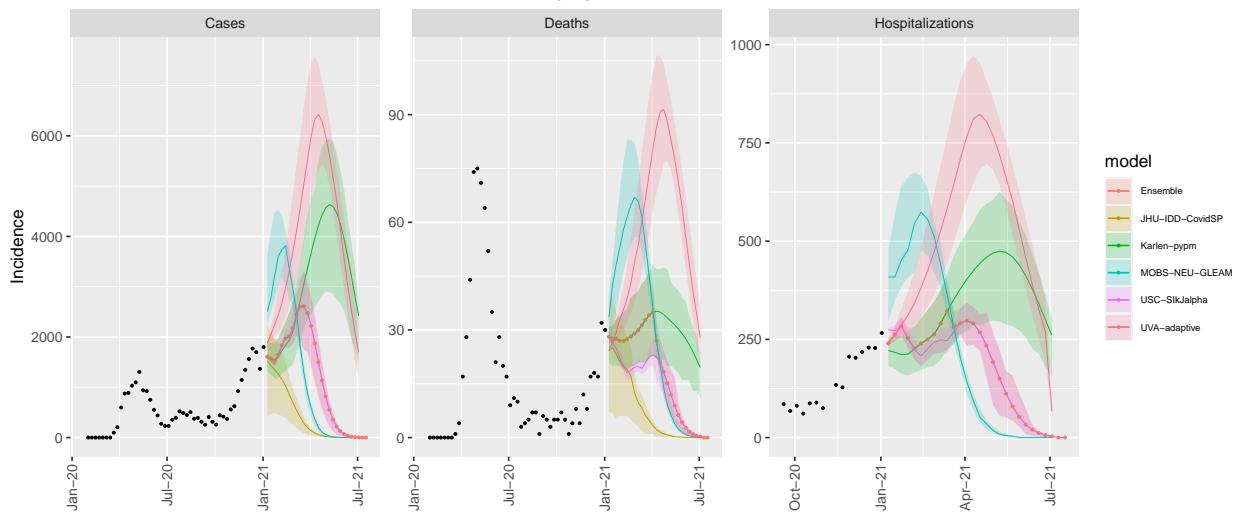
### CT model variance & 50% projection intervals – moderate



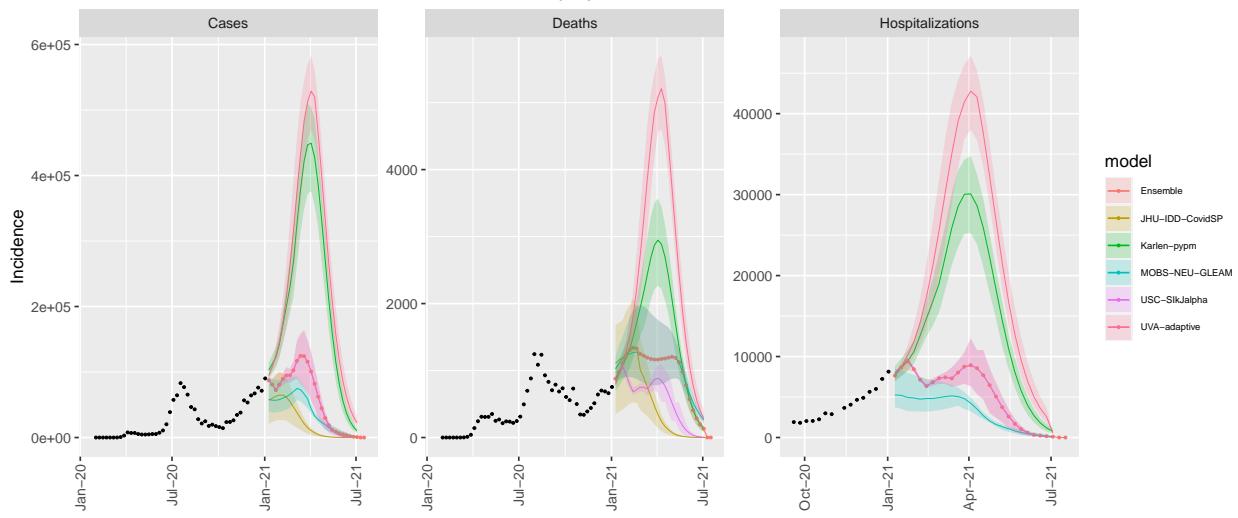
### DE model variance & 50% projection intervals – moderate



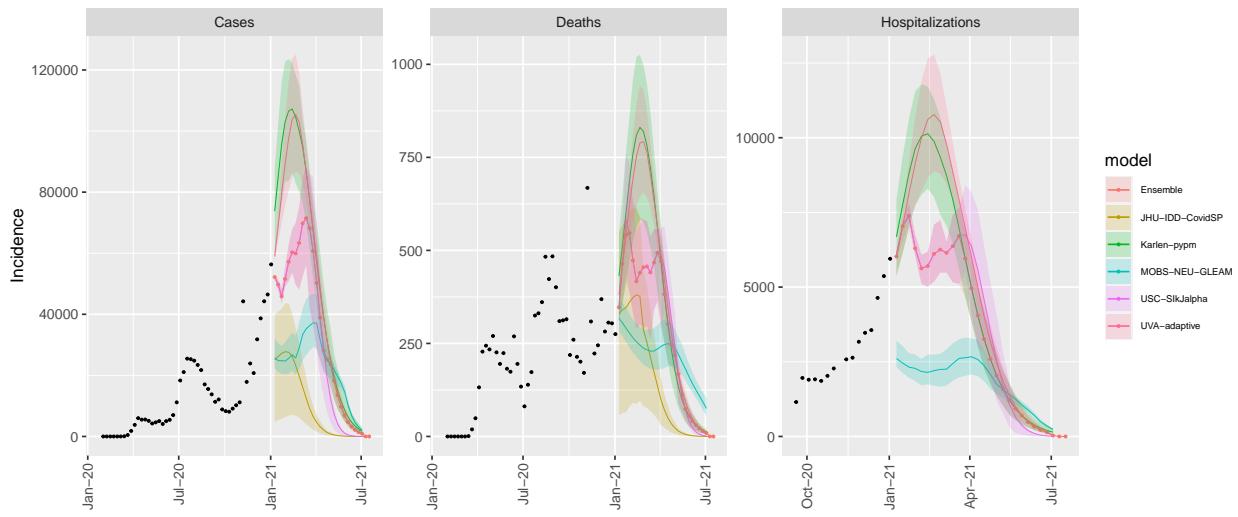
### DC model variance & 50% projection intervals – moderate



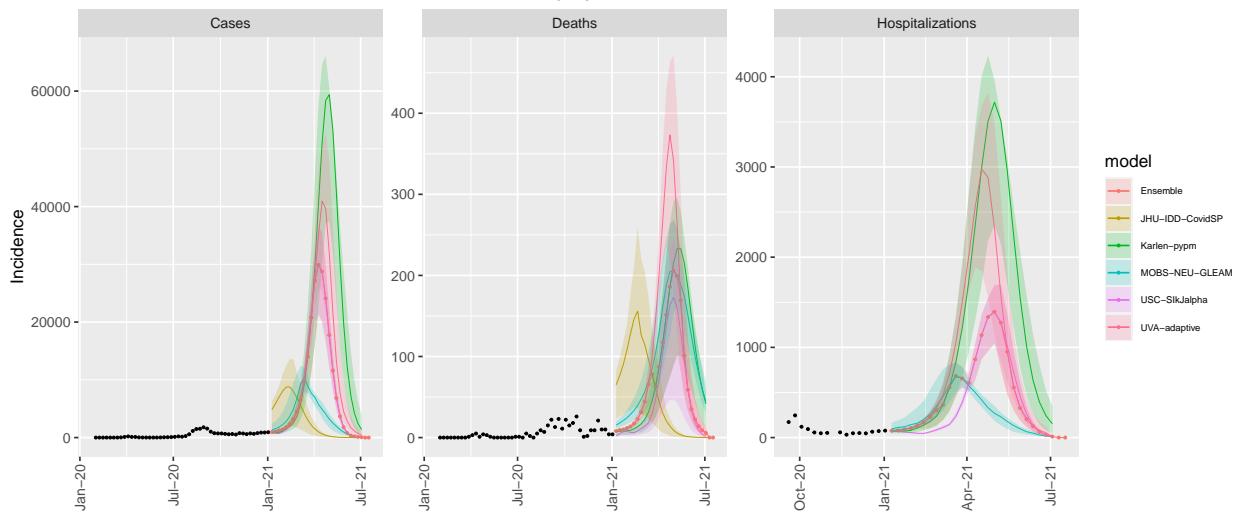
### FL model variance & 50% projection intervals – moderate



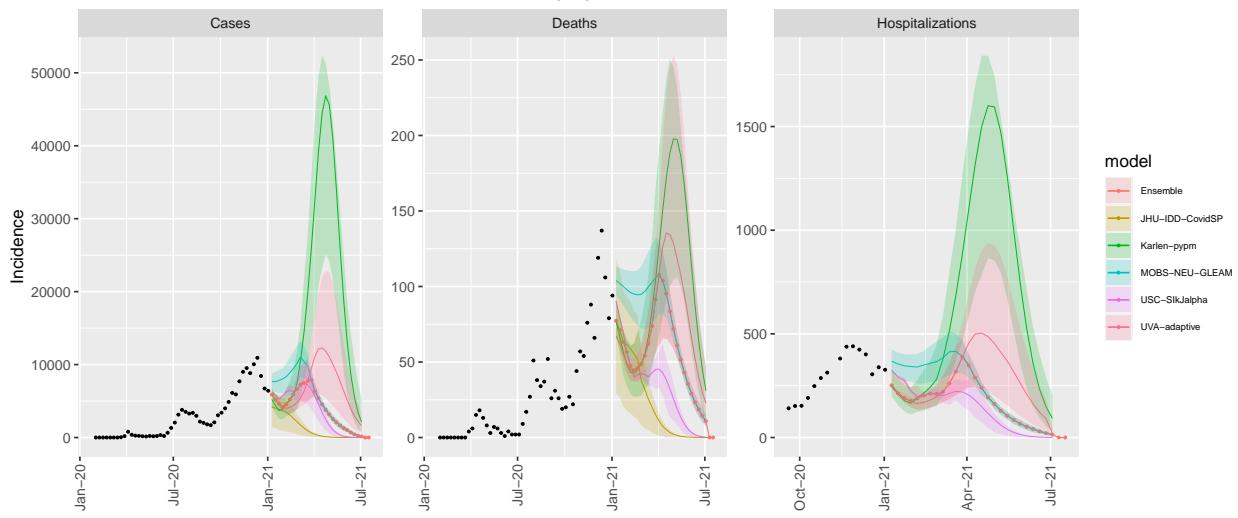
### GA model variance & 50% projection intervals – moderate



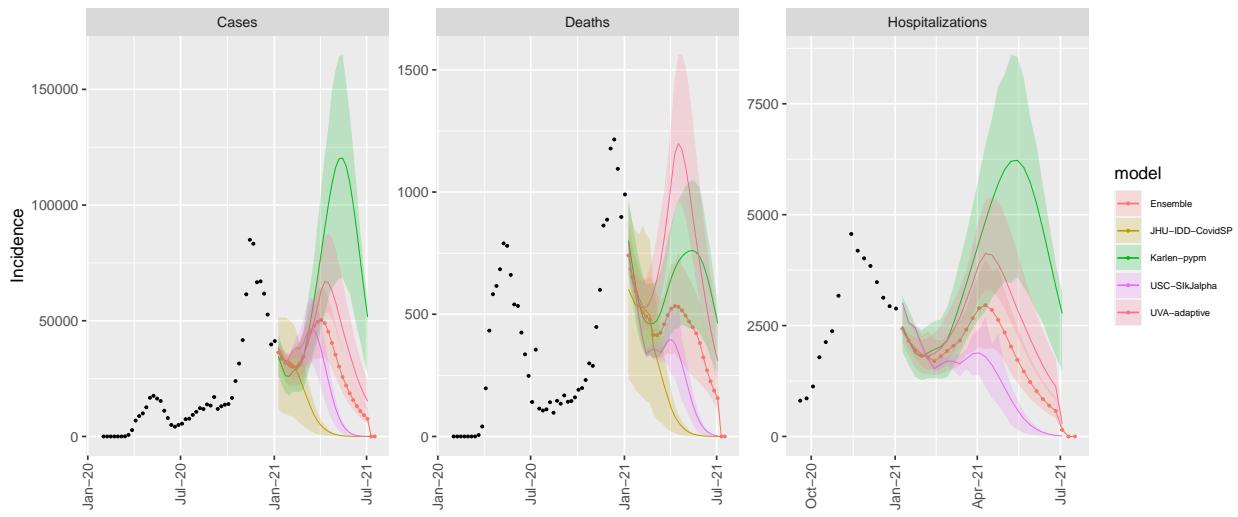
### HI model variance & 50% projection intervals – moderate



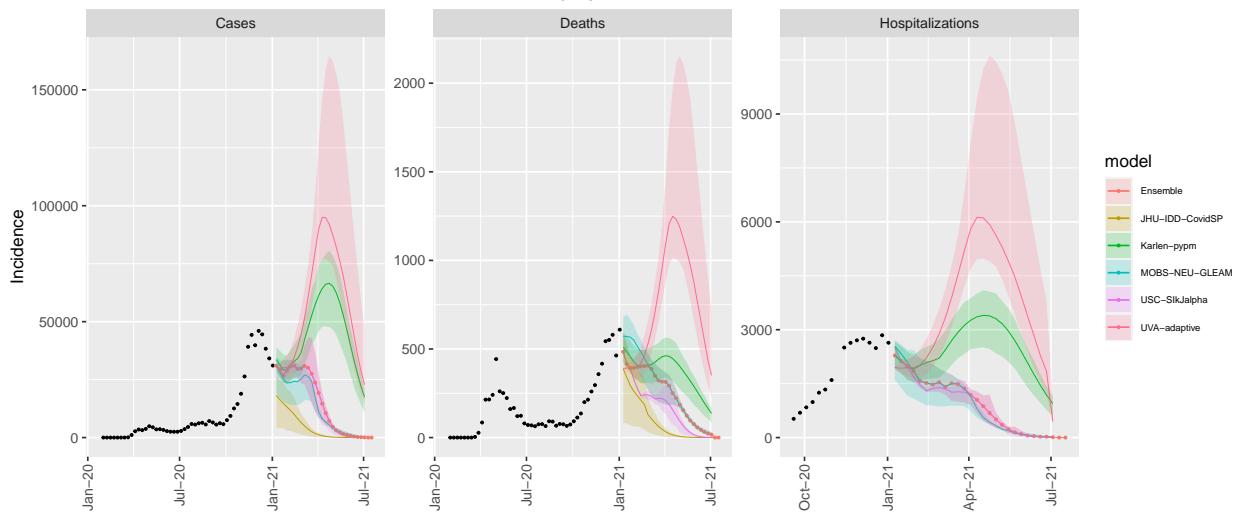
### ID model variance & 50% projection intervals – moderate



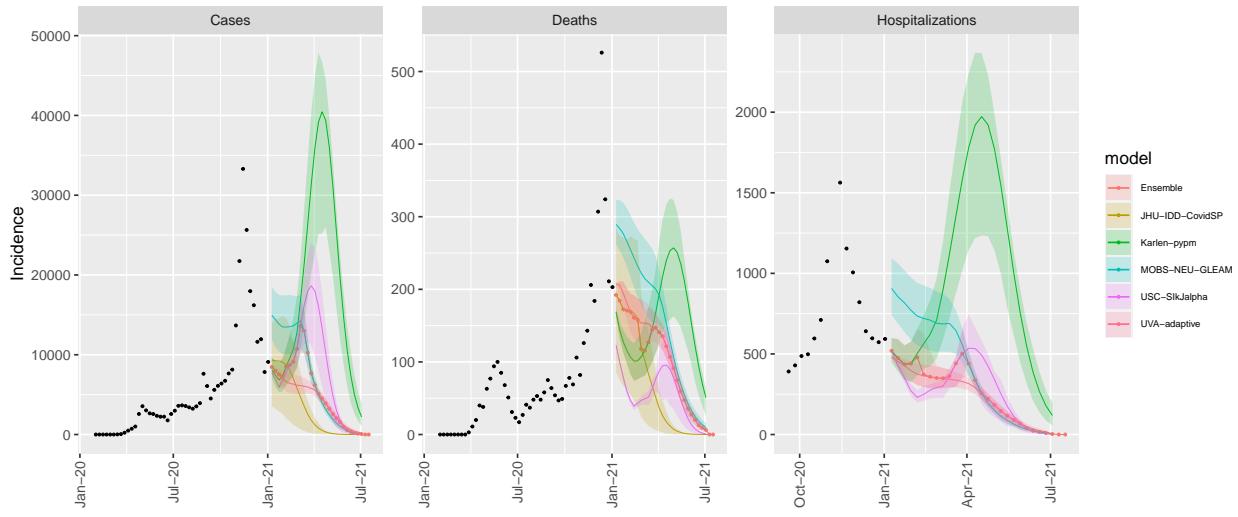
### IL model variance & 50% projection intervals – moderate



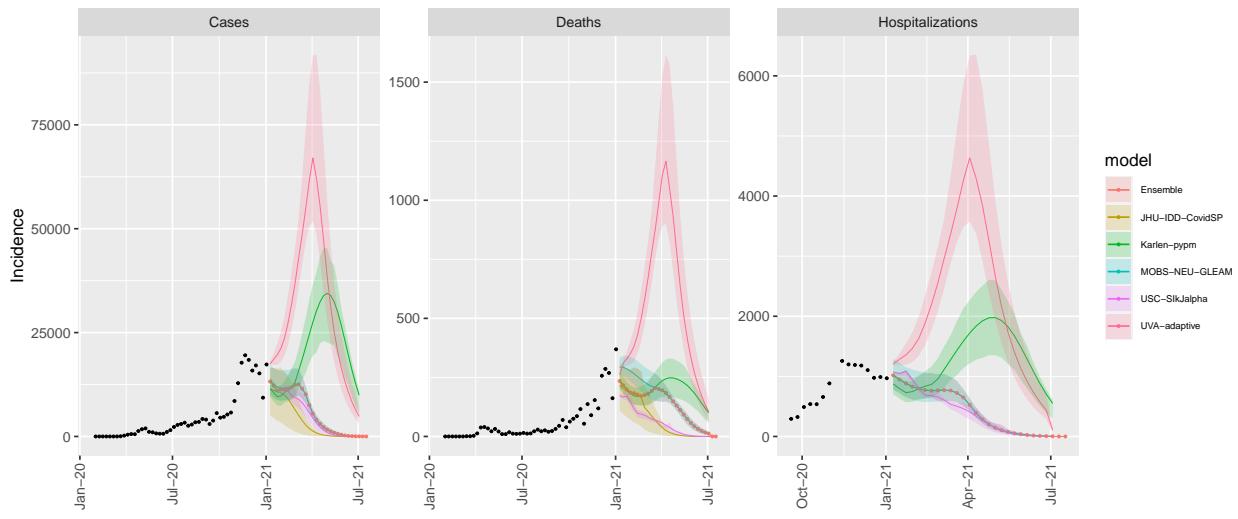
### IN model variance & 50% projection intervals – moderate



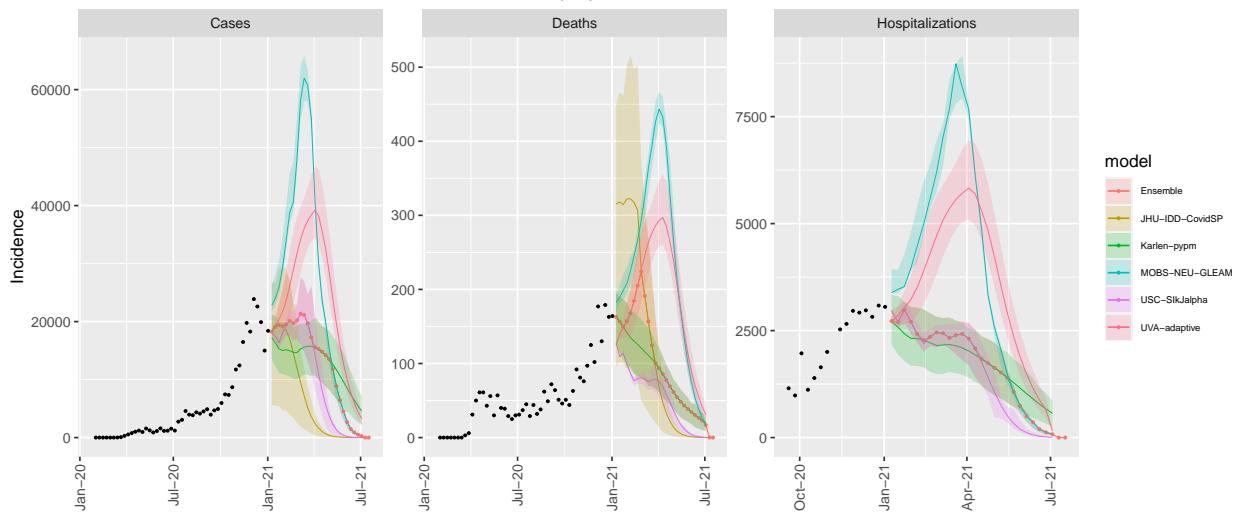
### IA model variance & 50% projection intervals – moderate



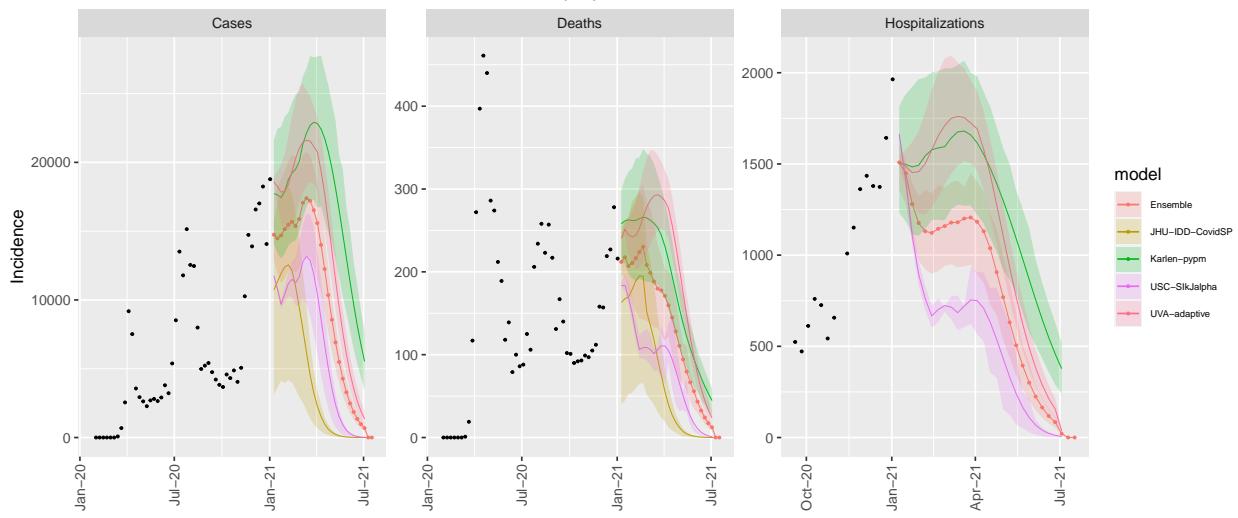
### KS model variance & 50% projection intervals – moderate



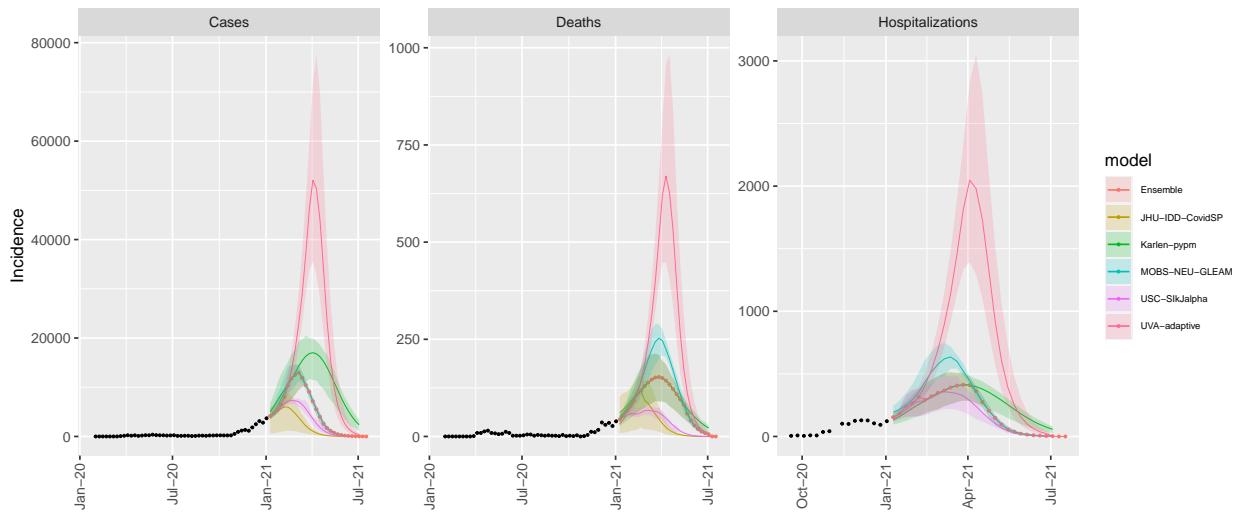
### KY model variance & 50% projection intervals – moderate



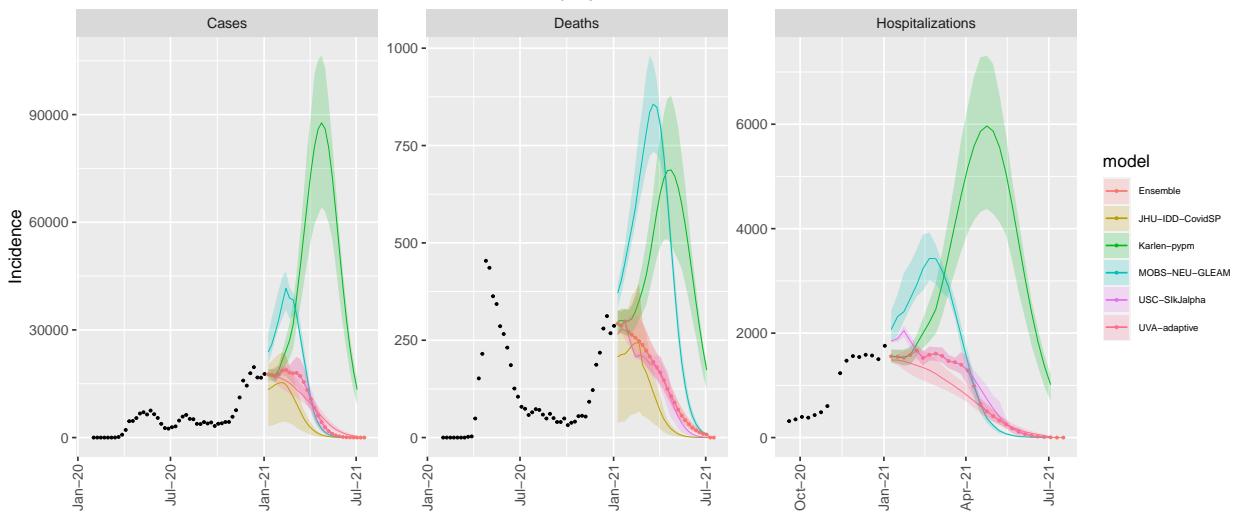
### LA model variance & 50% projection intervals – moderate



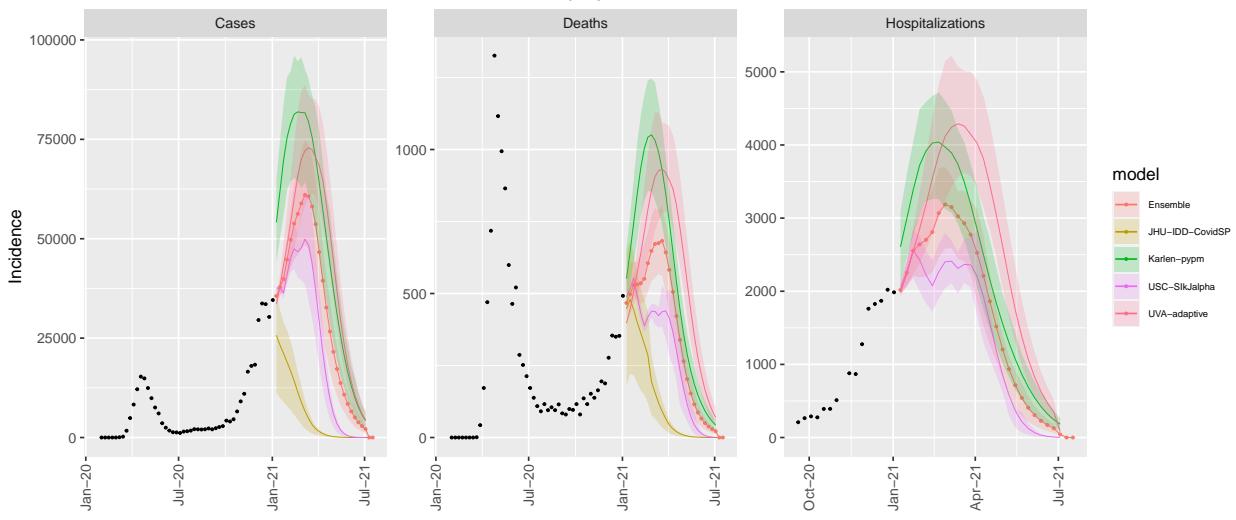
### ME model variance & 50% projection intervals – moderate



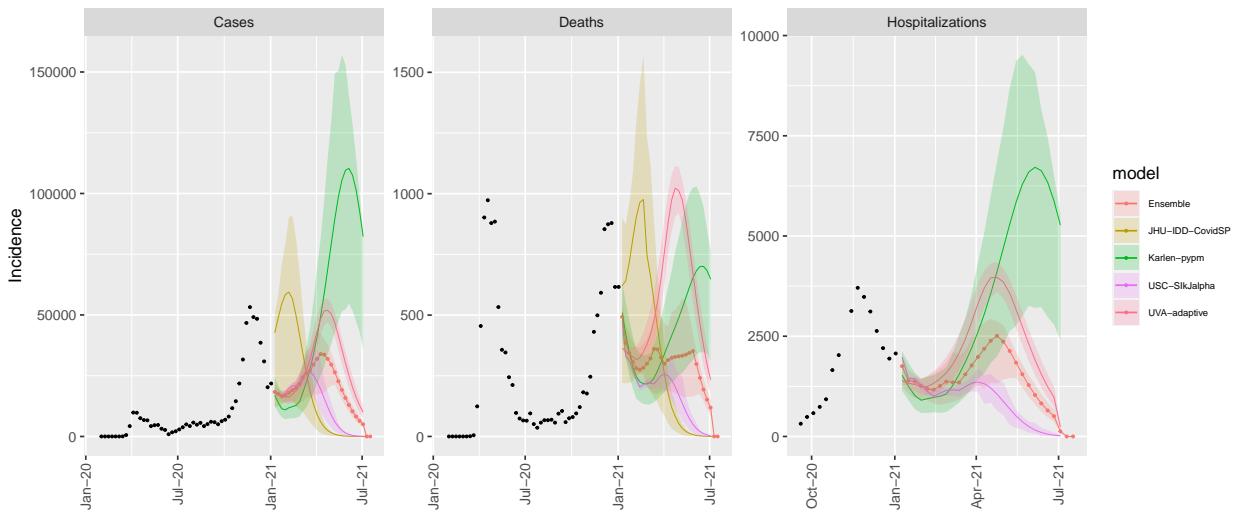
### MD model variance & 50% projection intervals – moderate



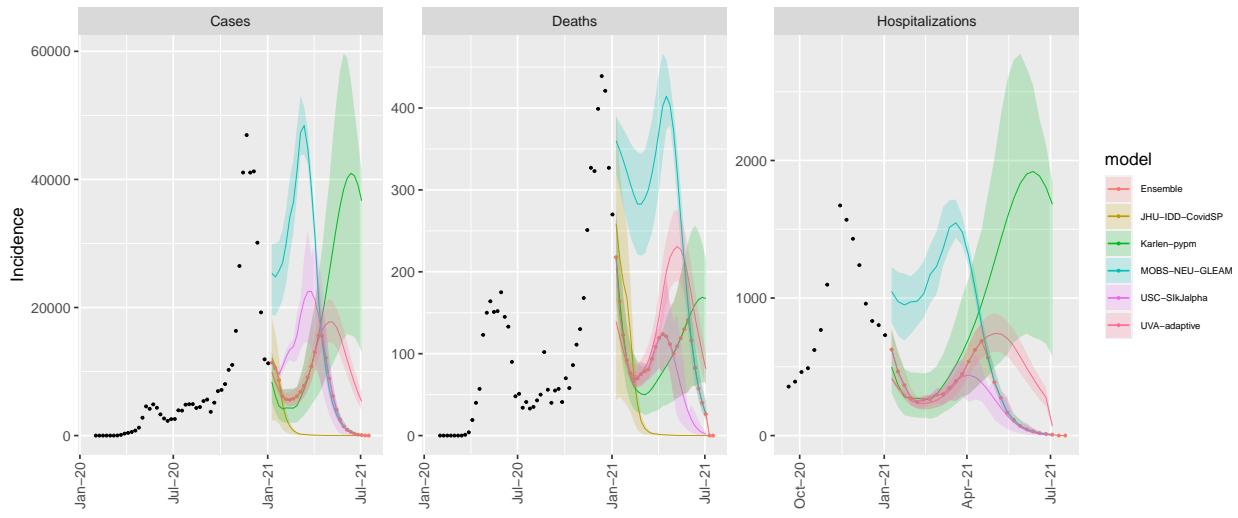
### MA model variance & 50% projection intervals – moderate



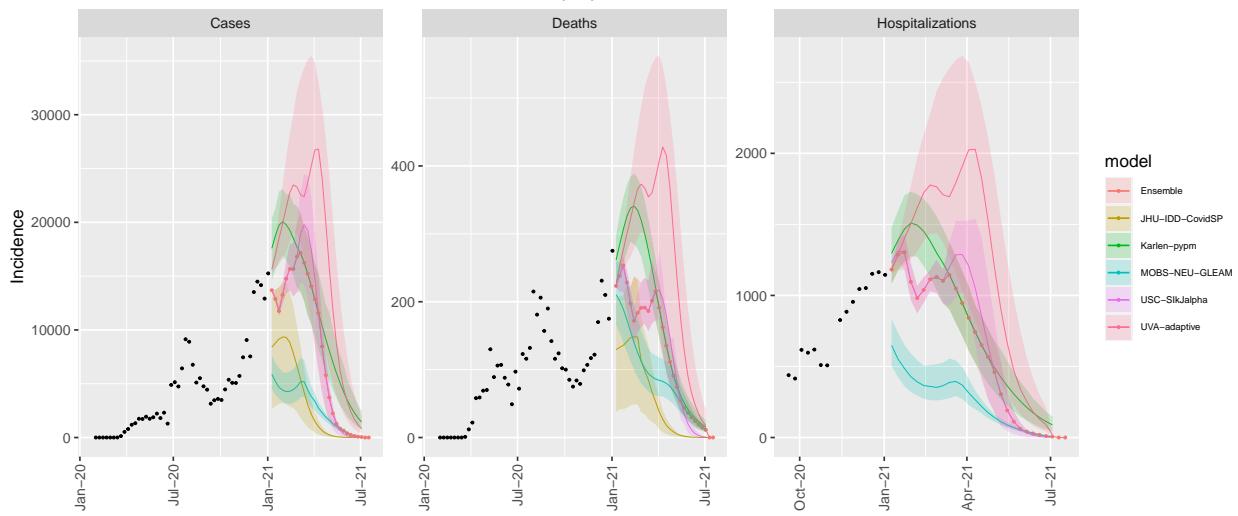
### MI model variance & 50% projection intervals – moderate



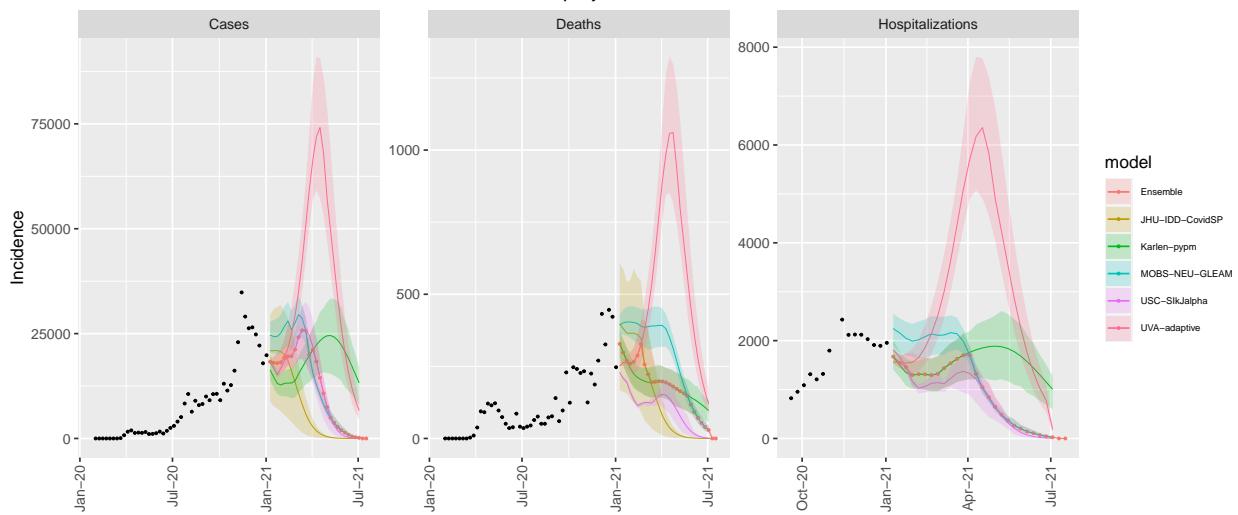
MN model variance & 50% projection intervals – moderate



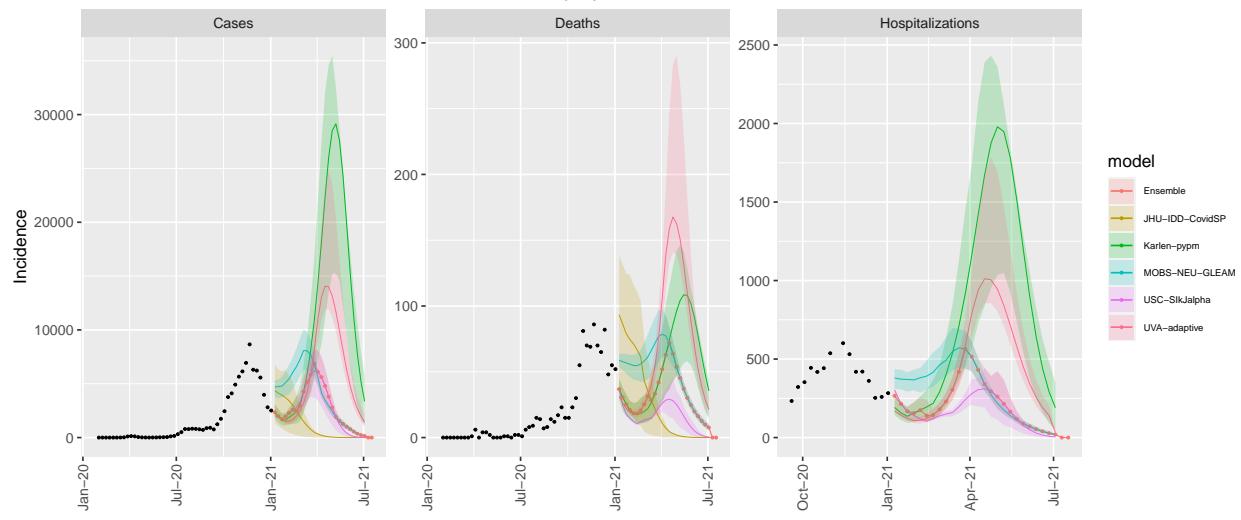
MS model variance & 50% projection intervals – moderate



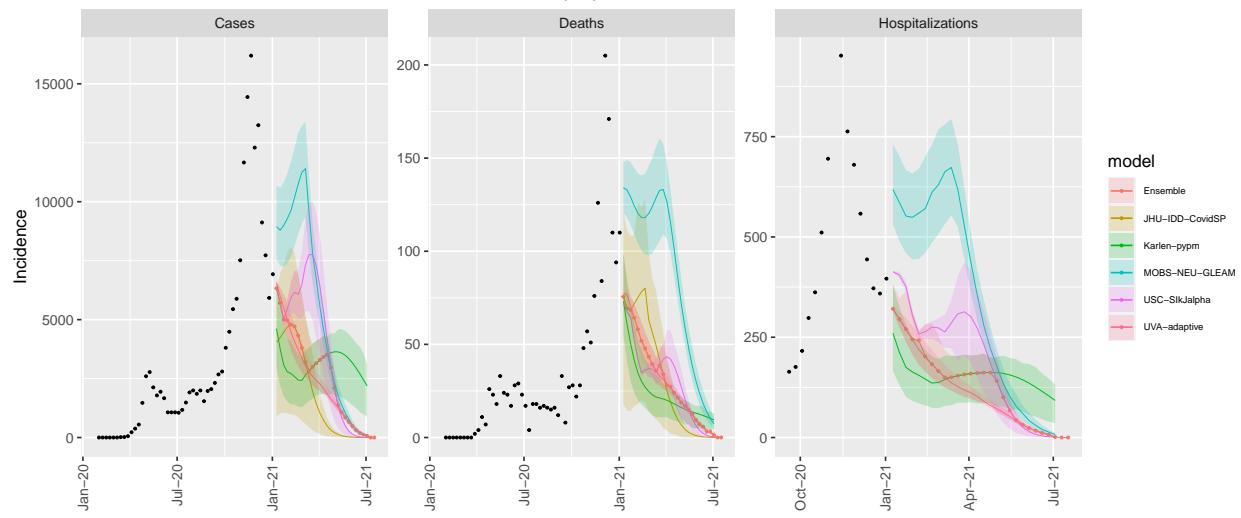
MO model variance & 50% projection intervals – moderate



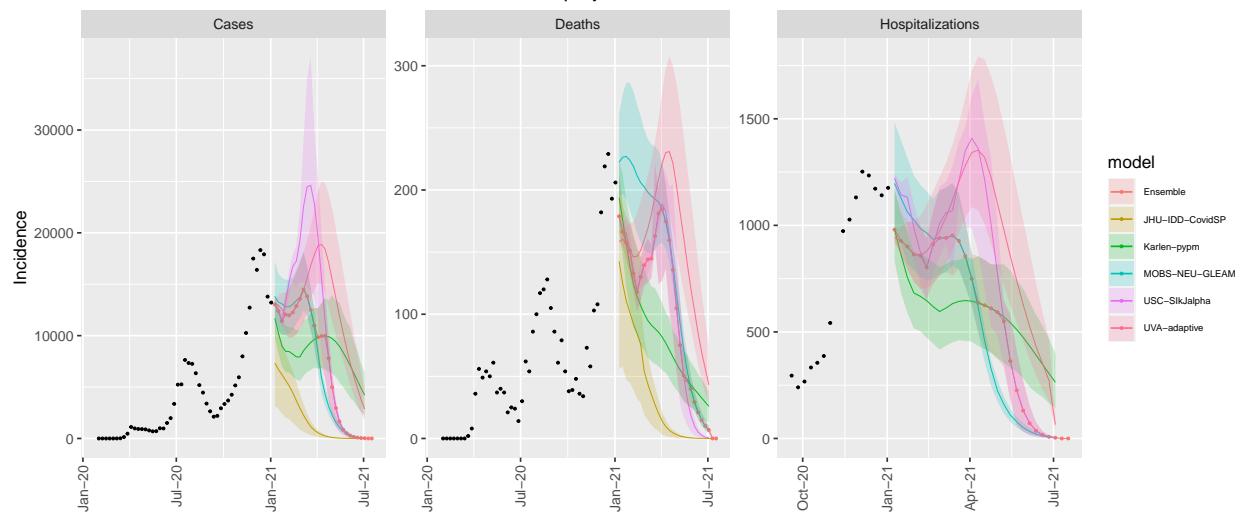
MT model variance & 50% projection intervals – moderate



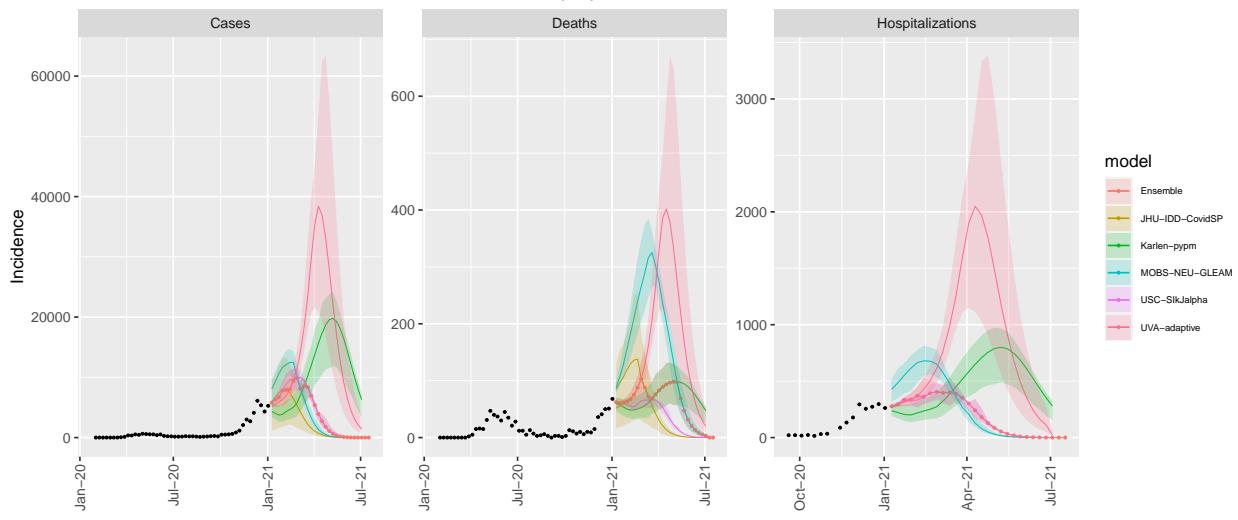
NE model variance & 50% projection intervals – moderate



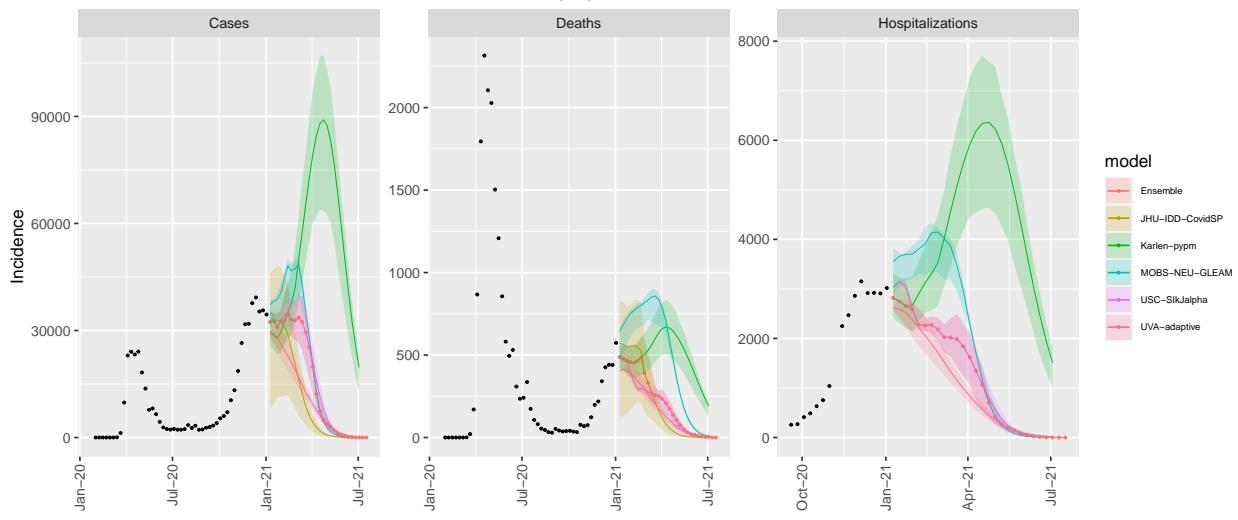
NV model variance & 50% projection intervals – moderate



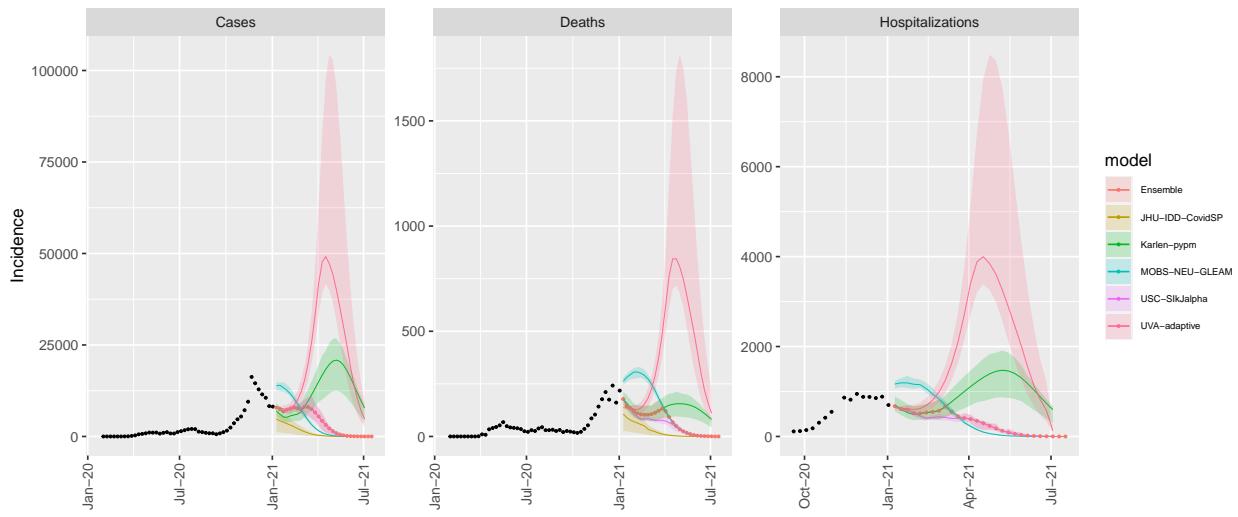
### NH model variance & 50% projection intervals – moderate



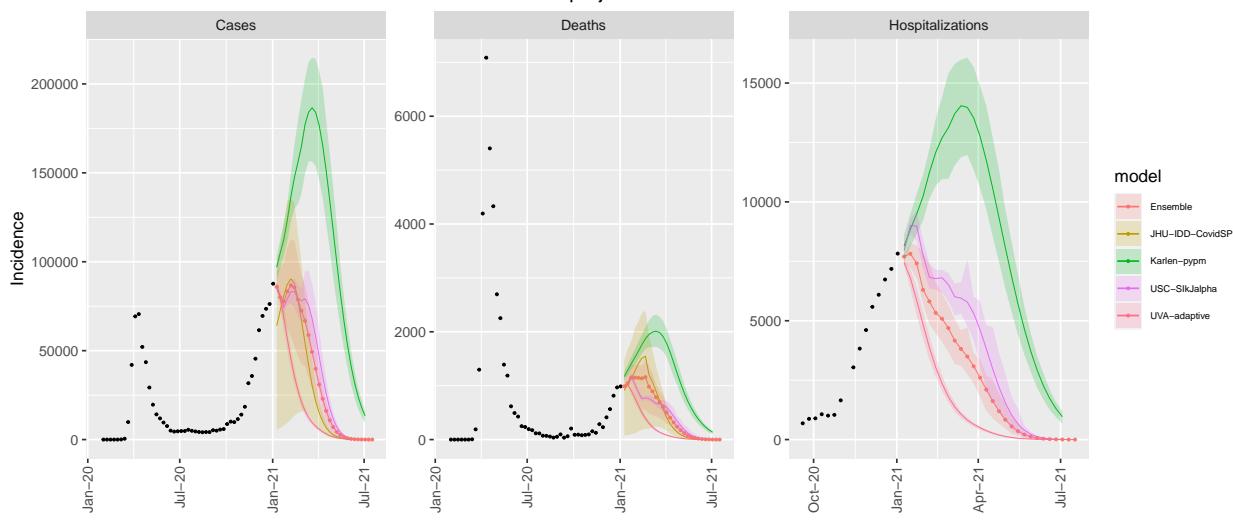
### NJ model variance & 50% projection intervals – moderate



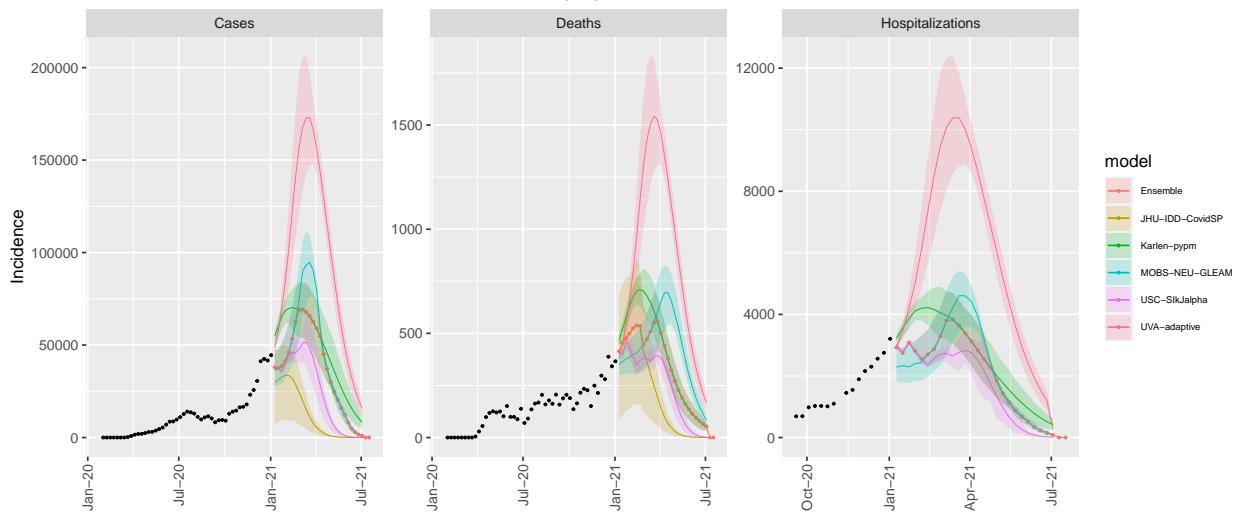
### NM model variance & 50% projection intervals – moderate



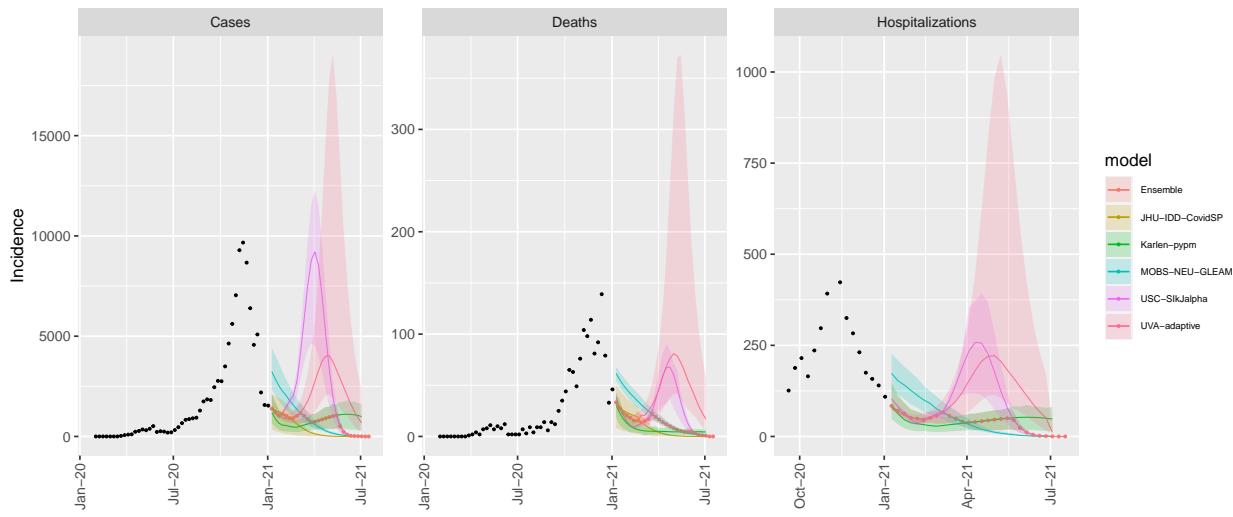
### NY model variance & 50% projection intervals – moderate



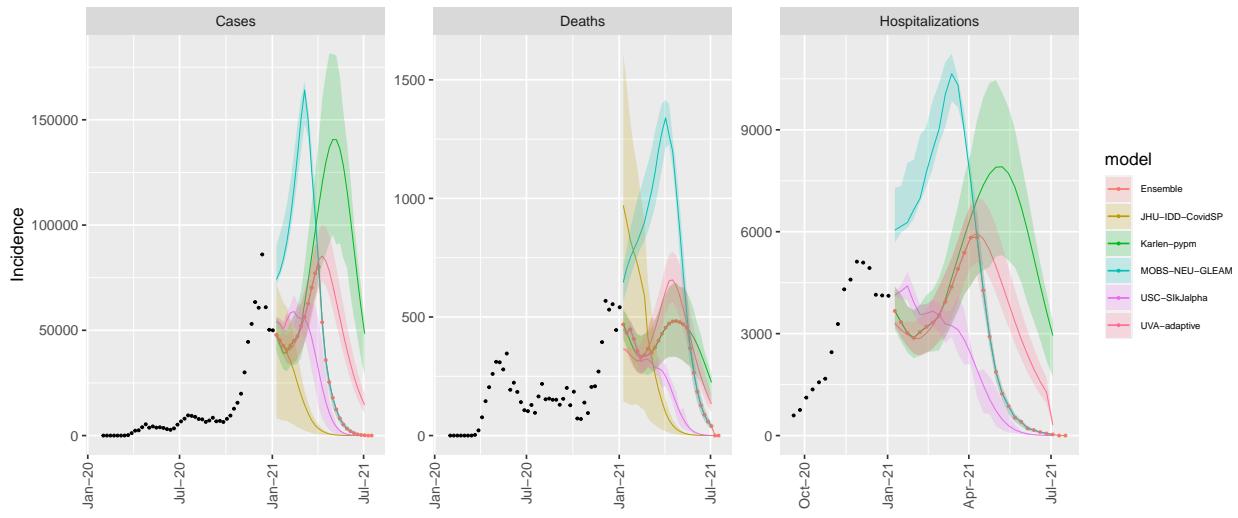
### NC model variance & 50% projection intervals – moderate



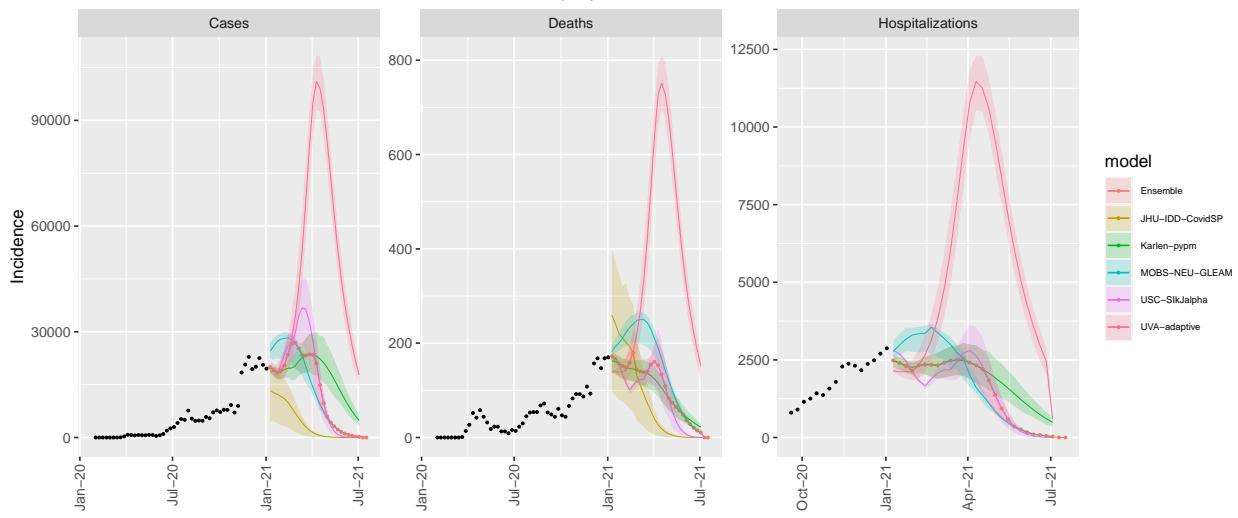
### ND model variance & 50% projection intervals – moderate



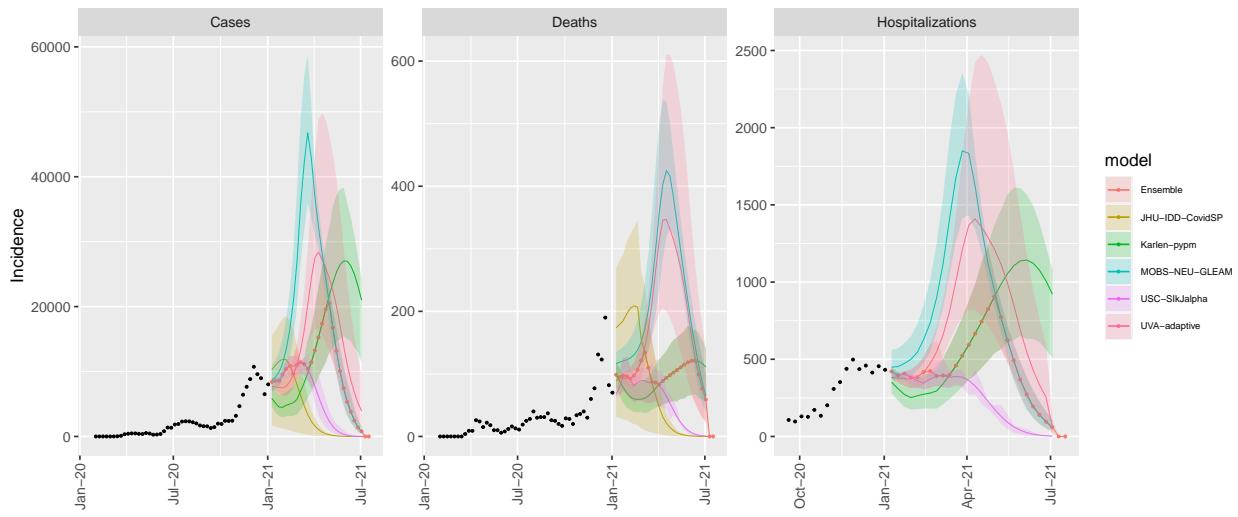
OH model variance & 50% projection intervals – moderate



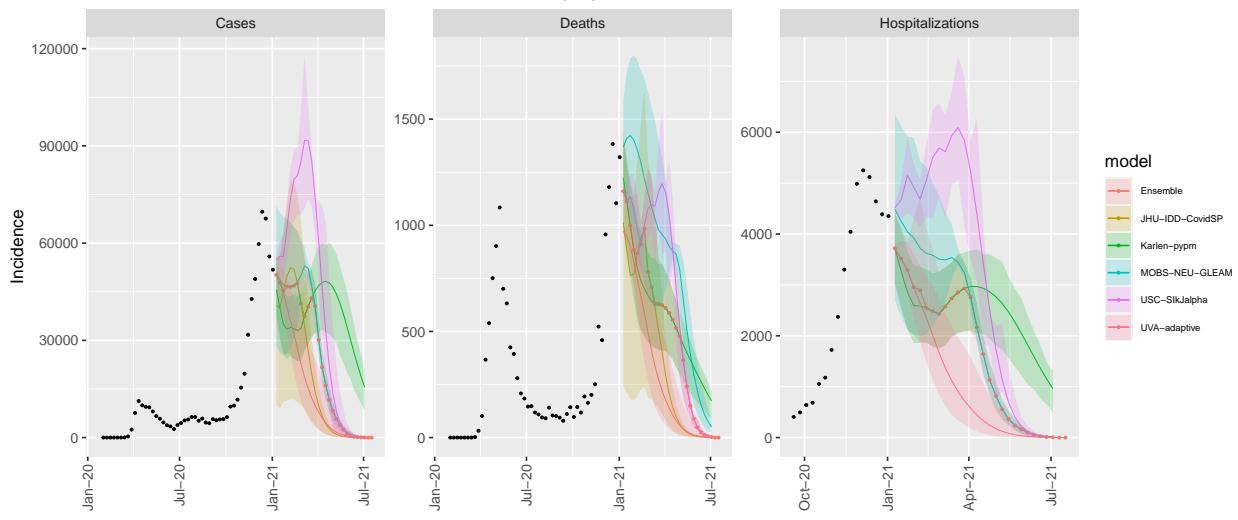
OK model variance & 50% projection intervals – moderate



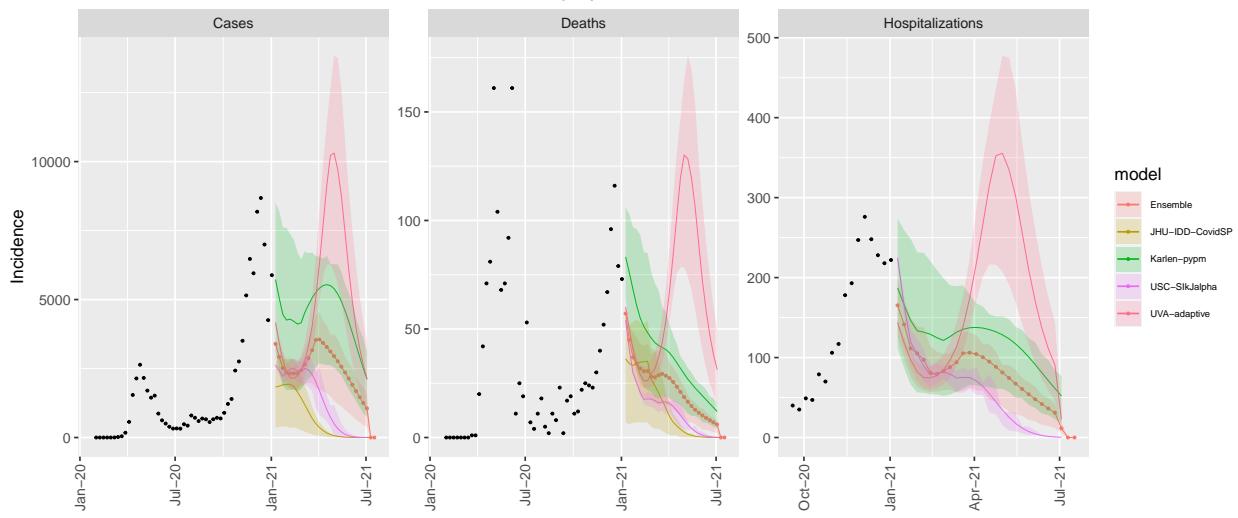
OR model variance & 50% projection intervals – moderate



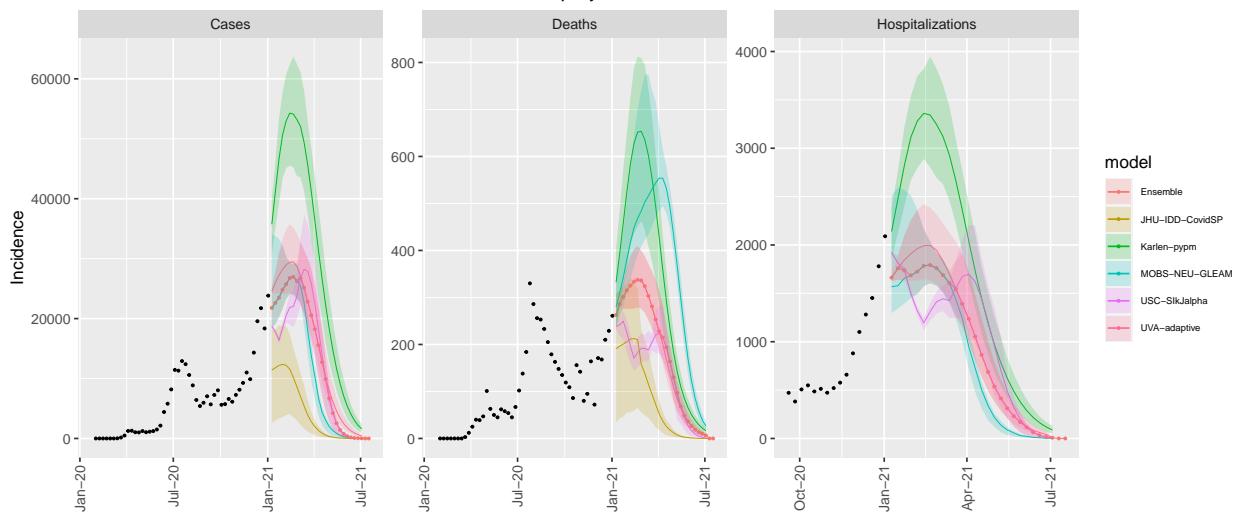
PA model variance & 50% projection intervals – moderate



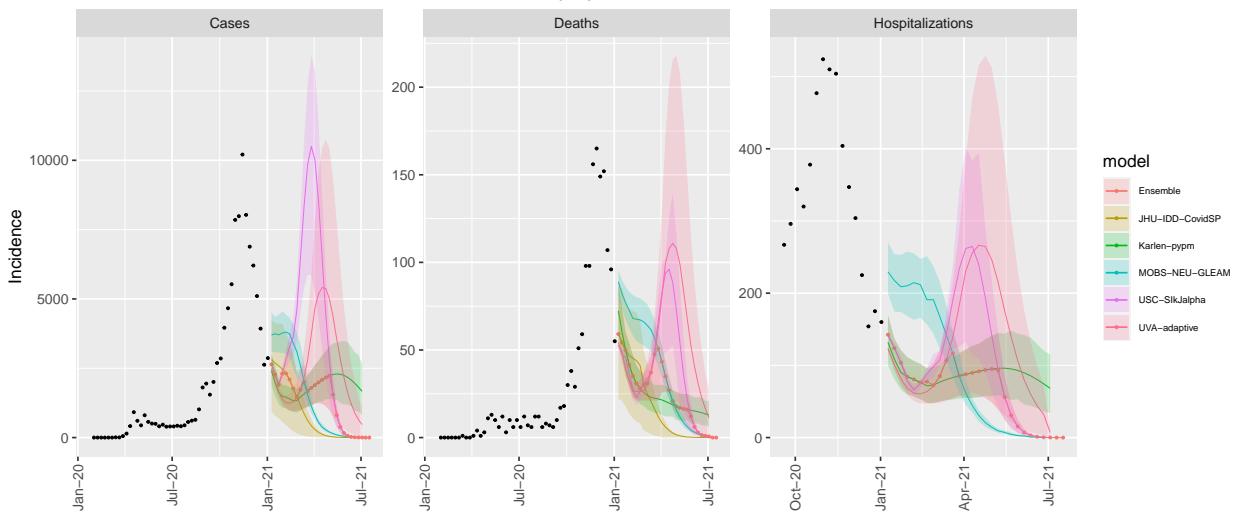
RI model variance & 50% projection intervals – moderate



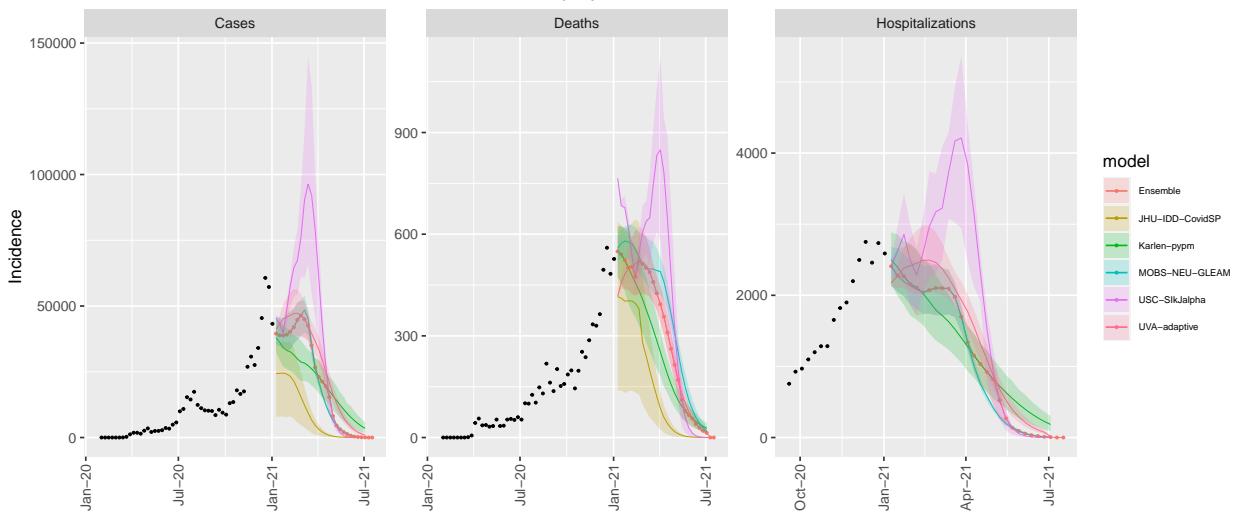
SC model variance & 50% projection intervals – moderate



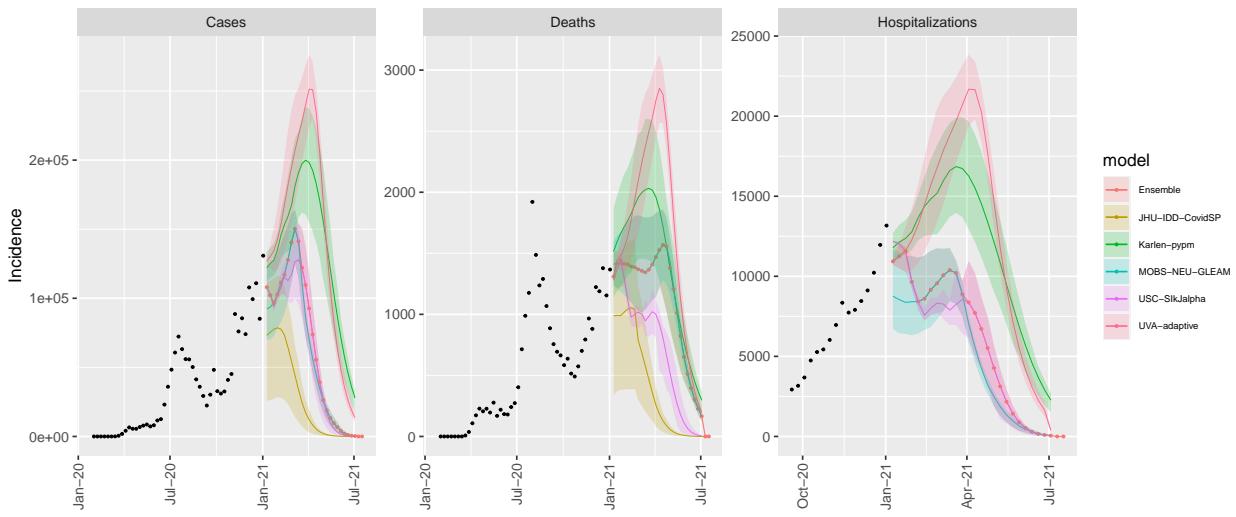
### SD model variance & 50% projection intervals – moderate



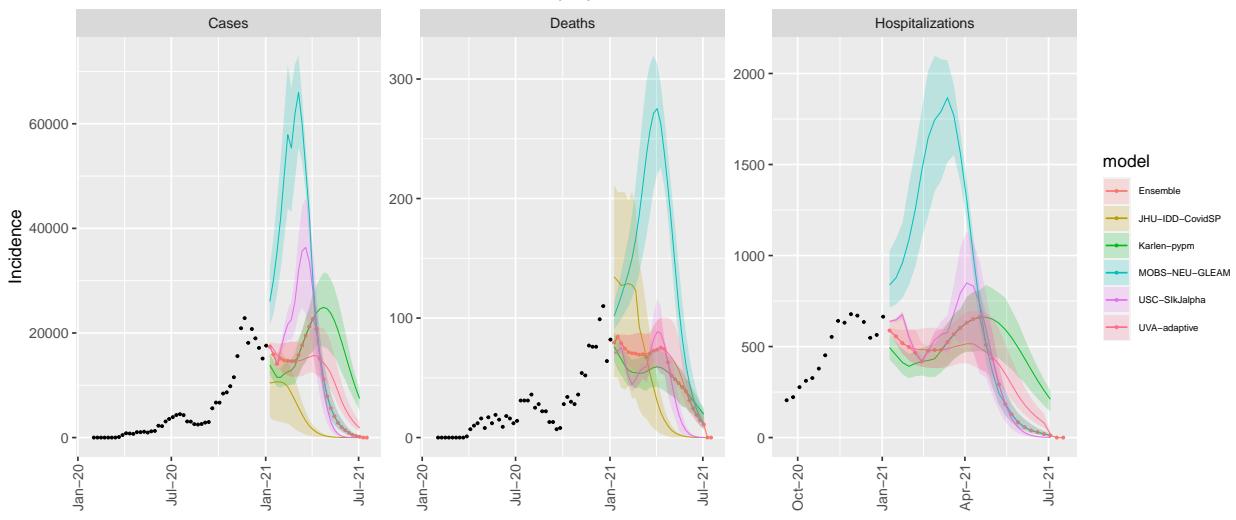
### TN model variance & 50% projection intervals – moderate



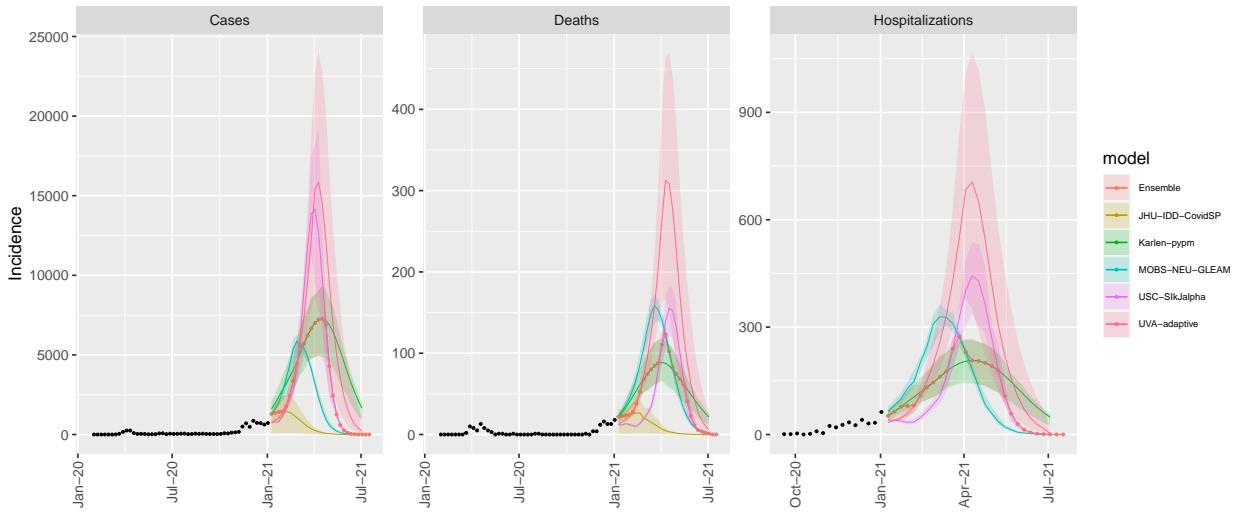
### TX model variance & 50% projection intervals – moderate



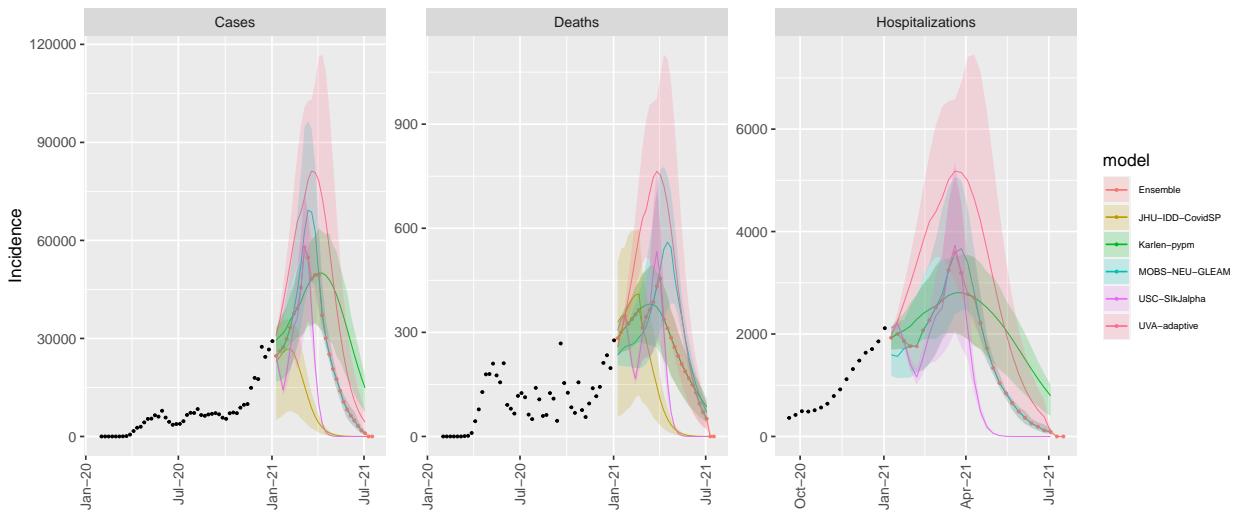
UT model variance & 50% projection intervals – moderate



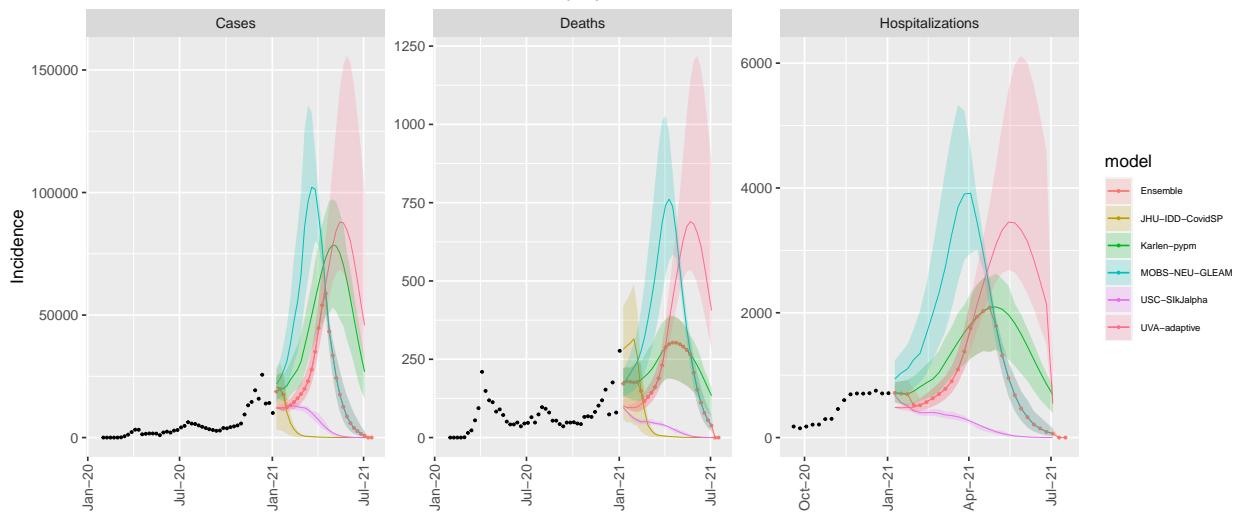
VT model variance & 50% projection intervals – moderate



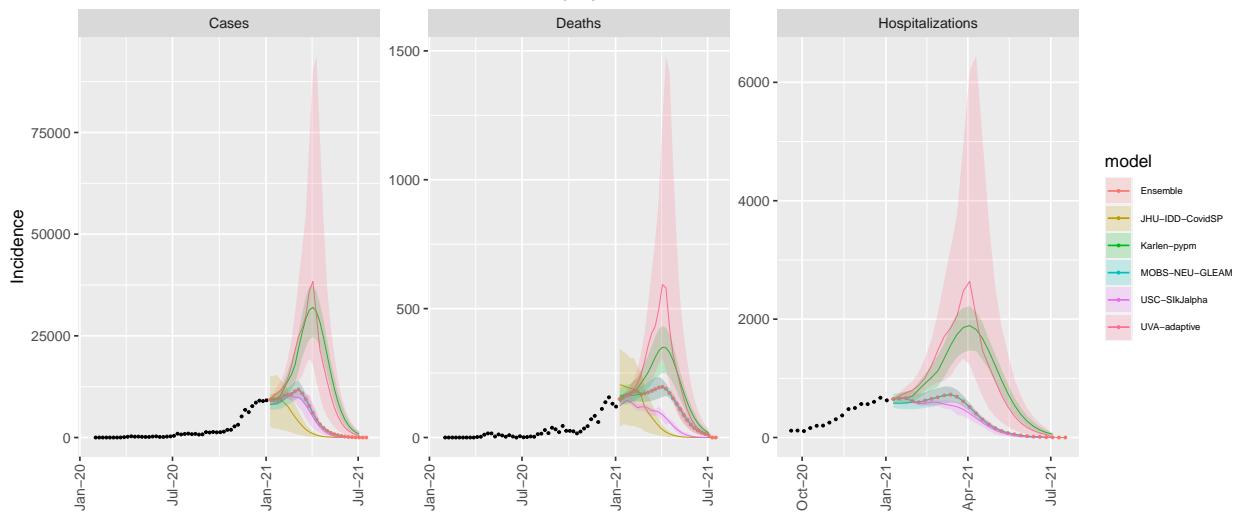
VA model variance & 50% projection intervals – moderate



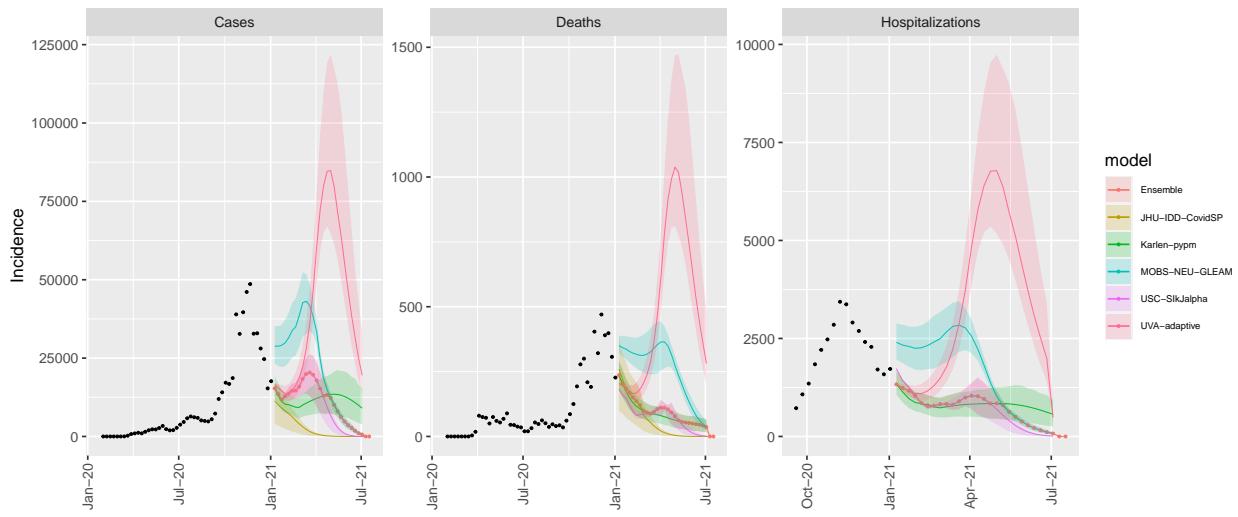
WA model variance & 50% projection intervals – moderate



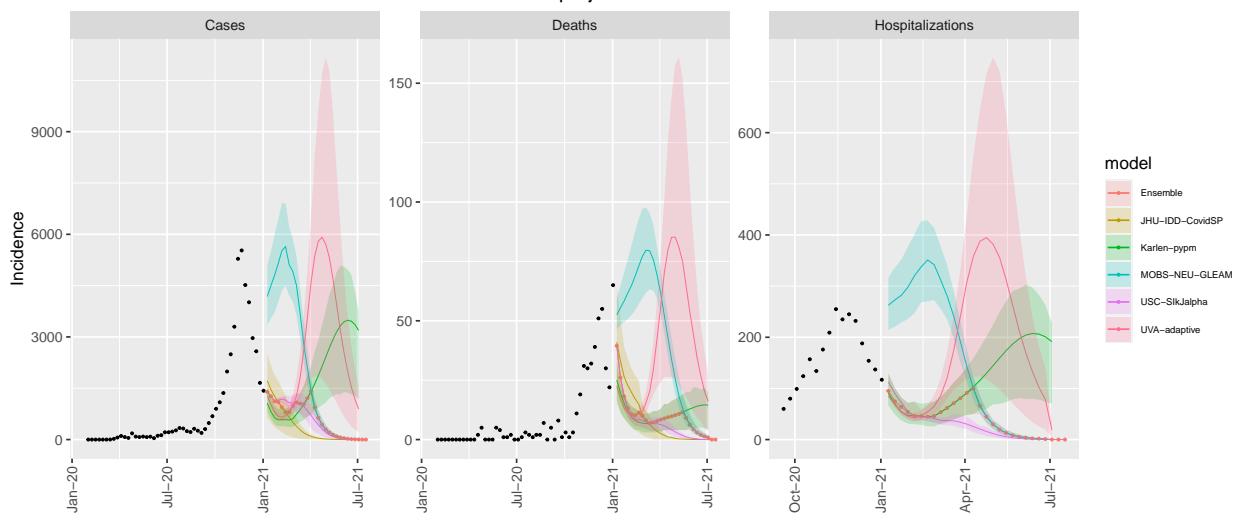
WV model variance & 50% projection intervals – moderate



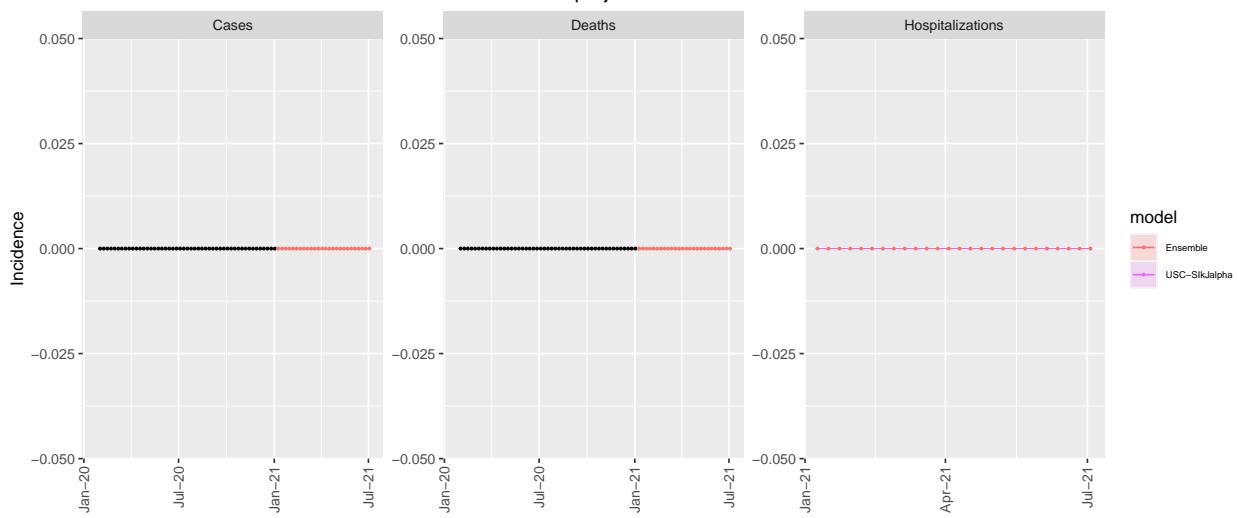
WI model variance & 50% projection intervals – moderate



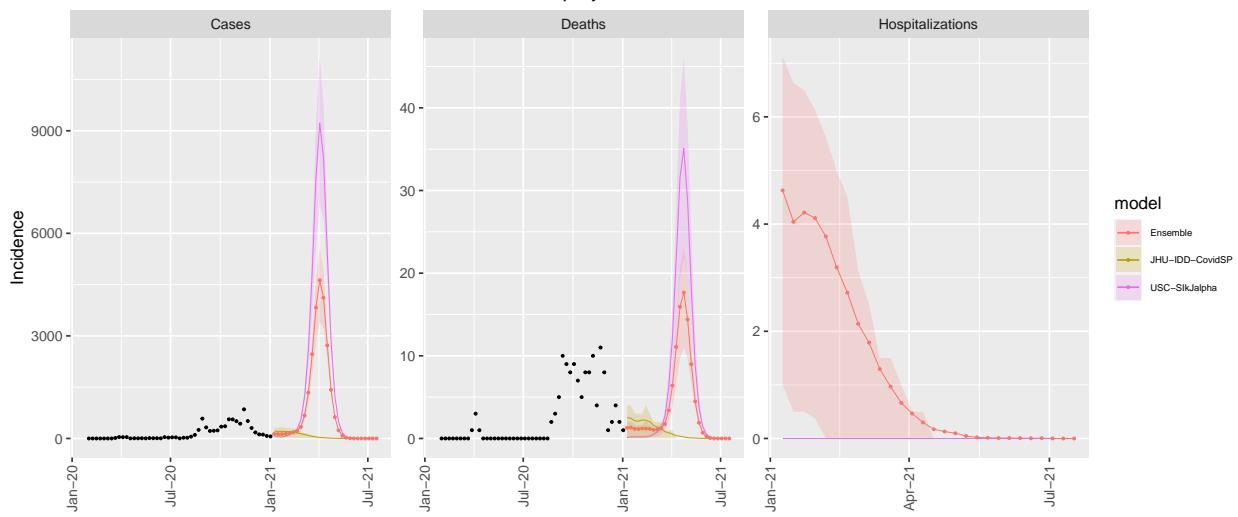
WY model variance & 50% projection intervals – moderate



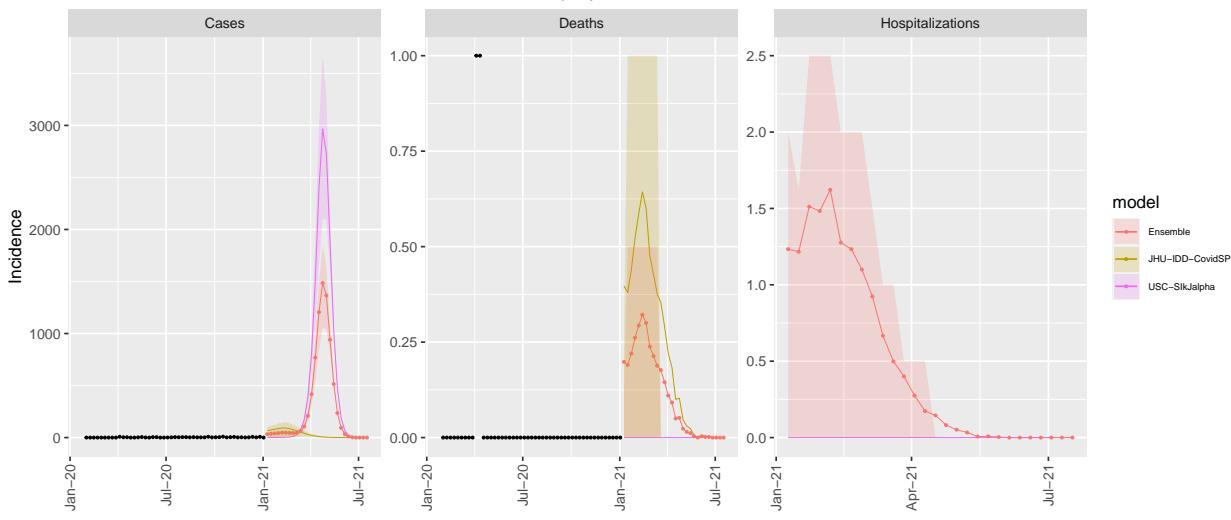
AS model variance & 50% projection intervals – moderate



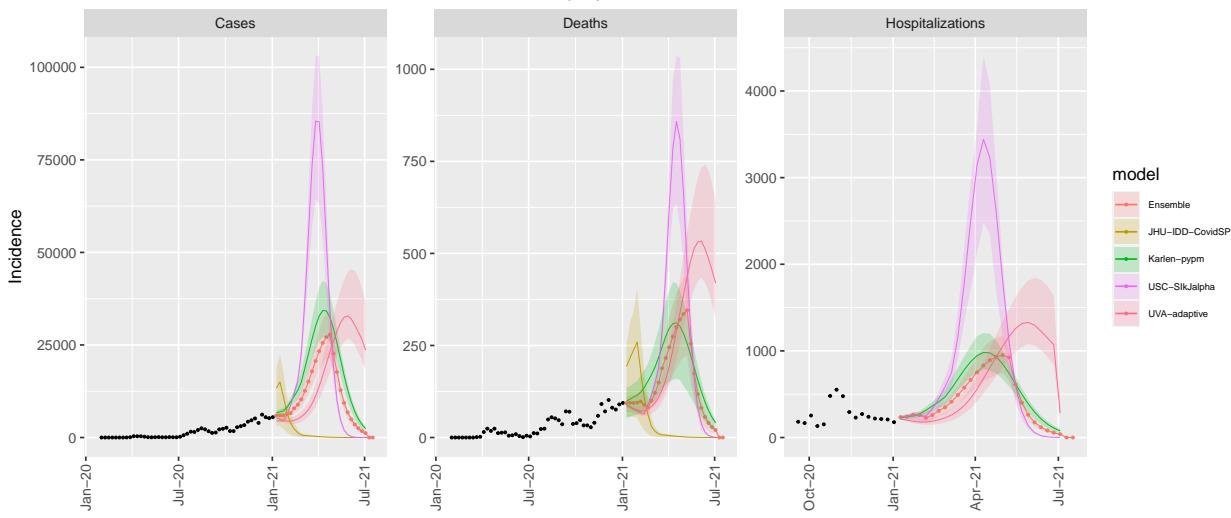
GU model variance & 50% projection intervals – moderate



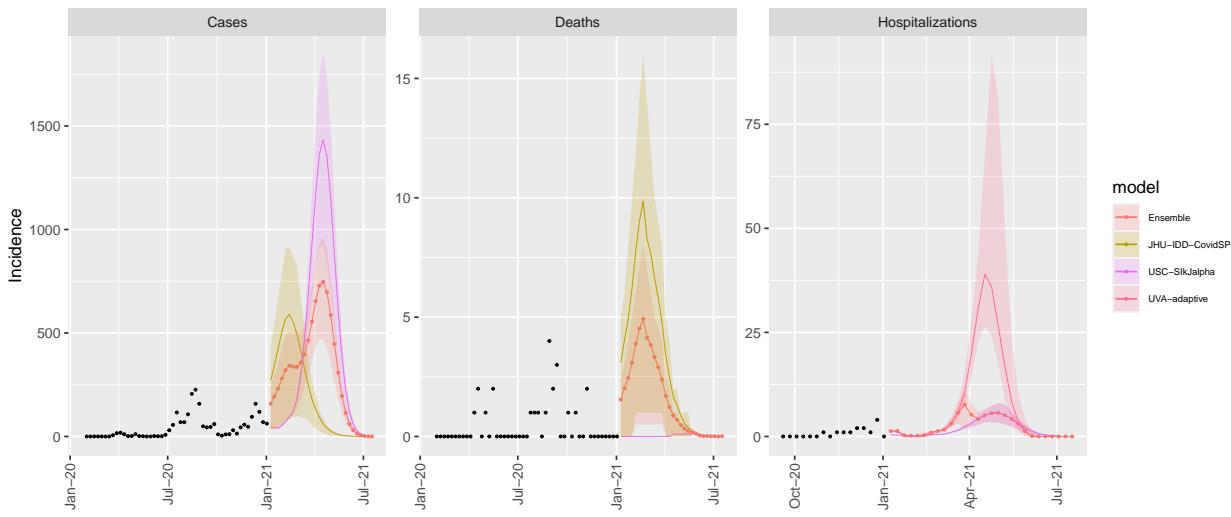
### MP model variance & 50% projection intervals – moderate



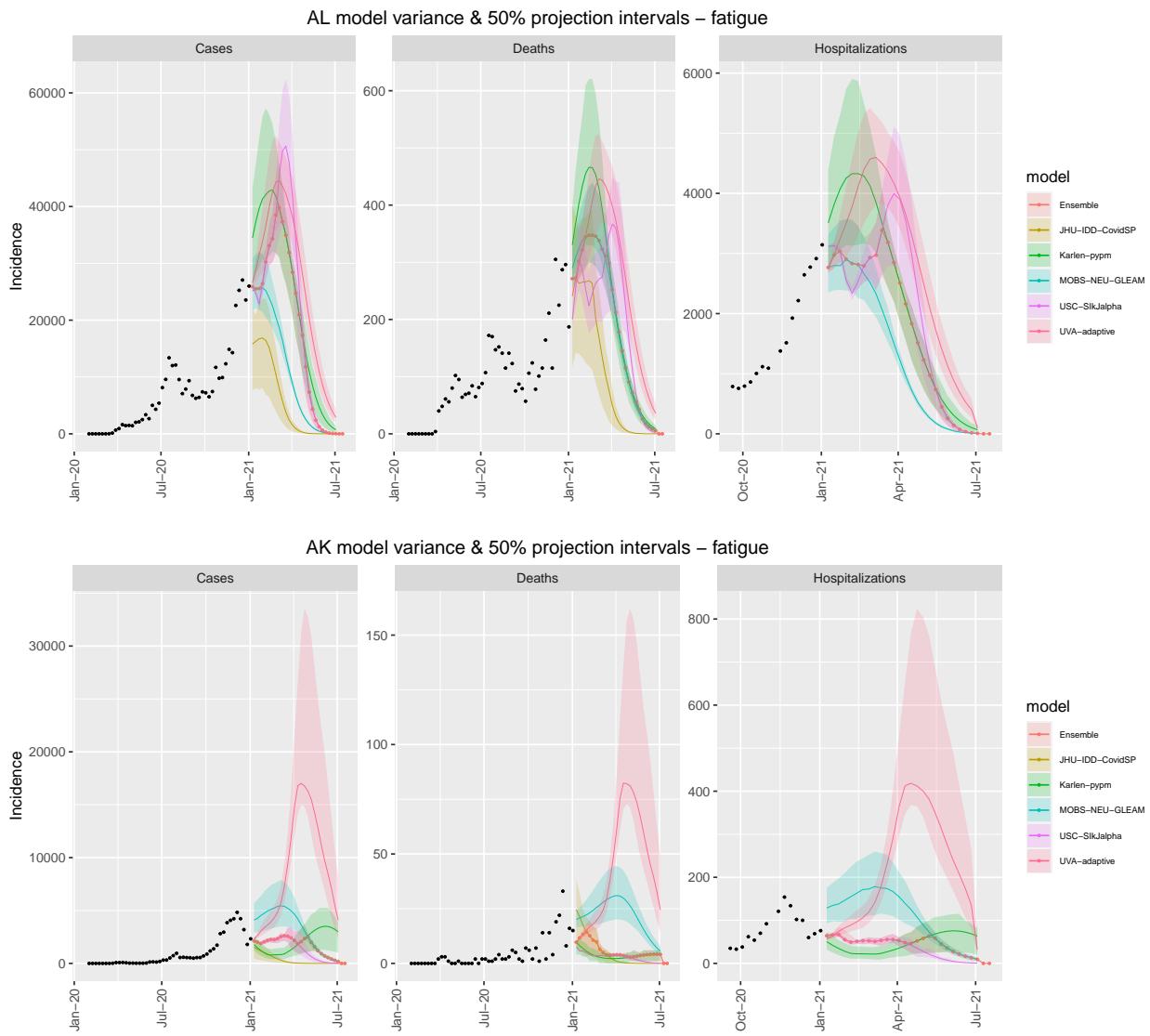
### PR model variance & 50% projection intervals – moderate



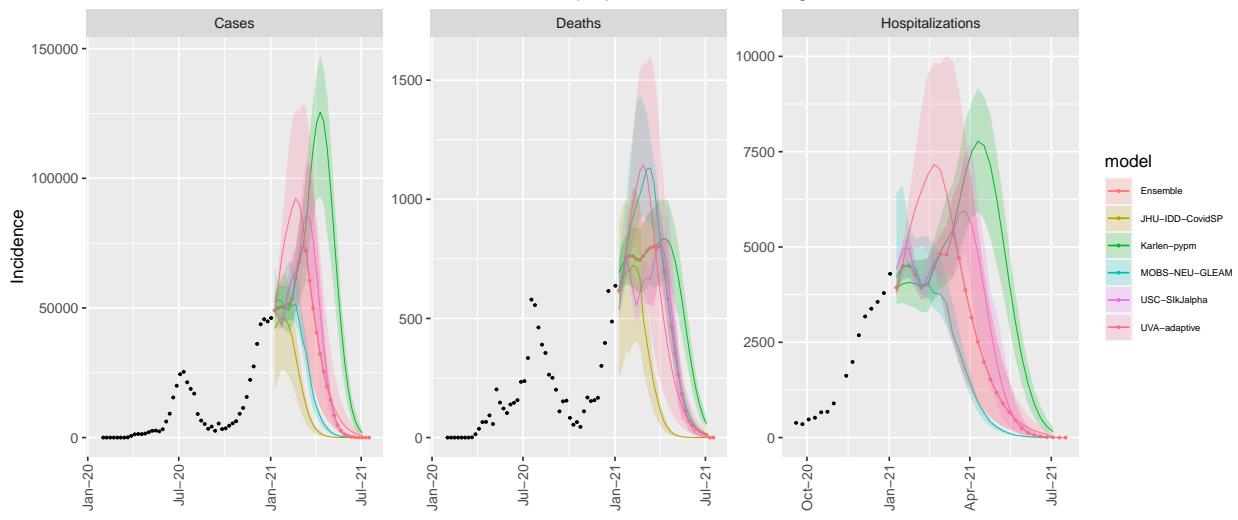
### VI model variance & 50% projection intervals – moderate



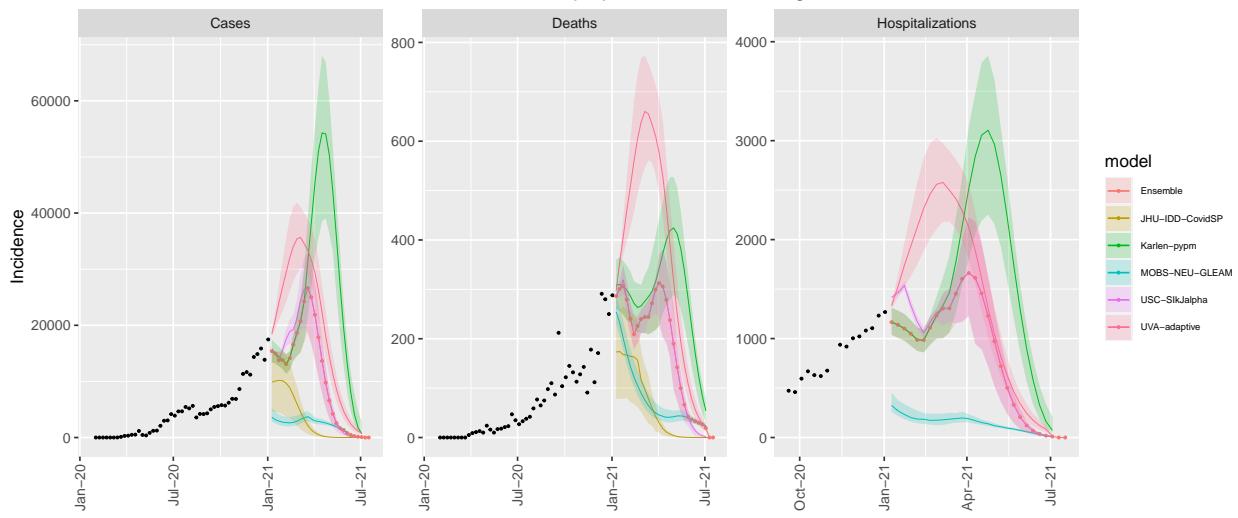
## National model variation for the fatigue scenario



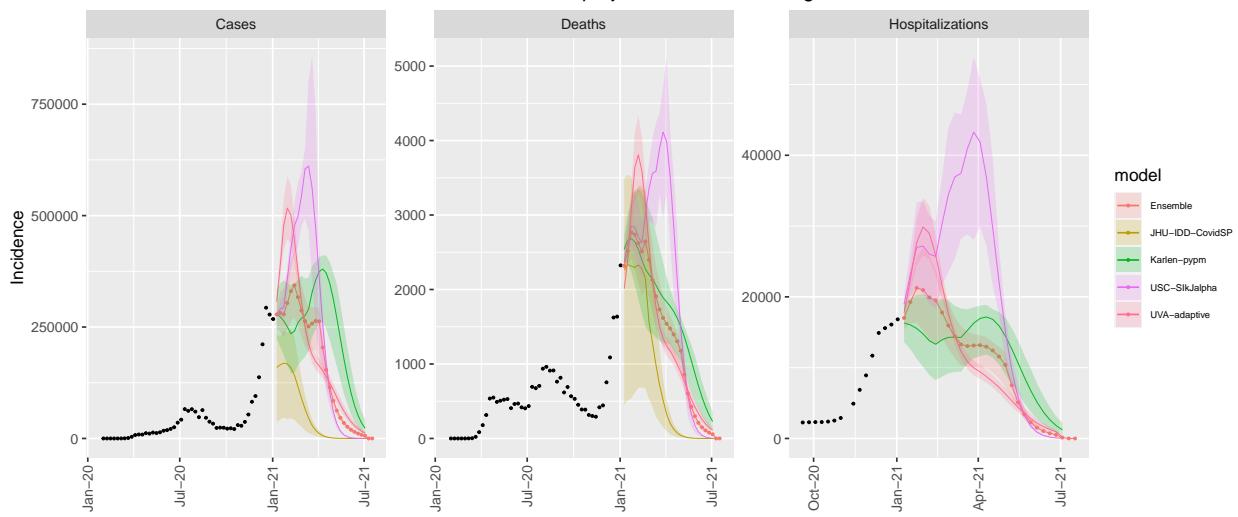
### AZ model variance & 50% projection intervals – fatigue



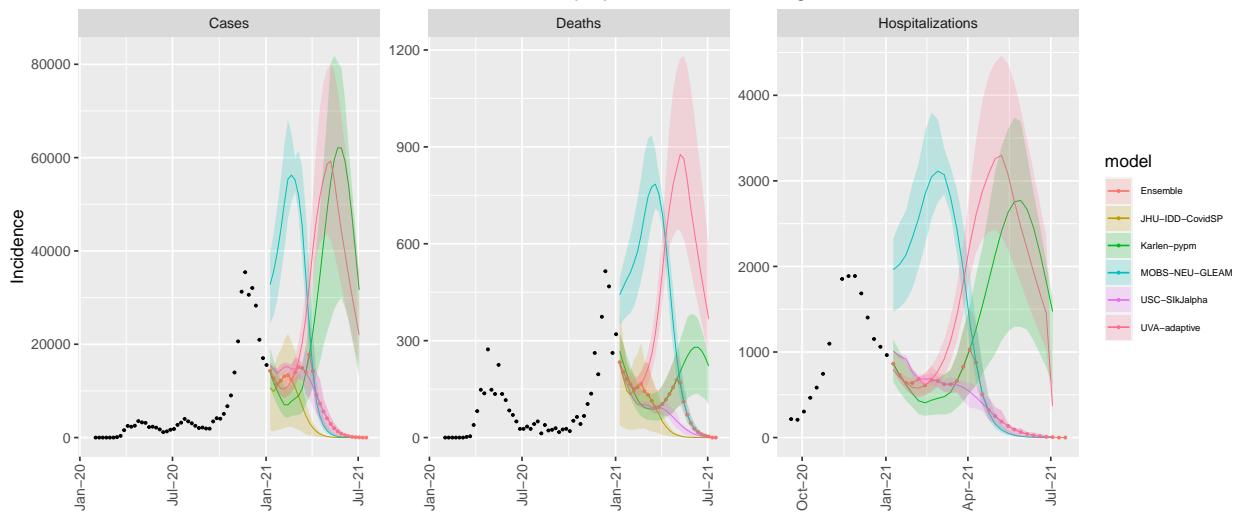
### AR model variance & 50% projection intervals – fatigue



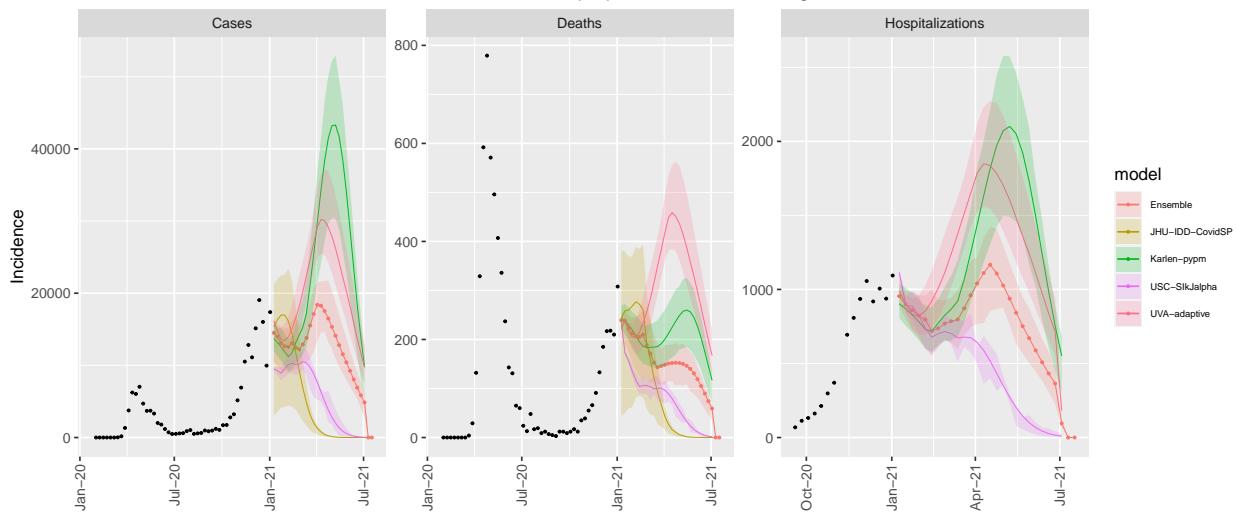
### CA model variance & 50% projection intervals – fatigue



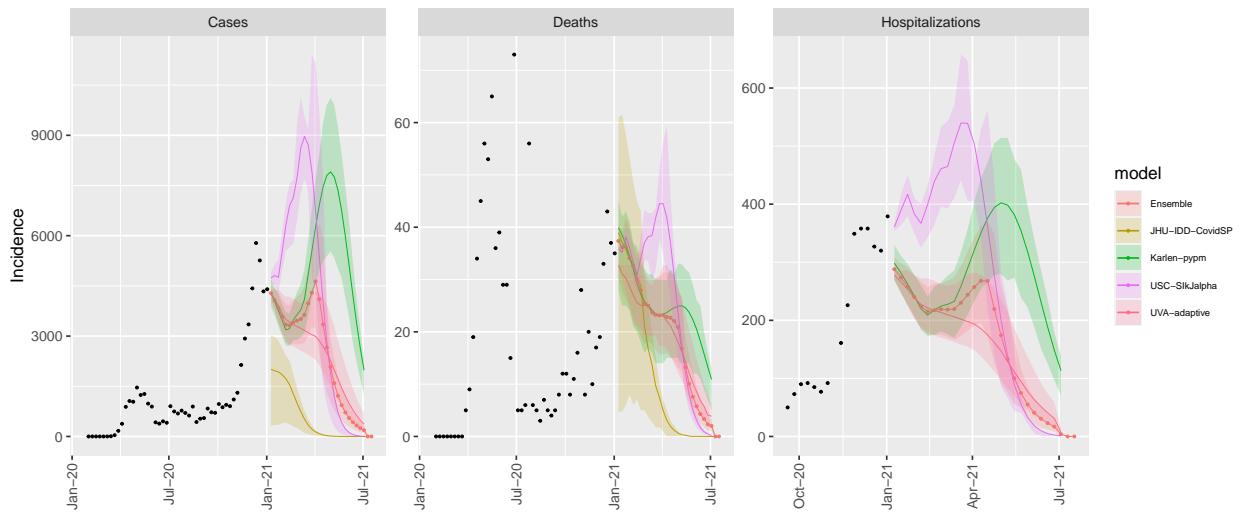
### CO model variance & 50% projection intervals – fatigue



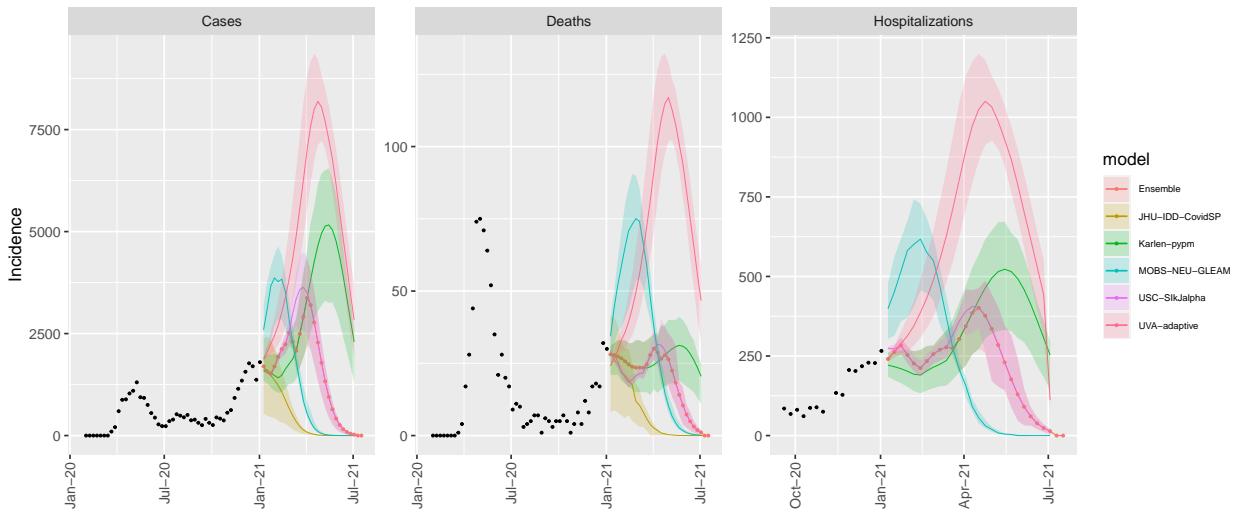
### CT model variance & 50% projection intervals – fatigue



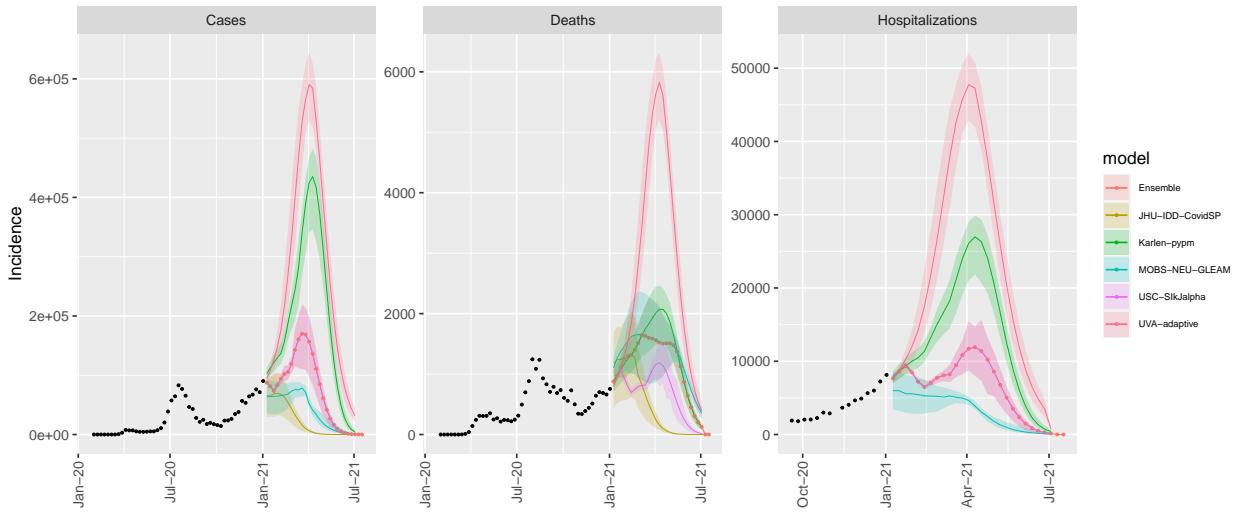
### DE model variance & 50% projection intervals – fatigue



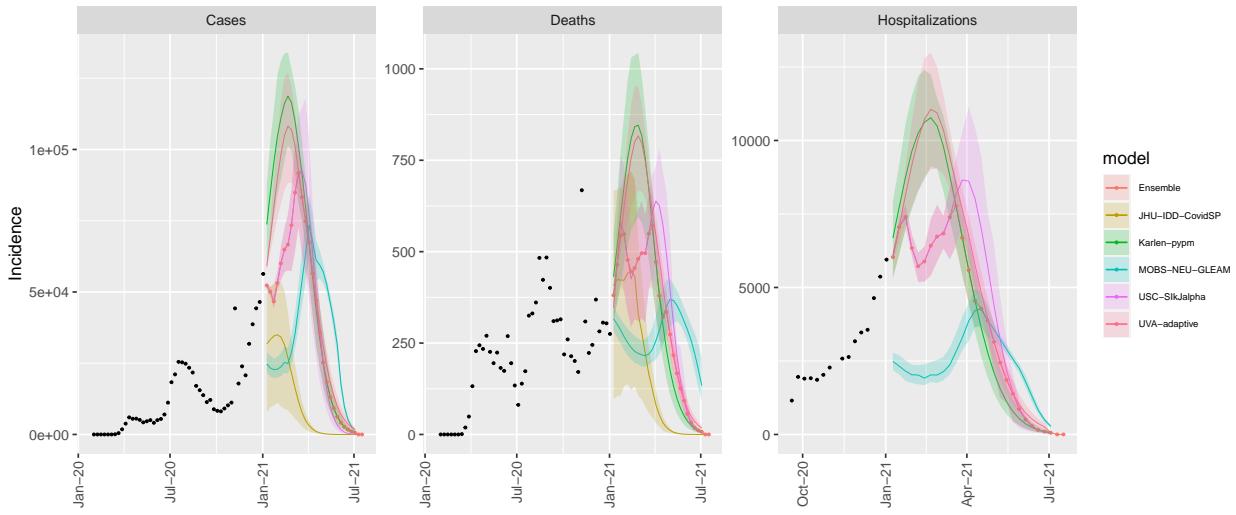
### DC model variance & 50% projection intervals – fatigue



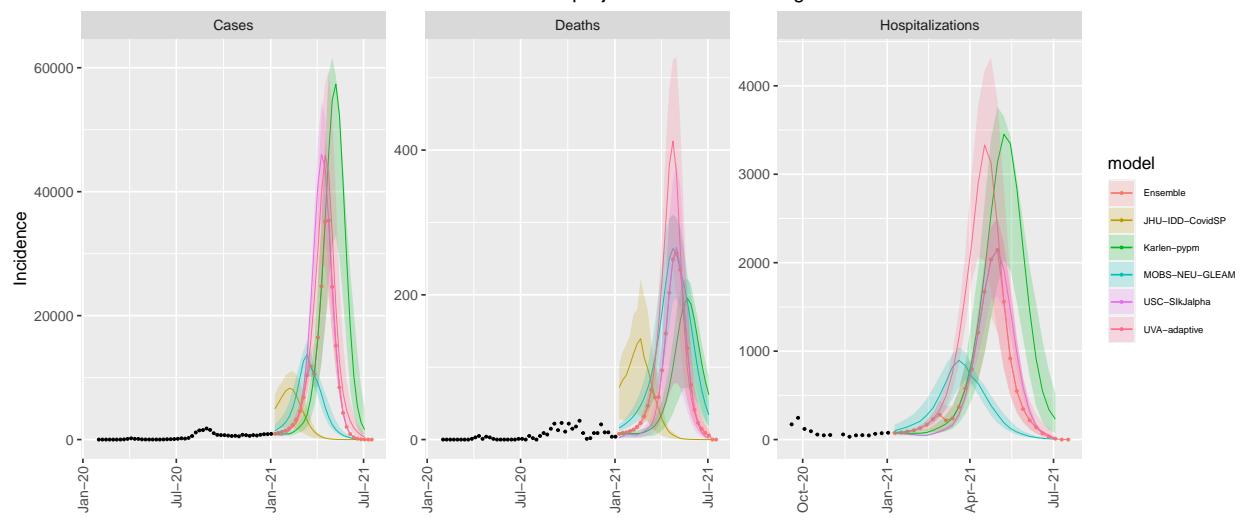
### FL model variance & 50% projection intervals – fatigue



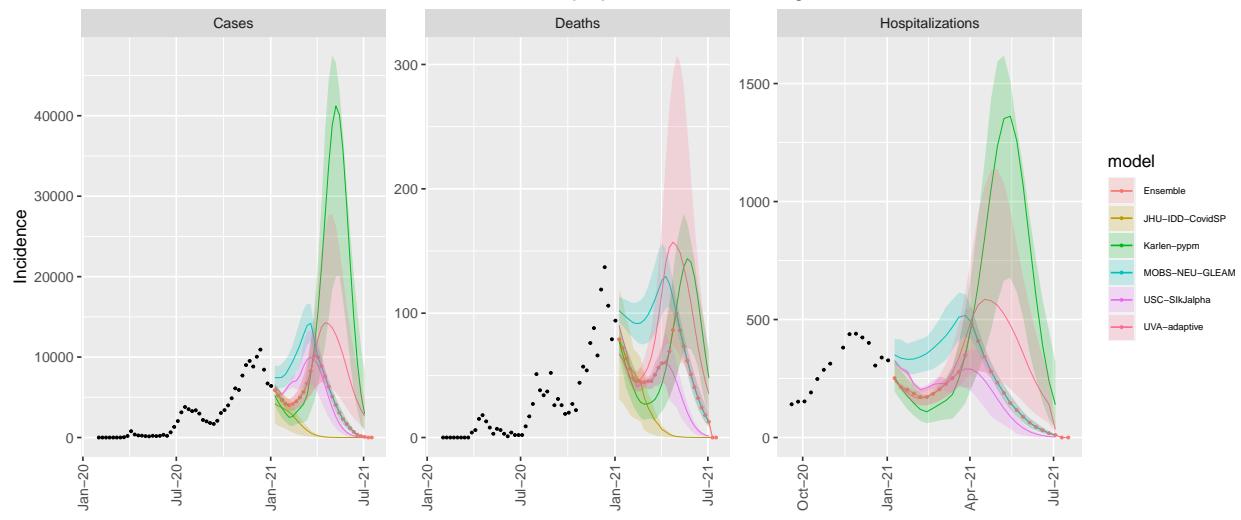
### GA model variance & 50% projection intervals – fatigue



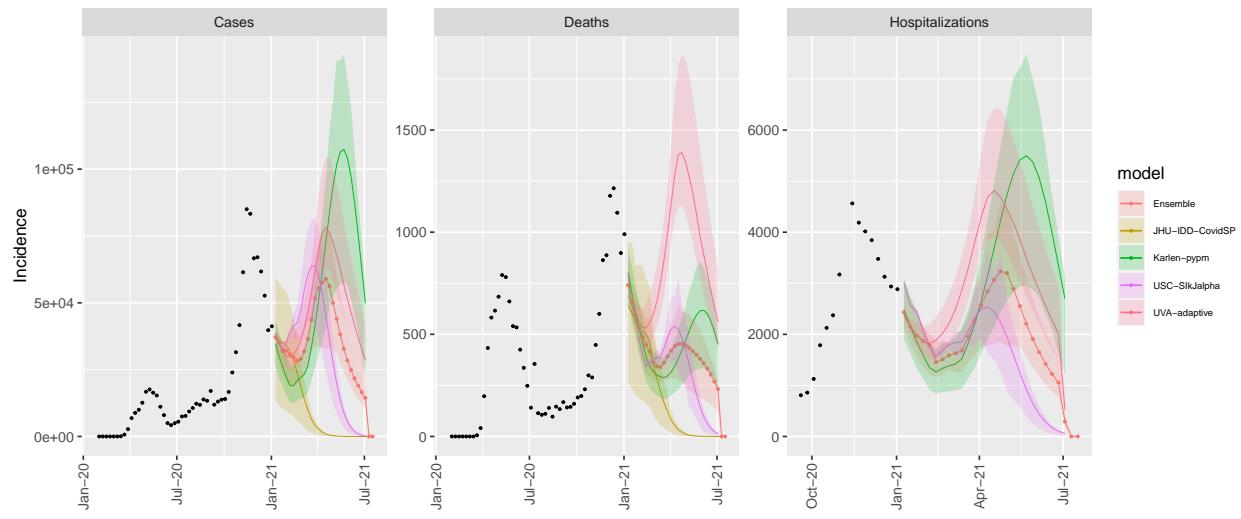
### HI model variance & 50% projection intervals – fatigue



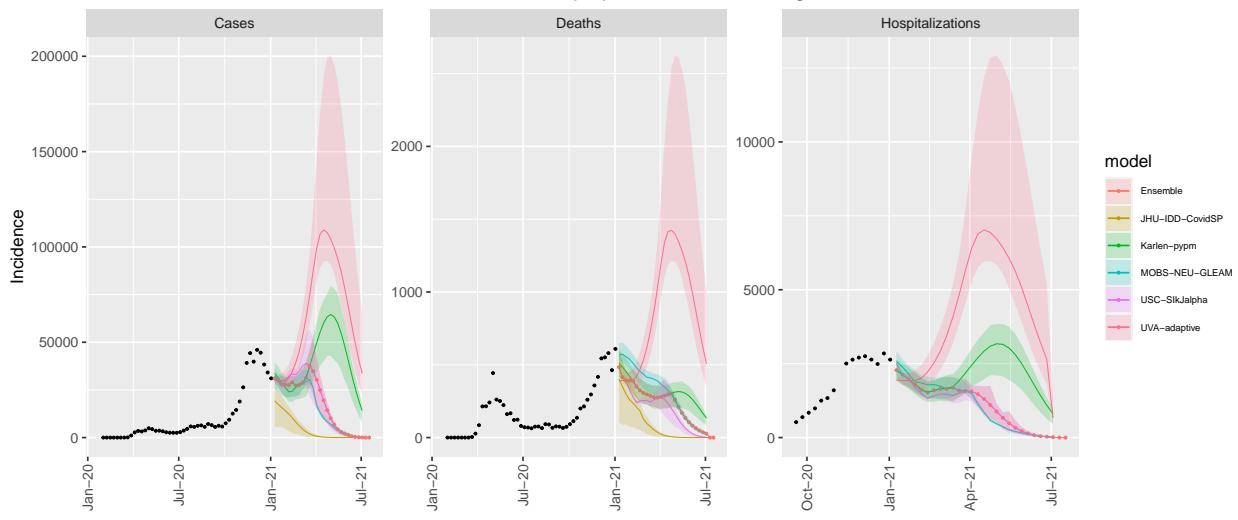
### ID model variance & 50% projection intervals – fatigue



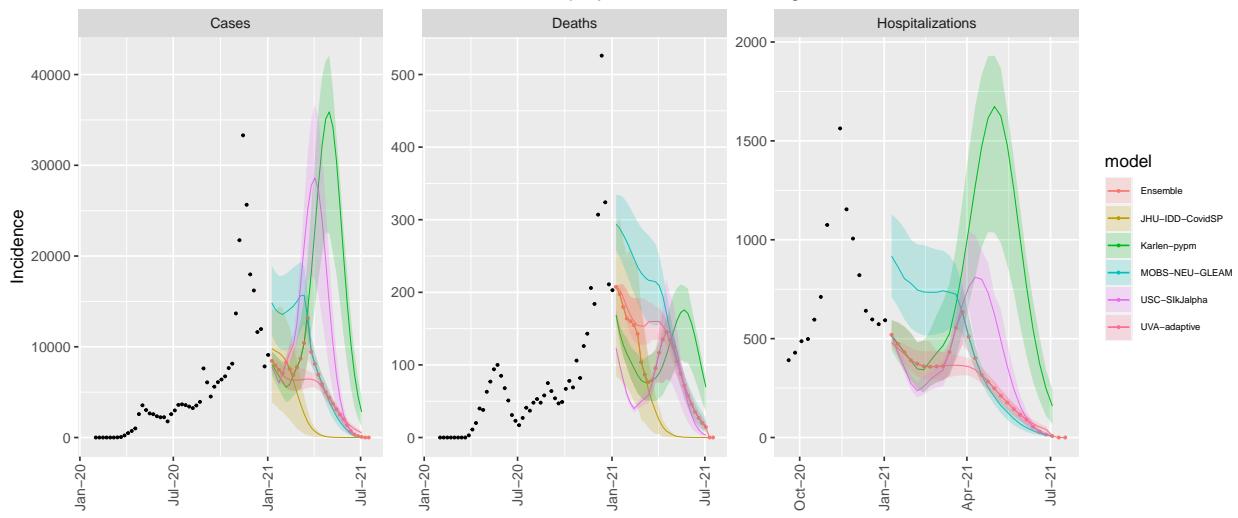
### IL model variance & 50% projection intervals – fatigue



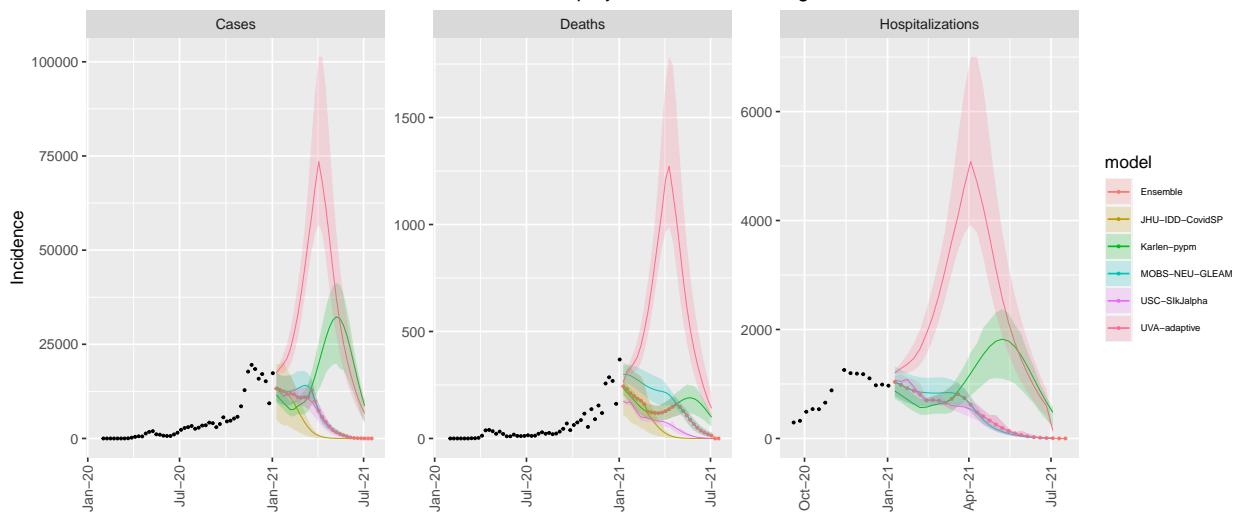
### IN model variance & 50% projection intervals – fatigue



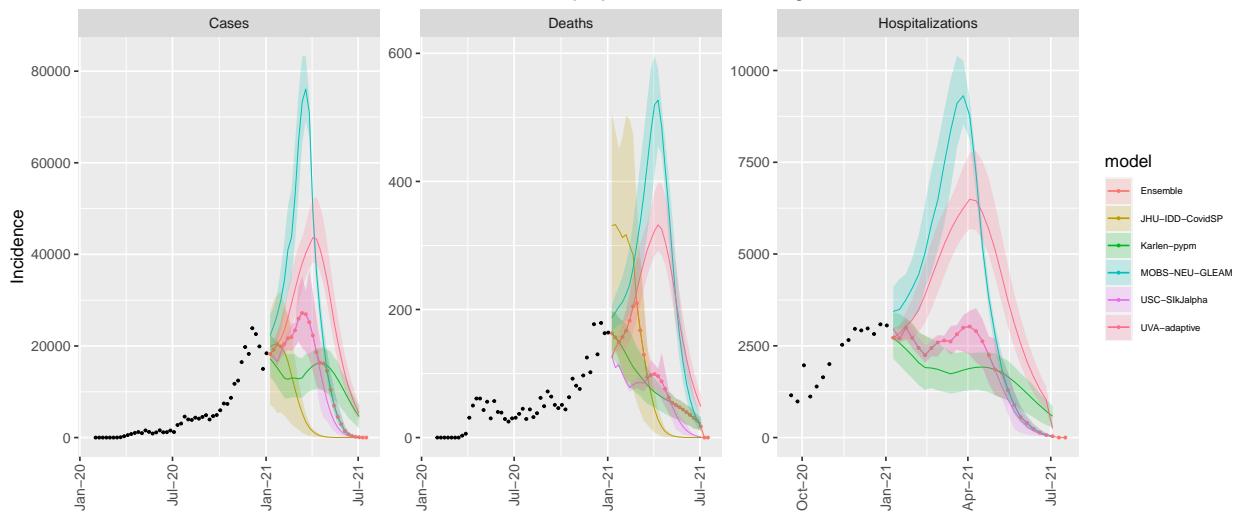
### IA model variance & 50% projection intervals – fatigue



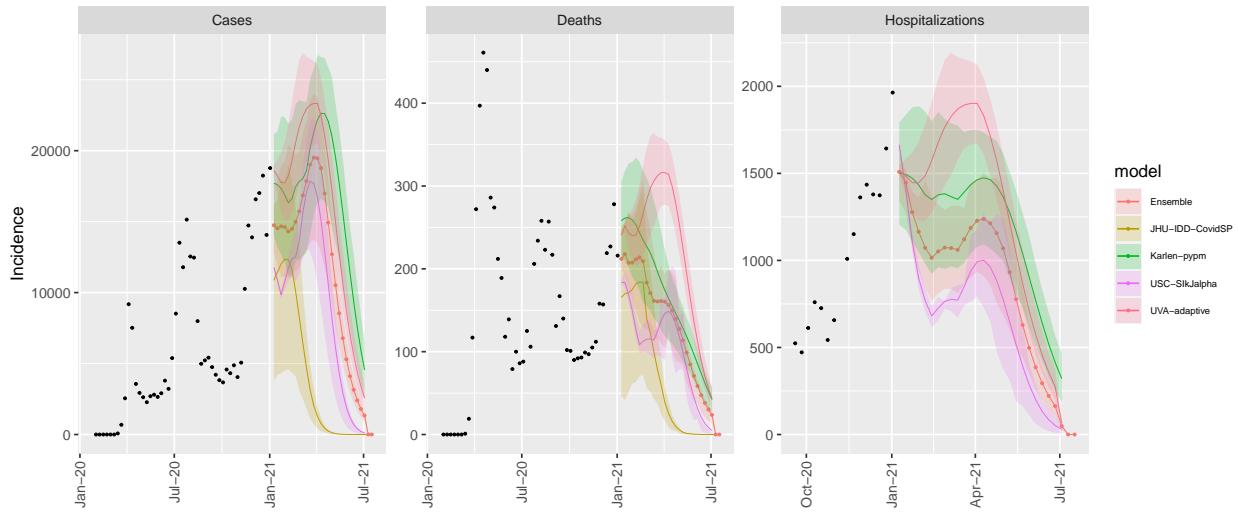
### KS model variance & 50% projection intervals – fatigue



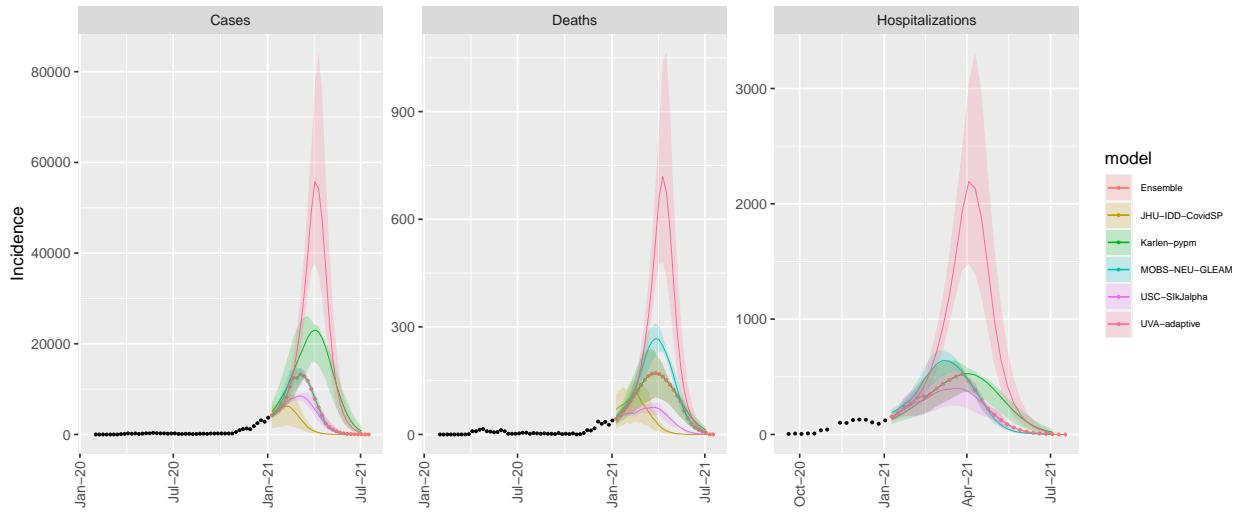
### KY model variance & 50% projection intervals – fatigue



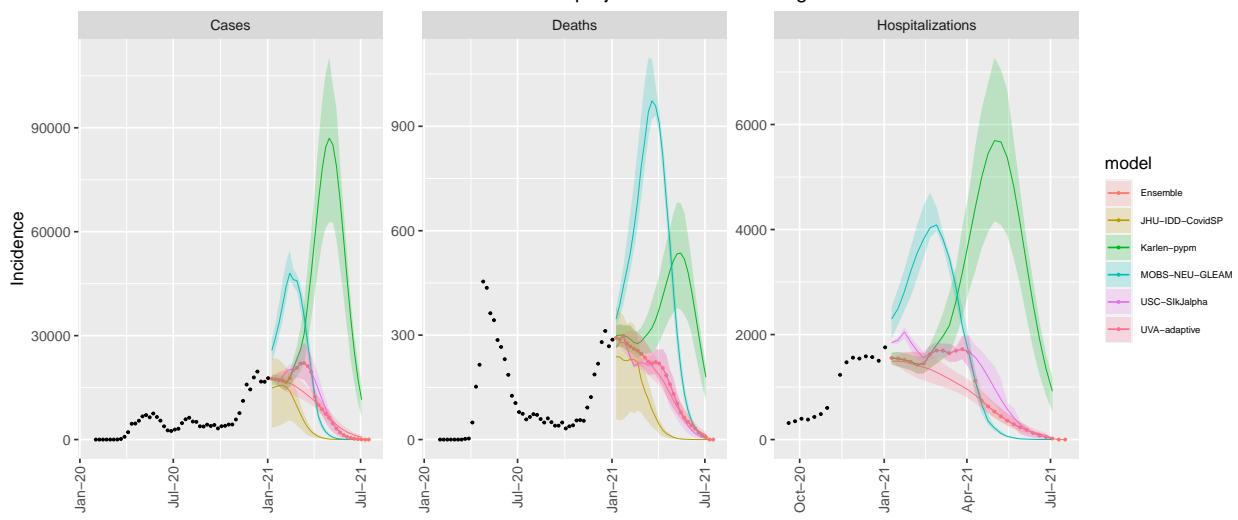
### LA model variance & 50% projection intervals – fatigue



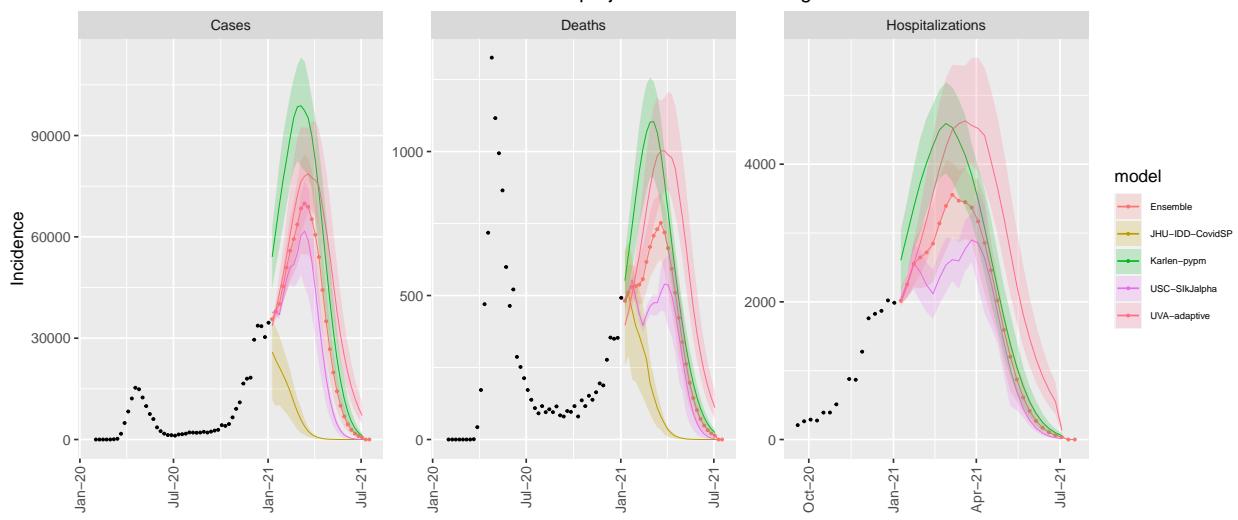
### ME model variance & 50% projection intervals – fatigue



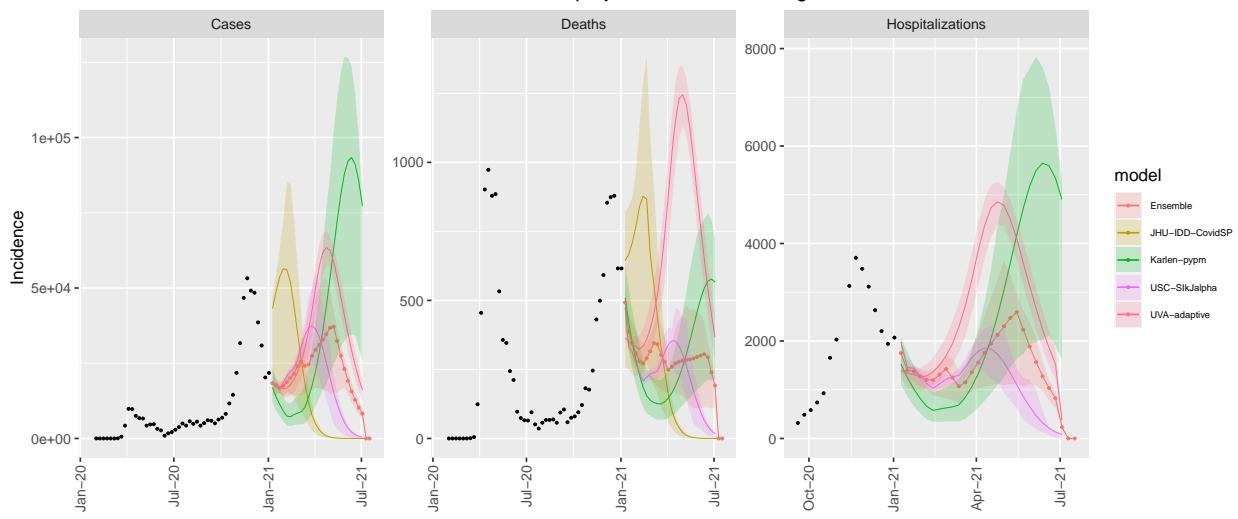
### MD model variance & 50% projection intervals – fatigue



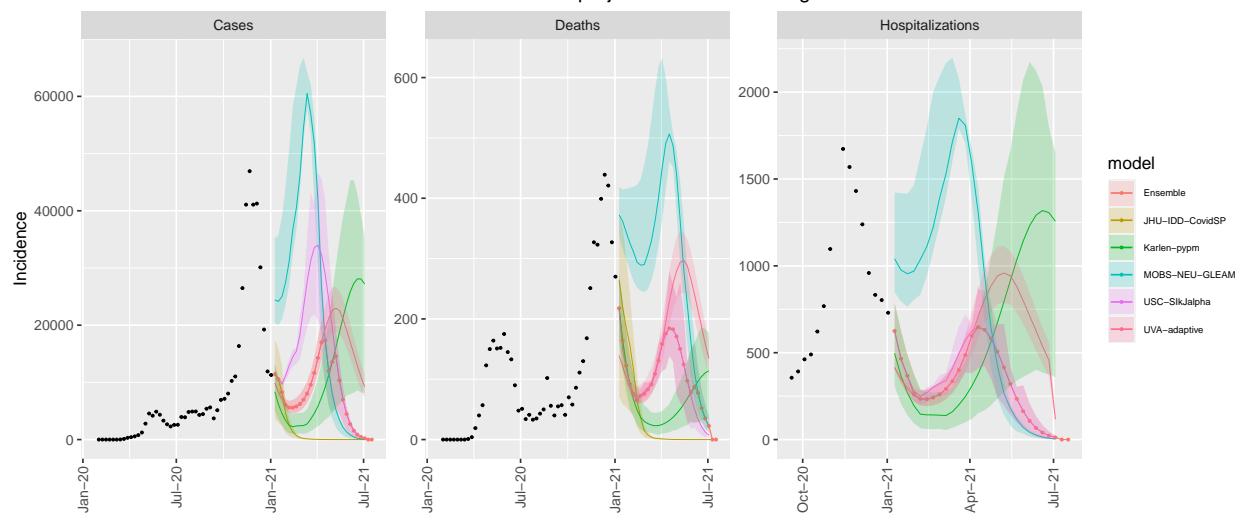
### MA model variance & 50% projection intervals – fatigue



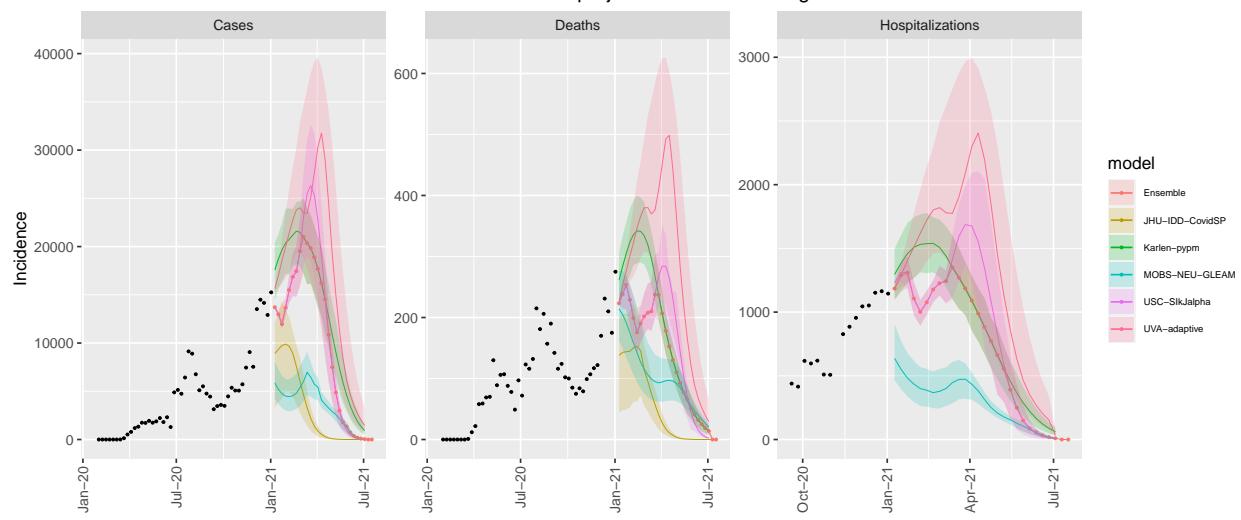
### MI model variance & 50% projection intervals – fatigue



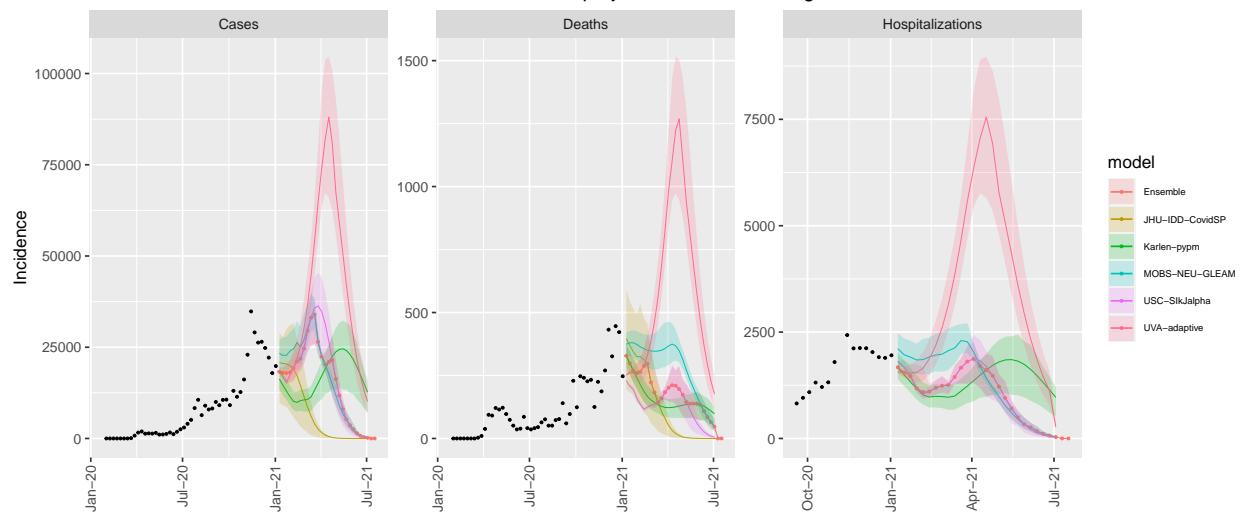
### MN model variance & 50% projection intervals – fatigue



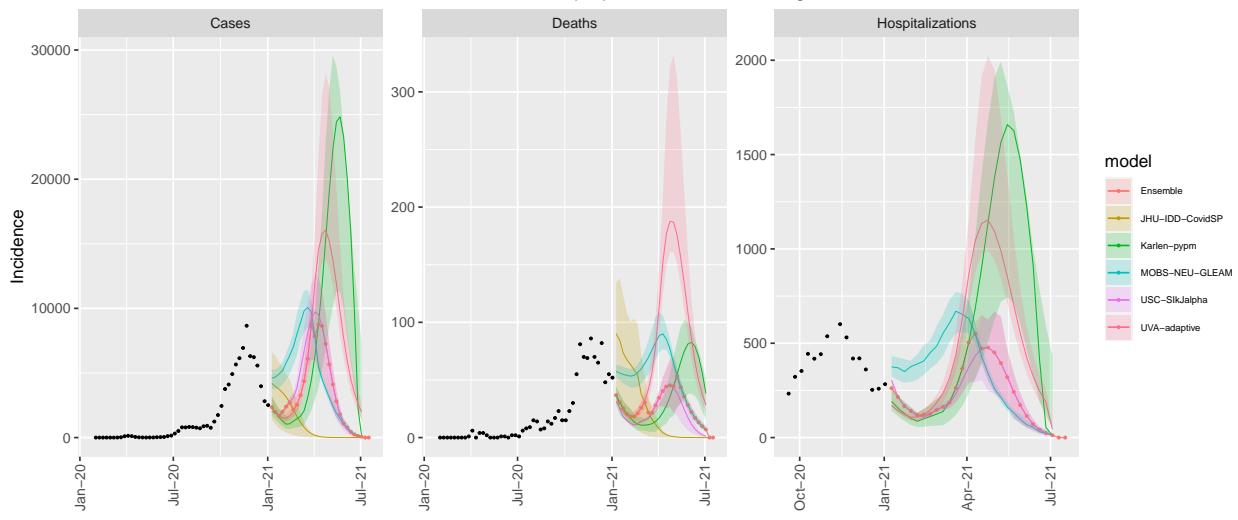
### MS model variance & 50% projection intervals – fatigue



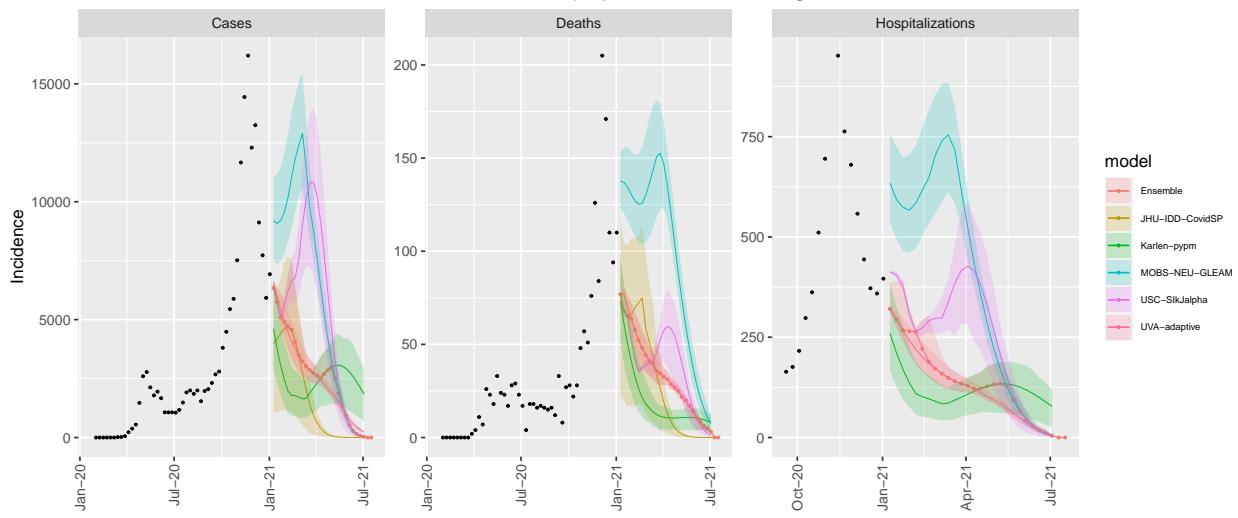
### MO model variance & 50% projection intervals – fatigue



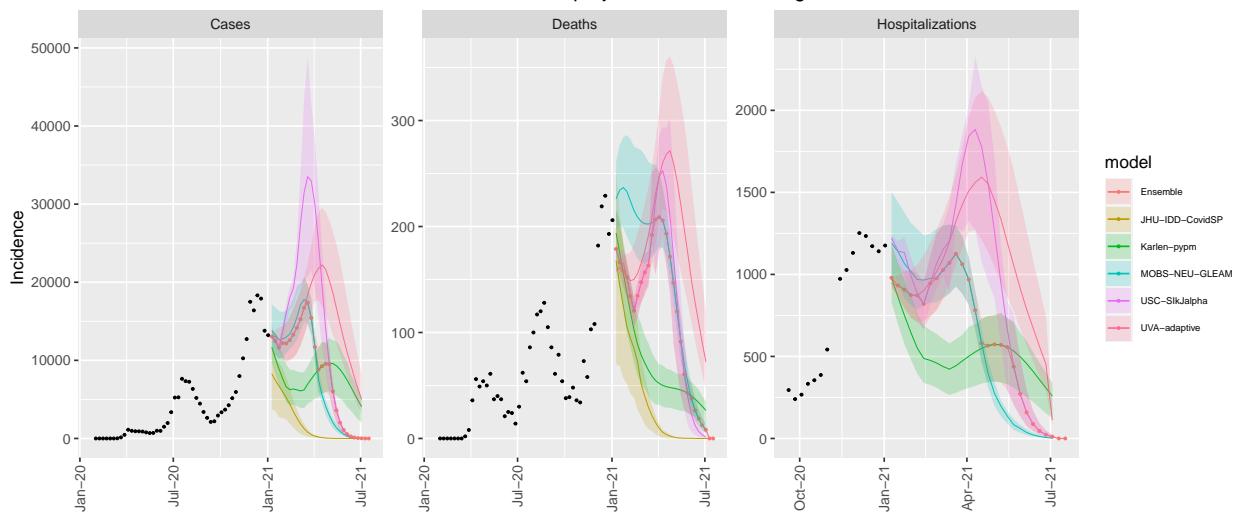
### MT model variance & 50% projection intervals – fatigue



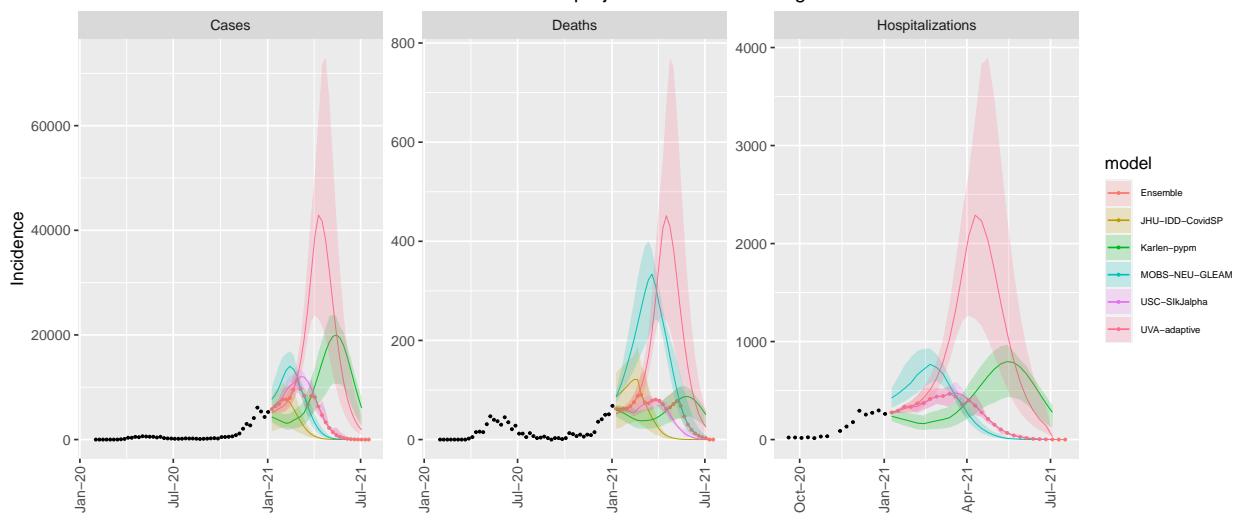
### NE model variance & 50% projection intervals – fatigue



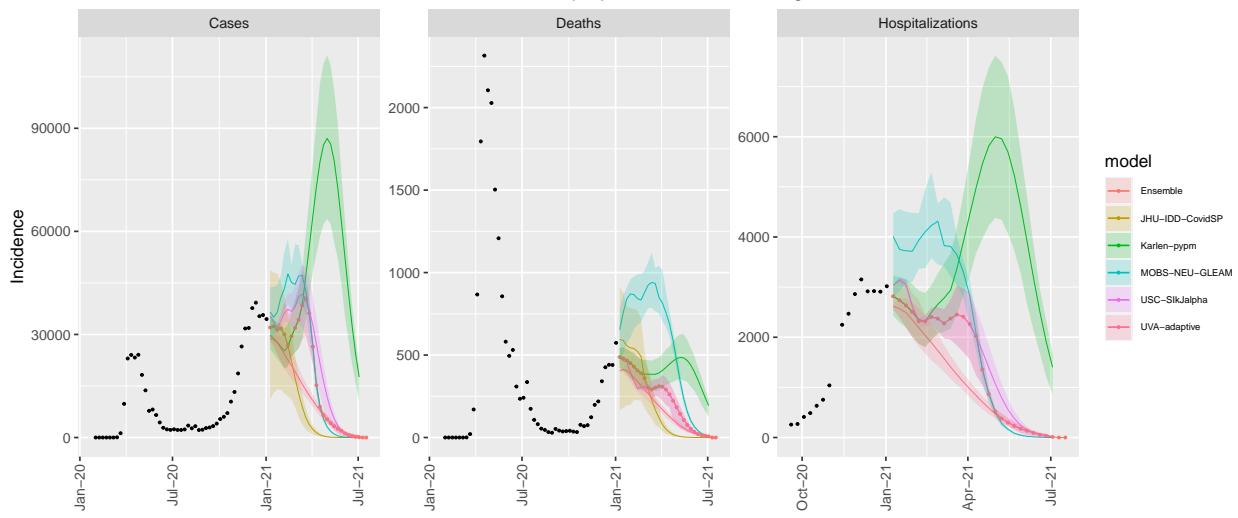
### NV model variance & 50% projection intervals – fatigue



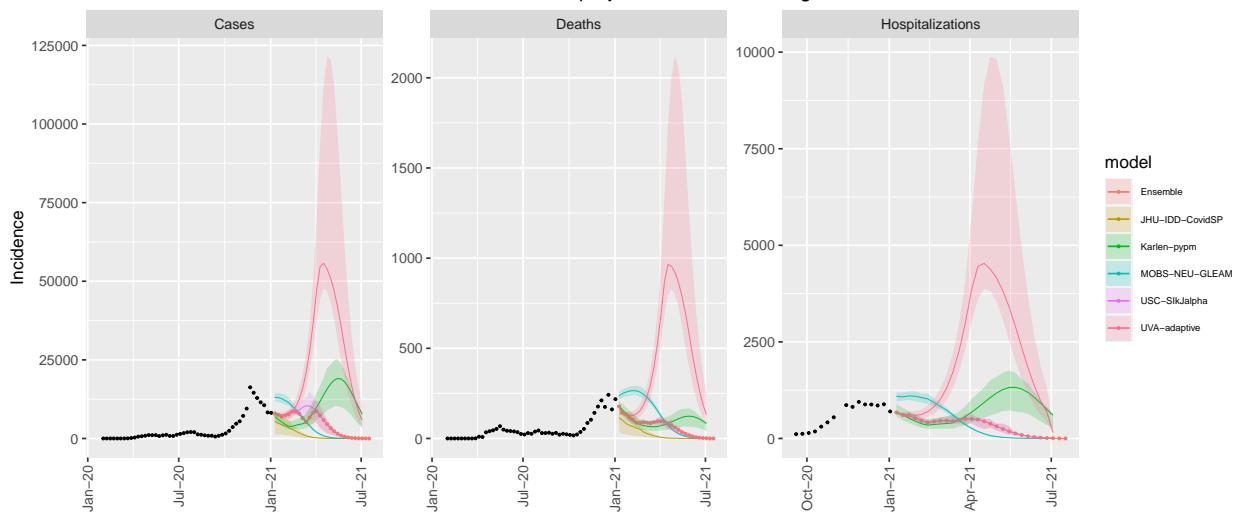
### NH model variance & 50% projection intervals – fatigue



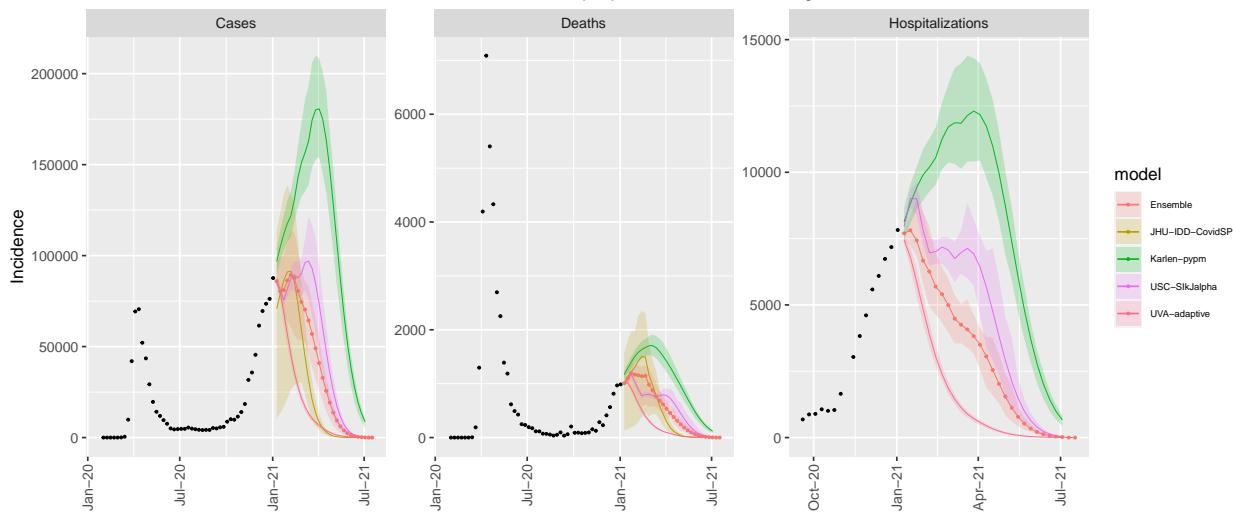
### NJ model variance & 50% projection intervals – fatigue



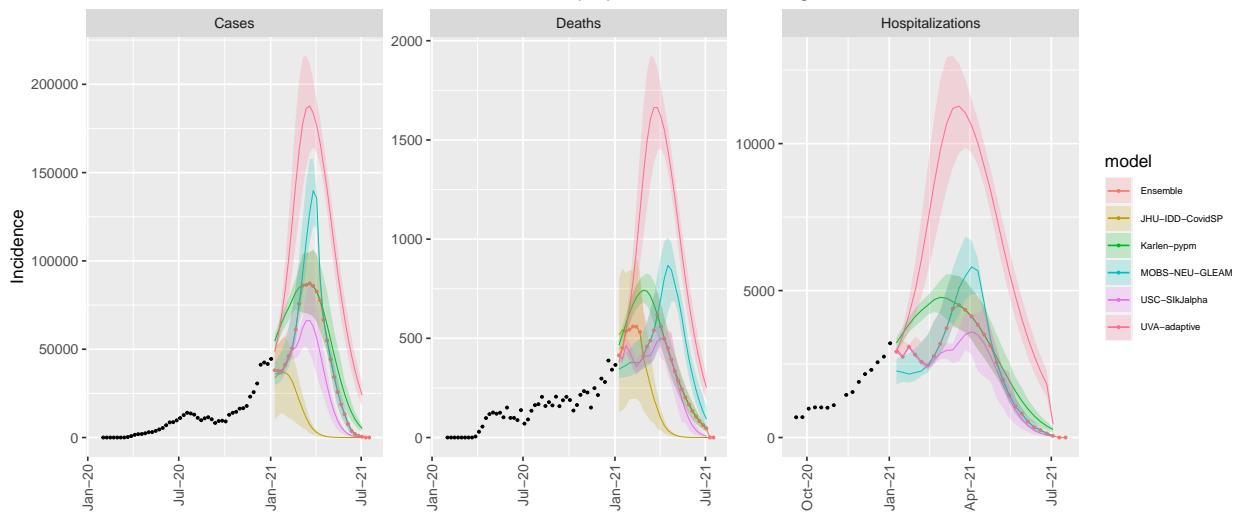
### NM model variance & 50% projection intervals – fatigue



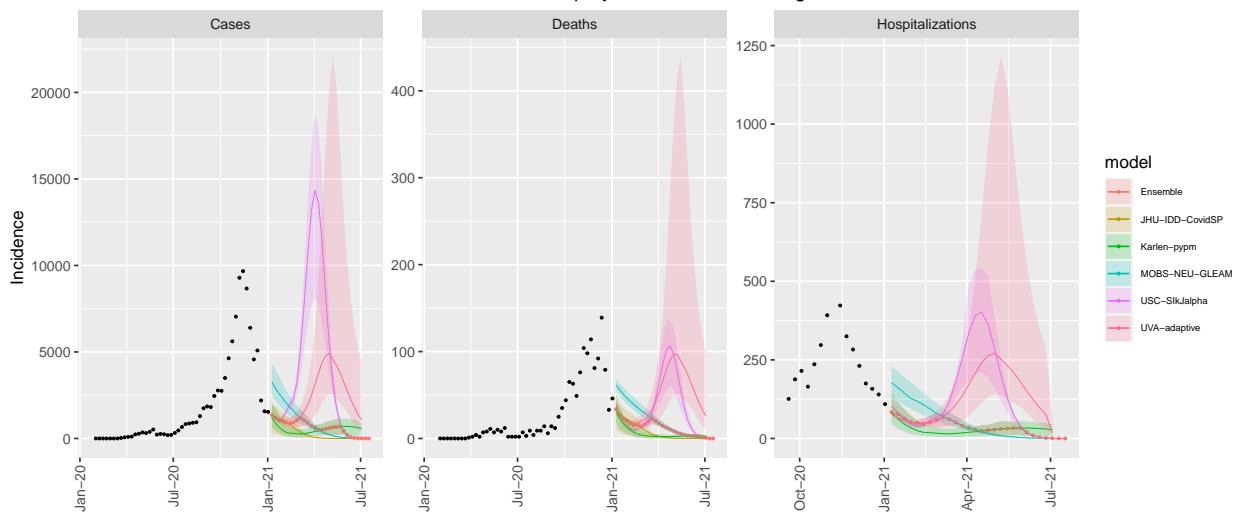
### NY model variance & 50% projection intervals – fatigue



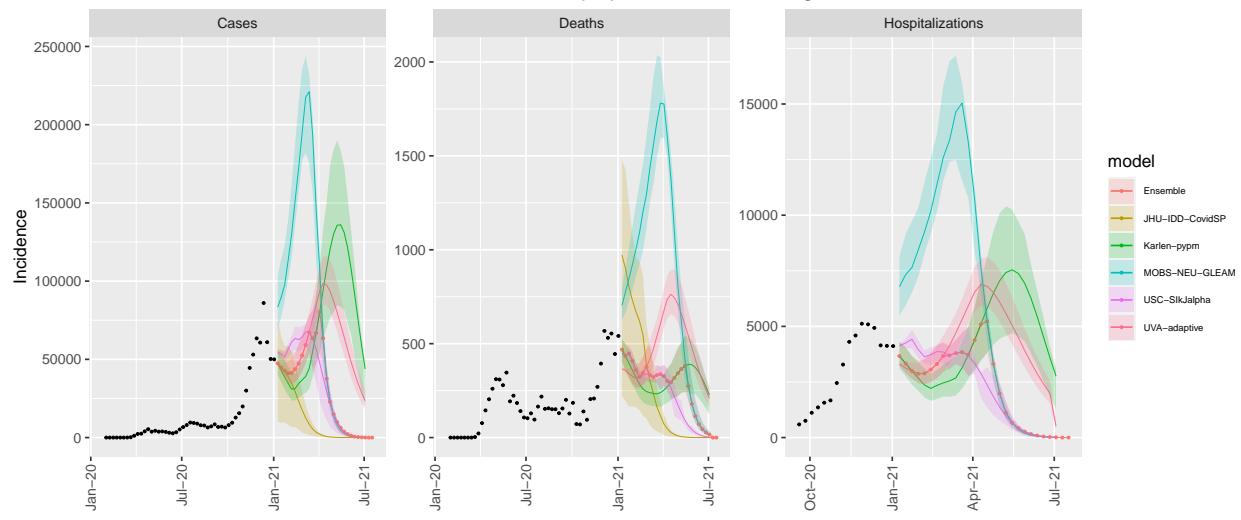
### NC model variance & 50% projection intervals – fatigue



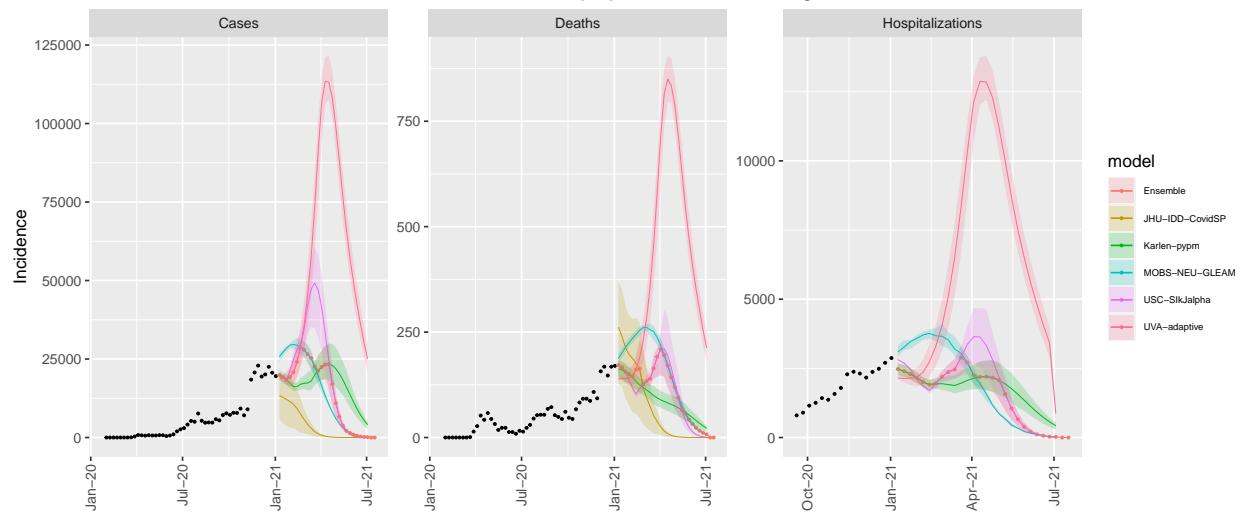
### ND model variance & 50% projection intervals – fatigue



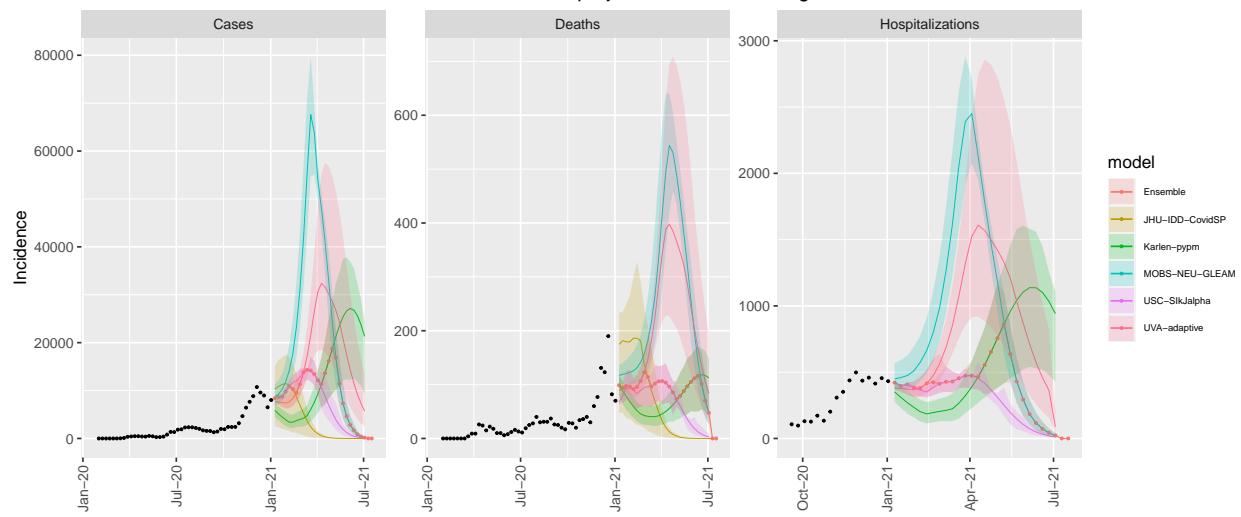
OH model variance & 50% projection intervals – fatigue



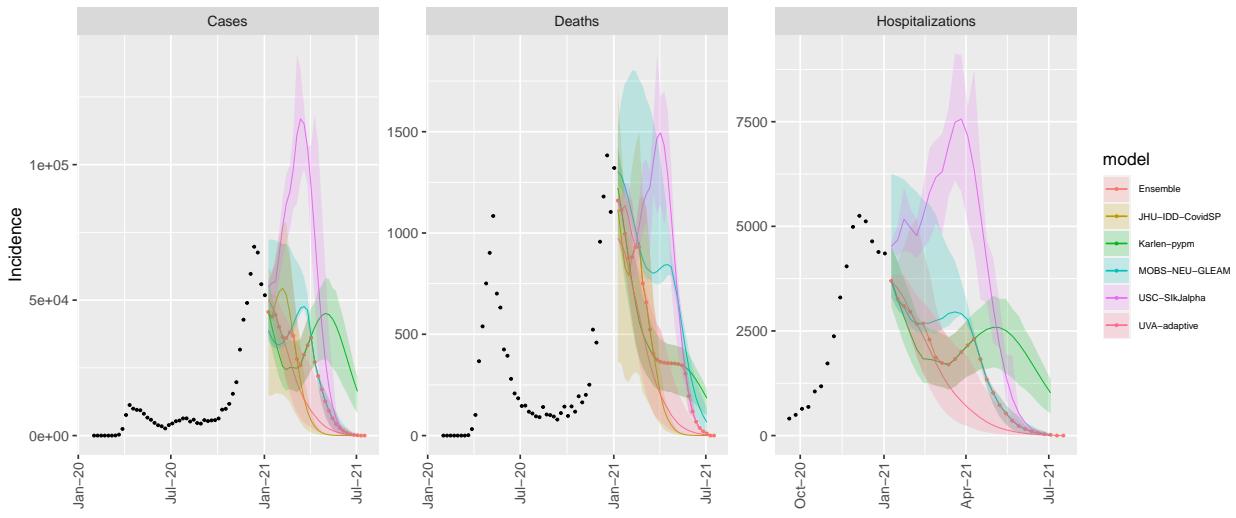
OK model variance & 50% projection intervals – fatigue



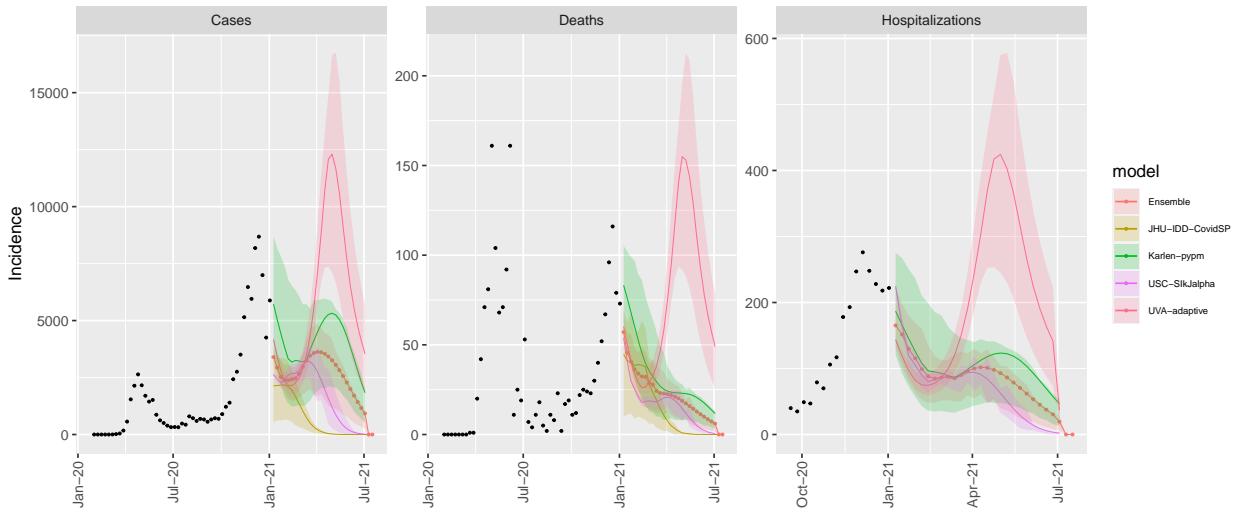
OR model variance & 50% projection intervals – fatigue



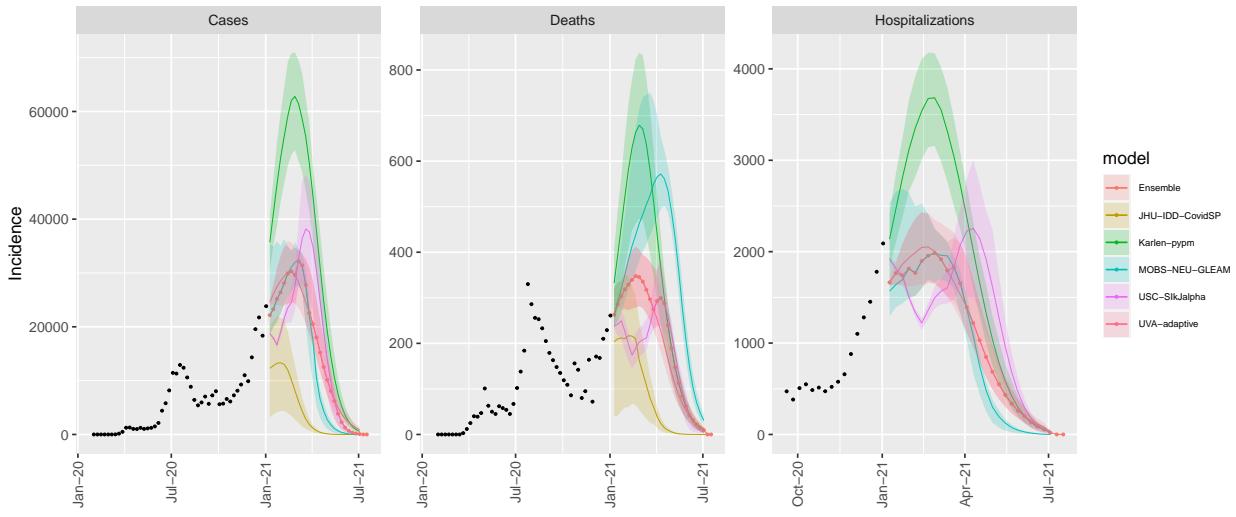
### PA model variance & 50% projection intervals – fatigue



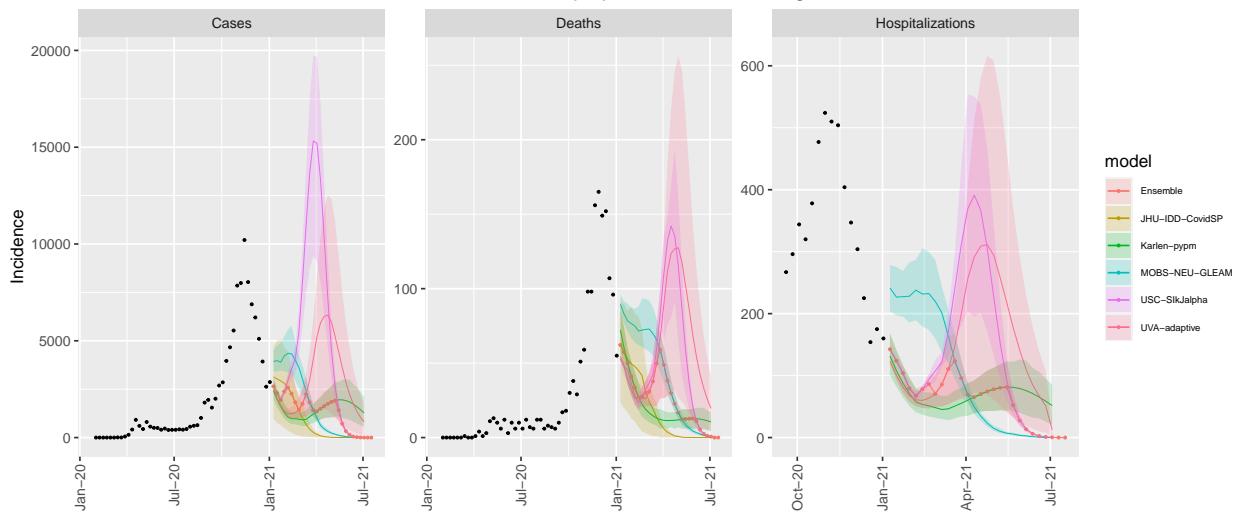
### RI model variance & 50% projection intervals – fatigue



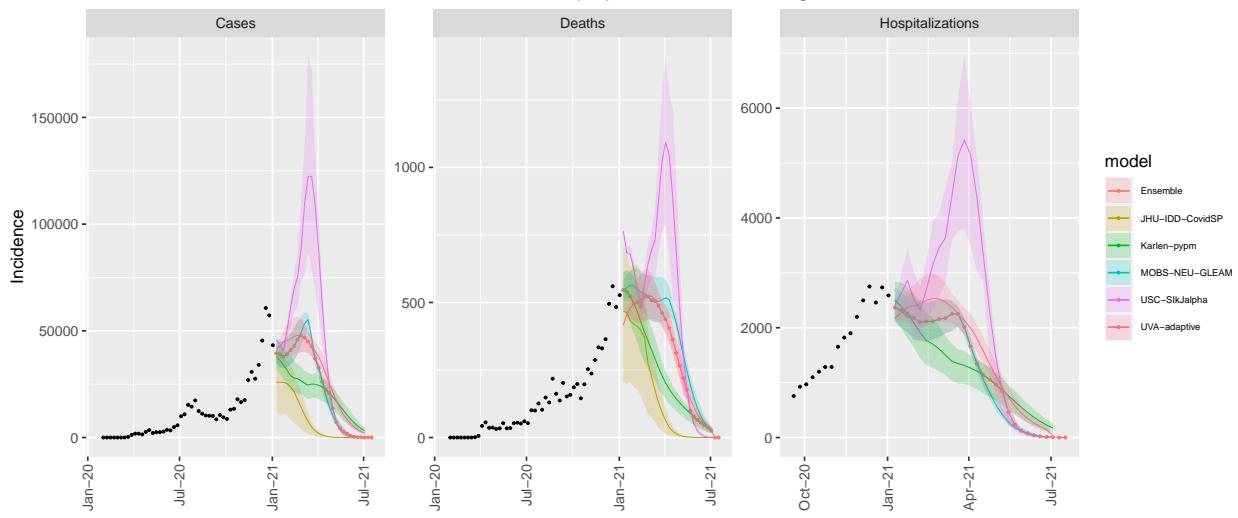
### SC model variance & 50% projection intervals – fatigue



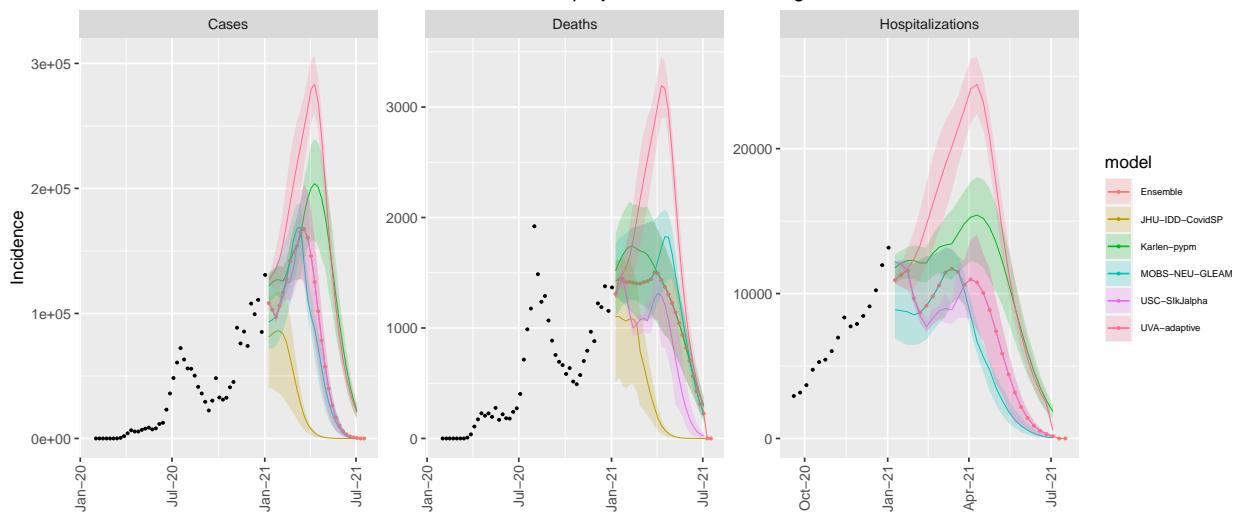
### SD model variance & 50% projection intervals – fatigue



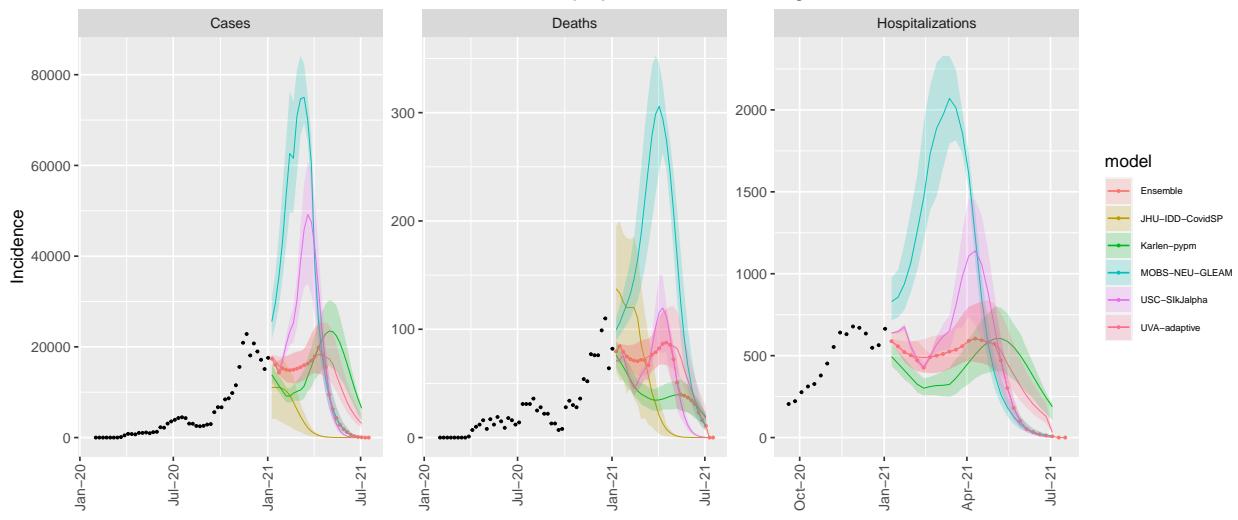
### TN model variance & 50% projection intervals – fatigue



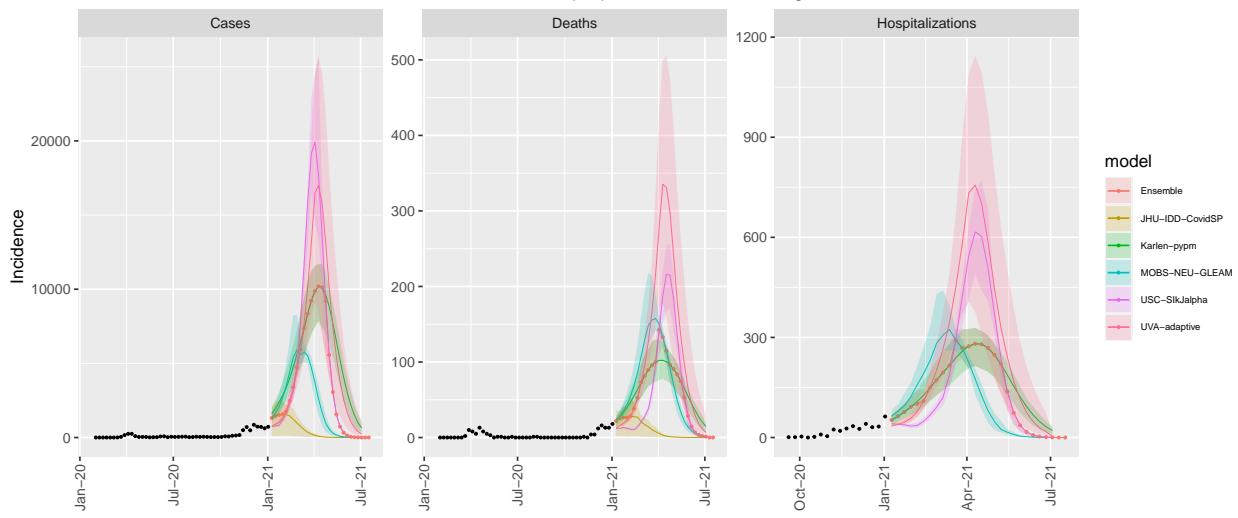
### TX model variance & 50% projection intervals – fatigue



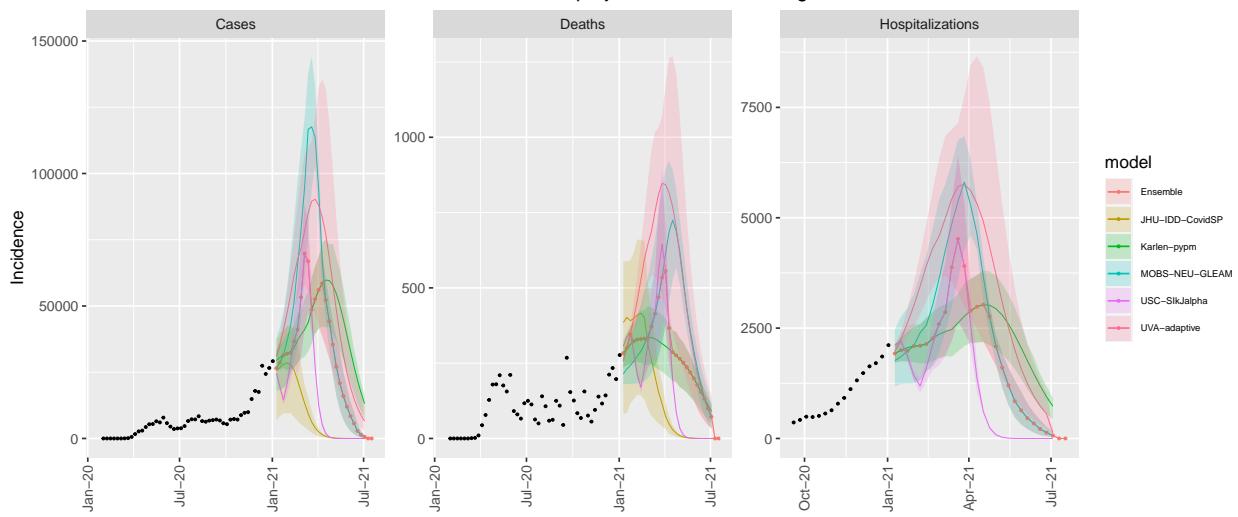
### UT model variance & 50% projection intervals – fatigue



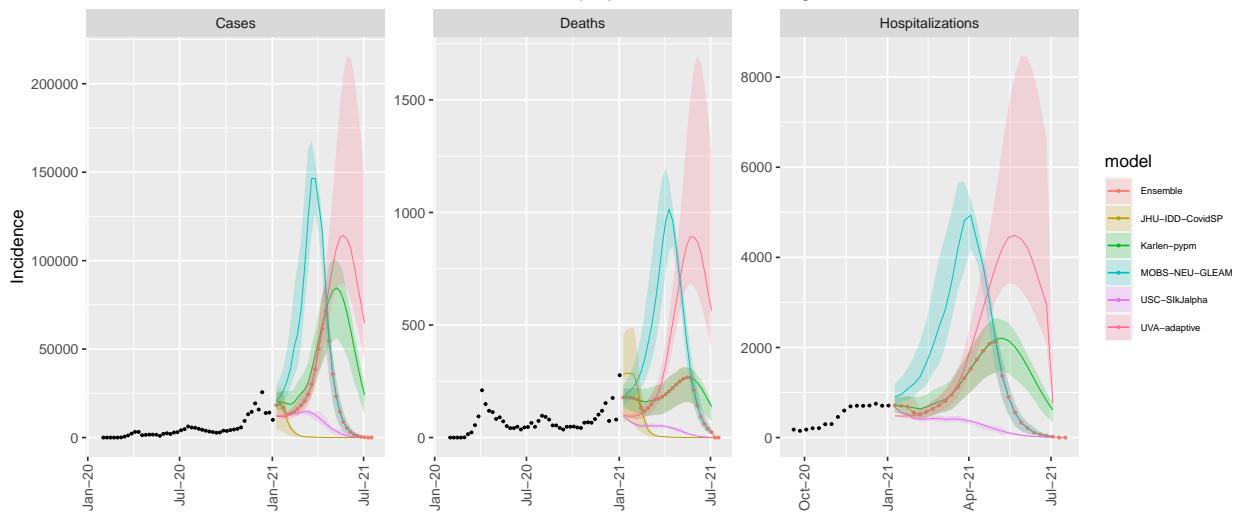
### VT model variance & 50% projection intervals – fatigue



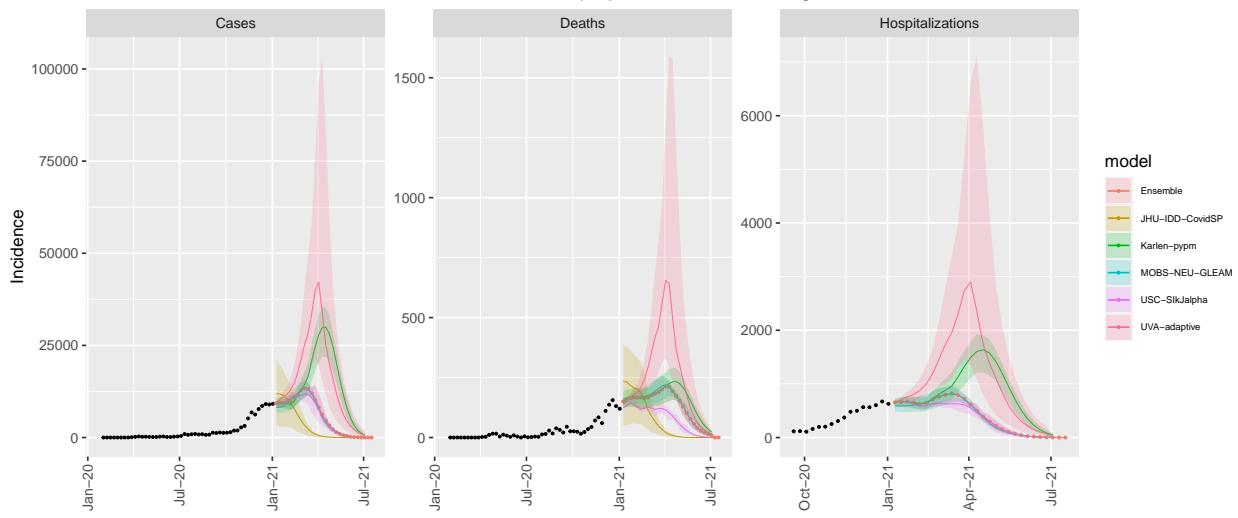
### VA model variance & 50% projection intervals – fatigue



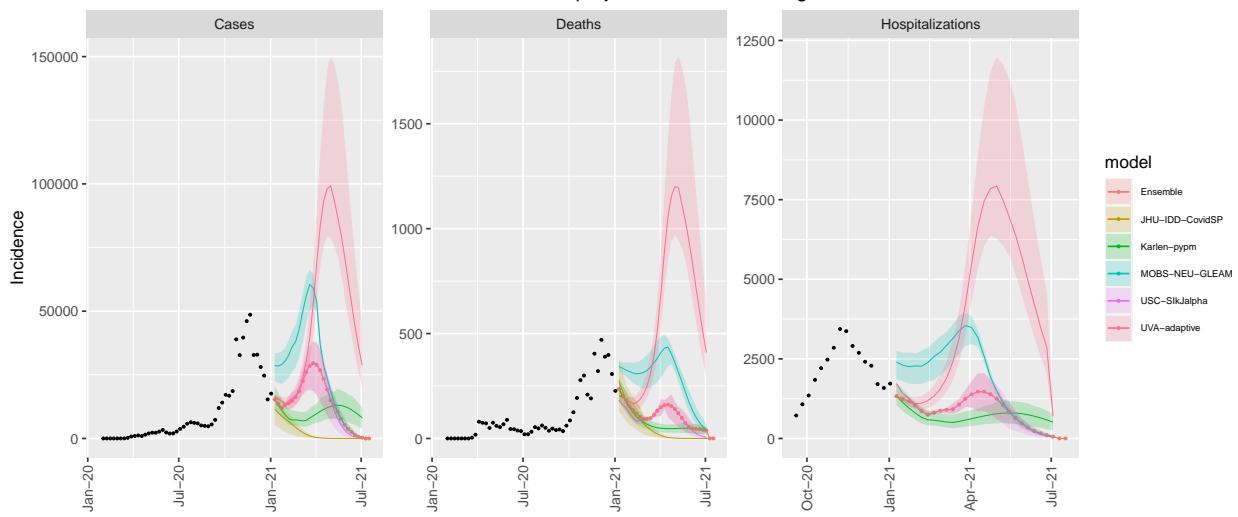
WA model variance & 50% projection intervals – fatigue



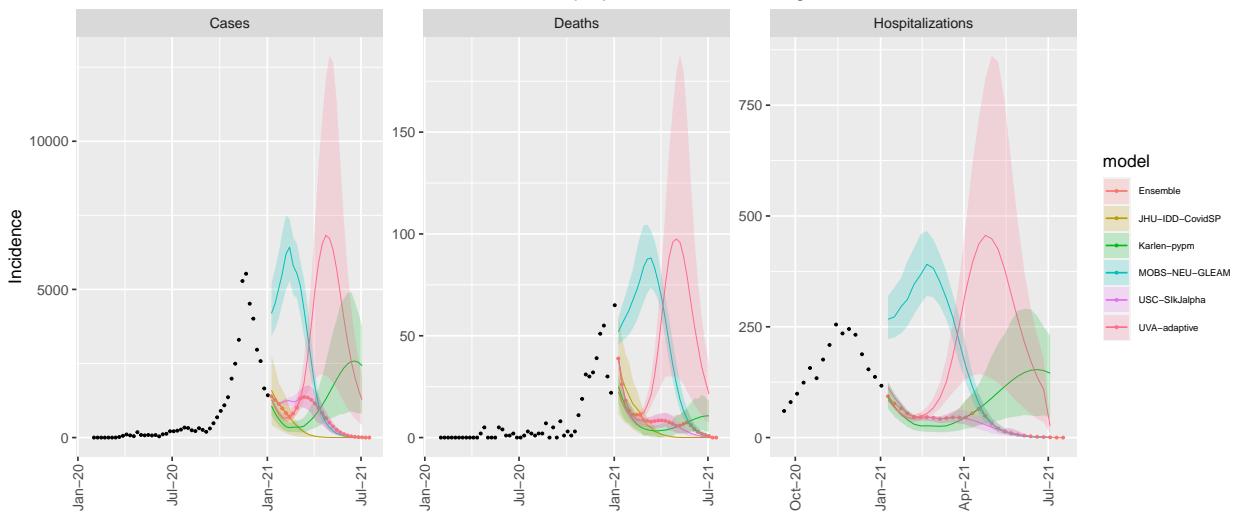
WV model variance & 50% projection intervals – fatigue



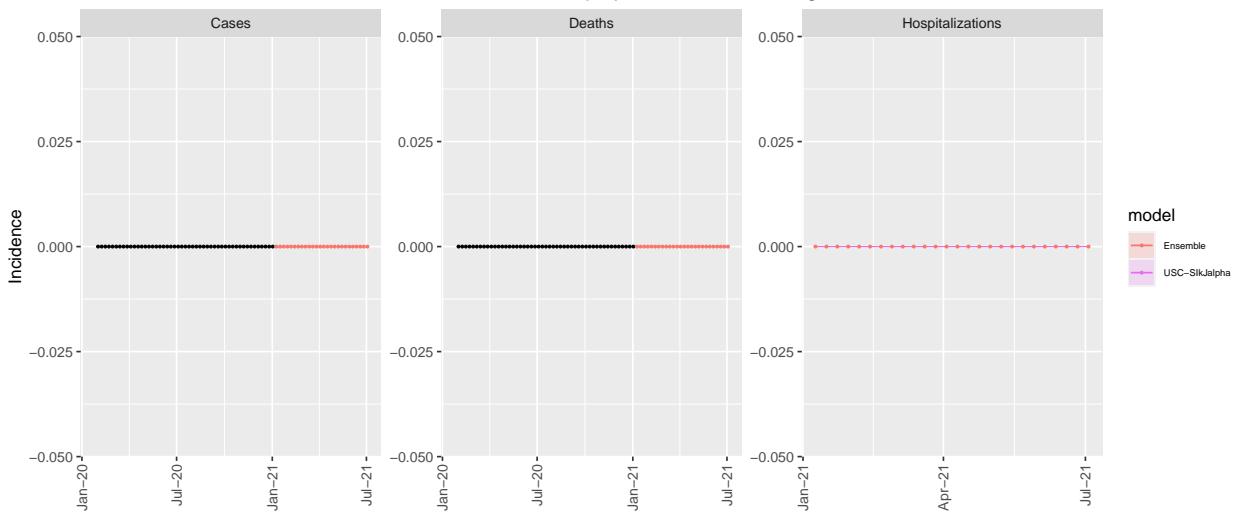
WI model variance & 50% projection intervals – fatigue



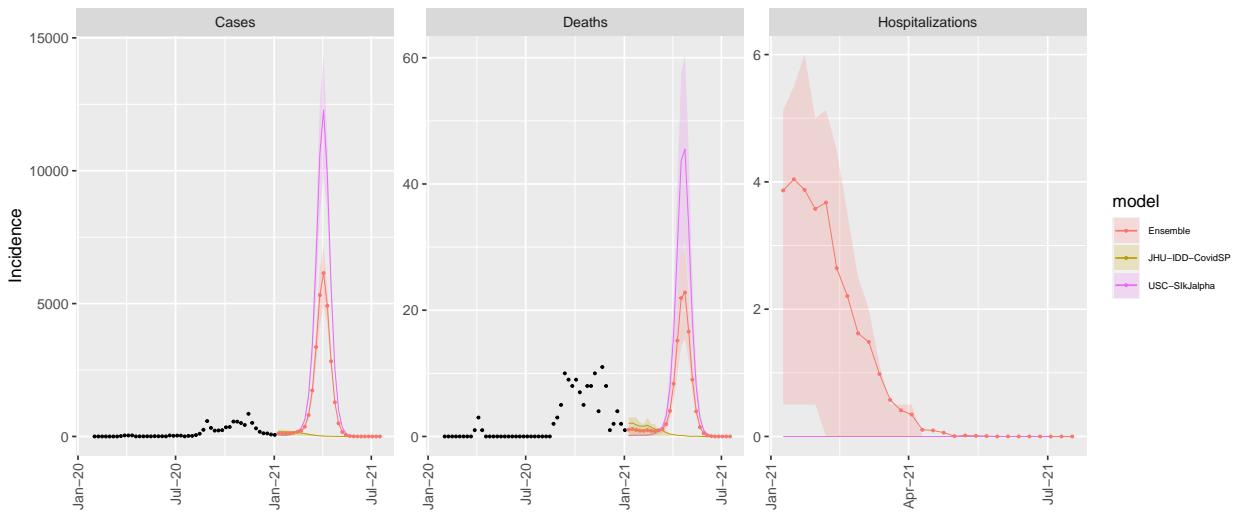
WY model variance & 50% projection intervals – fatigue



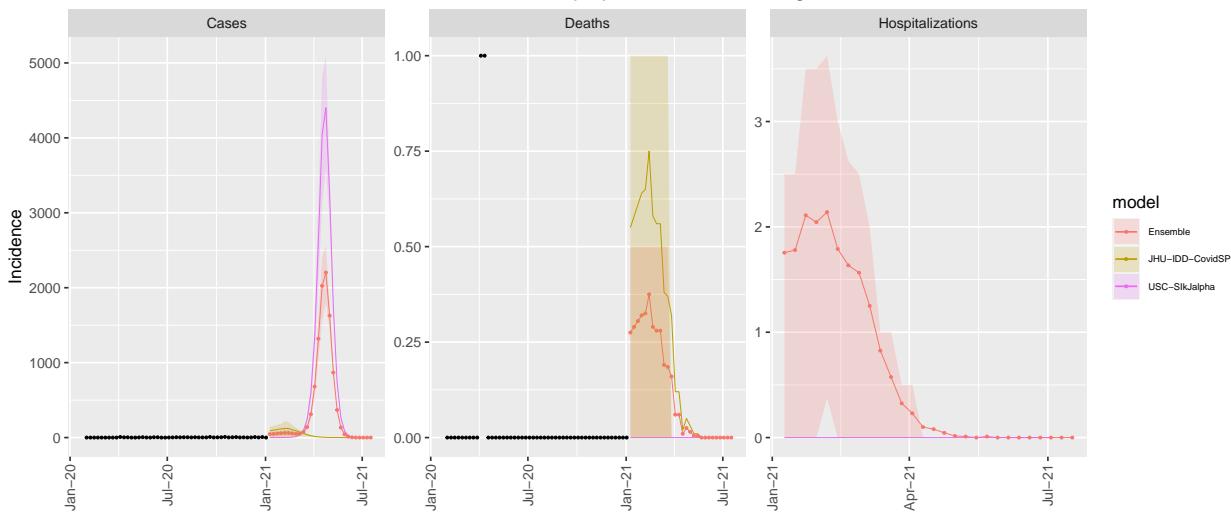
AS model variance & 50% projection intervals – fatigue



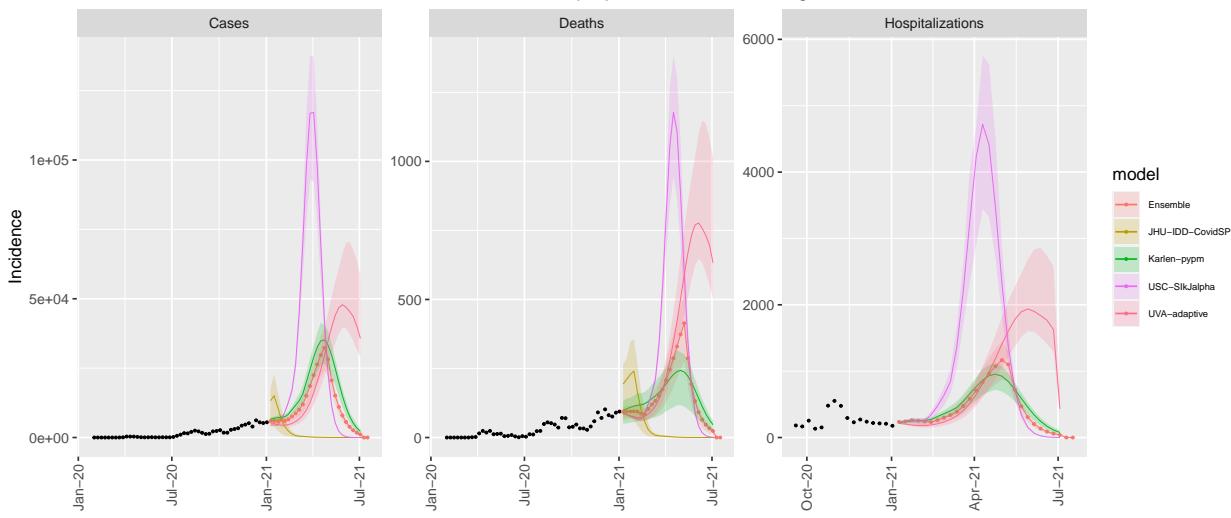
GU model variance & 50% projection intervals – fatigue



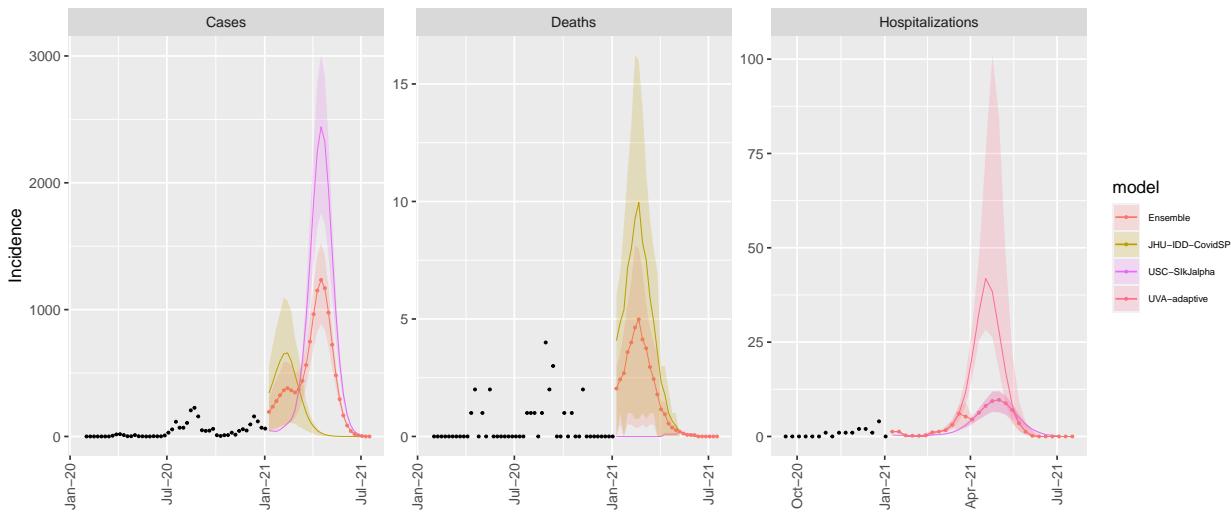
### MP model variance & 50% projection intervals – fatigue



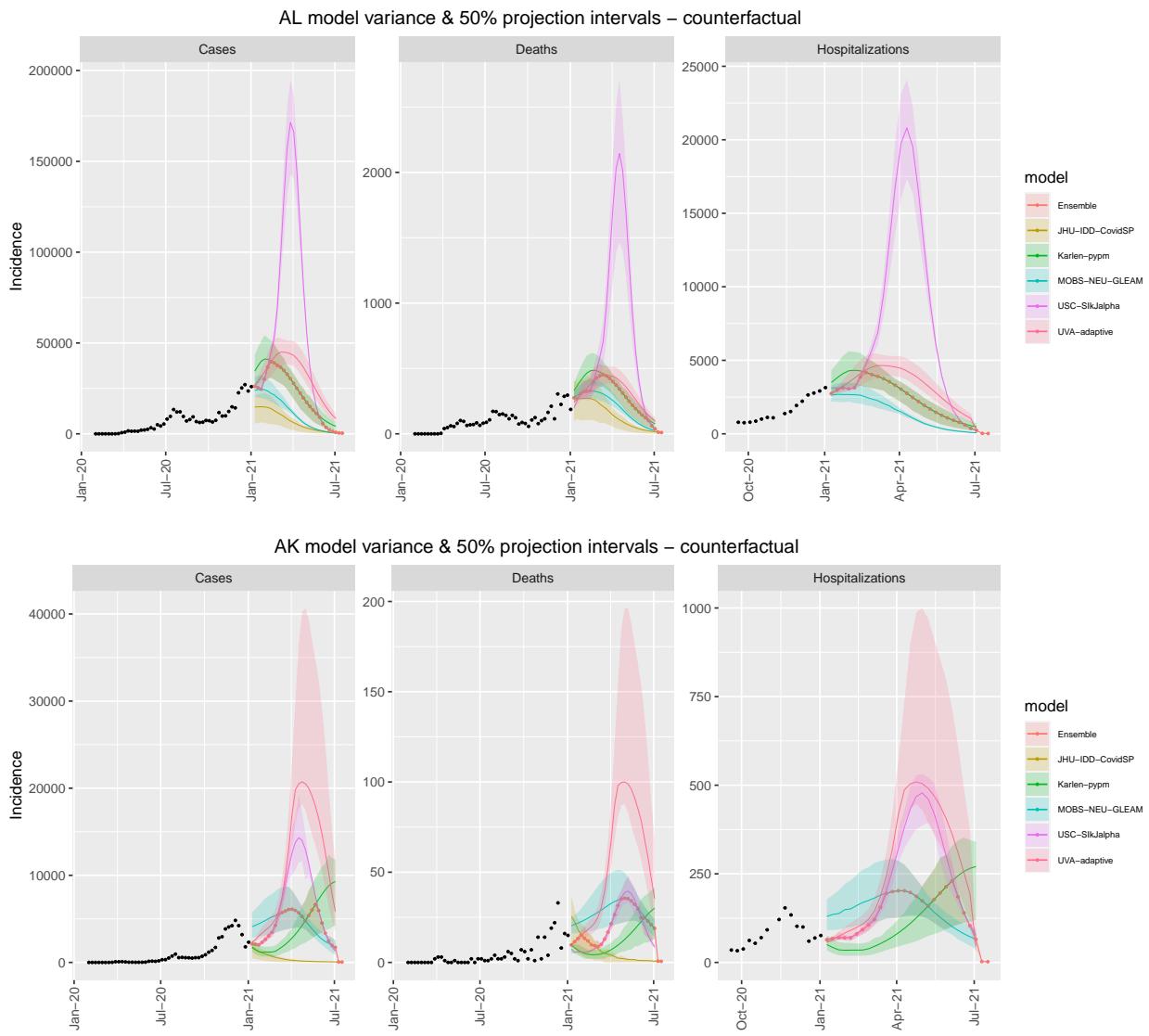
### PR model variance & 50% projection intervals – fatigue



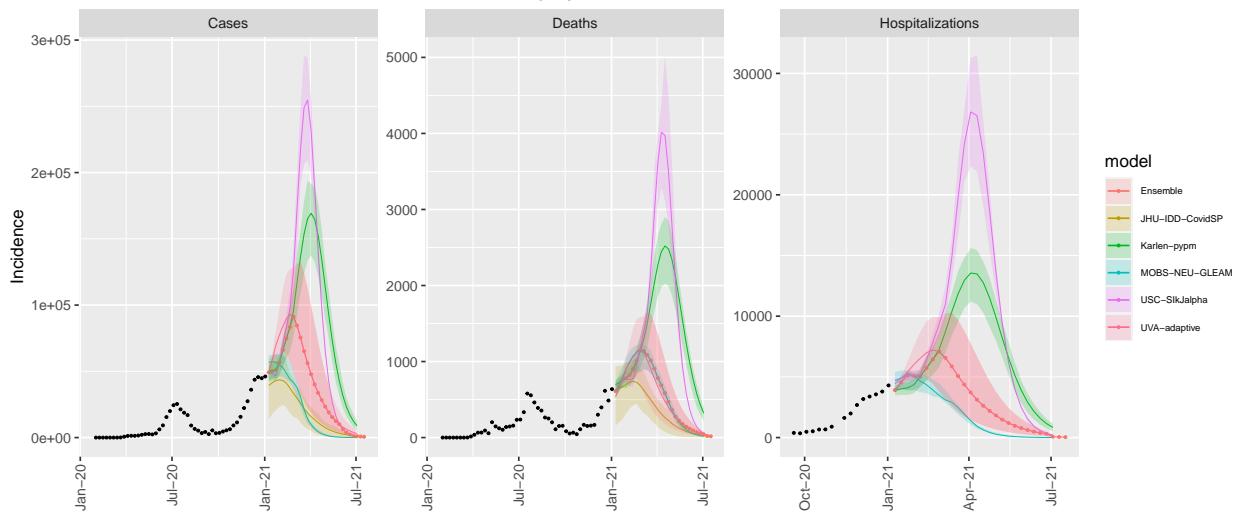
### VI model variance & 50% projection intervals – fatigue



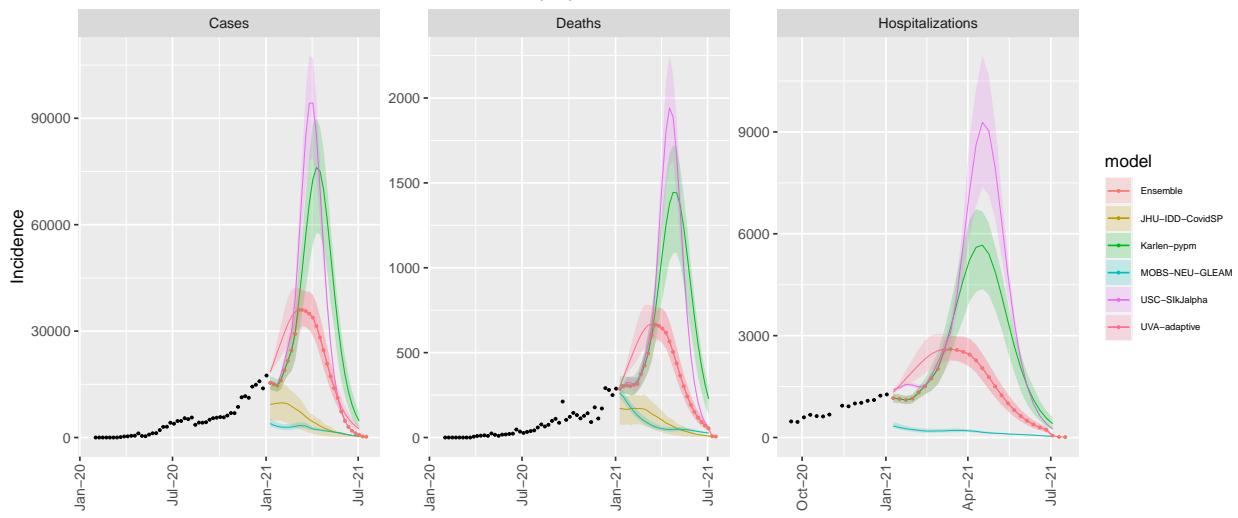
## National model variation for the counterfactual scenario



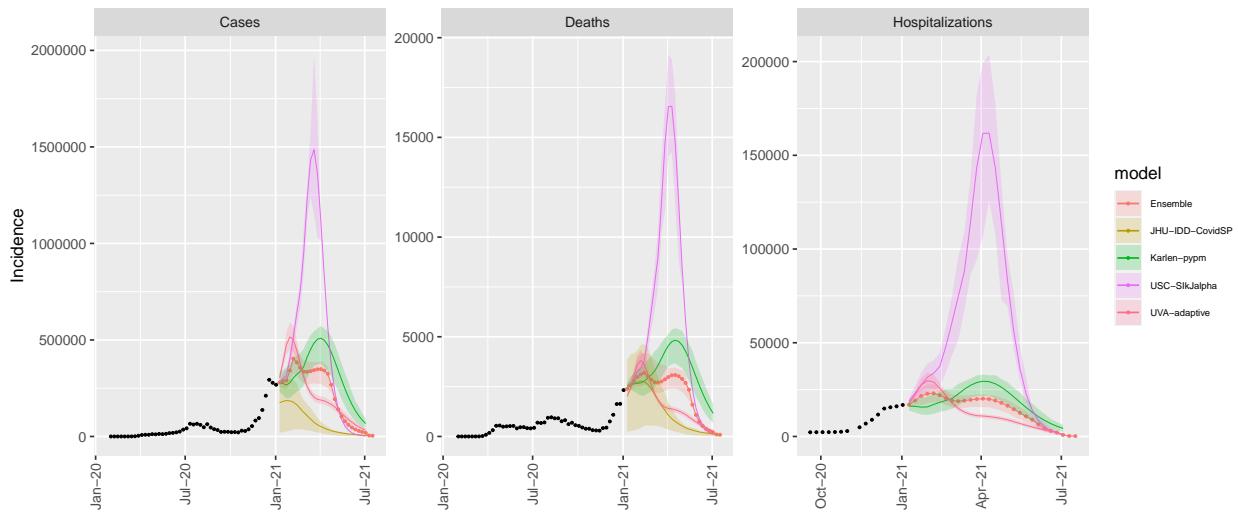
AZ model variance & 50% projection intervals – counterfactual



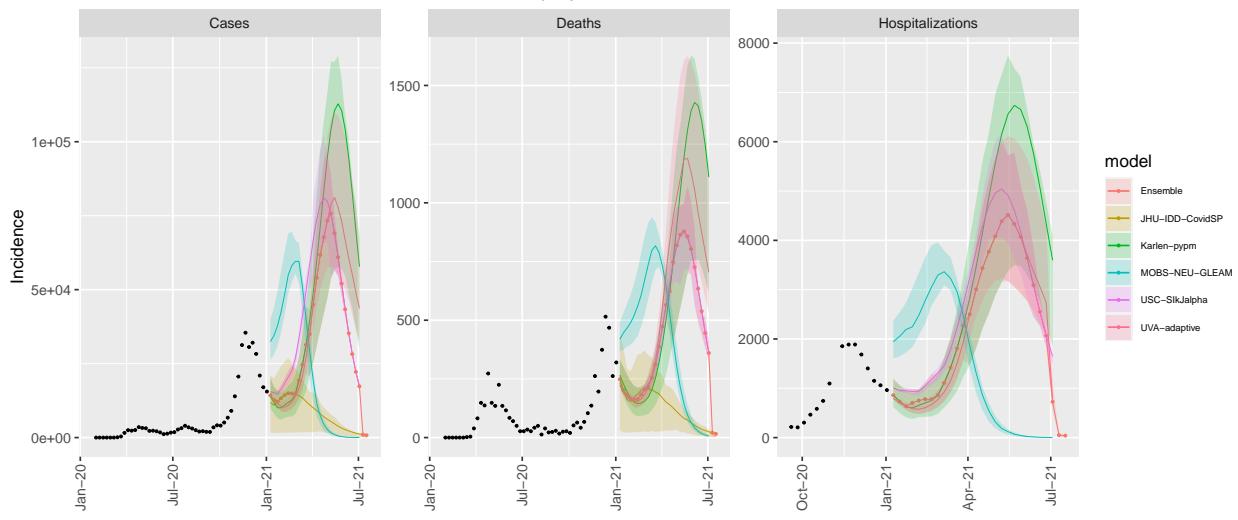
AR model variance & 50% projection intervals – counterfactual



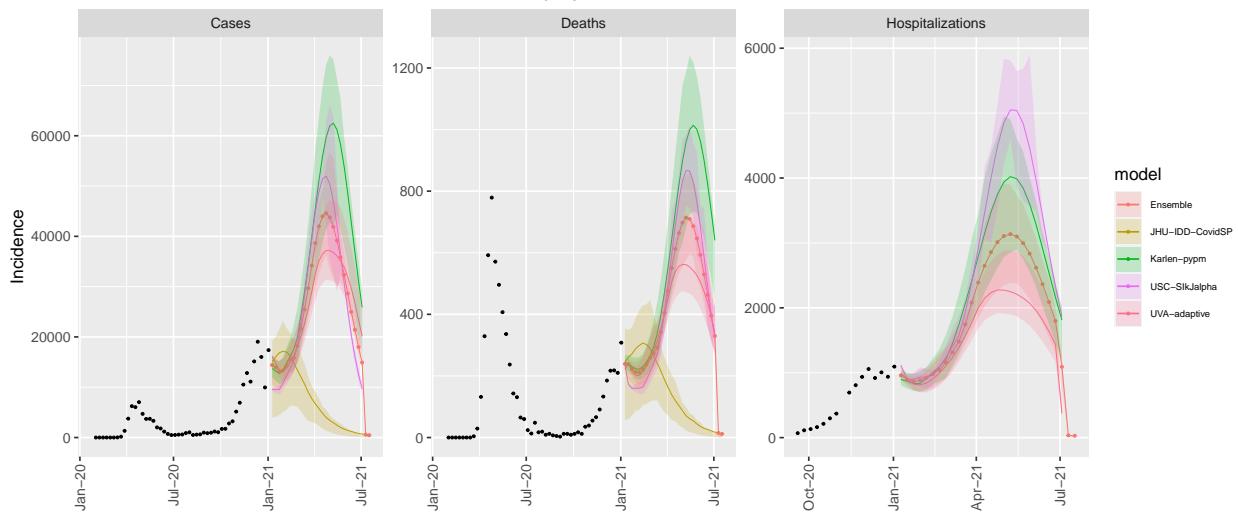
CA model variance & 50% projection intervals – counterfactual



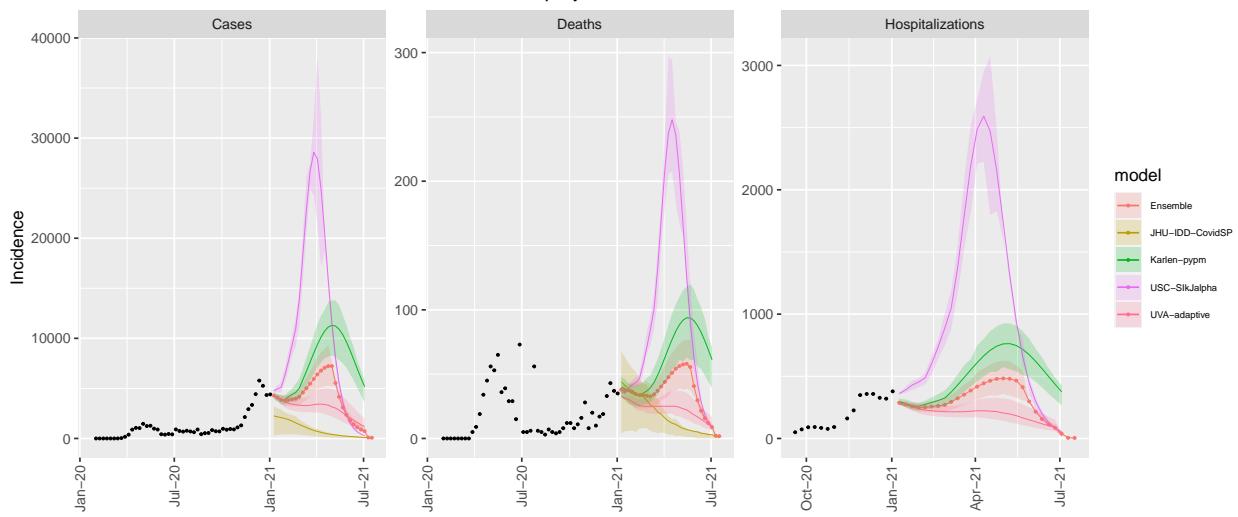
### CO model variance & 50% projection intervals – counterfactual



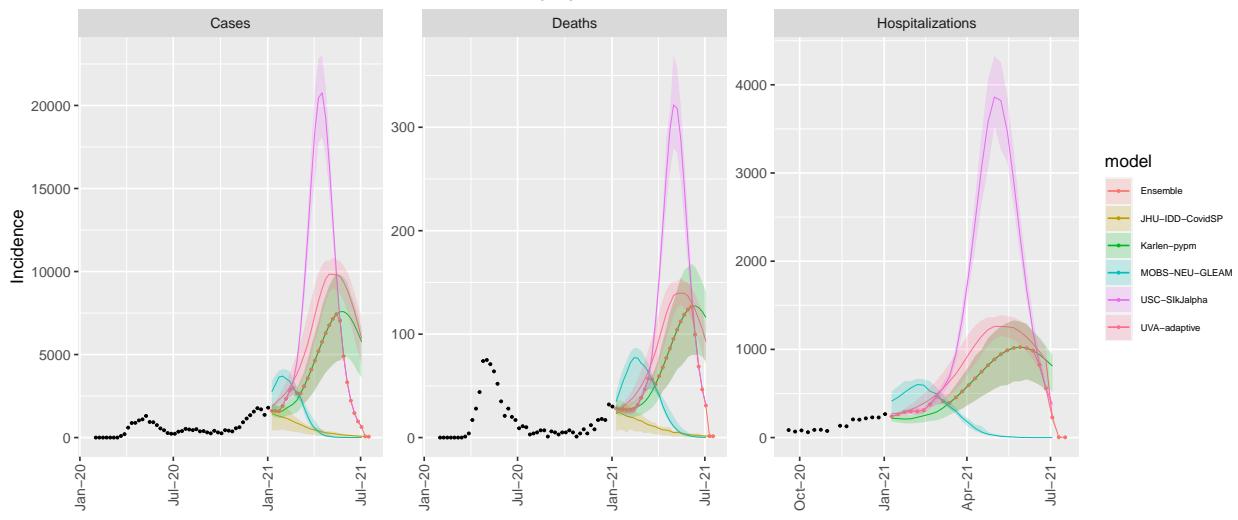
### CT model variance & 50% projection intervals – counterfactual



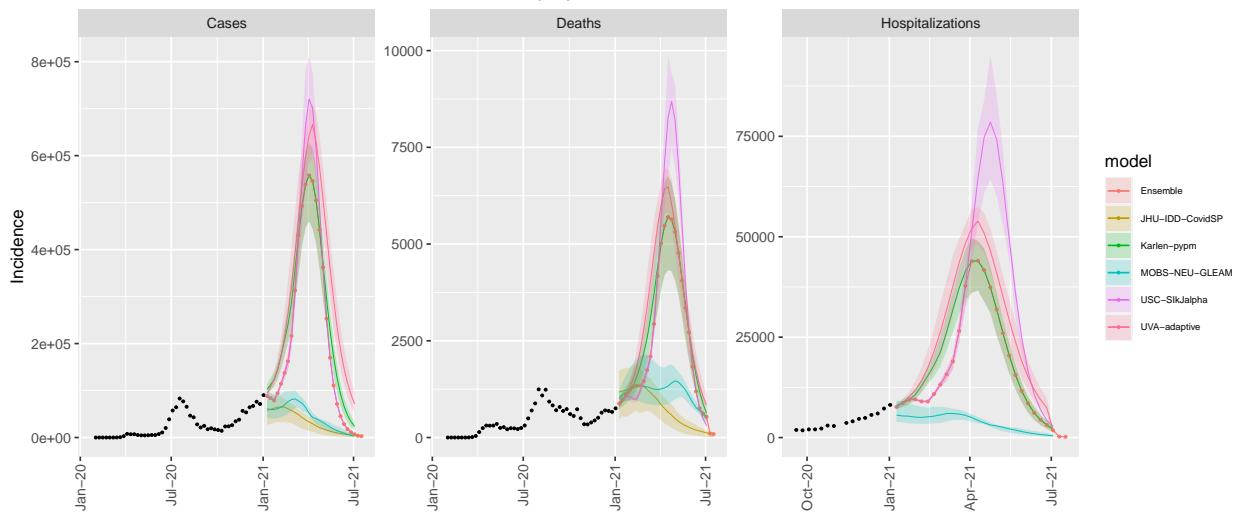
### DE model variance & 50% projection intervals – counterfactual



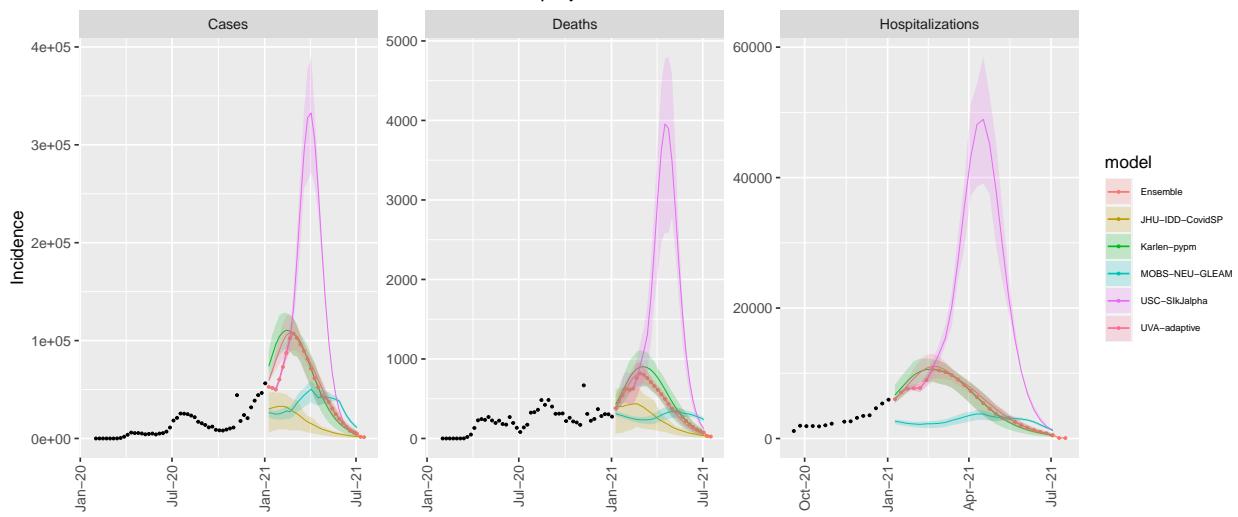
DC model variance & 50% projection intervals – counterfactual



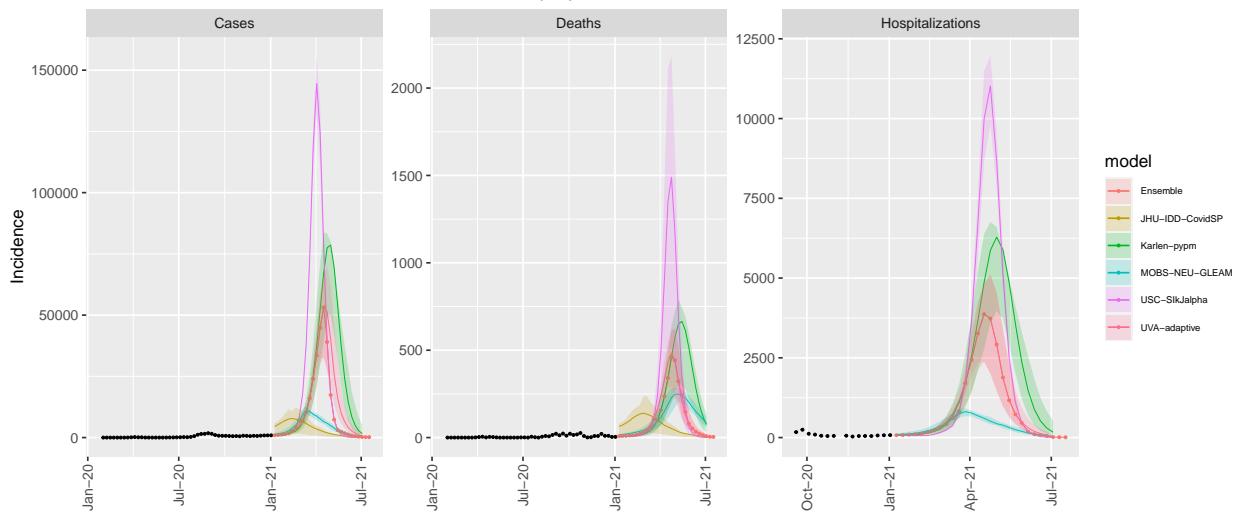
FL model variance & 50% projection intervals – counterfactual



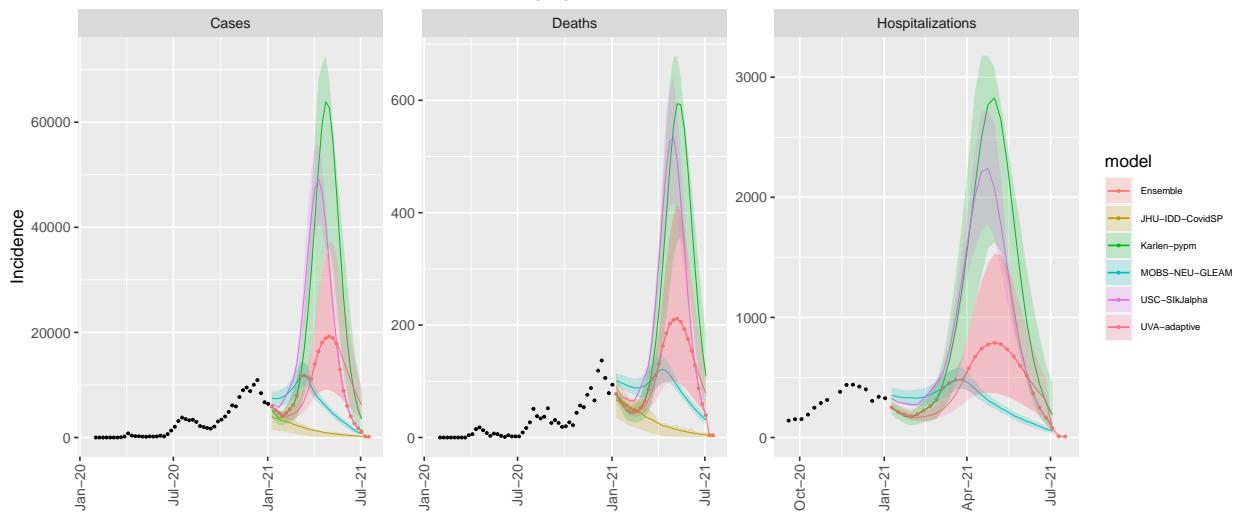
GA model variance & 50% projection intervals – counterfactual



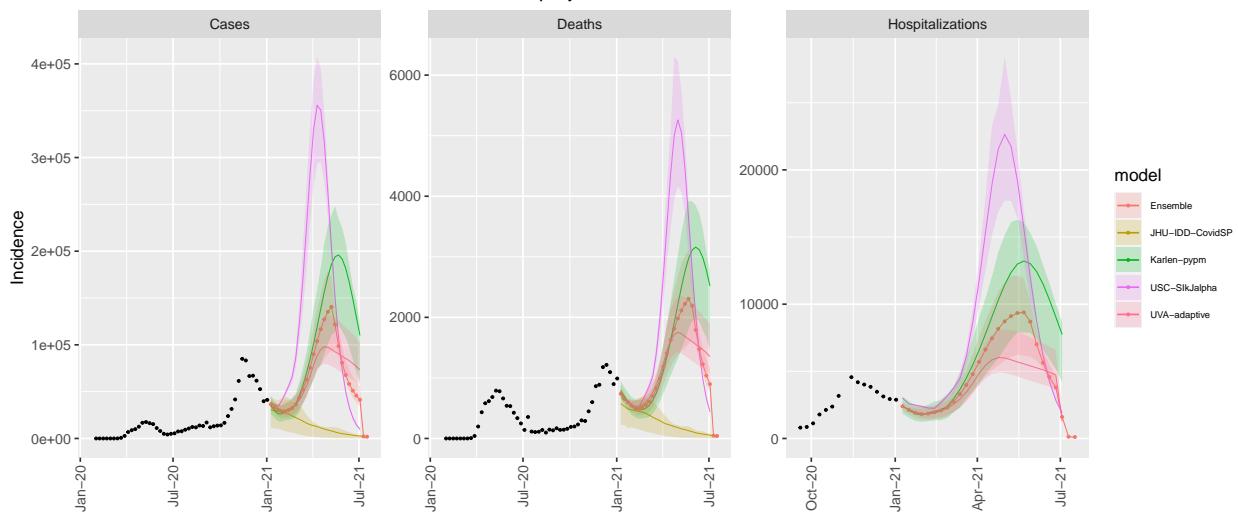
HI model variance & 50% projection intervals – counterfactual



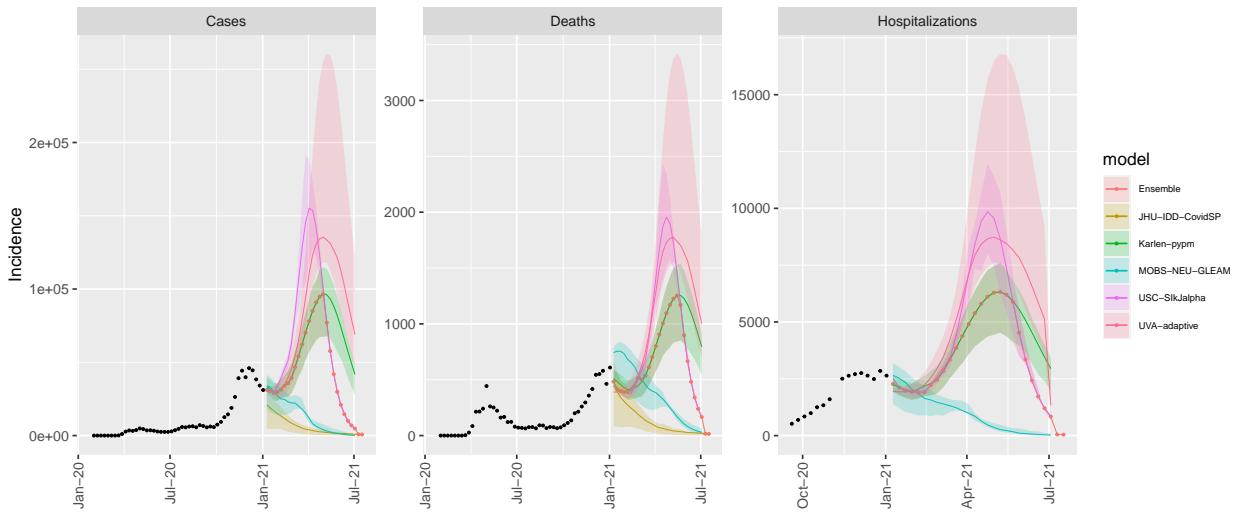
ID model variance & 50% projection intervals – counterfactual



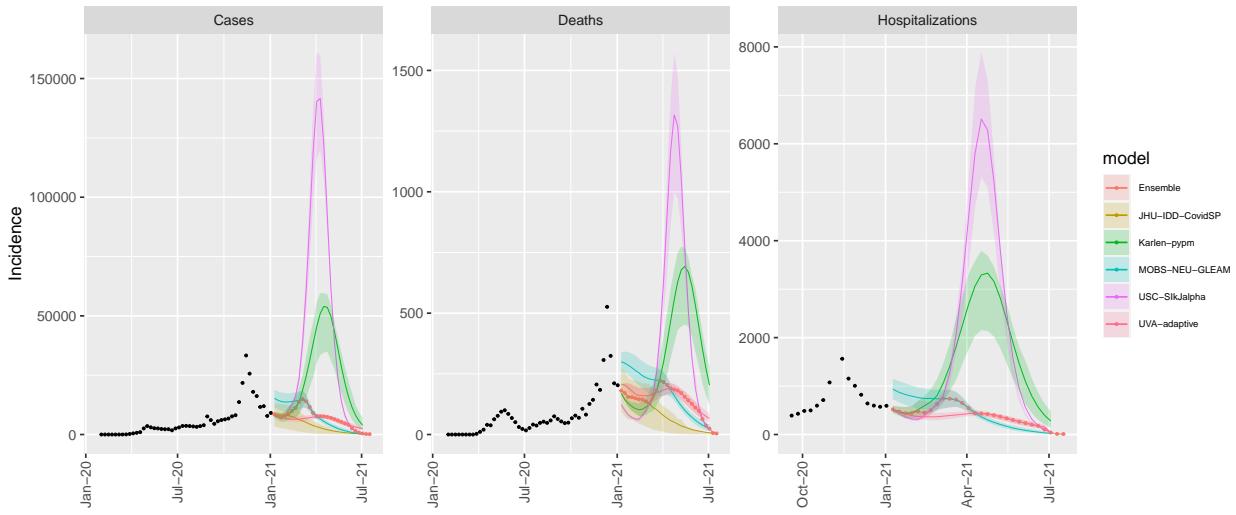
IL model variance & 50% projection intervals – counterfactual



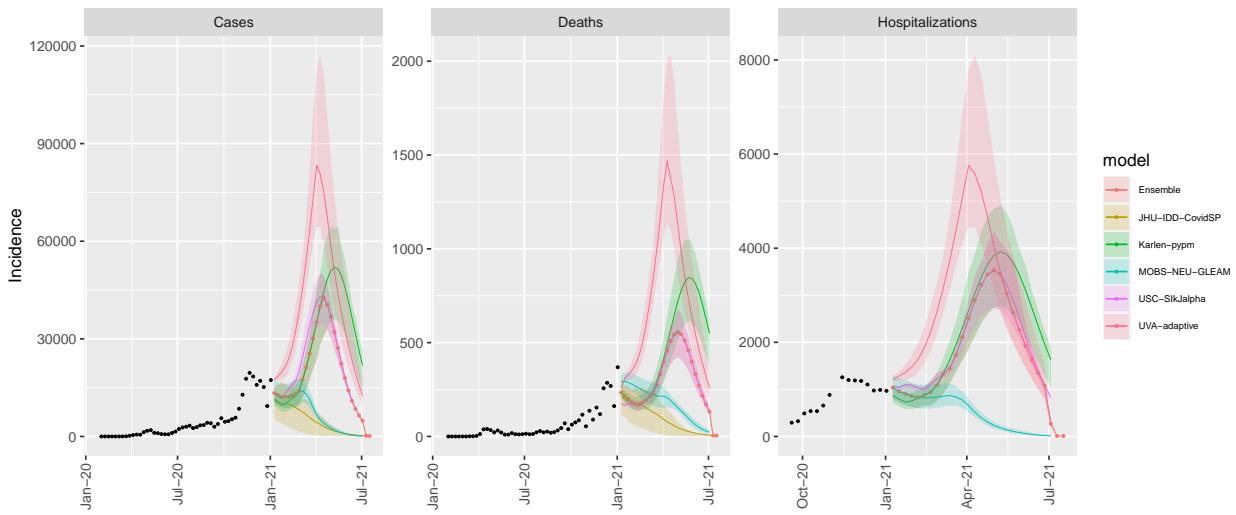
IN model variance & 50% projection intervals – counterfactual



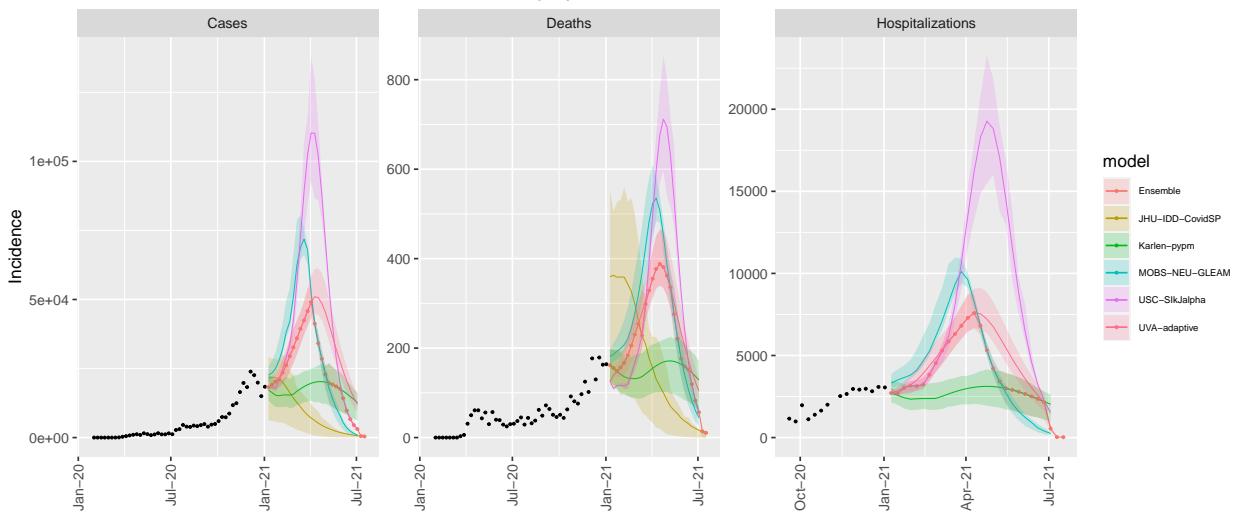
IA model variance & 50% projection intervals – counterfactual



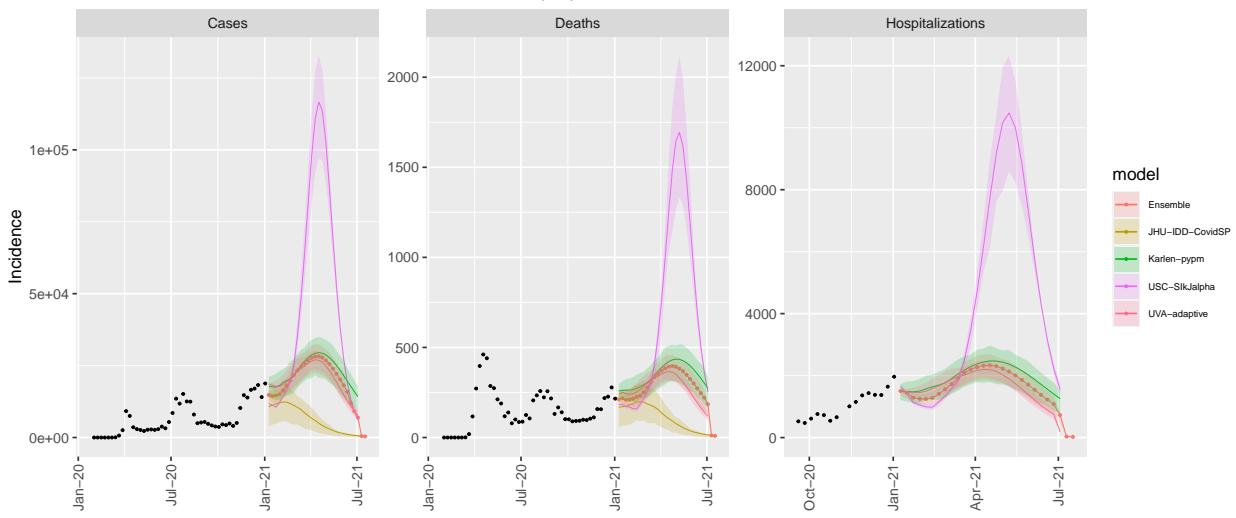
KS model variance & 50% projection intervals – counterfactual



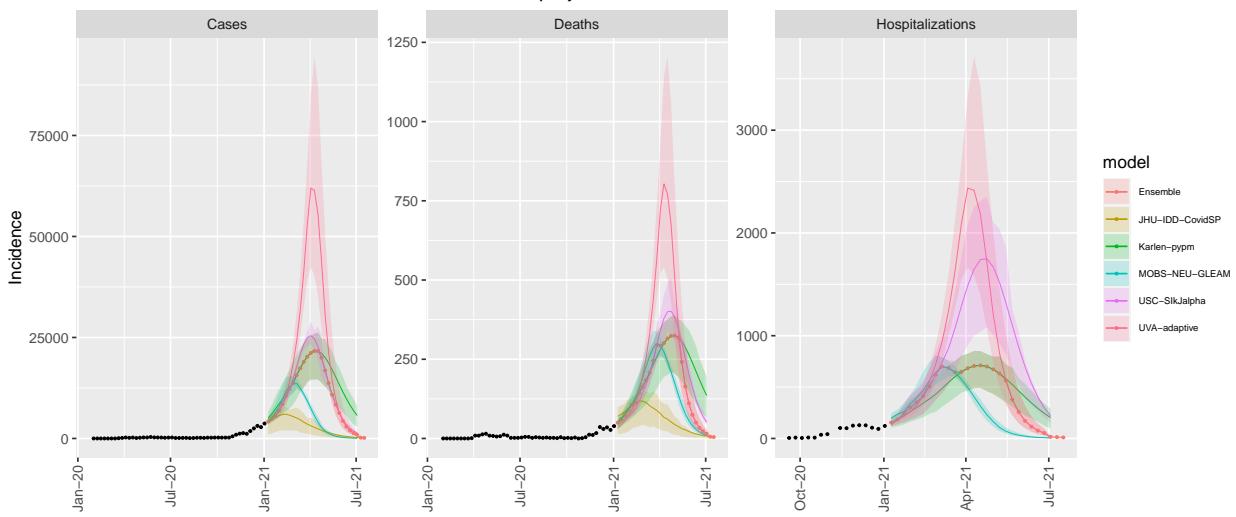
### KY model variance & 50% projection intervals – counterfactual



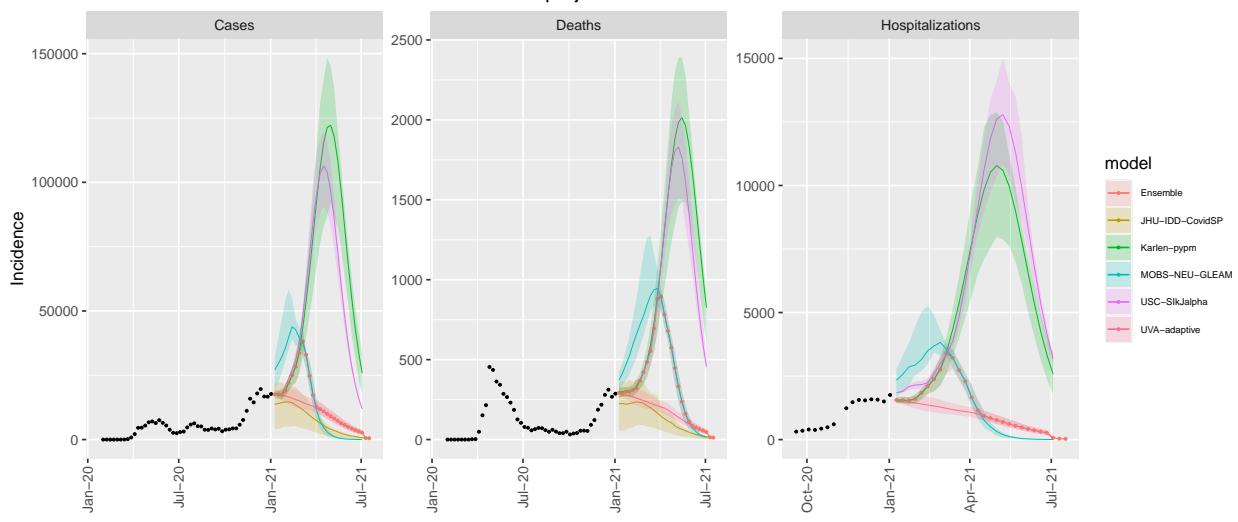
### LA model variance & 50% projection intervals – counterfactual



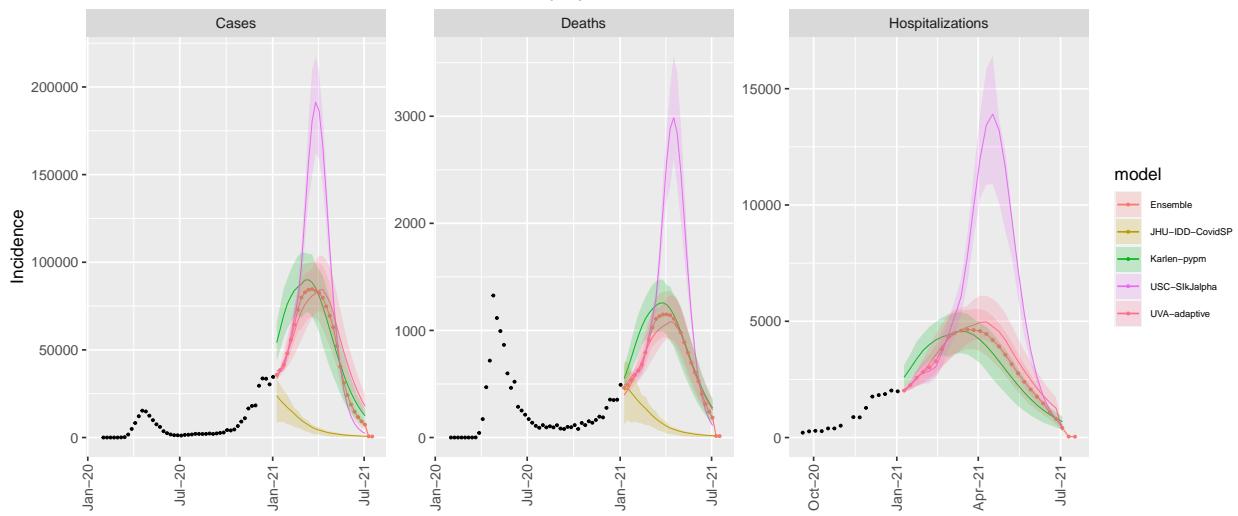
### ME model variance & 50% projection intervals – counterfactual



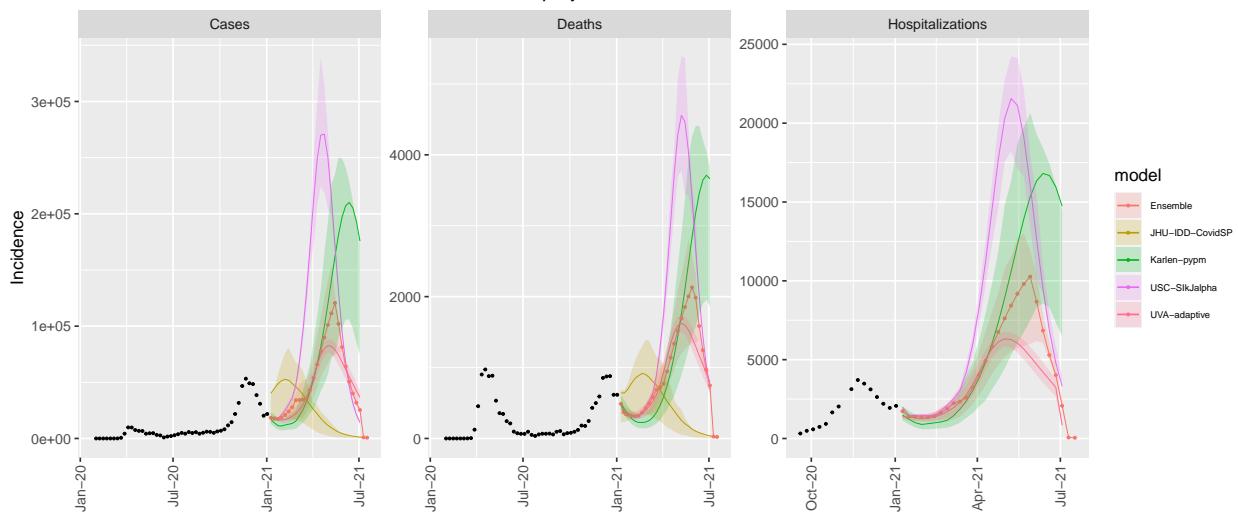
MD model variance & 50% projection intervals – counterfactual



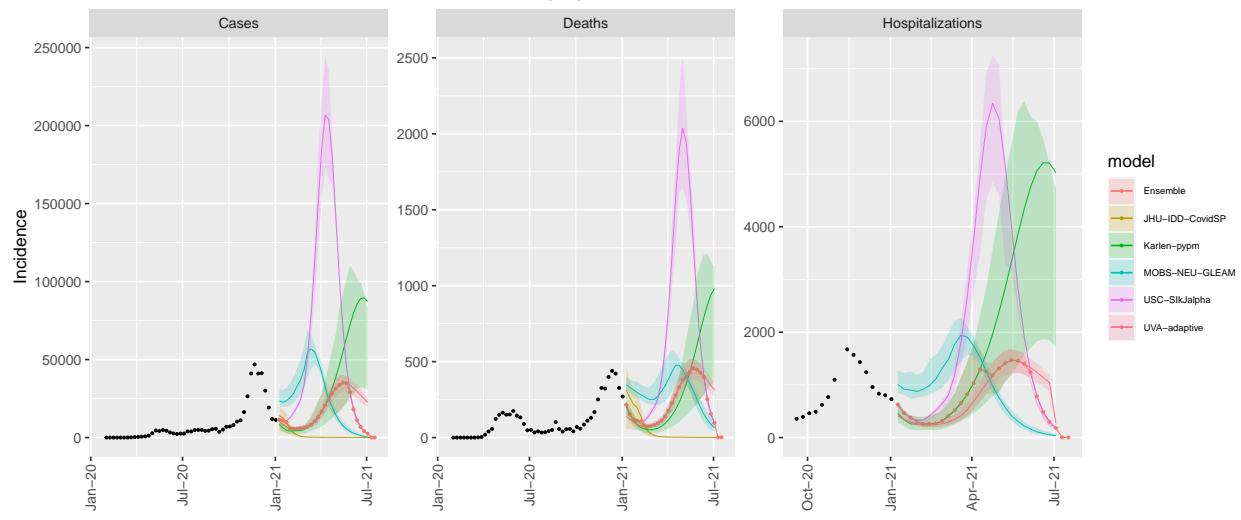
MA model variance & 50% projection intervals – counterfactual



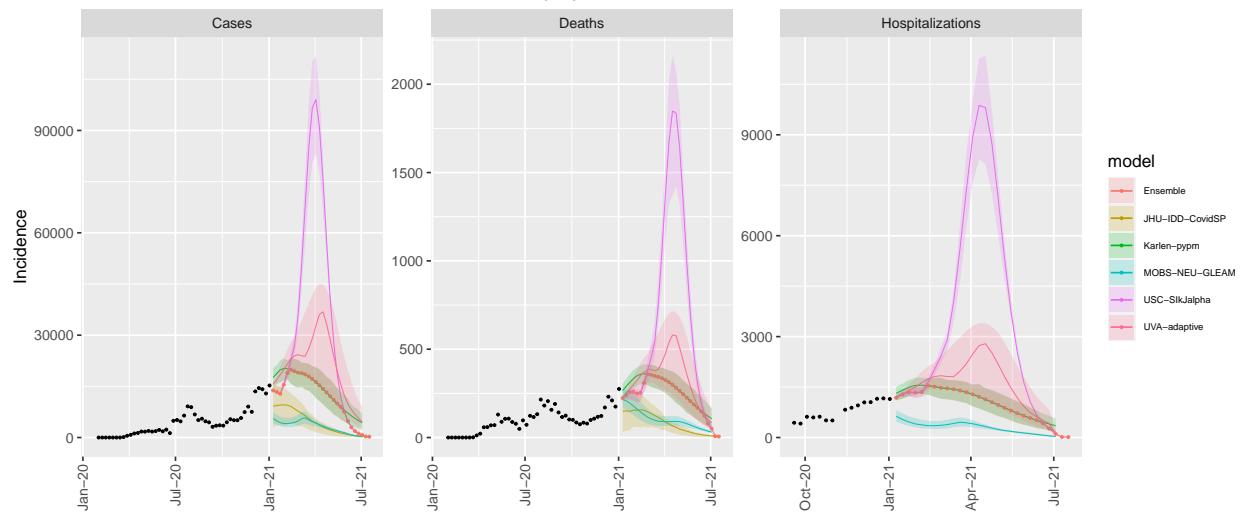
MI model variance & 50% projection intervals – counterfactual



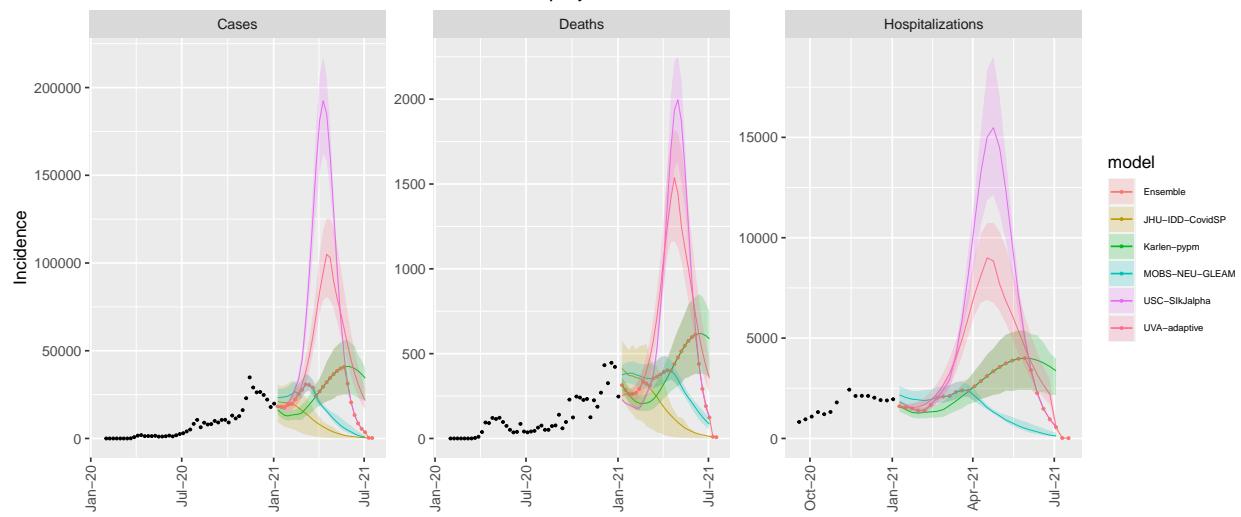
MN model variance & 50% projection intervals – counterfactual



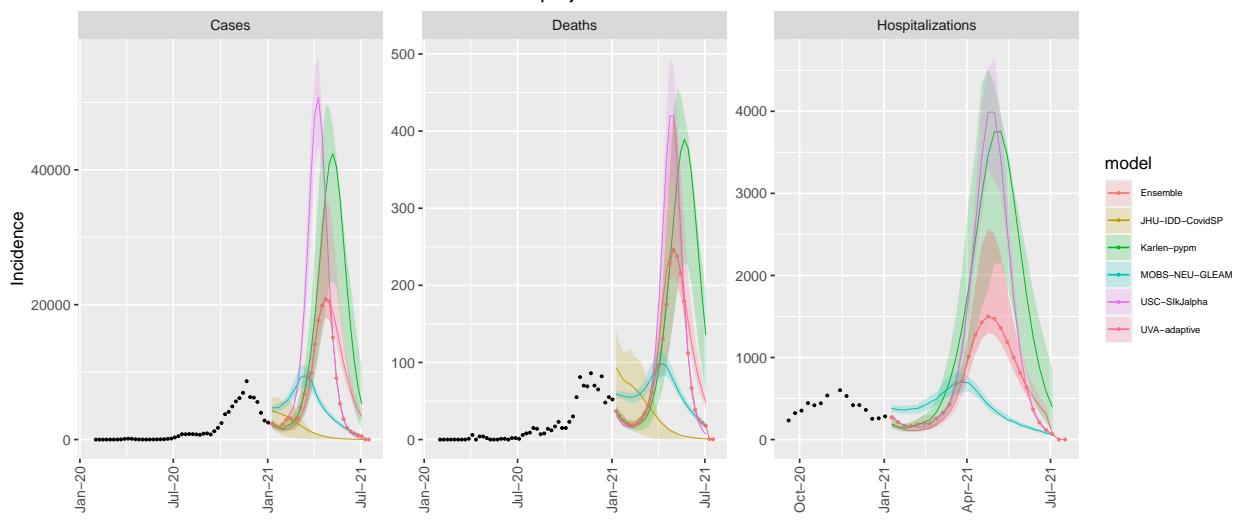
MS model variance & 50% projection intervals – counterfactual



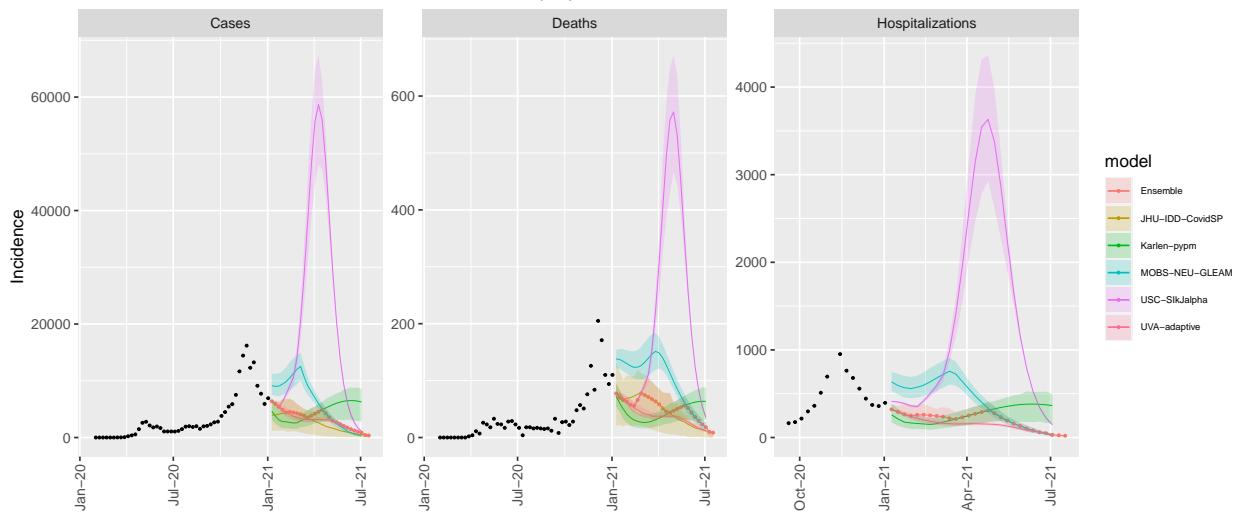
MO model variance & 50% projection intervals – counterfactual



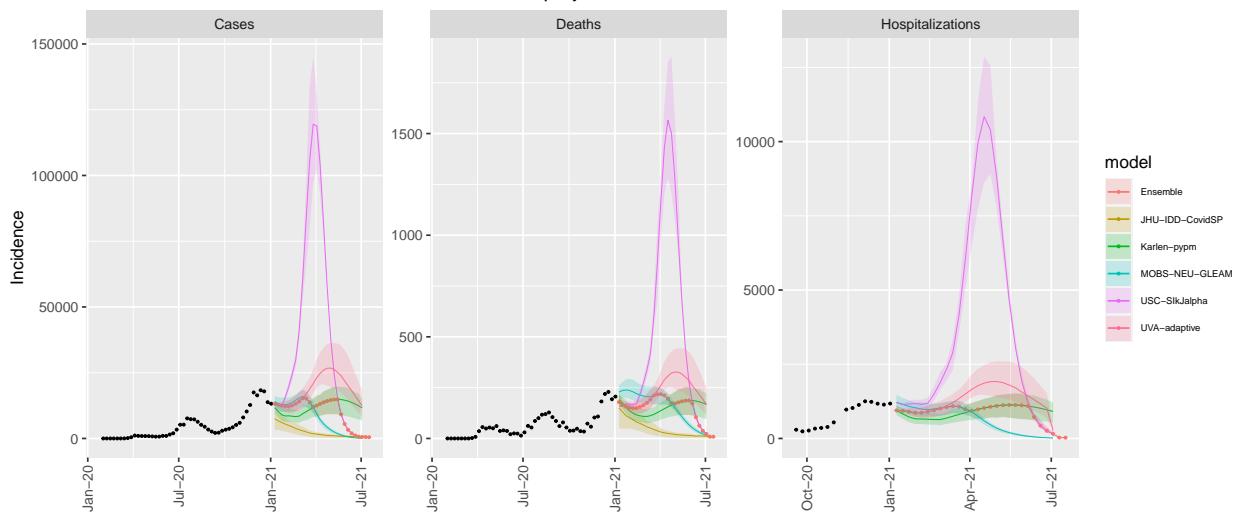
MT model variance & 50% projection intervals – counterfactual



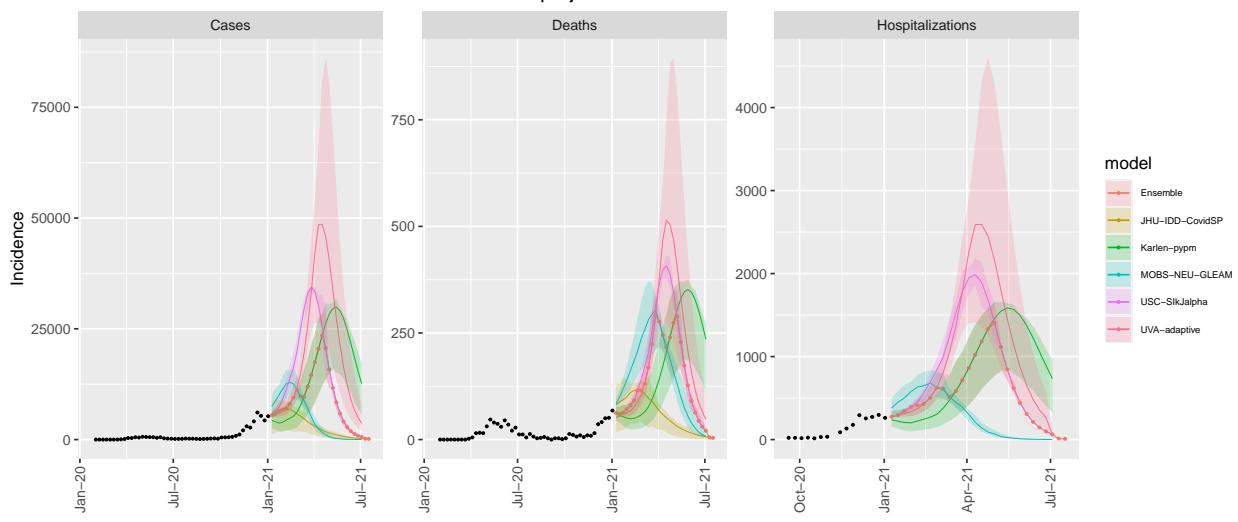
NE model variance & 50% projection intervals – counterfactual



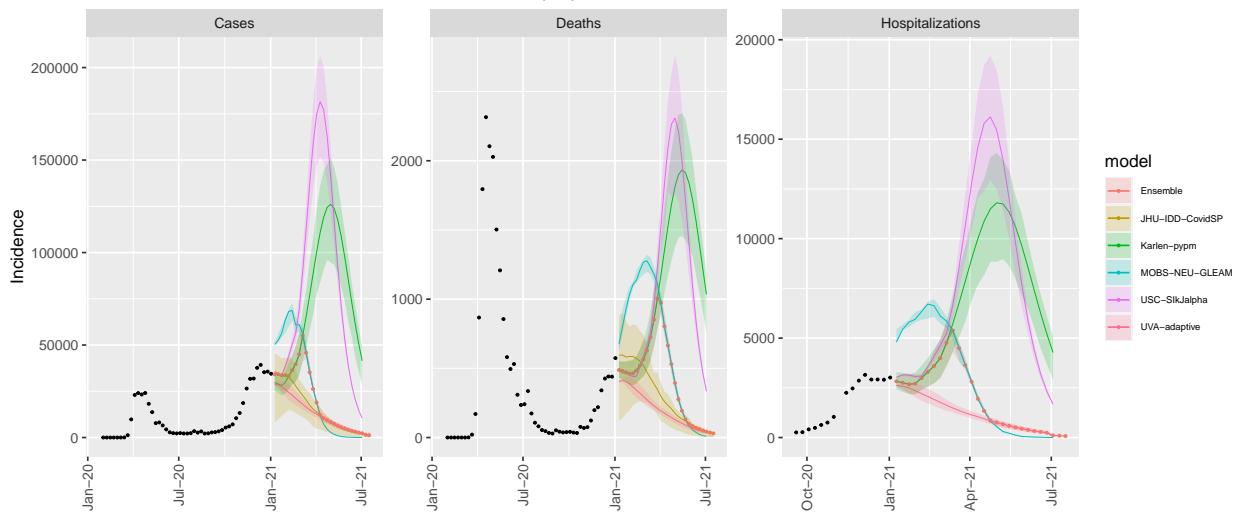
NV model variance & 50% projection intervals – counterfactual



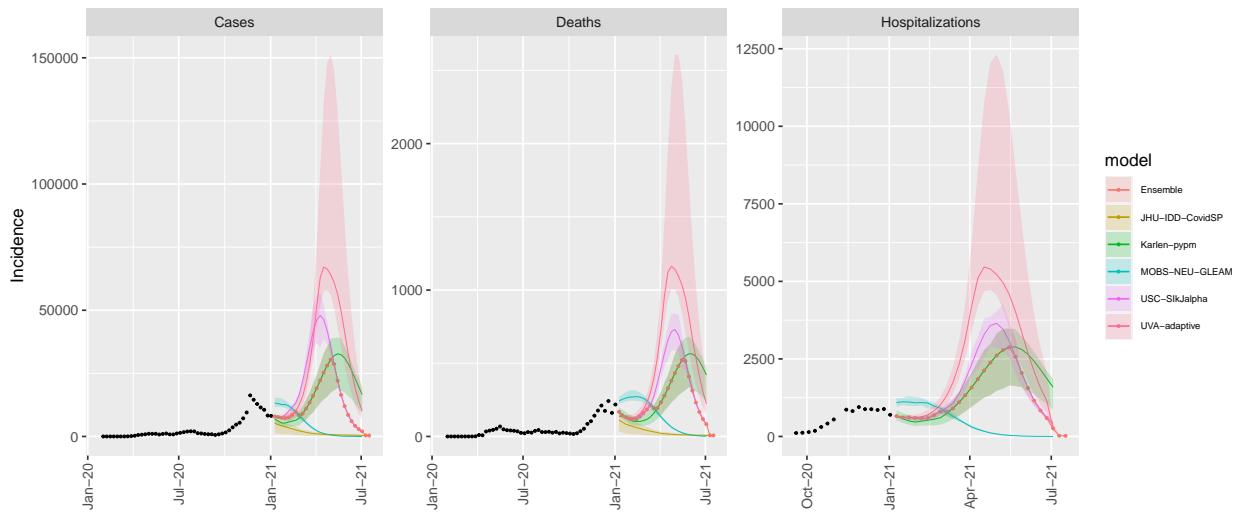
### NH model variance & 50% projection intervals – counterfactual



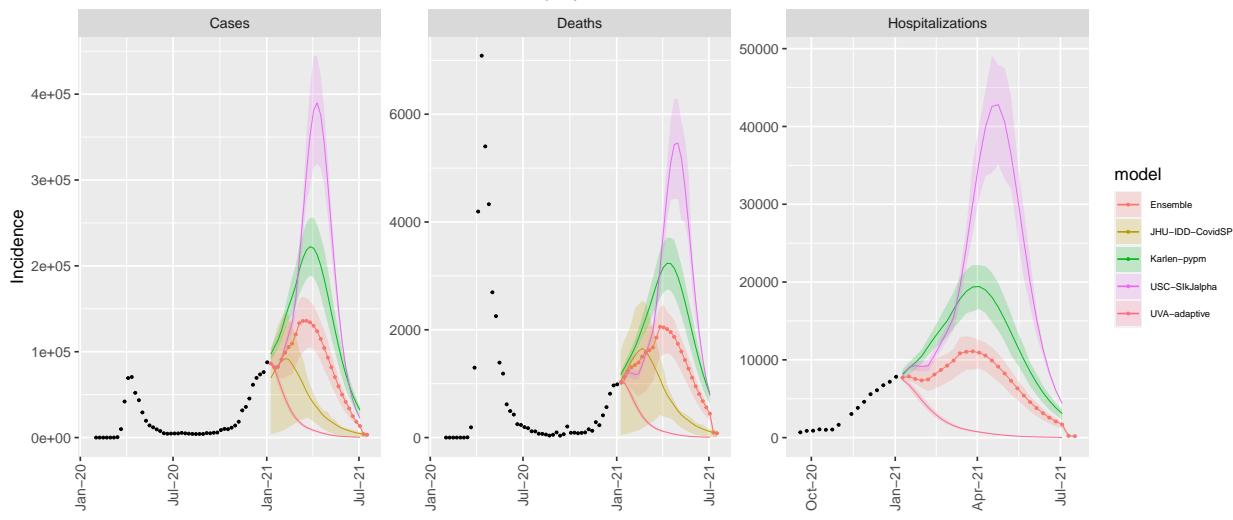
### NJ model variance & 50% projection intervals – counterfactual



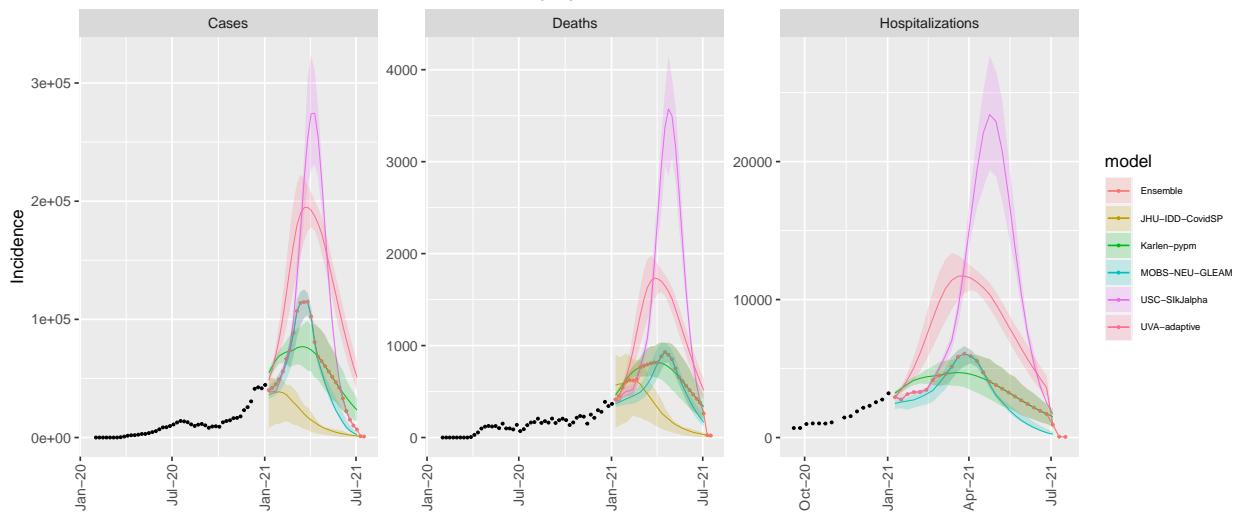
### NM model variance & 50% projection intervals – counterfactual



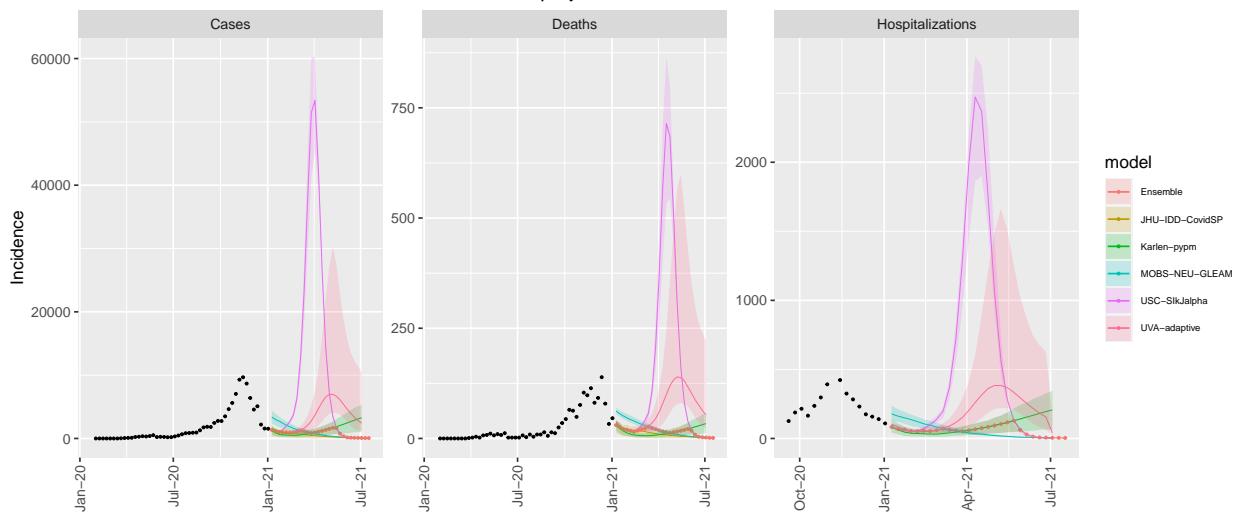
### NY model variance & 50% projection intervals – counterfactual



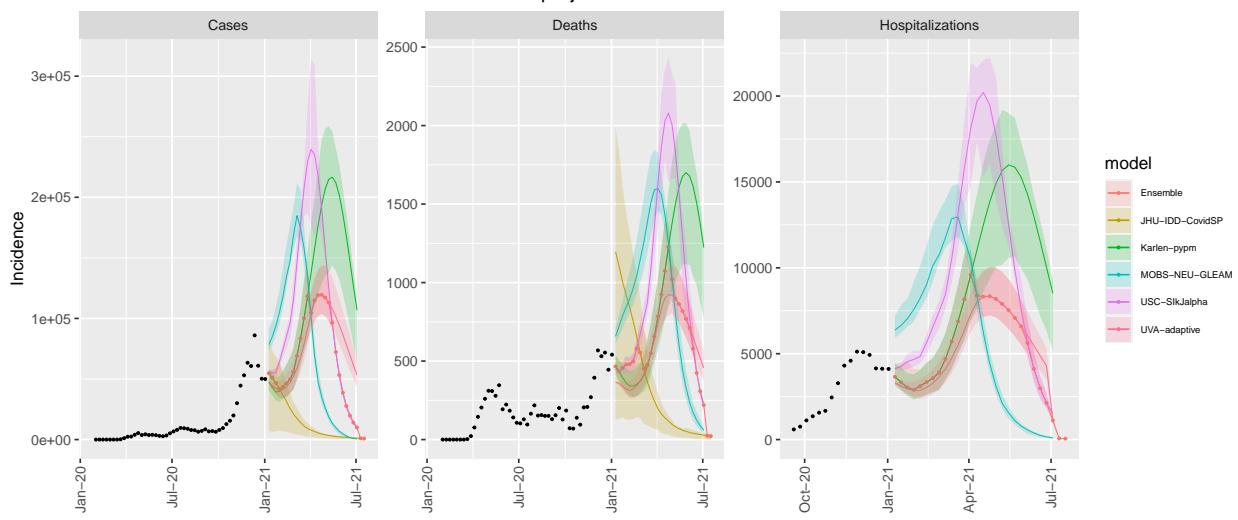
### NC model variance & 50% projection intervals – counterfactual



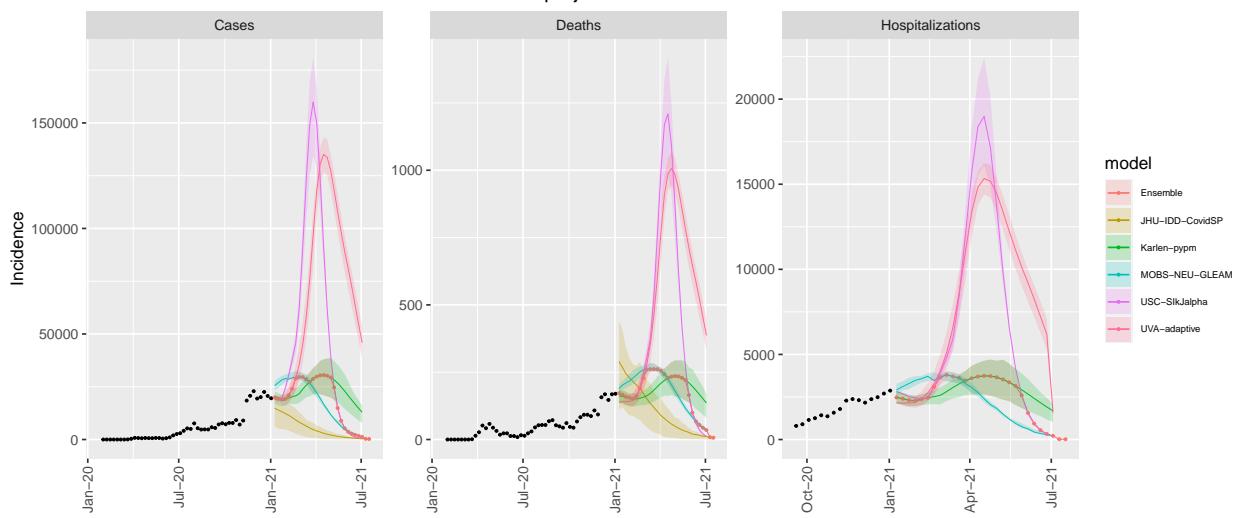
### ND model variance & 50% projection intervals – counterfactual



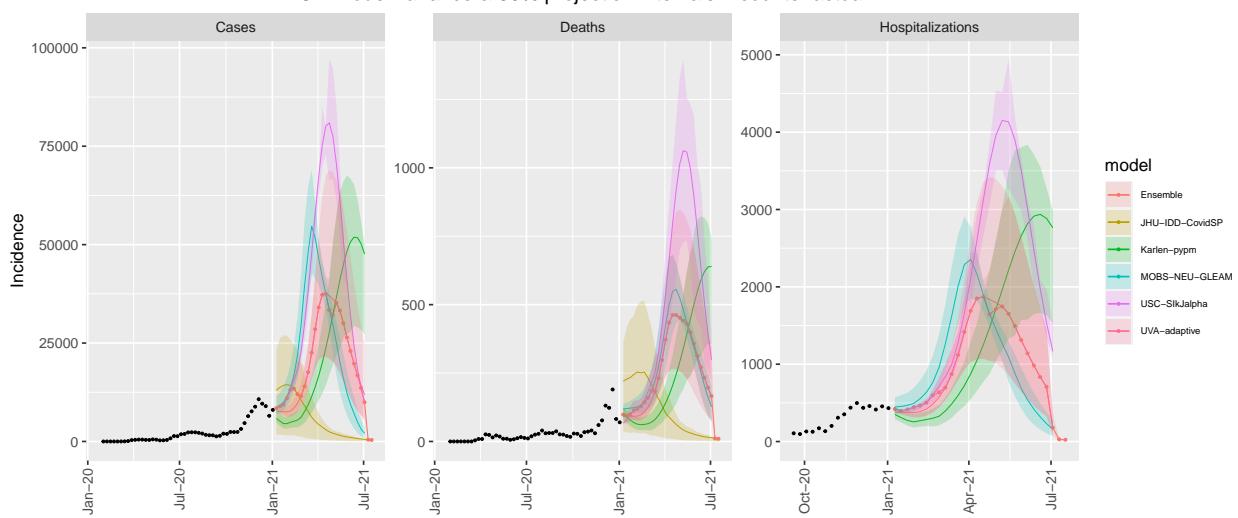
### OH model variance & 50% projection intervals – counterfactual



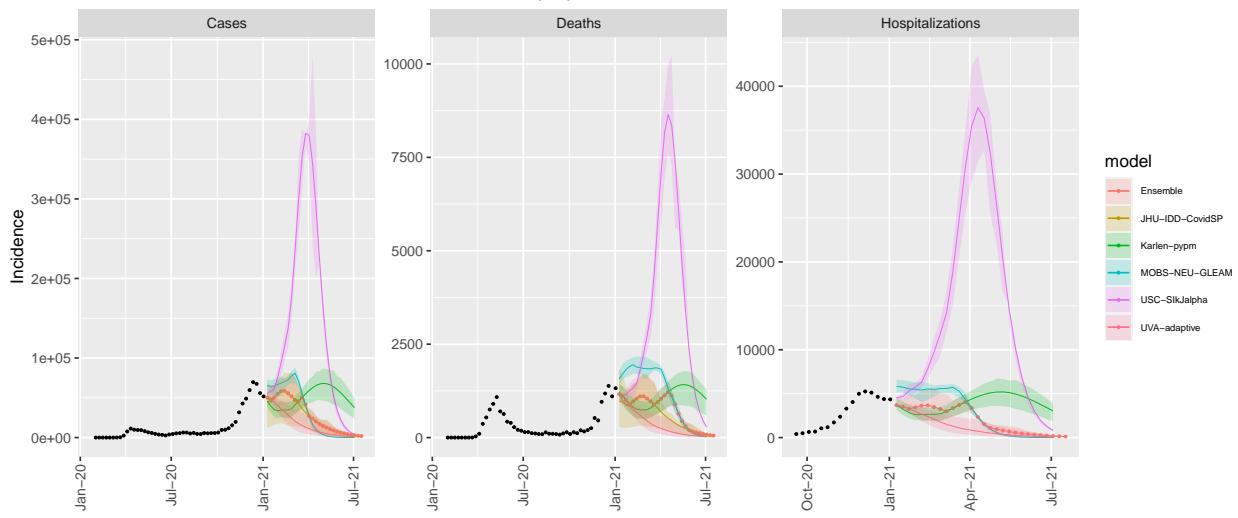
### OK model variance & 50% projection intervals – counterfactual



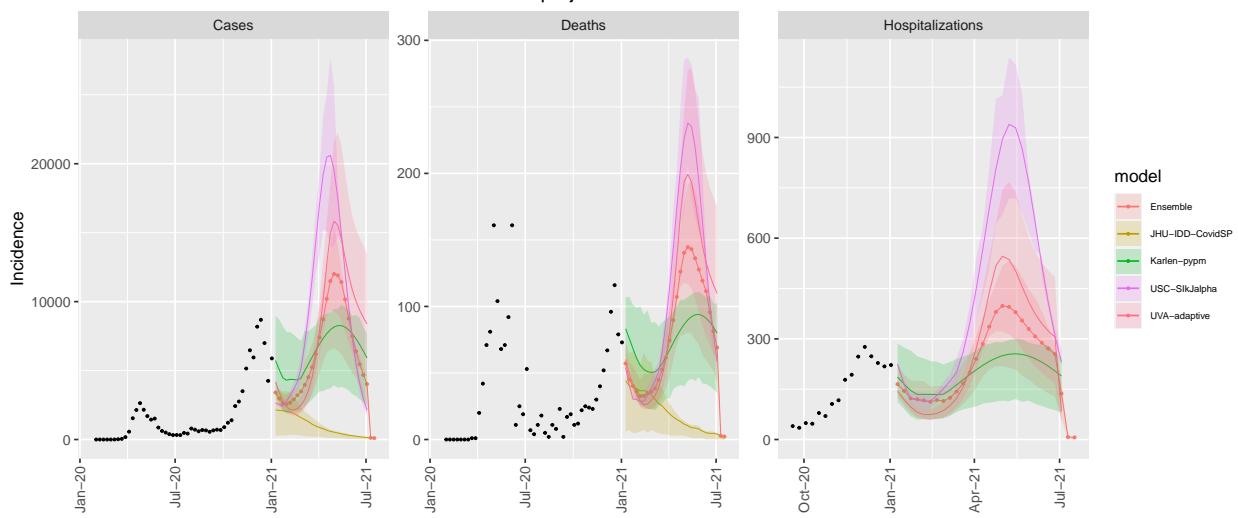
### OR model variance & 50% projection intervals – counterfactual



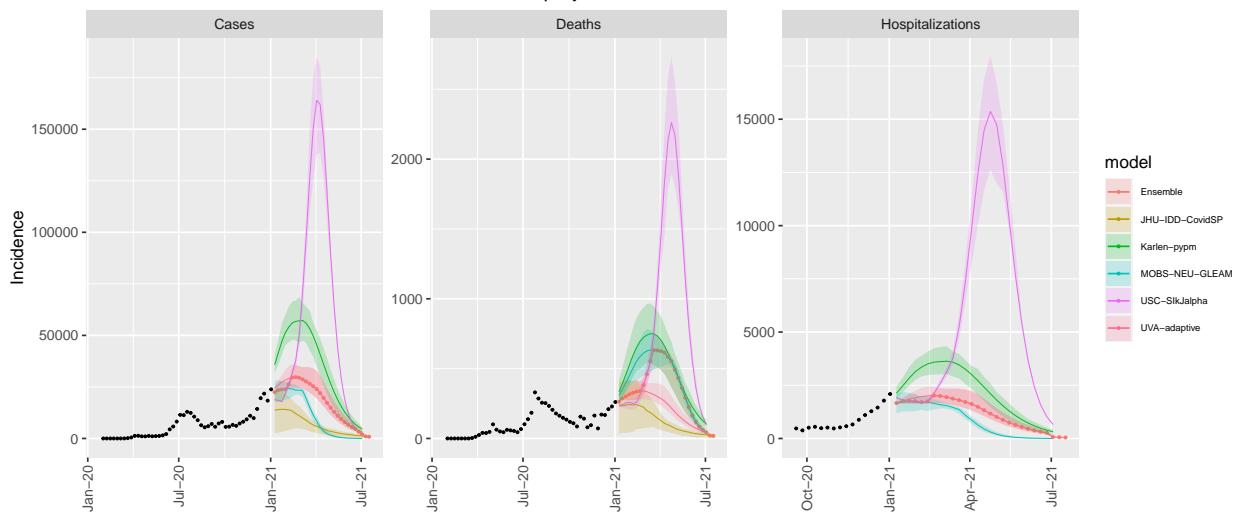
PA model variance & 50% projection intervals – counterfactual



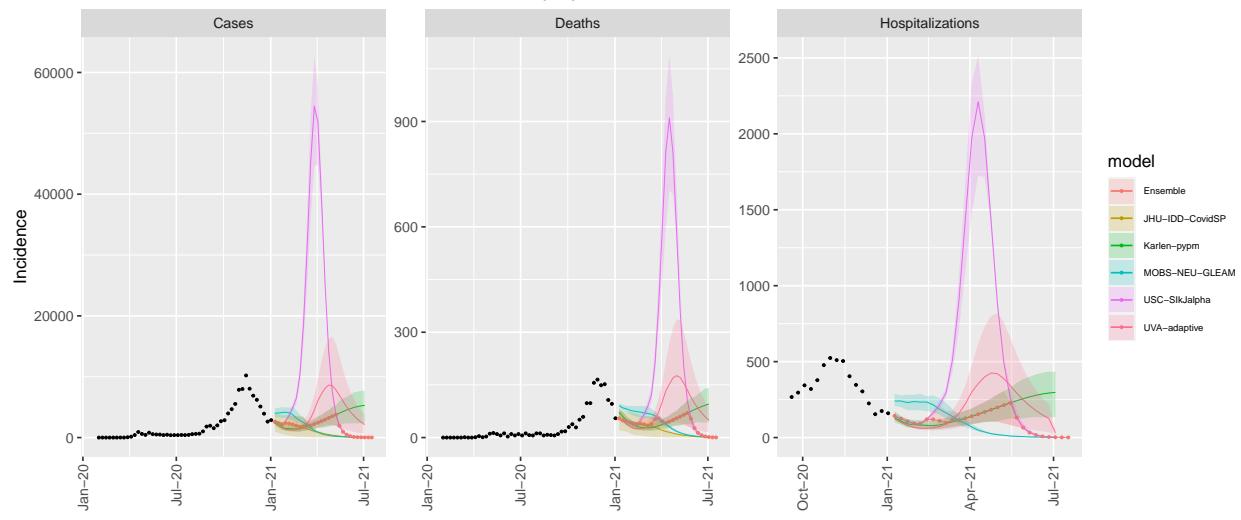
RI model variance & 50% projection intervals – counterfactual



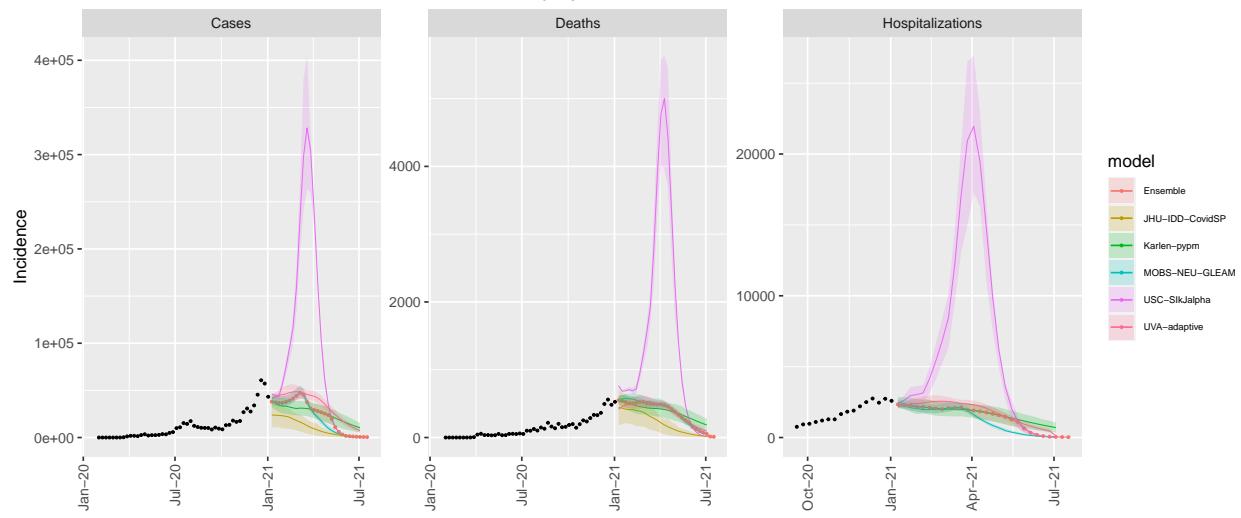
SC model variance & 50% projection intervals – counterfactual



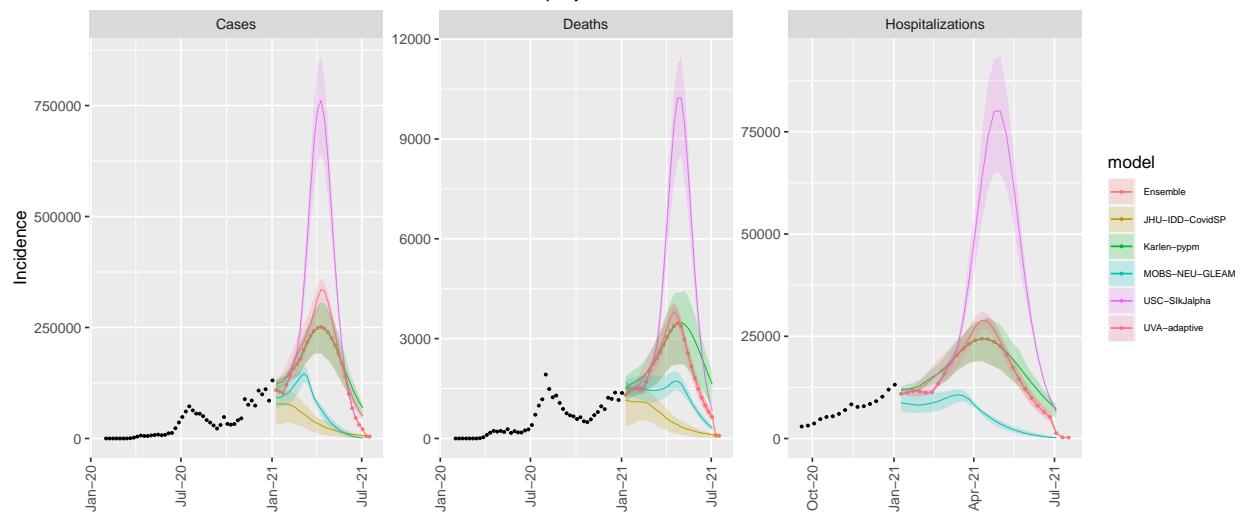
### SD model variance & 50% projection intervals – counterfactual



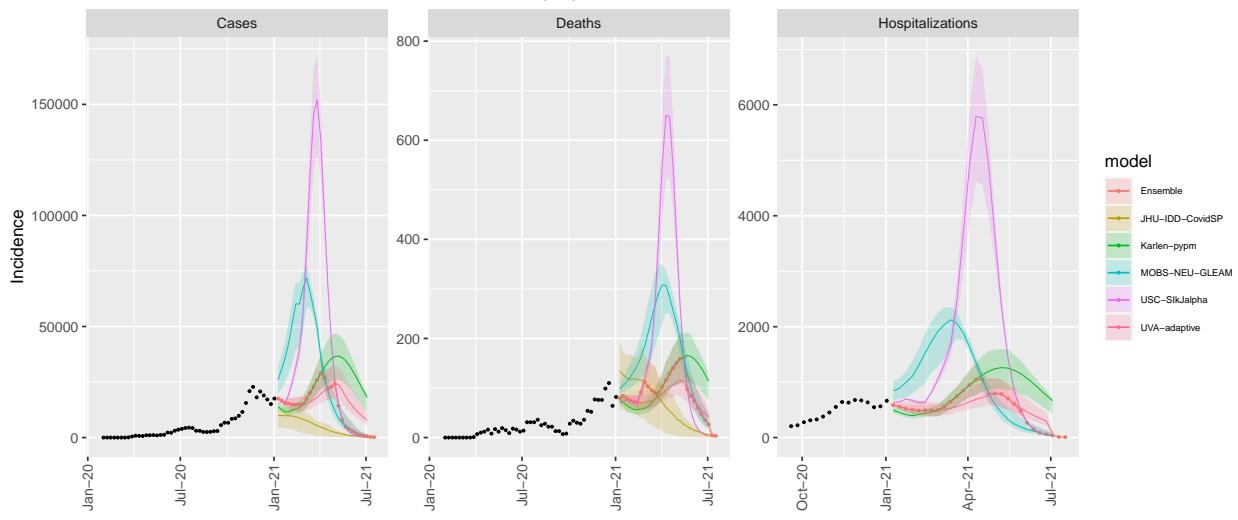
### TN model variance & 50% projection intervals – counterfactual



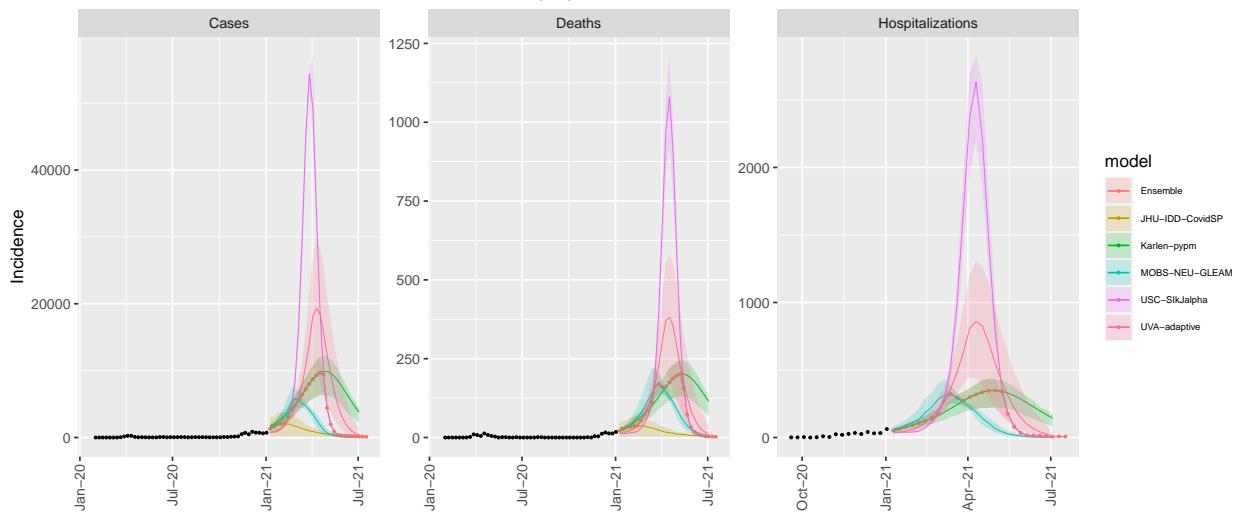
### TX model variance & 50% projection intervals – counterfactual



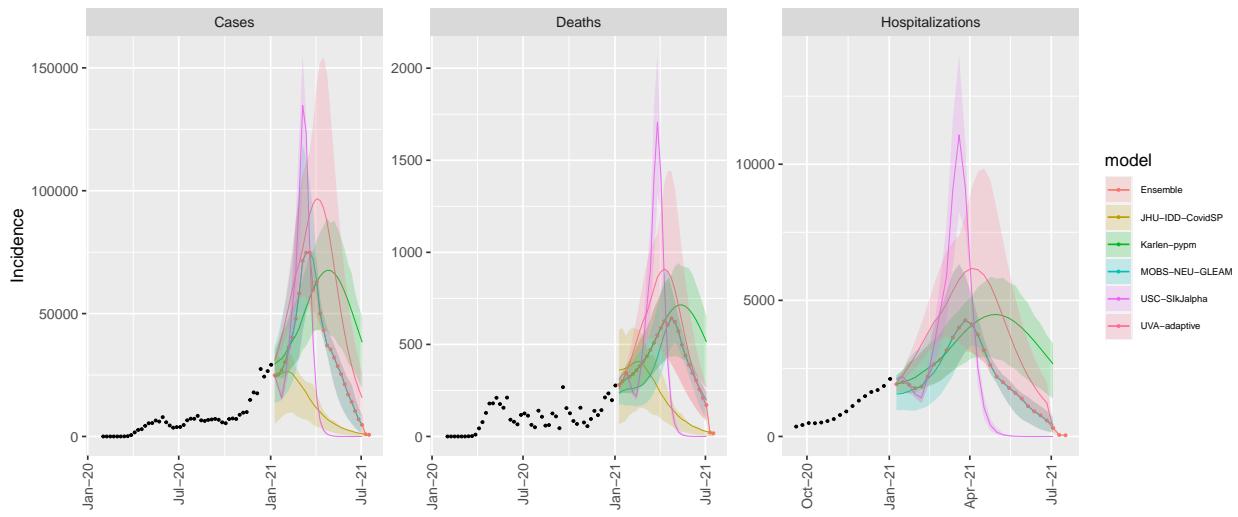
UT model variance & 50% projection intervals – counterfactual



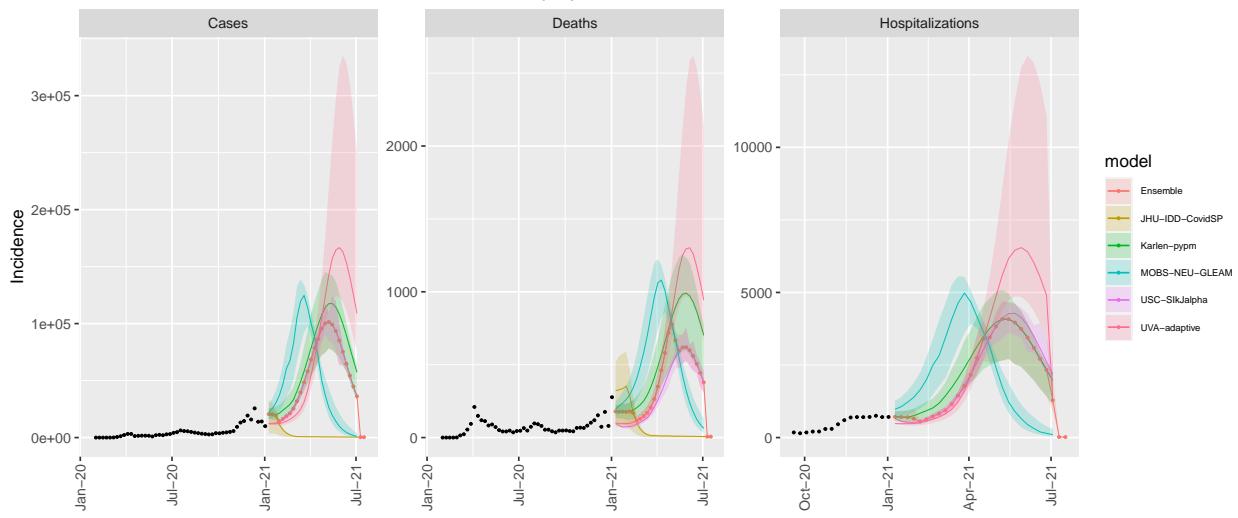
VT model variance & 50% projection intervals – counterfactual



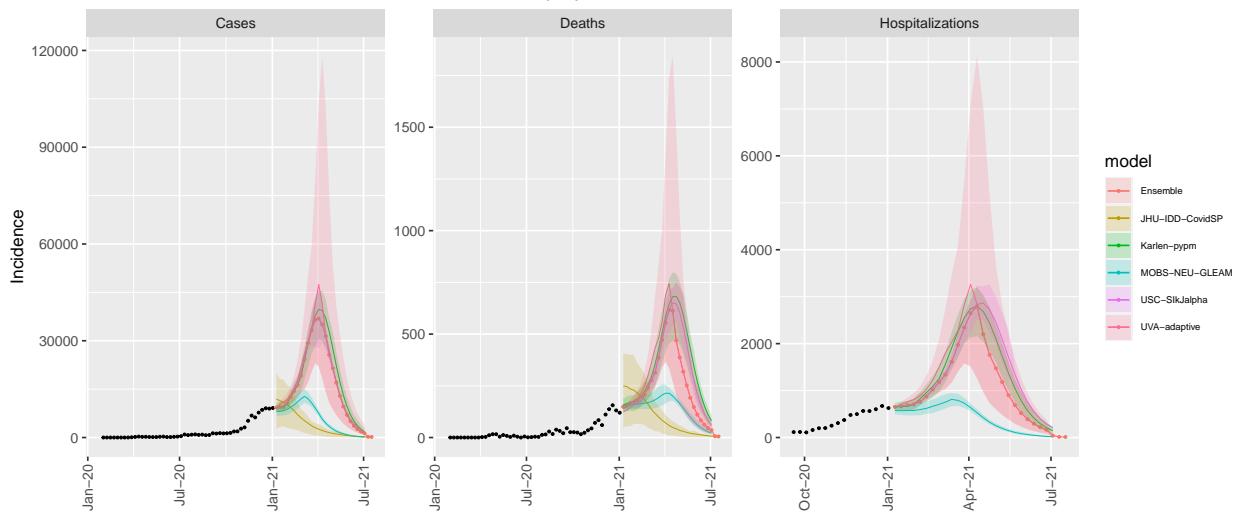
VA model variance & 50% projection intervals – counterfactual



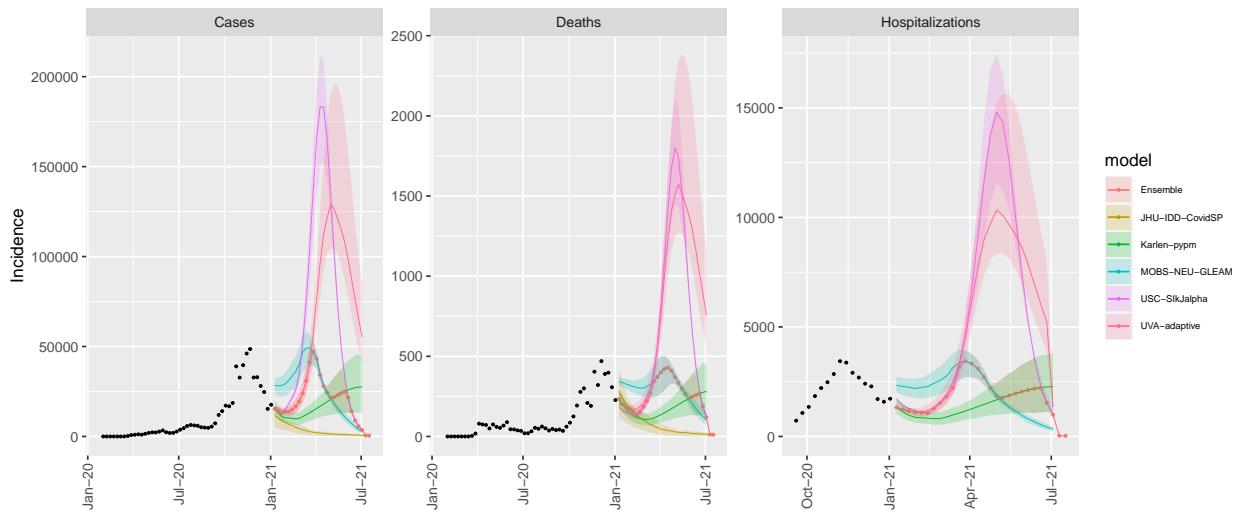
### WA model variance & 50% projection intervals – counterfactual



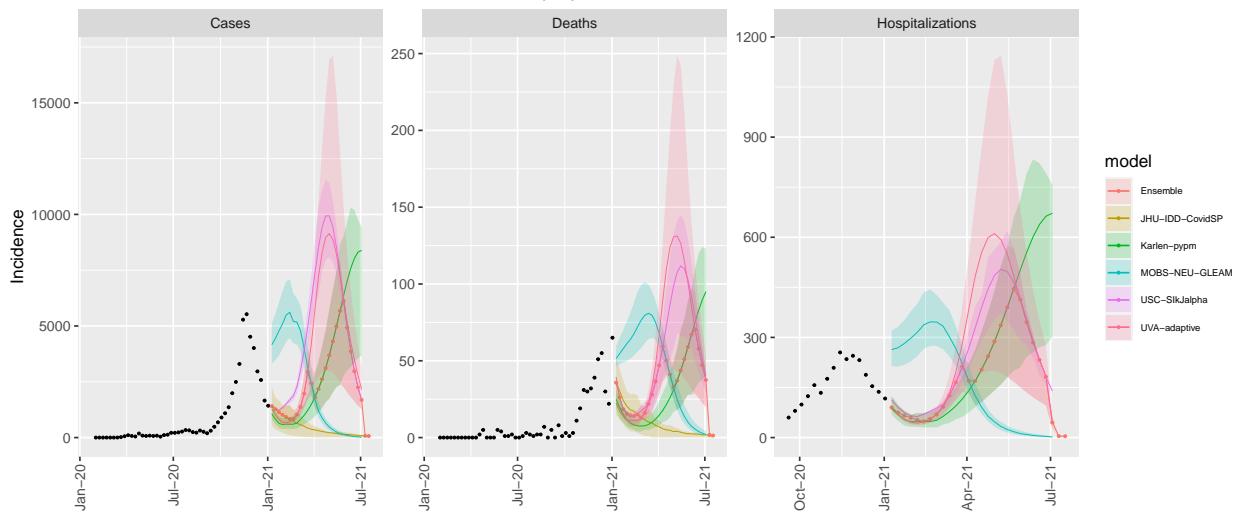
### WV model variance & 50% projection intervals – counterfactual



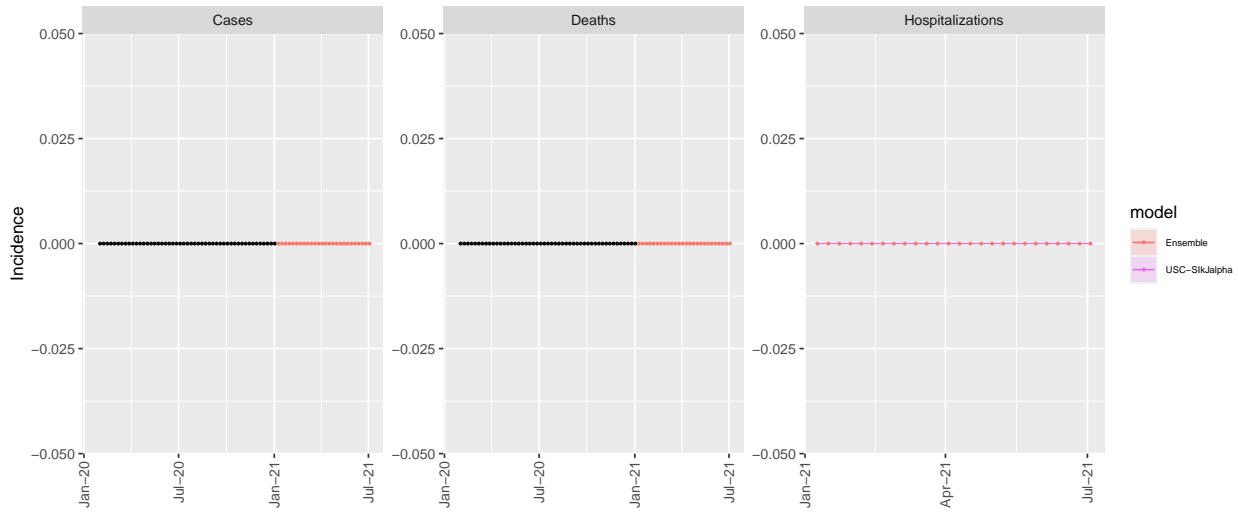
### WI model variance & 50% projection intervals – counterfactual



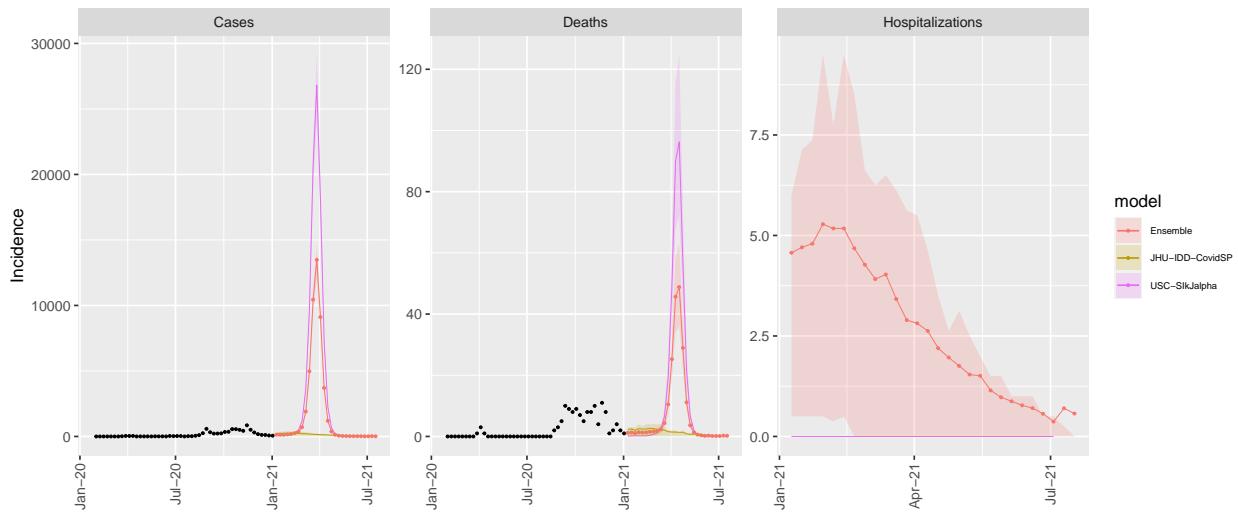
WY model variance & 50% projection intervals – counterfactual



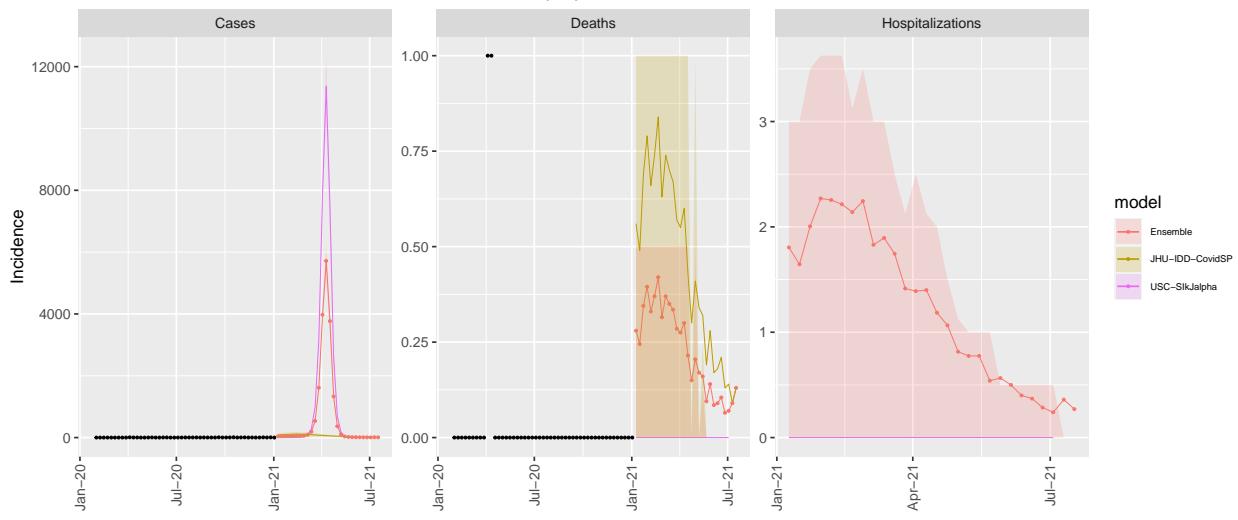
AS model variance & 50% projection intervals – counterfactual



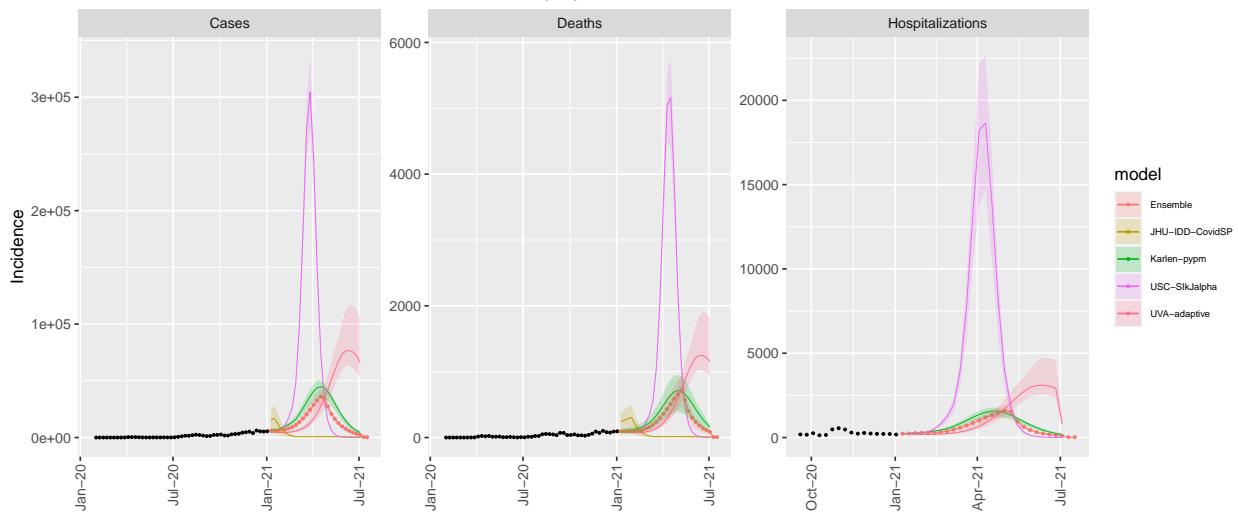
GU model variance & 50% projection intervals – counterfactual



### MP model variance & 50% projection intervals – counterfactual



### PR model variance & 50% projection intervals – counterfactual



### VI model variance & 50% projection intervals – counterfactual

