

COVID-19 Scenario Modeling Hub Report

10 September, 2021
Scenario Modeling Hub Team¹

Executive Summary

This report presents the results of the eighth round of projections from the COVID-19 Scenario Modeling Hub. A consortium of six modeling groups convened to generate week ahead projections of COVID-19 cases, deaths, and hospitalizations for a period of six months (weeks ending 2021-08-21 to 2022-02-12), given four scenarios of waning immunity. A full list of contributors is included at the end of the report. See the table on the next page for an overview of the scenarios included in this round. Detailed scenario descriptions and setting assumptions are provided [here](#).

Key Takeaways and Caveats from the Eighth Round

- The most recent wave of infection associated with the Delta variant is expected to peak in late September nationally at 1.1 to 1.6 million weekly cases, and subside by late November 2021.
- National hospitalizations levels are projected to be similar to winter 2020-2021, while there will be 2-3 times fewer deaths than last winter.
- Generally, there does not appear to be a large difference in projected cases, hospitalizations, and deaths under each waning scenario, however incidences are projected to remain elevated and near constant in winter 2021-2022 in scenarios with fast waning.
- Projections for some states display larger effects of waning speed and intensity (e.g., Maine).
- There is high uncertainty between models in projections of hospitalizations and deaths, with two models projecting resurgences in deaths similar to the 2020-2021 winter in the scenario with most pronounced waning.
- Complex interactions between waning parameters within models and model fitting may complicate interpreting differences between scenario projections.
- Supplemental analyses of the MOBS projections suggests that, although all scenarios may capture the epidemic trajectory at the US level, the scenarios with fast waning are the most likely based on model selection relying on the past trajectory of cases.

Disclaimer

These results are from a preliminary round intended to allow teams to identify any issues surrounding the implementation of waning in their models. This report has been developed for specific stakeholders and should not be shared externally.

¹Compiled by Justin Lessler, Rebecca Borcherding, Emily Howerton, and Claire Smith.

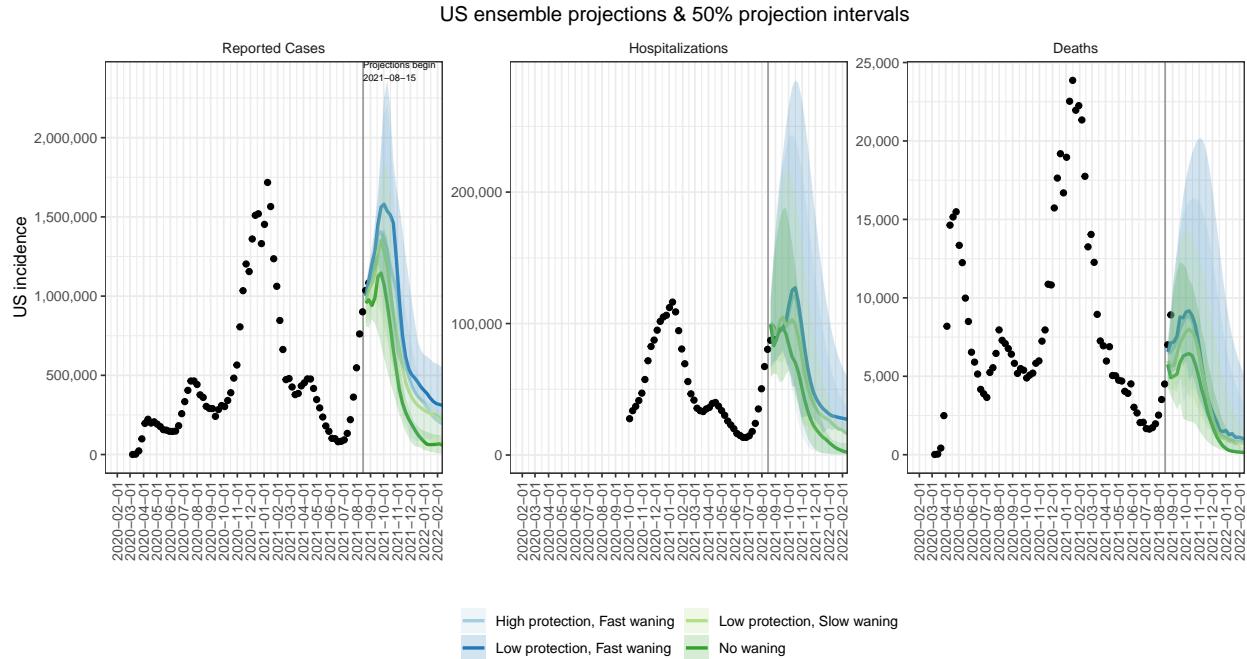
Round 8 Scenario Specifications

See detailed notes on each scenario below	Slow waning of natural and vaccine-induced immunity <i>(from no waning to exponential waning with mean of 3 yrs)</i>	Fast waning of natural and vaccine-induced immunity <i>(exponential waning with mean of 1 year)</i>
High protection against infection and severe disease after waning	<p>Scenario A</p> <p>No Waning:</p> <ul style="list-style-type: none"> - Vaccine-induced and natural immunity retain their initial protection throughout the simulation period 	<p>Scenario B</p> <p>Waning:</p> <ul style="list-style-type: none"> - Exponentially distributed immune waning with mean of 1 year (time to transition to partially immune state) <p>In partially immune state:</p> <ul style="list-style-type: none"> - Protection from infection is: <ul style="list-style-type: none"> - 70% ≤ 65yrs - 35% > 65yrs - Protection from hospitalization and death is 90%
Low protection against infection and severe disease after waning	<p>Scenario C</p> <p>Waning:</p> <ul style="list-style-type: none"> - Exponentially distributed immune waning with mean of 3 years (time to transition to partially immune state) <p>In partially immune state:</p> <ul style="list-style-type: none"> - Protection from infection is: <ul style="list-style-type: none"> - 50% ≤ 65yrs - 25% > 65yrs - Protection from hospitalization and death is 80% 	<p>Scenario D</p> <p>Waning:</p> <ul style="list-style-type: none"> - Exponentially distributed immune waning with mean of 1 year (time to transition to partially immune state) <p>In partially immune state:</p> <ul style="list-style-type: none"> - Protection from infection is: <ul style="list-style-type: none"> - 50% ≤ 65yrs - 25% > 65yrs - Protection from hospitalization and death is 80%

Figure 1: Round 8 Scenario Specifications

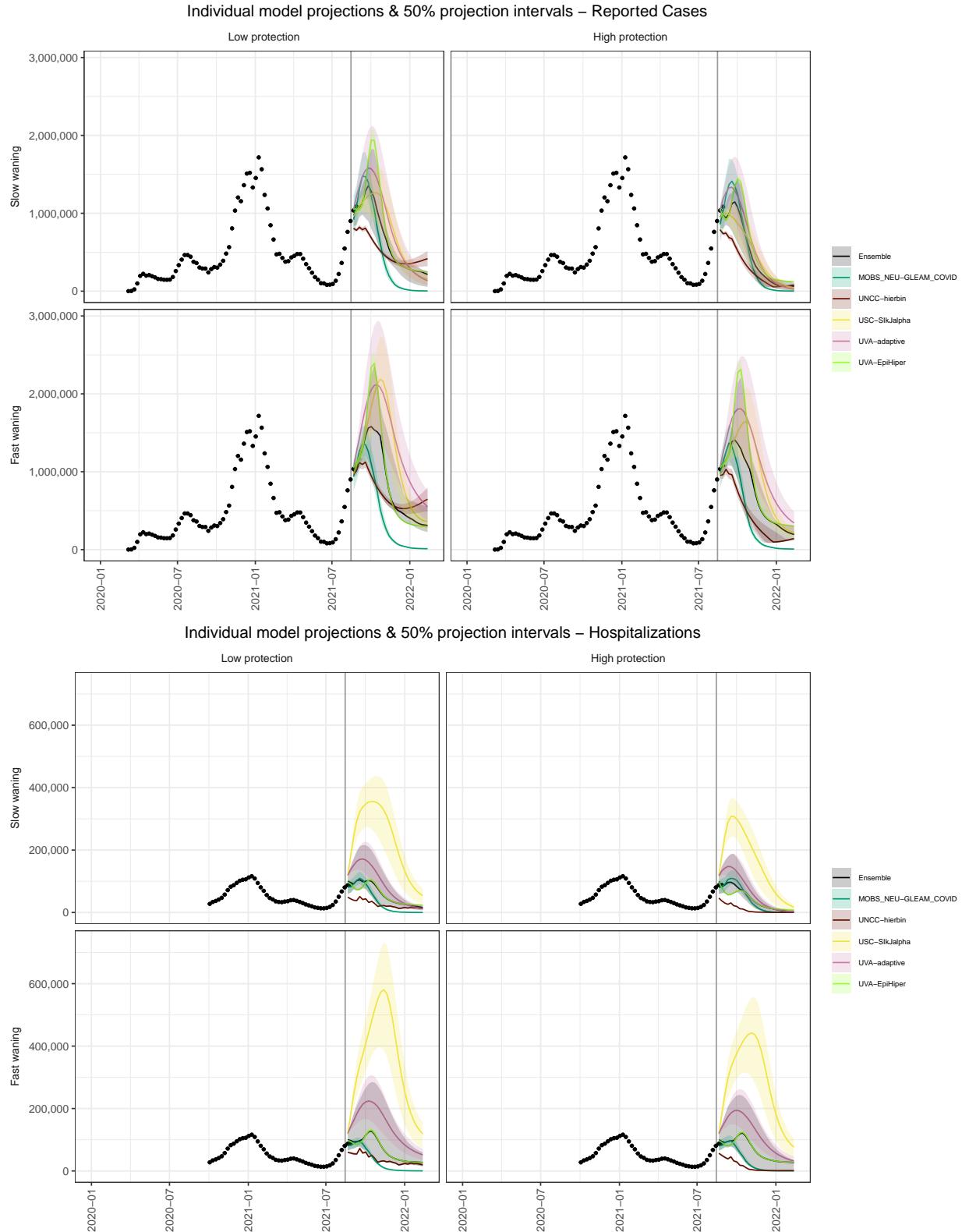
National ensemble projections

Ensemble projections for national cases, hospitalizations and deaths separated by scenario. Note that for this round we transitioned from using a trimmed linear opinion pool to an untrimmed linear opinion pool methodology to generate the ensemble.

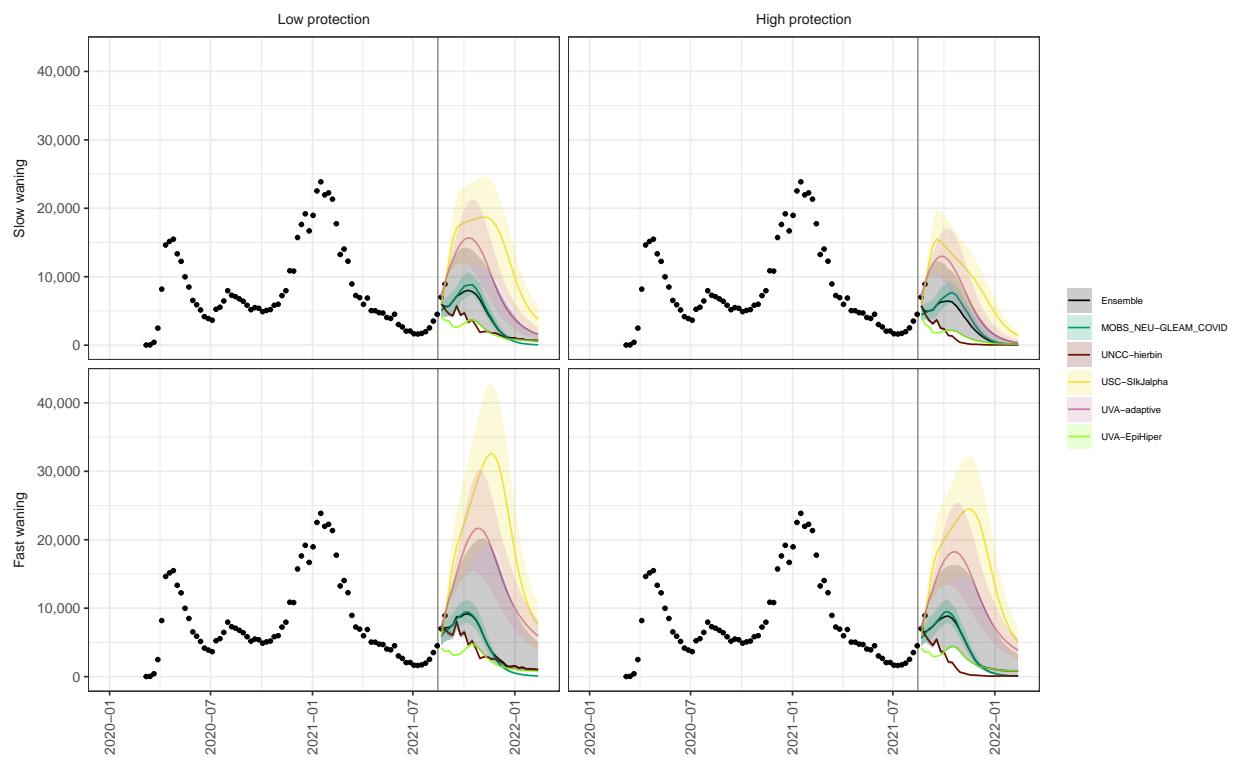


National individual model projections

Individual model projections and ensemble by scenario for national cases, hospitalizations, and deaths.

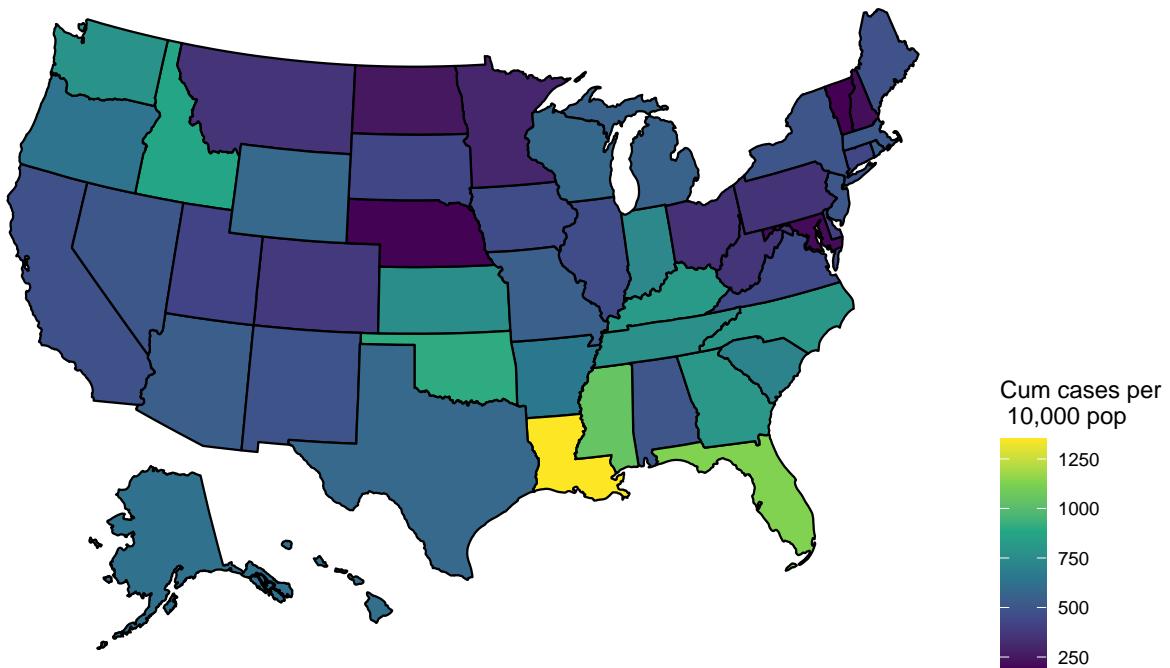


Individual model projections & 50% projection intervals – Deaths

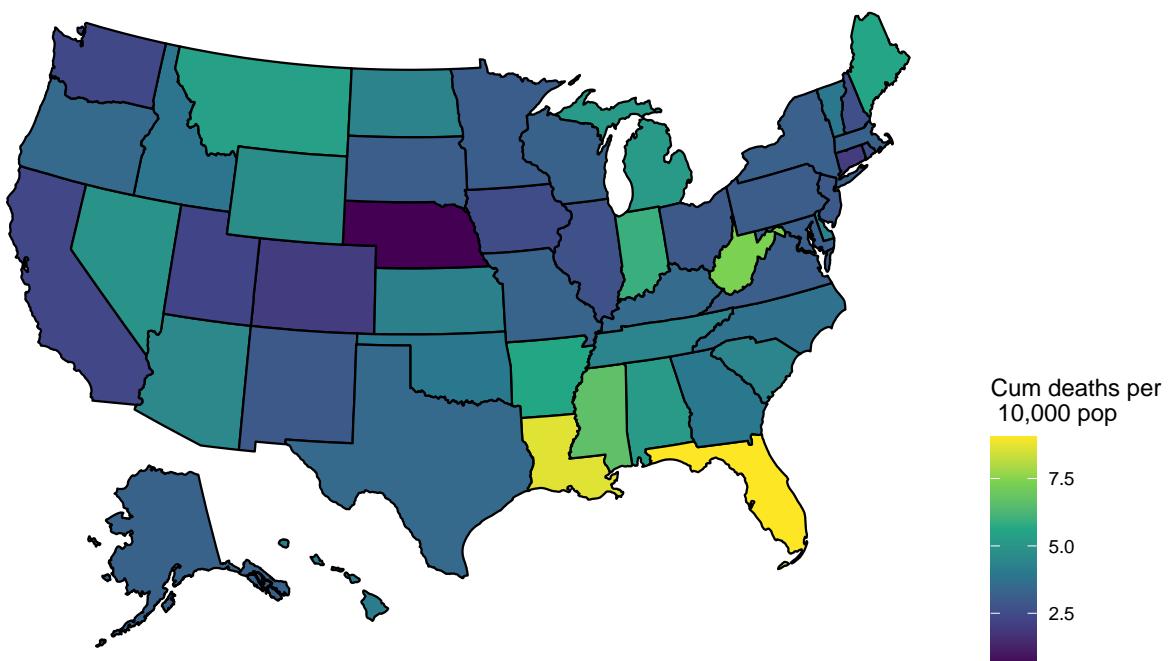


Risk maps

Cumulative reported cases per 10,000 population in low protection,
fast waning scenario: August 15, 2021 to February 12, 2022

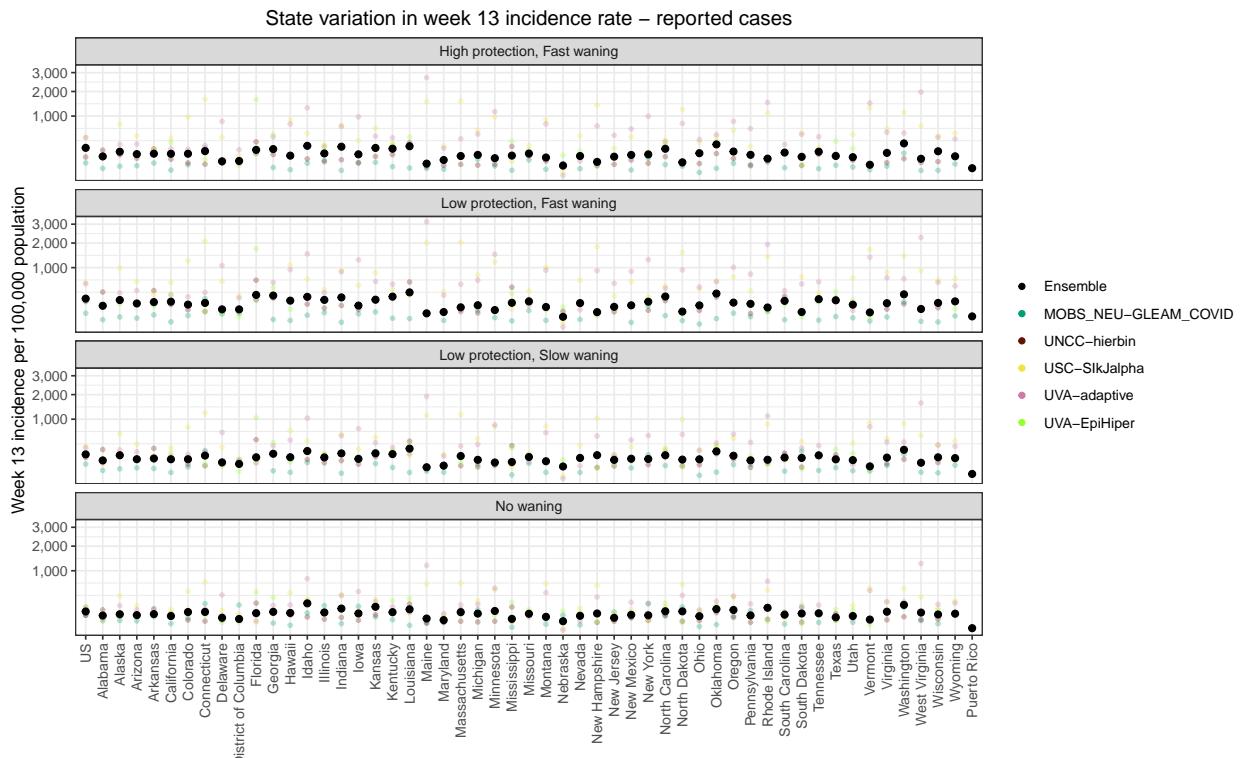


Cumulative deaths per 10,000 population in low protection,
fast waning scenario: August 15, 2021 to February 12, 2022

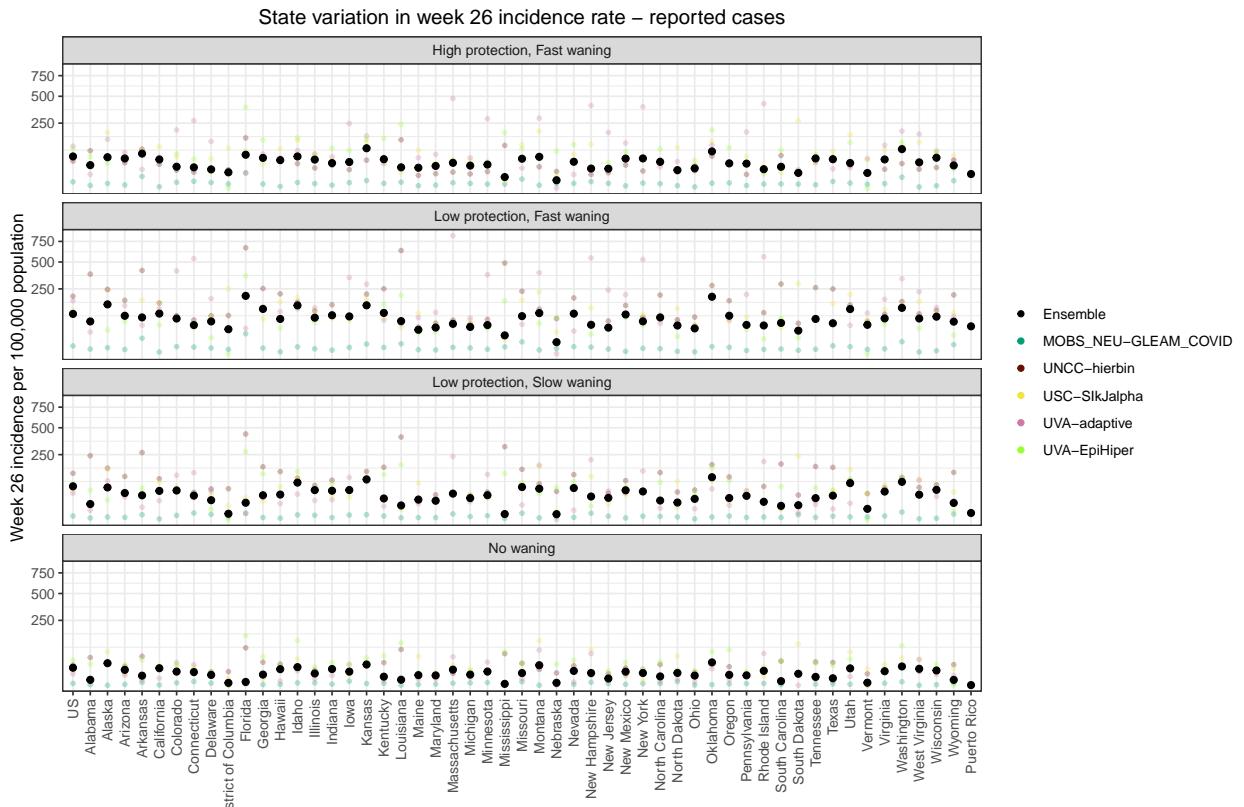


State-level deviation from national

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

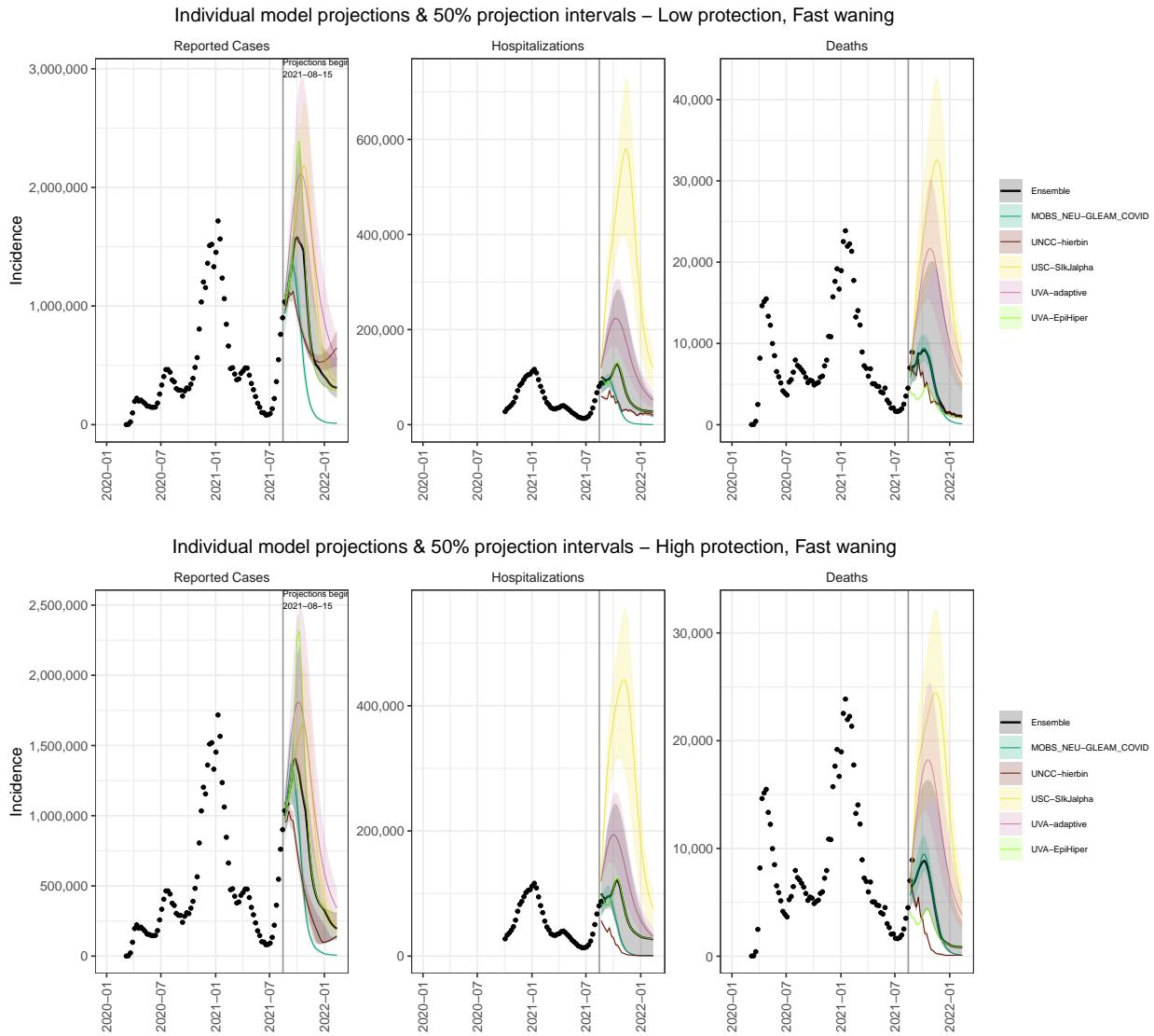


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

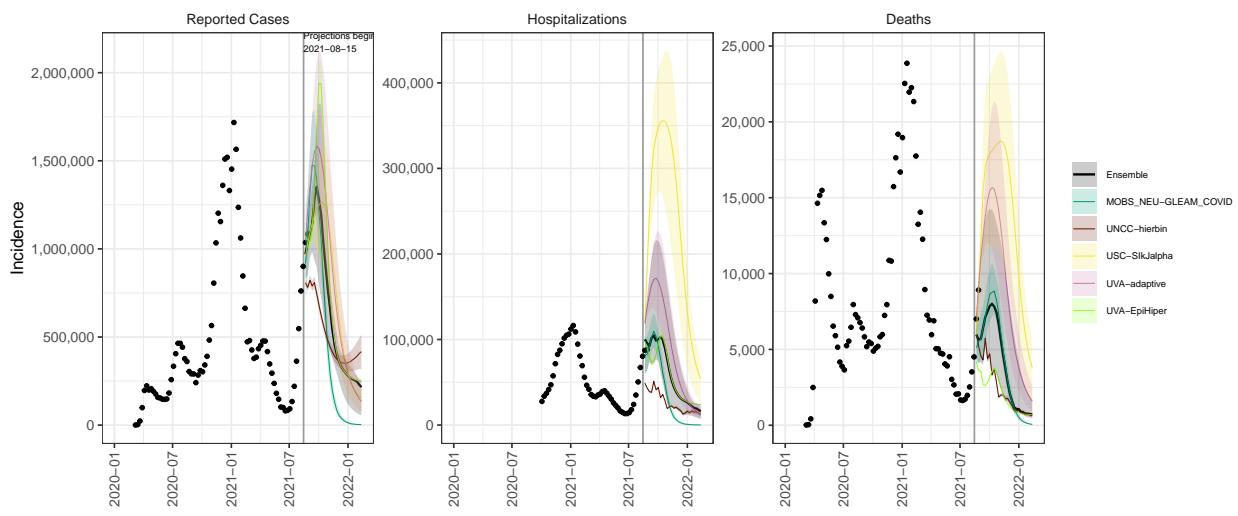


National model variation

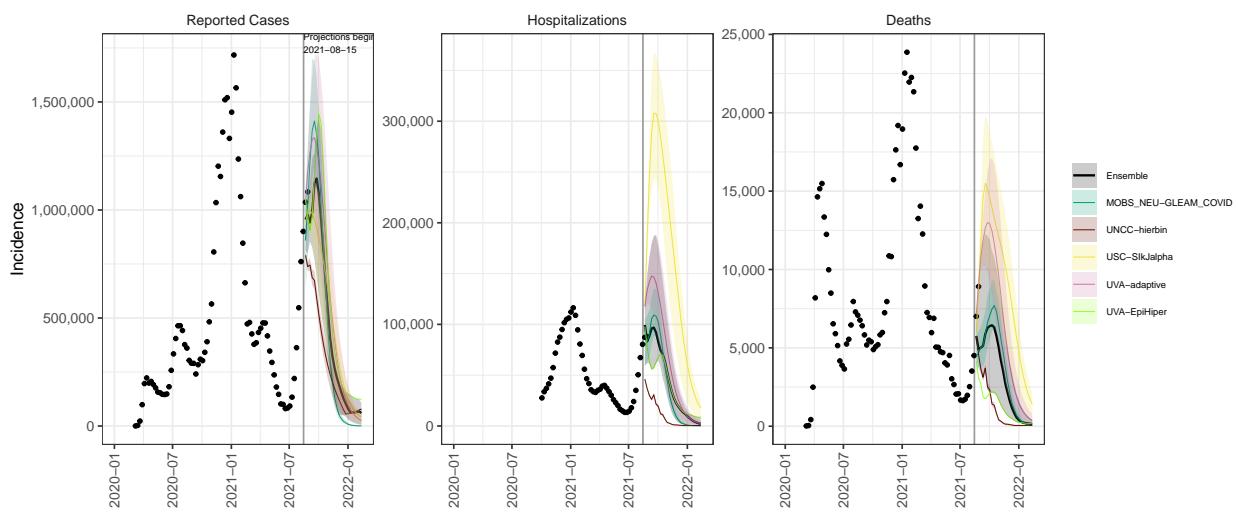
Individual model projections for national incident cases, hospitalizations and deaths.



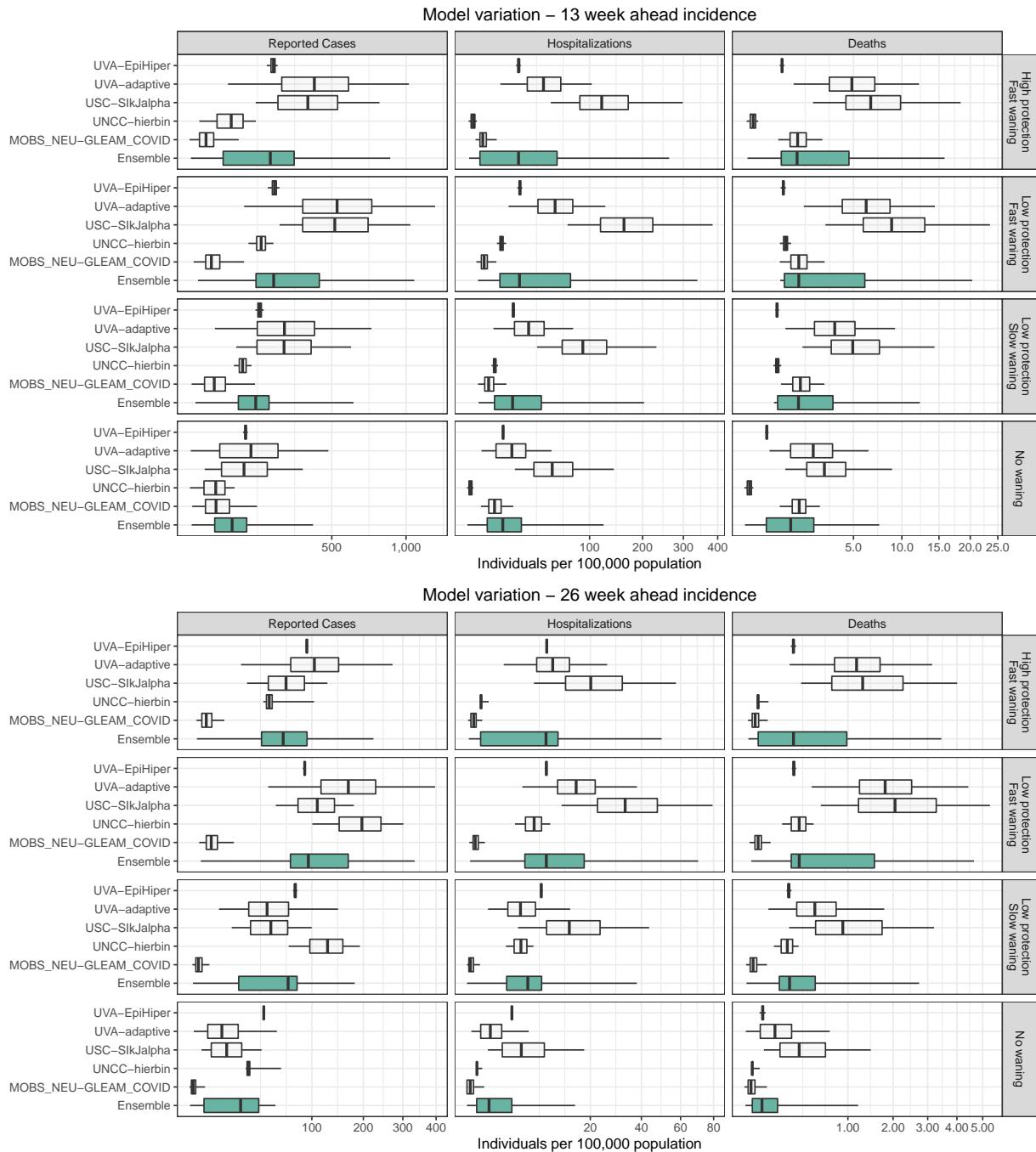
Individual model projections & 50% projection intervals – Low protection, Slow waning



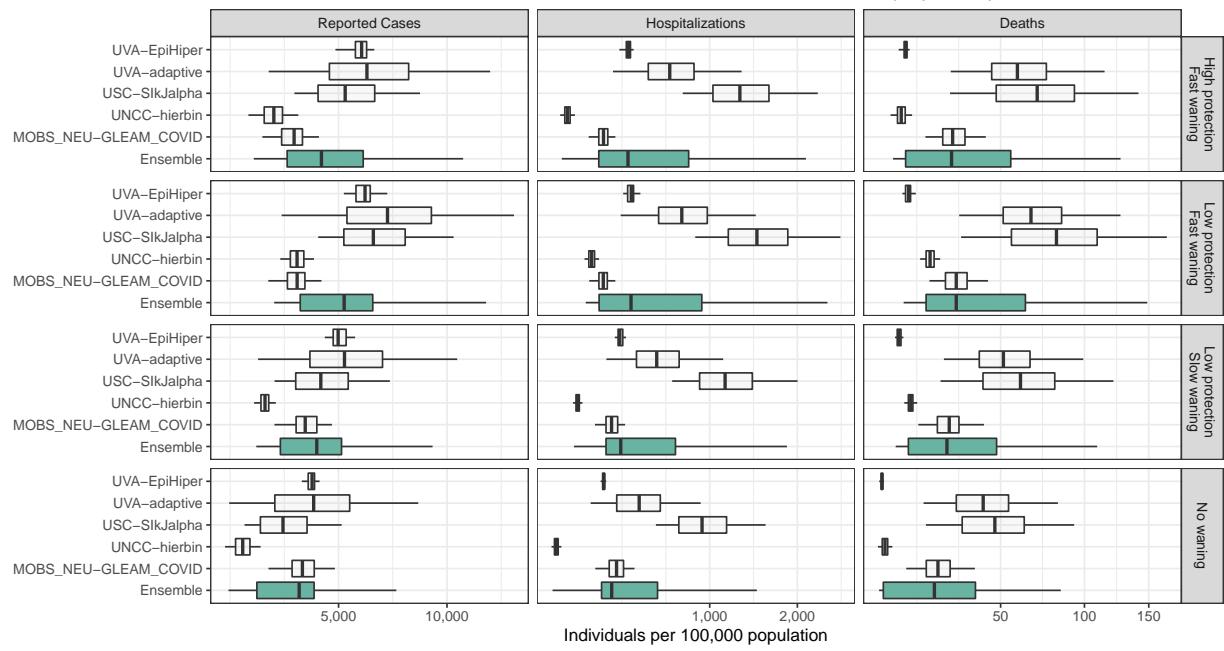
Individual model projections & 50% projection intervals – No waning



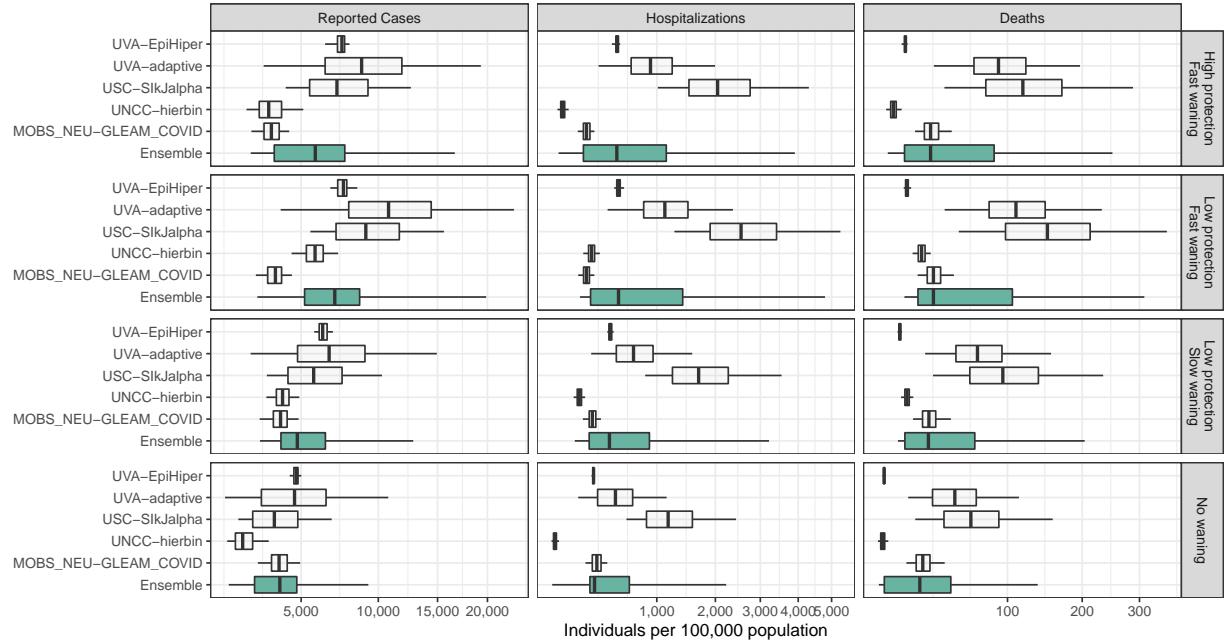
Projection distributions



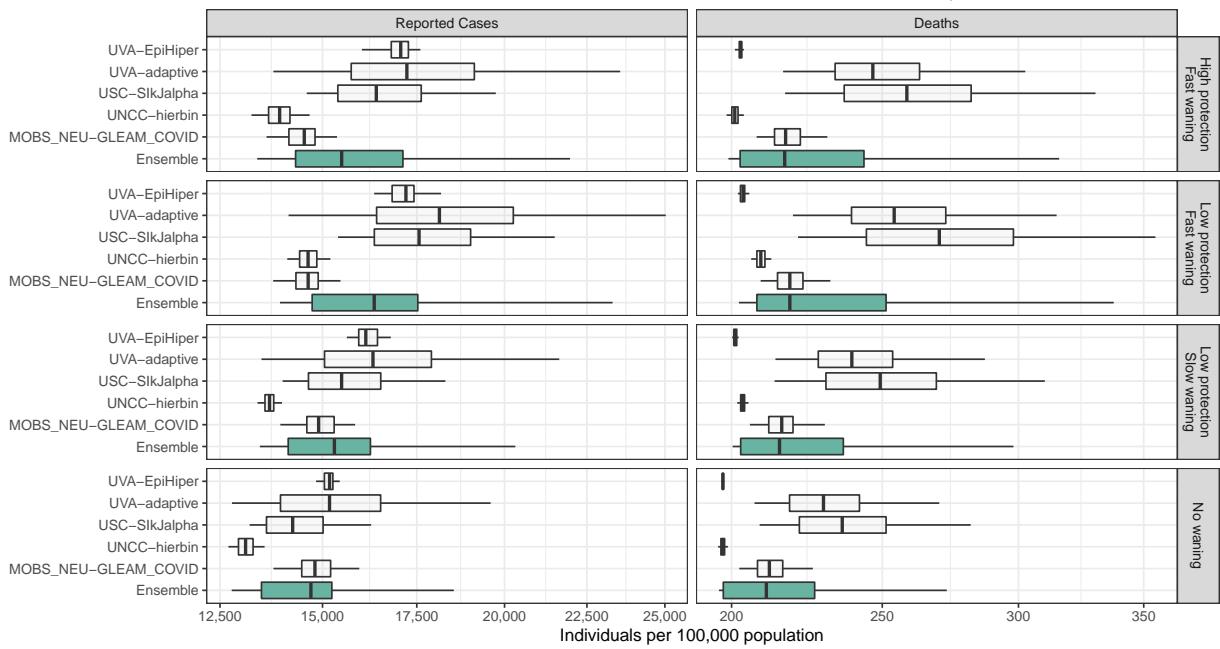
Model variation – 13 week ahead cumulative incidence over projection period



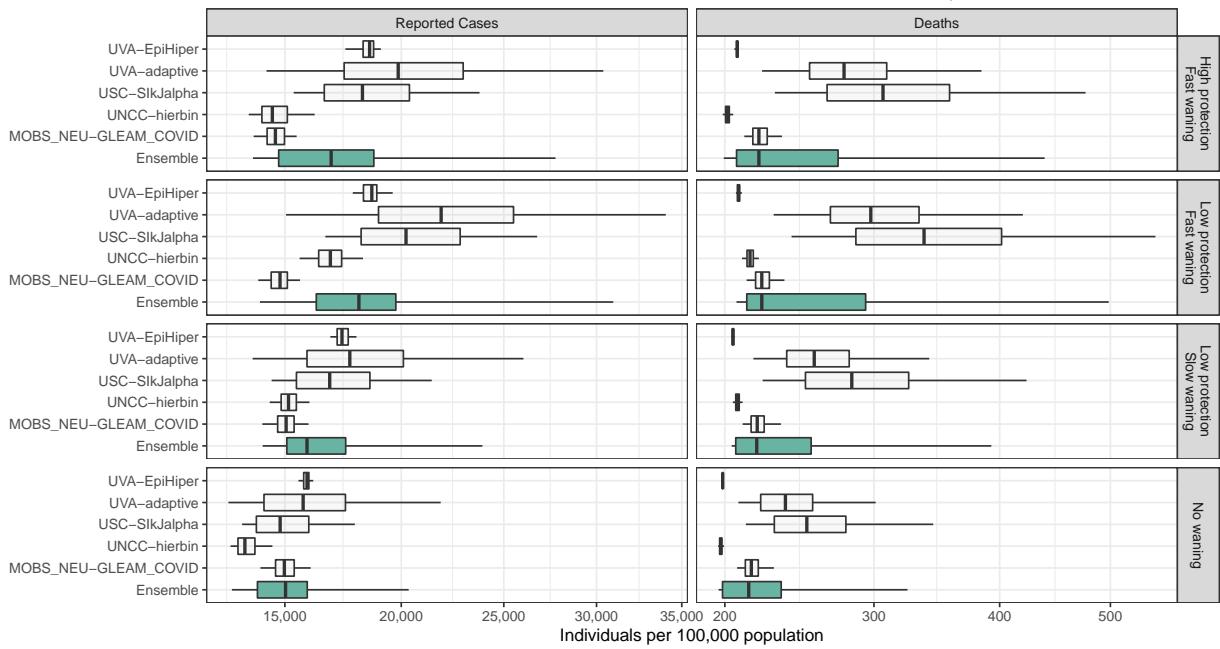
Model variation – 26 week ahead cumulative incidence over projection period



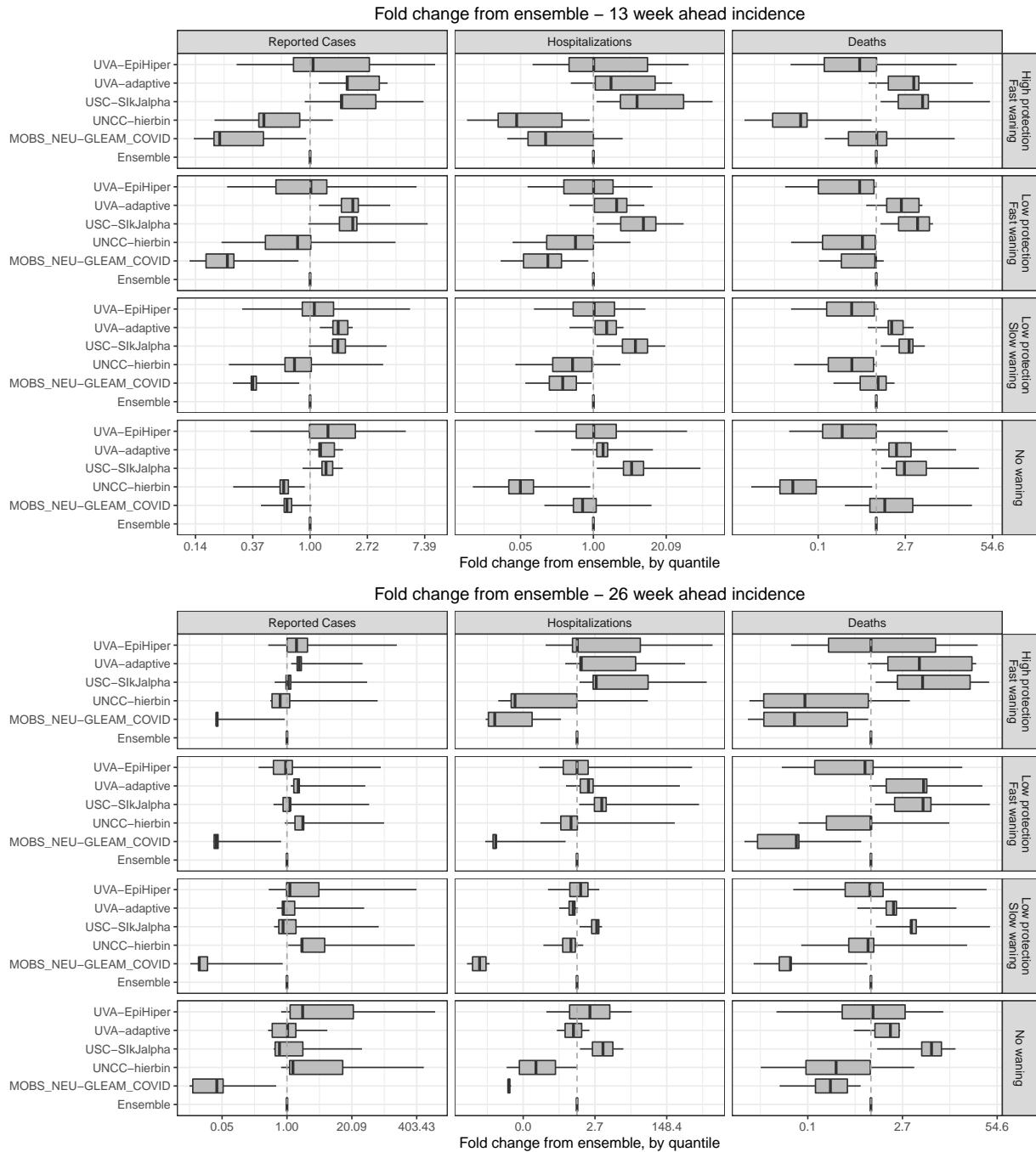
Model variation – 13 week ahead cumulative incidence over entire pandemic

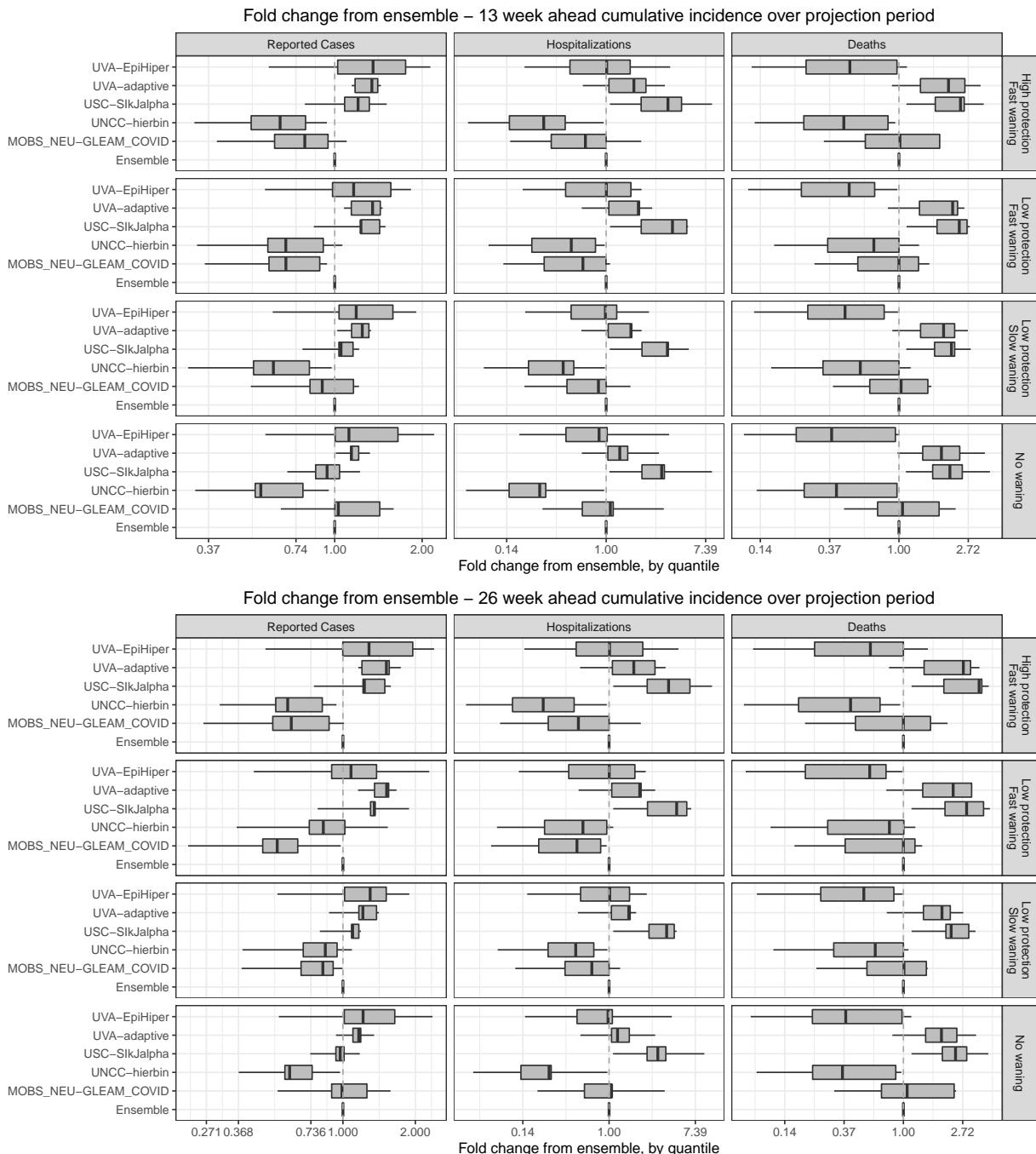


Model variation – 26 week ahead cumulative incidence over entire pandemic

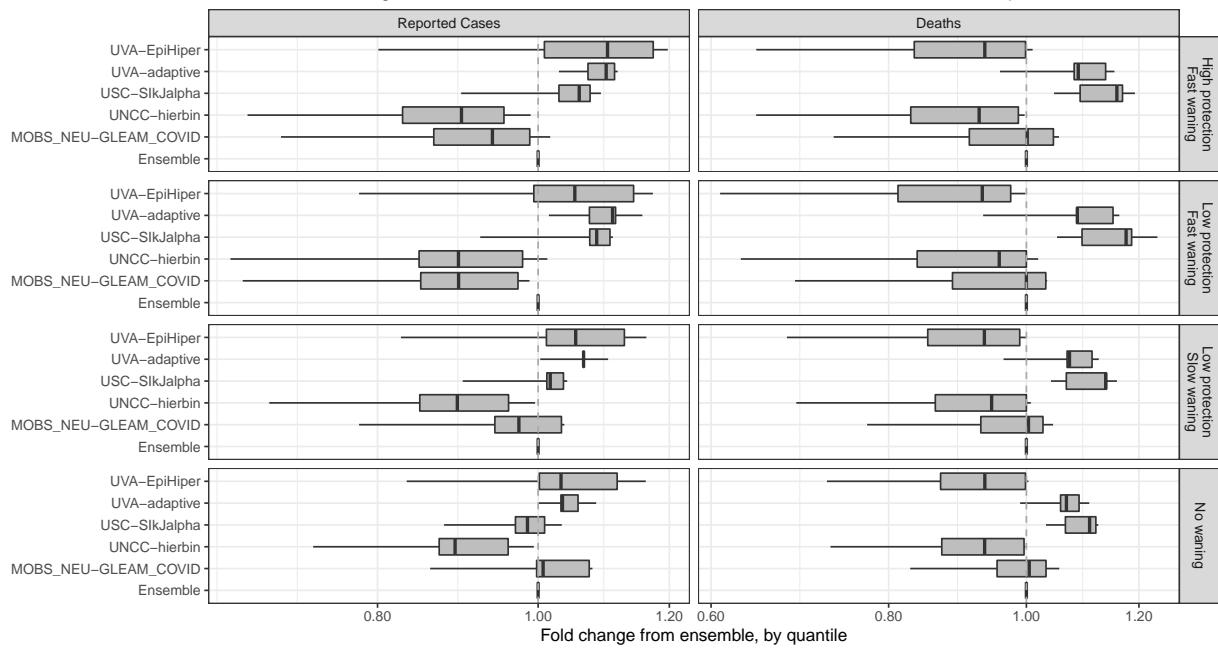


Difference between model and ensemble distributions

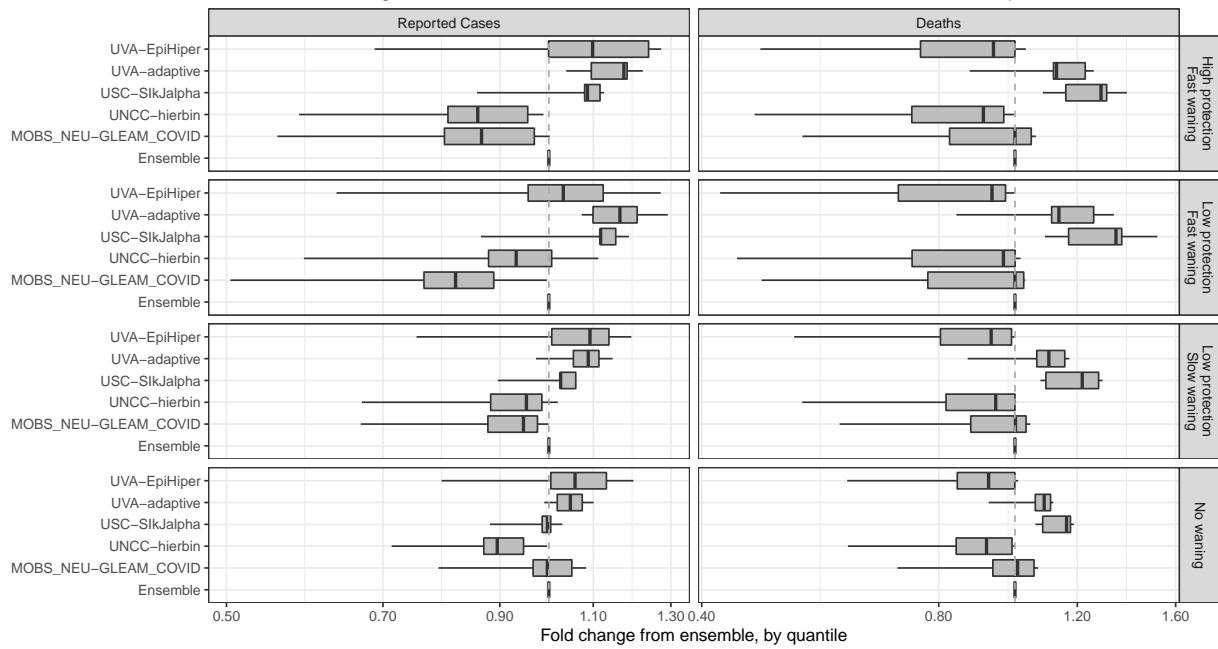




Fold change from ensemble – 13 week ahead cumulative incidence over entire pandemic

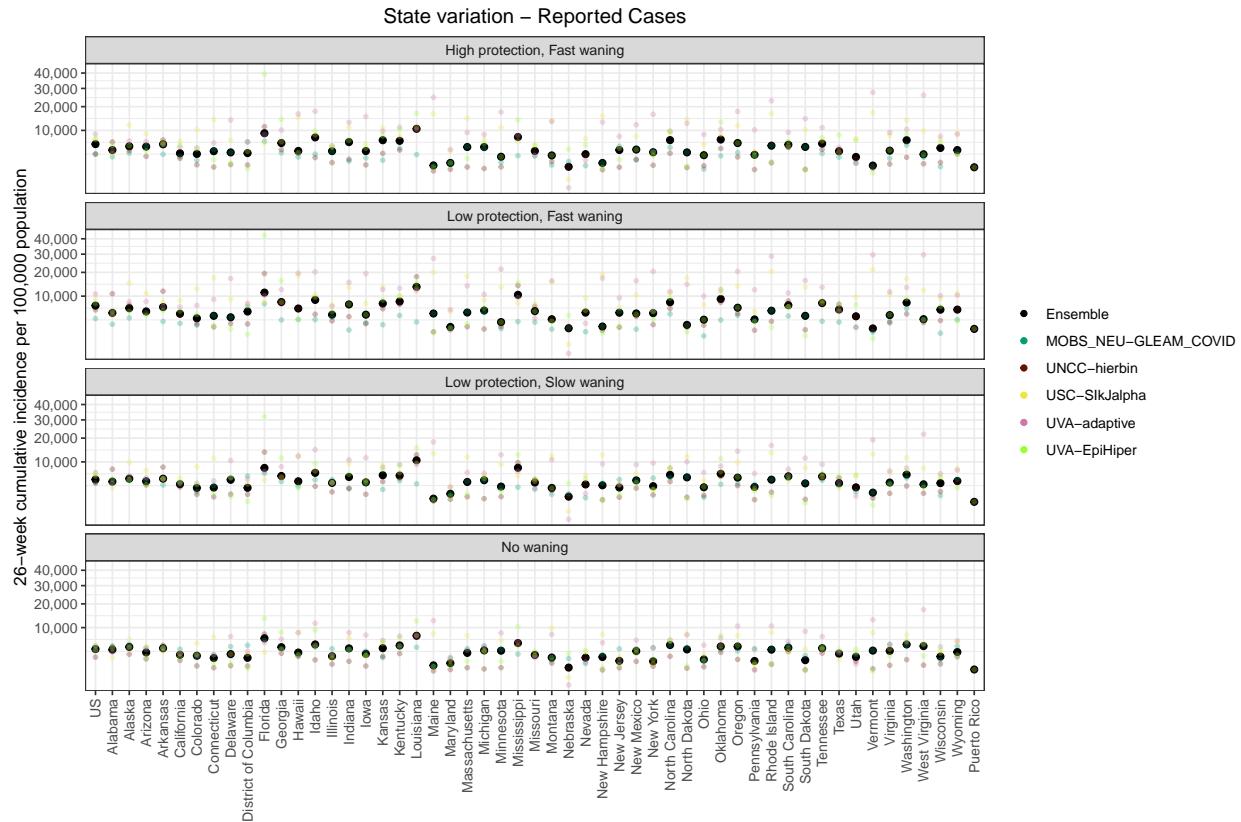


Fold change from ensemble – 26 week ahead cumulative incidence over entire pandemic

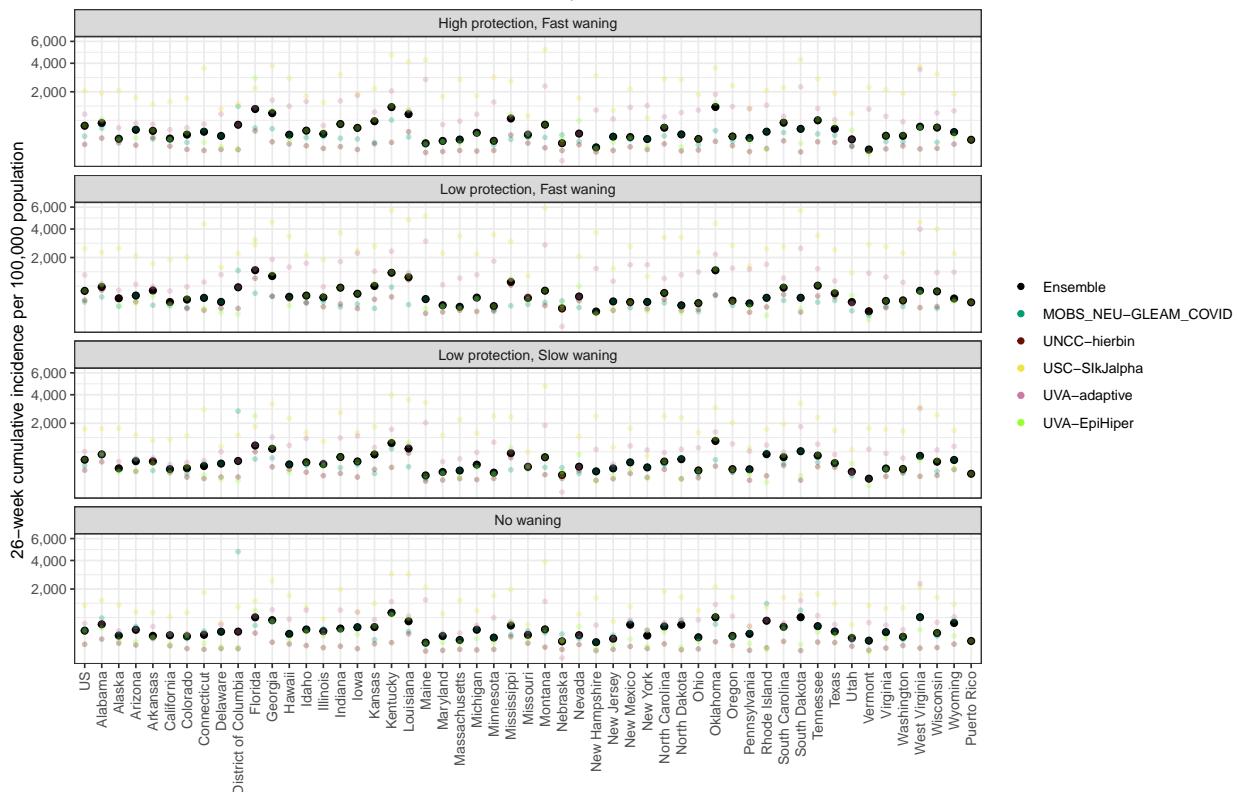


Supplemental Plots

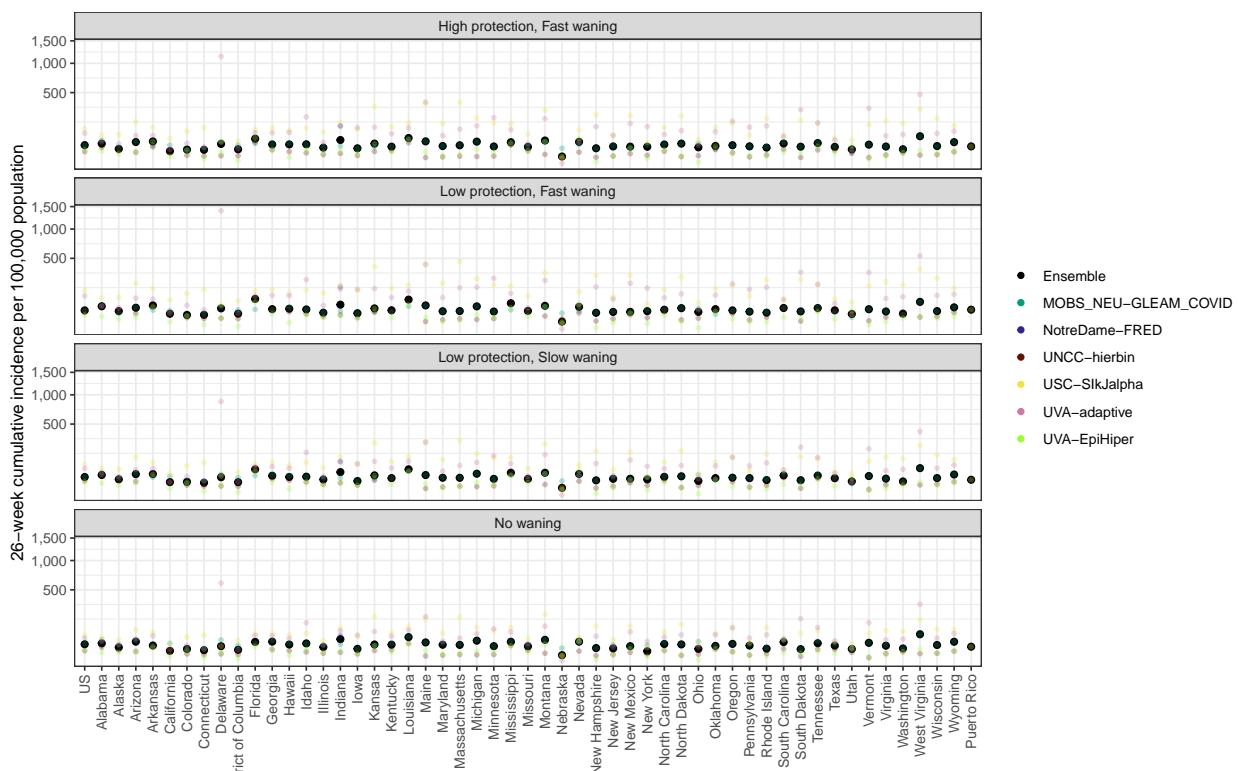
Individual model and ensembles projections for state-level cumulative incidence per 100,000 population over 26-week projection period. Please note the relatively small number of models incorporated in the ensemble at this stage, particularly states and territories for which only one or two models have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



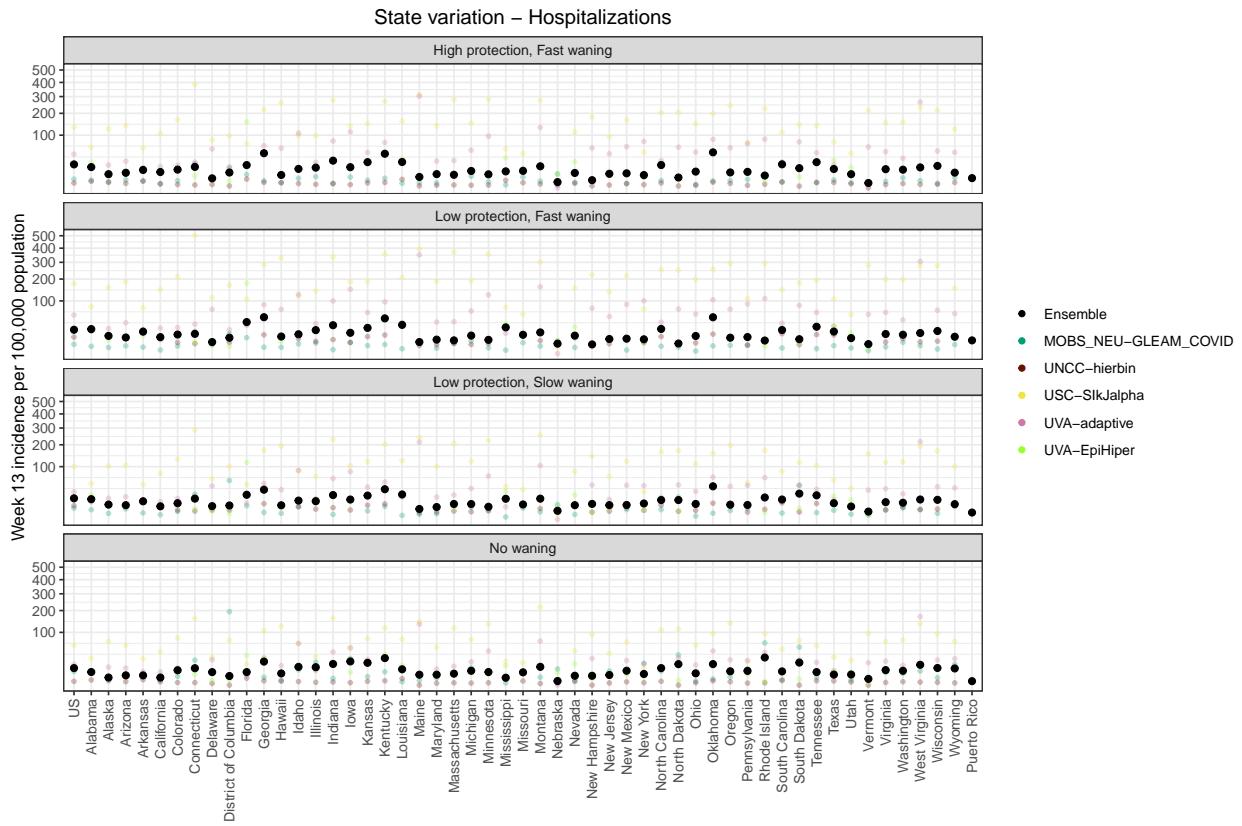
State variation – Hospitalizations

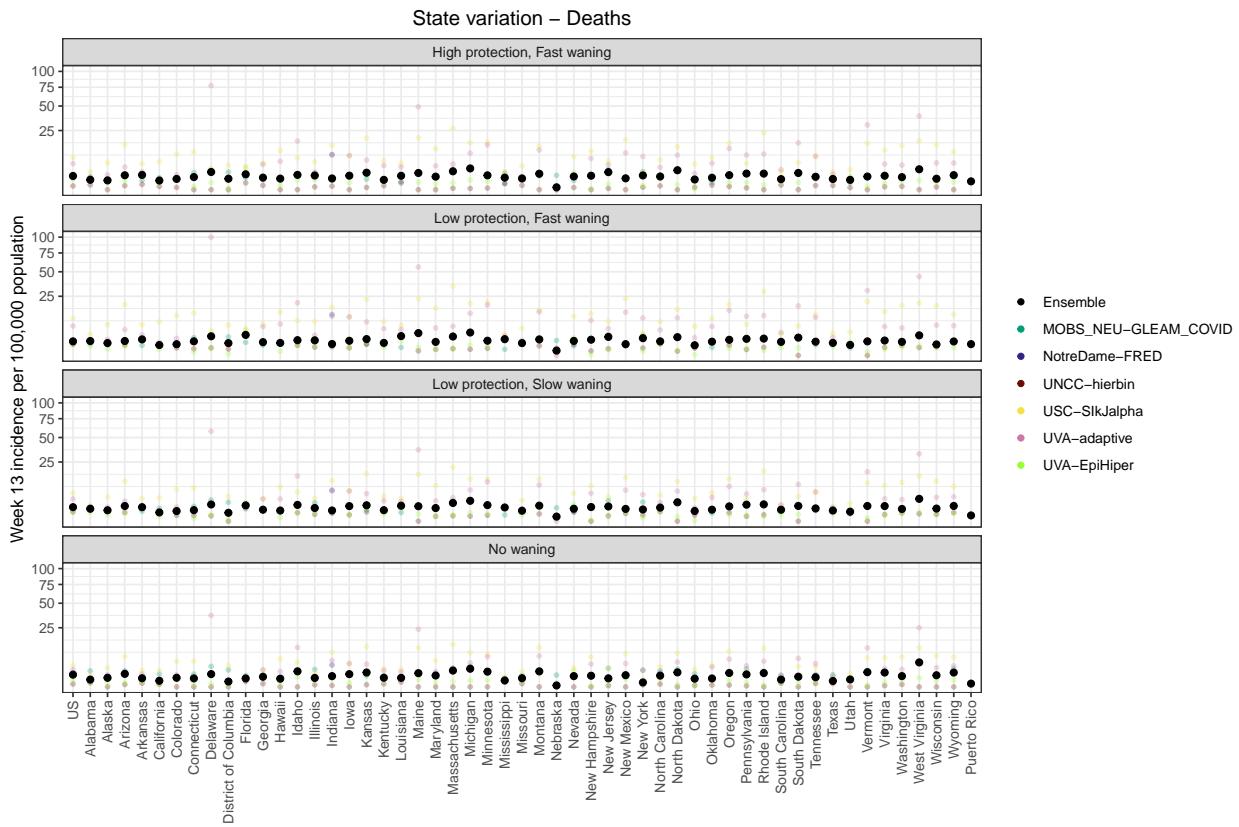


State variation – Deaths

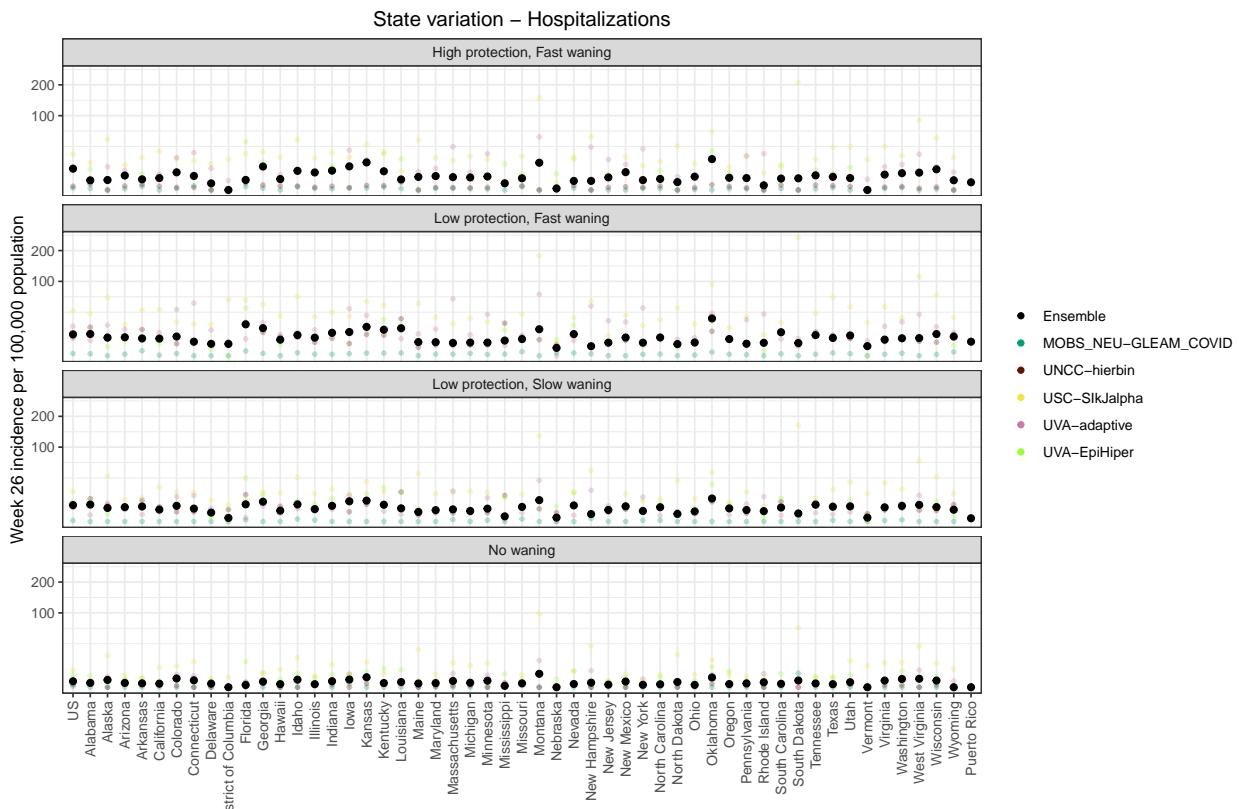


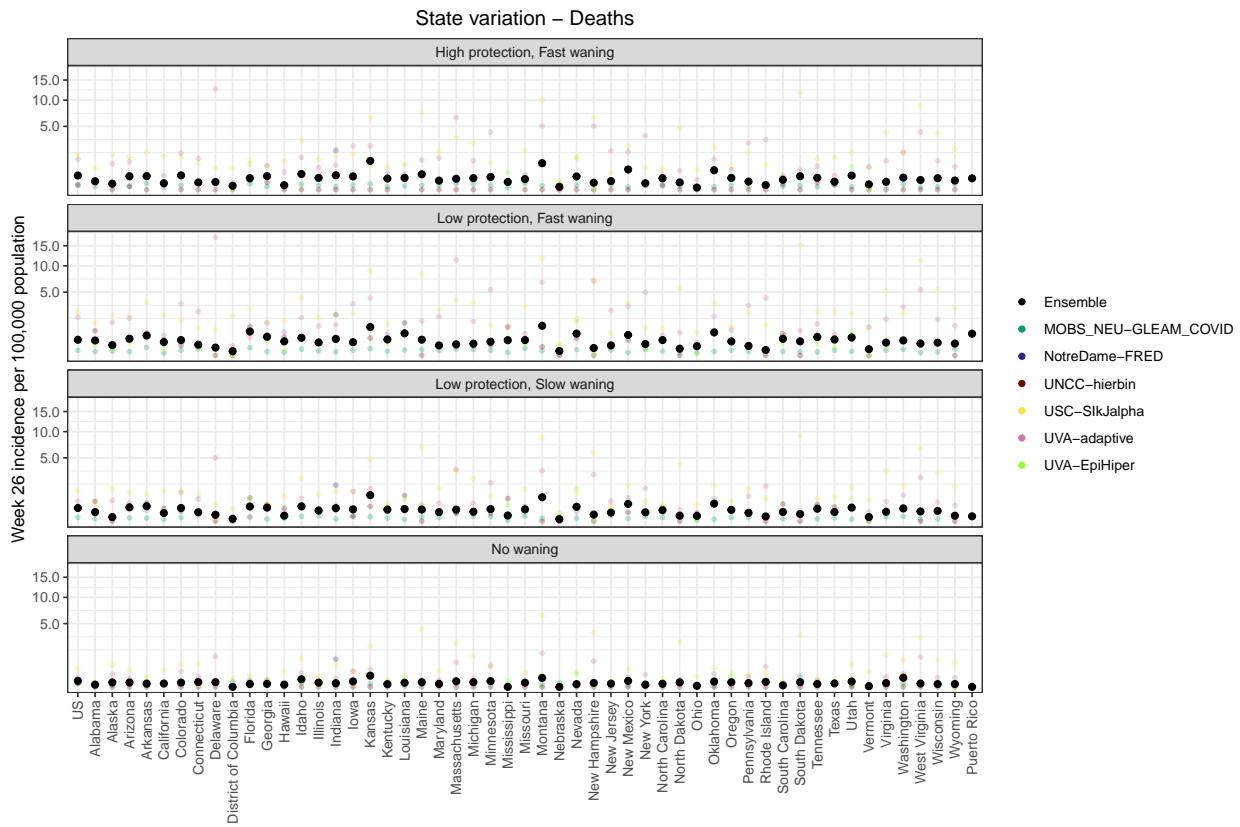
Individual model and ensembles projections for state-level death and hospitalization incidence per 100,000 population at week 13.



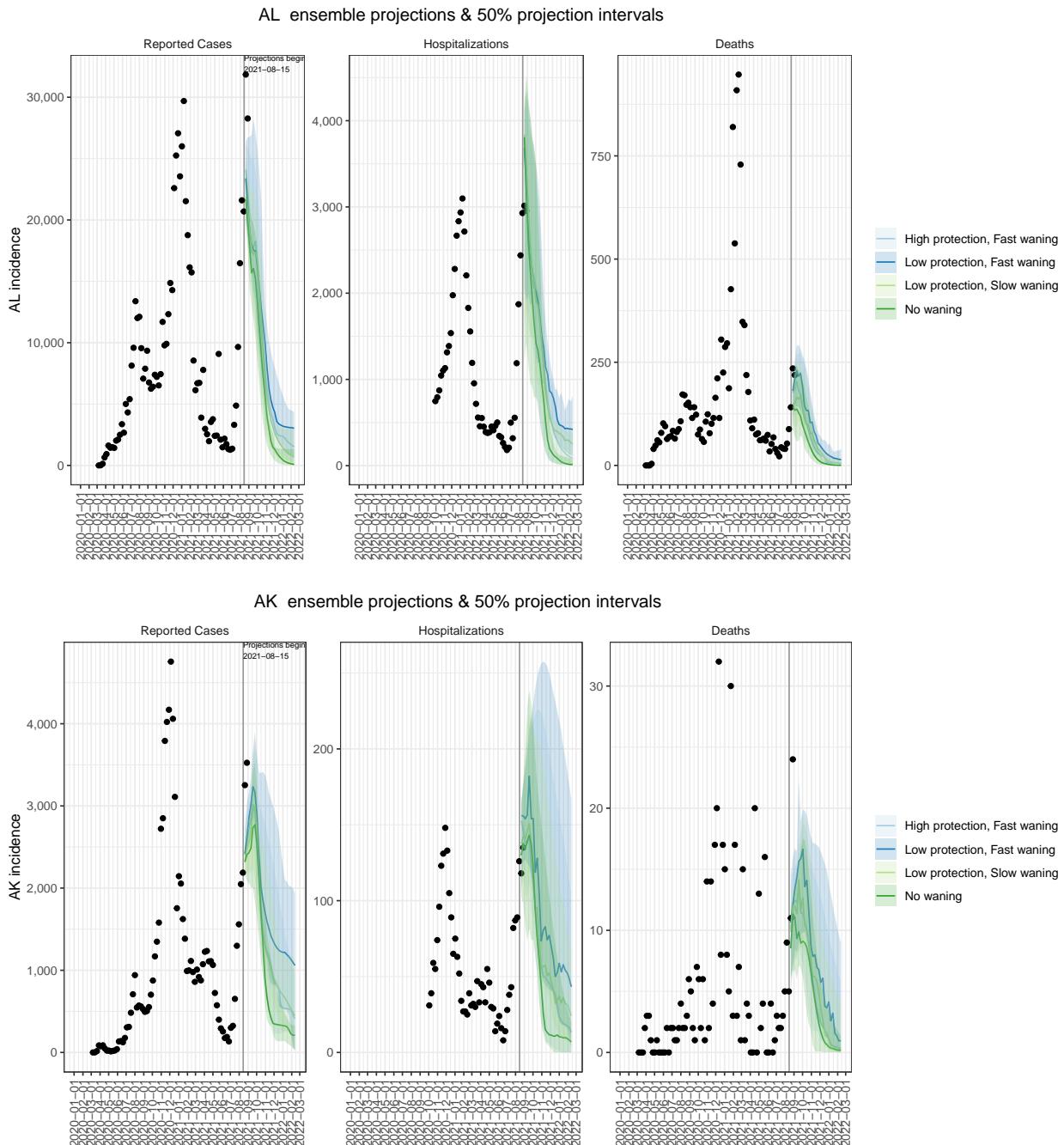


Individual model and ensembles projections for state-level incidence per 100,000 population at week 26.

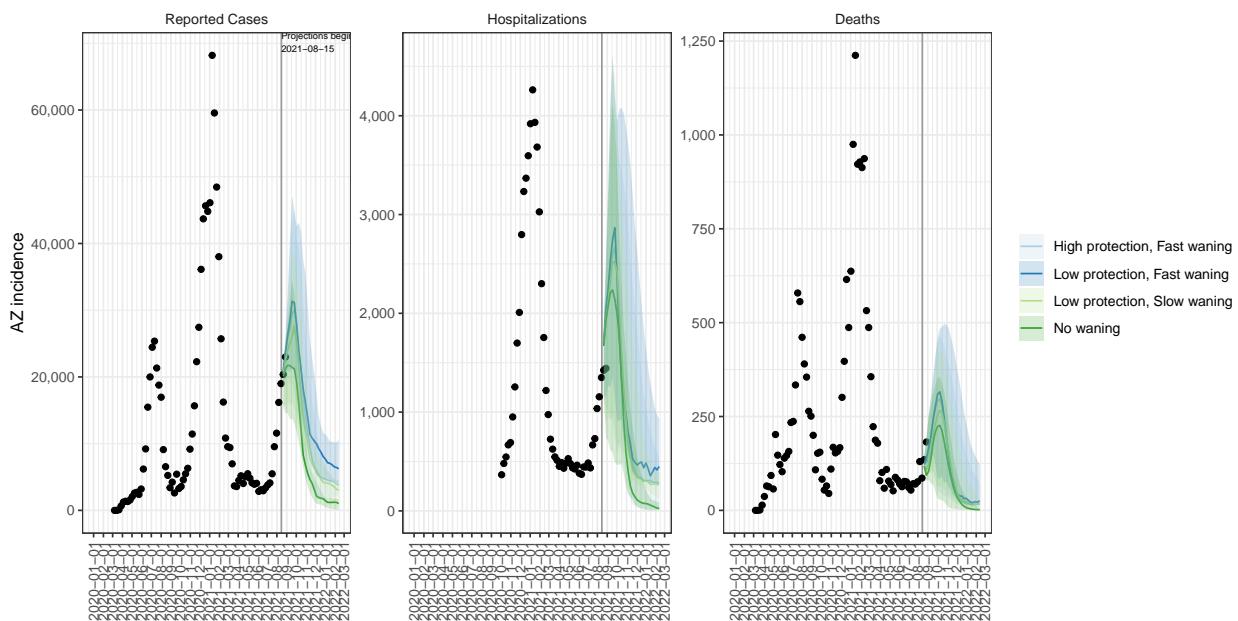




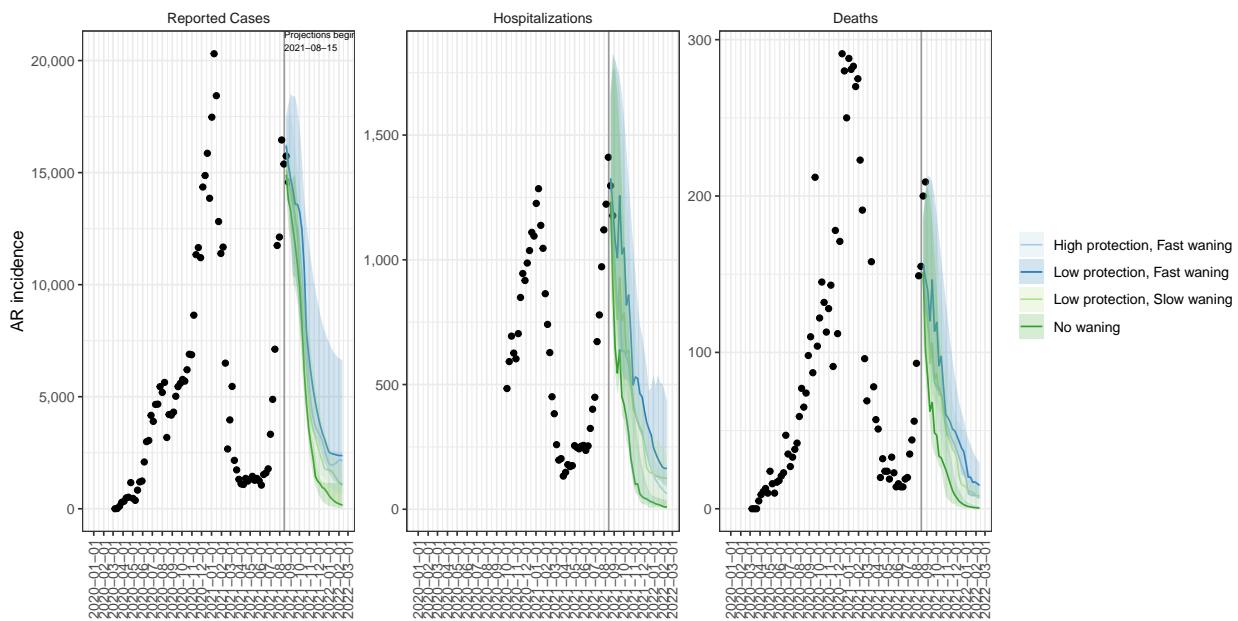
State-level ensemble plots



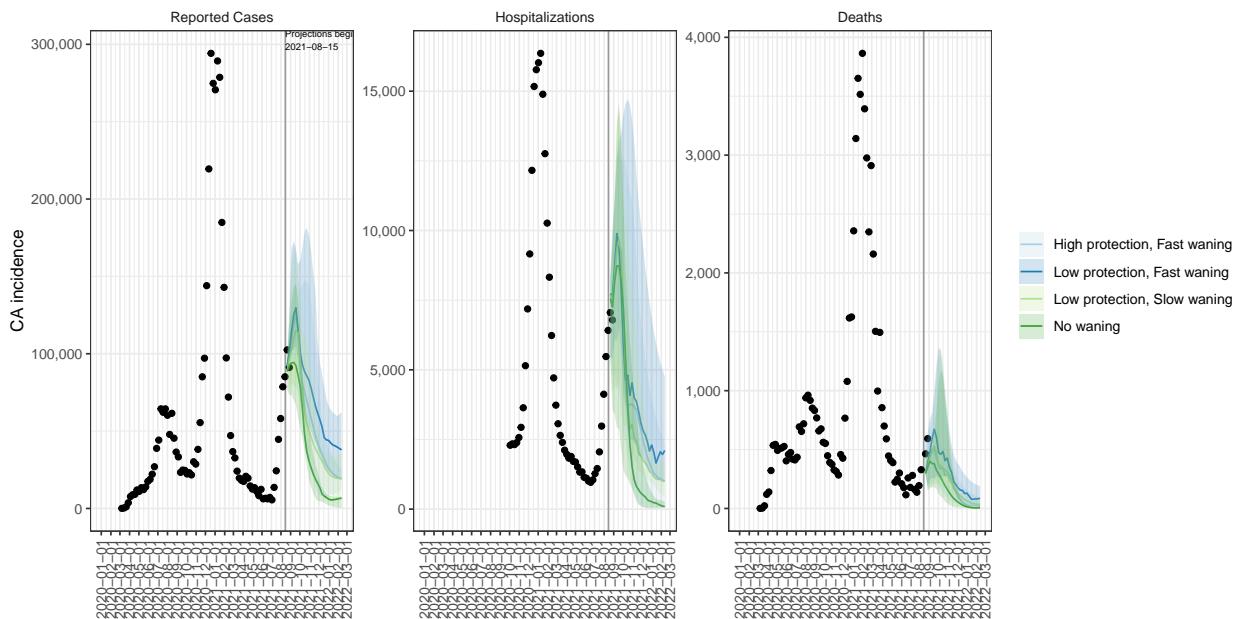
AZ ensemble projections & 50% projection intervals



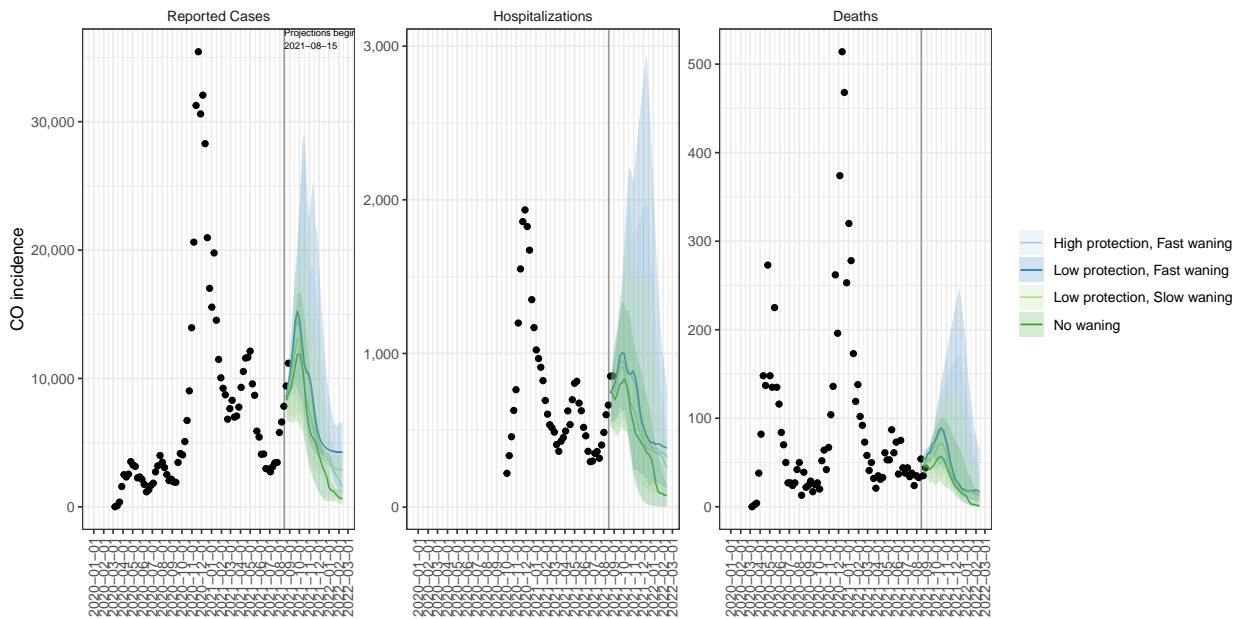
AR ensemble projections & 50% projection intervals



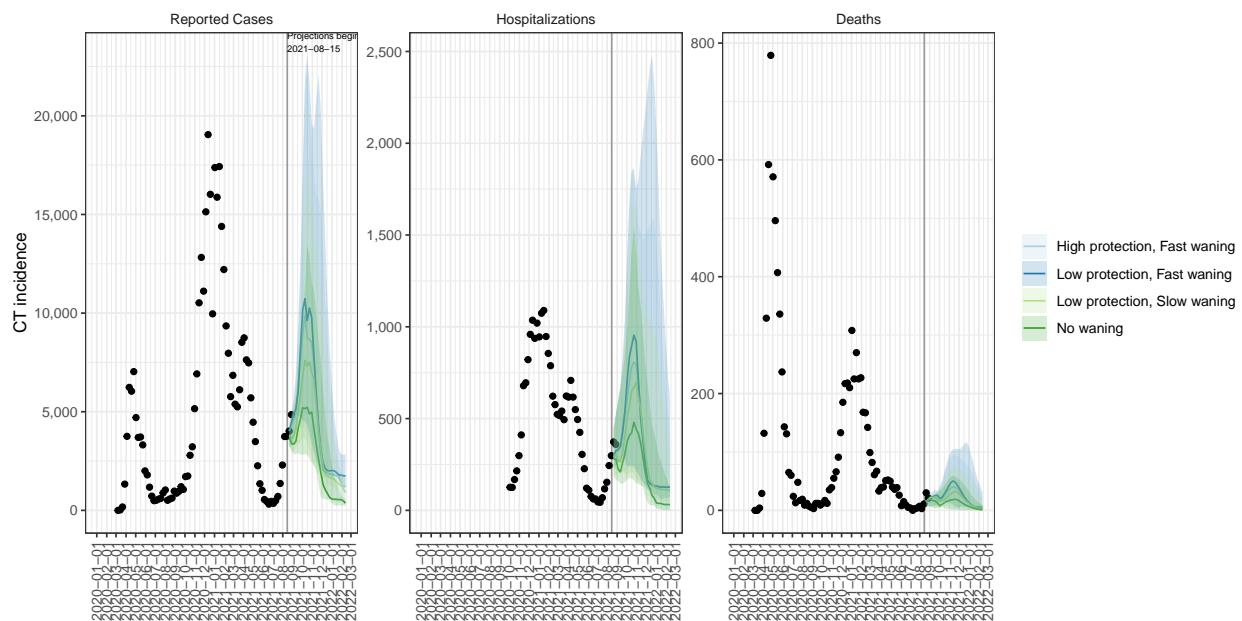
CA ensemble projections & 50% projection intervals



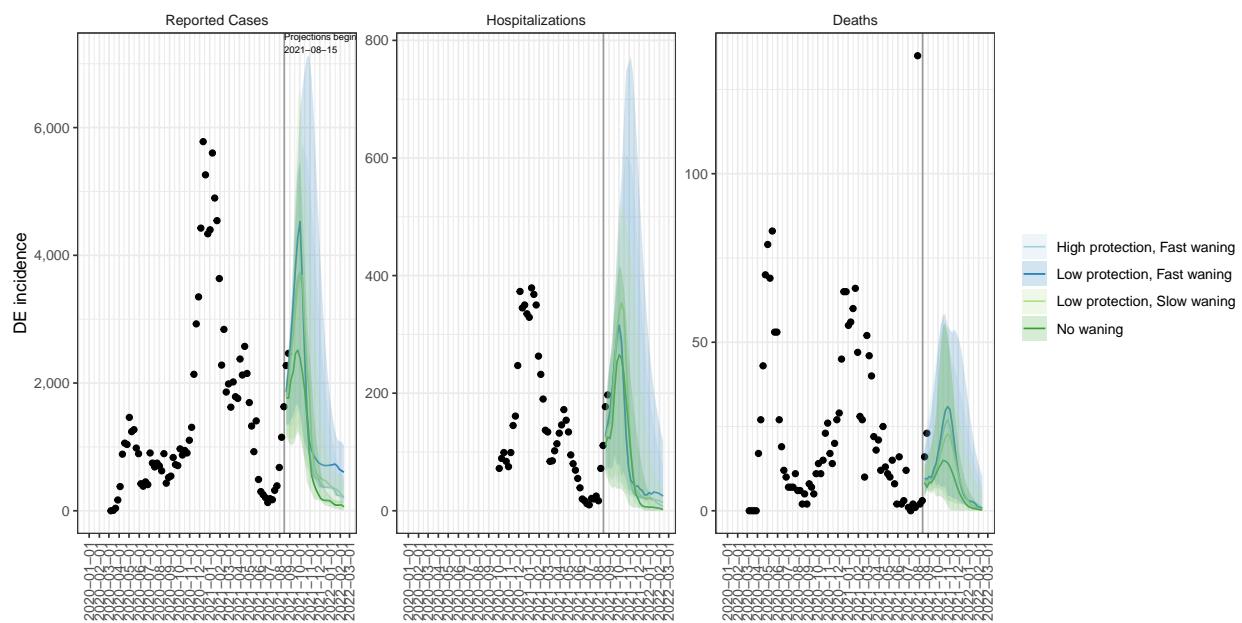
CO ensemble projections & 50% projection intervals



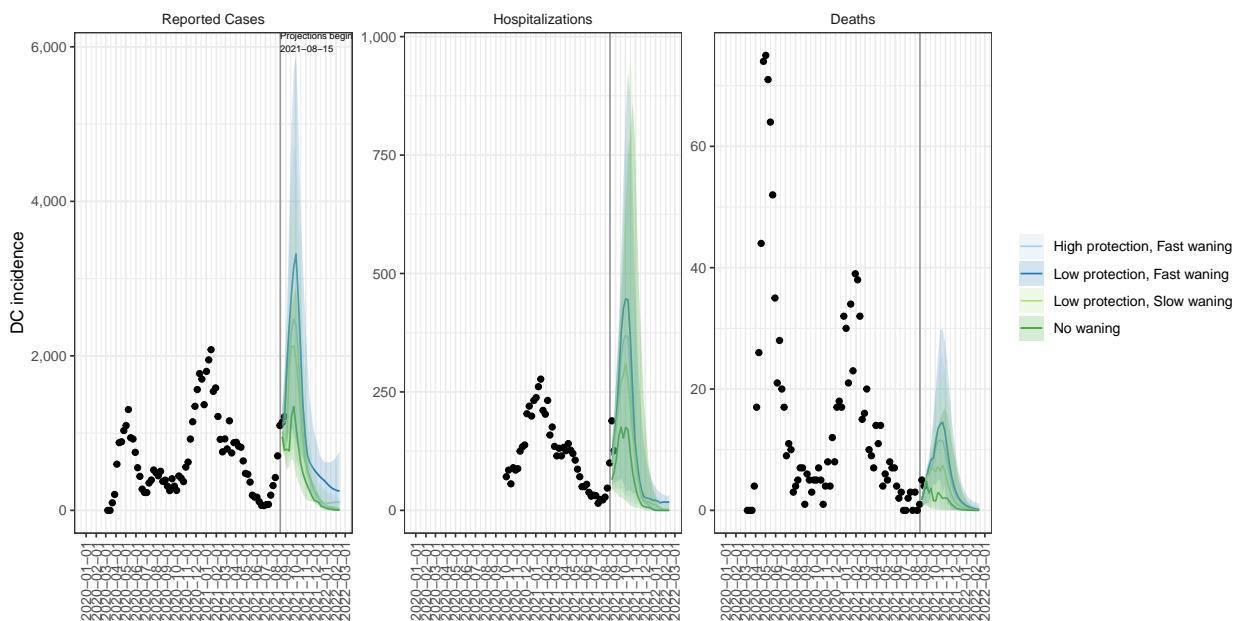
CT ensemble projections & 50% projection intervals



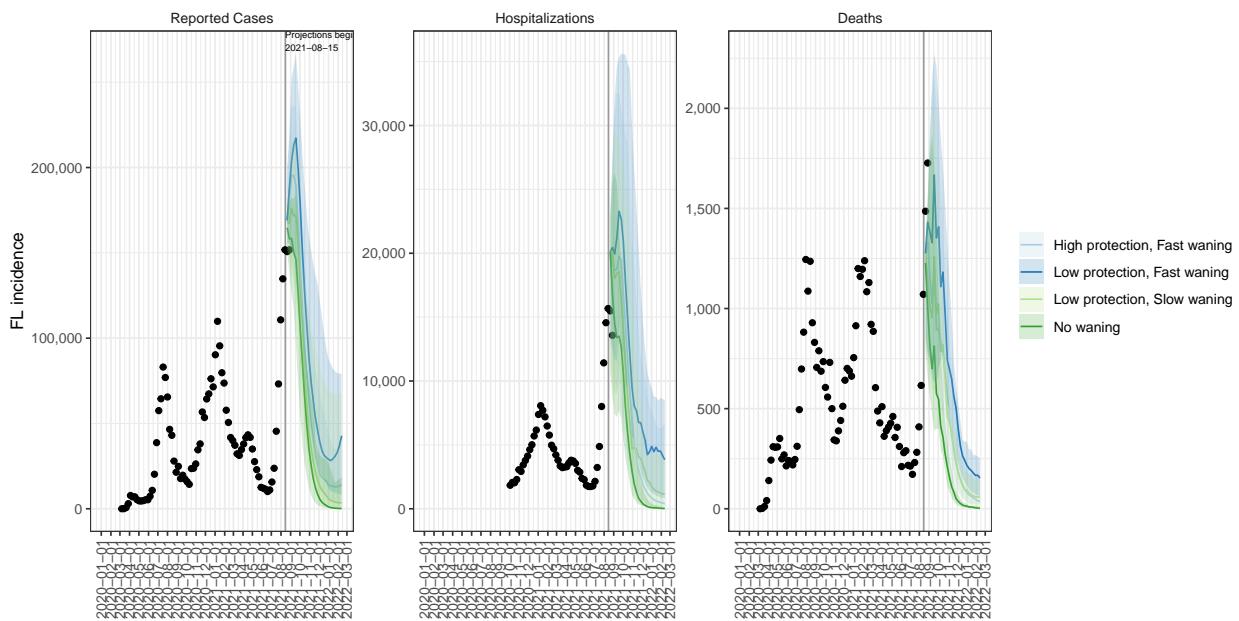
DE ensemble projections & 50% projection intervals



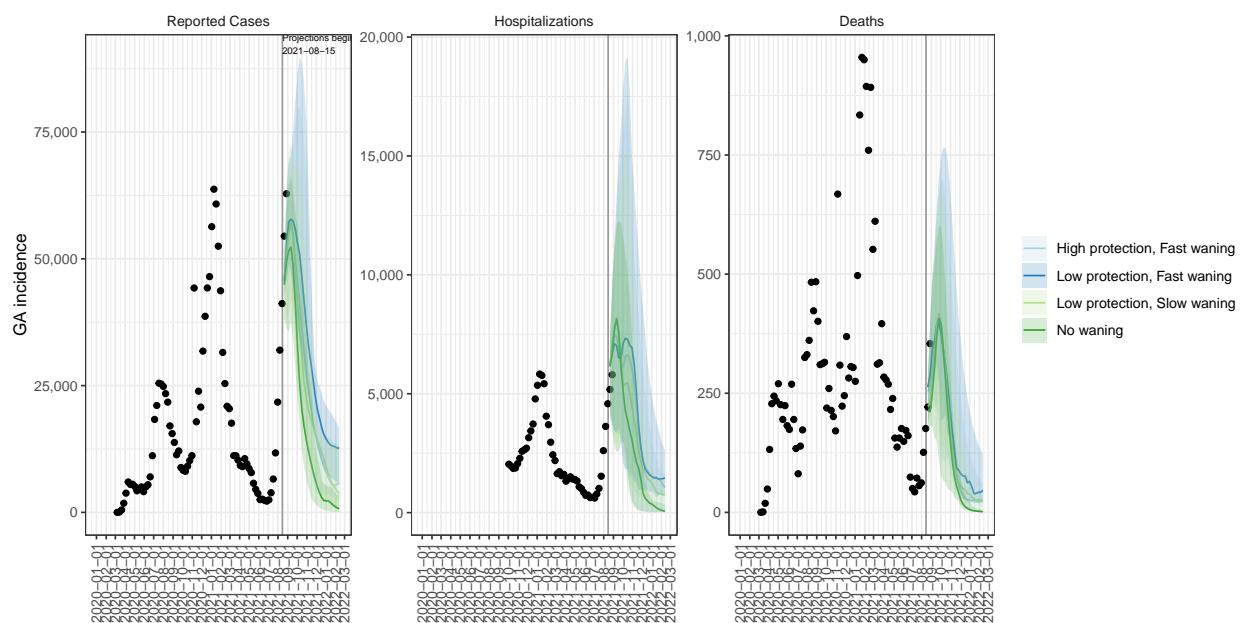
DC ensemble projections & 50% projection intervals



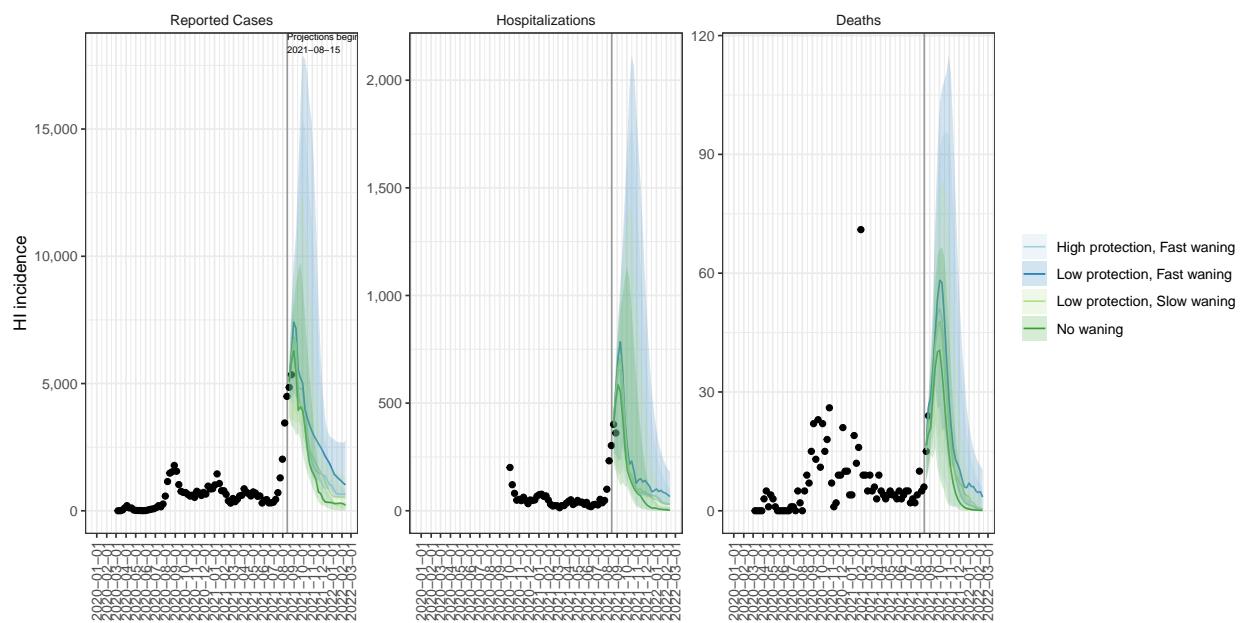
FL ensemble projections & 50% projection intervals



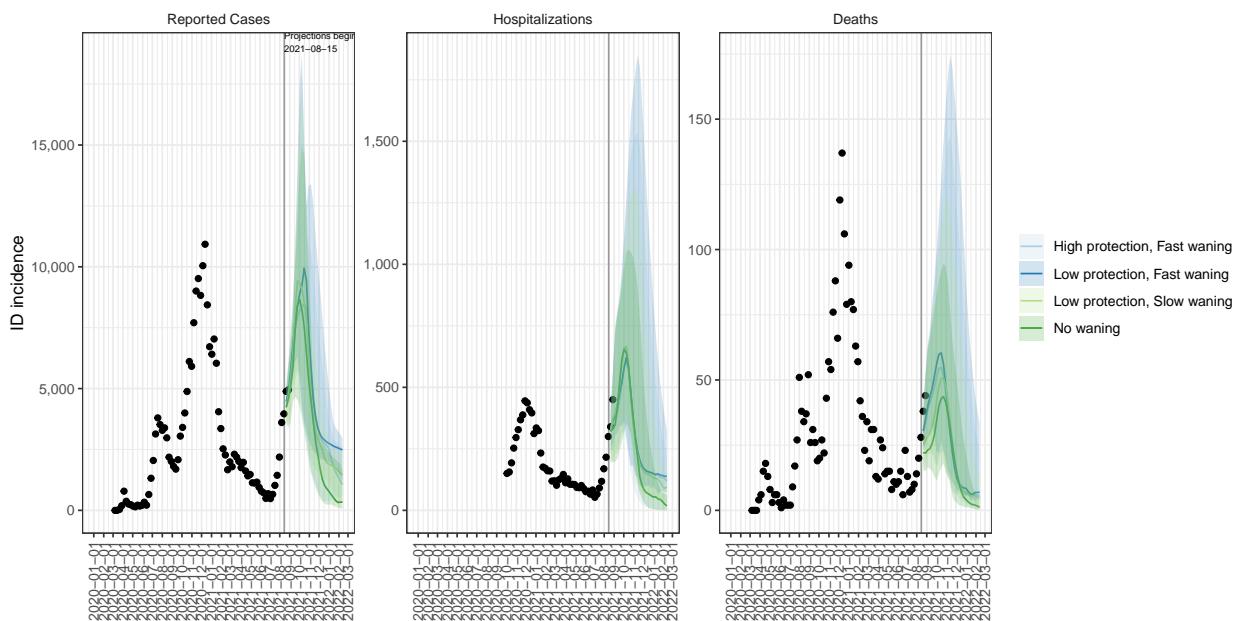
GA ensemble projections & 50% projection intervals



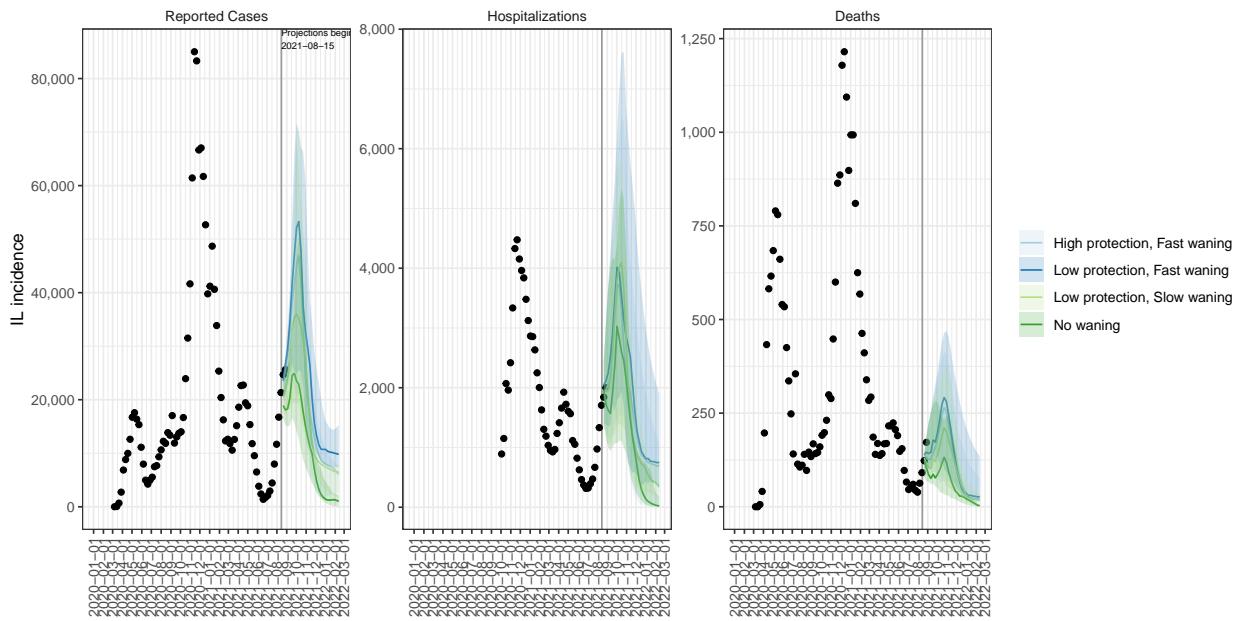
HI ensemble projections & 50% projection intervals



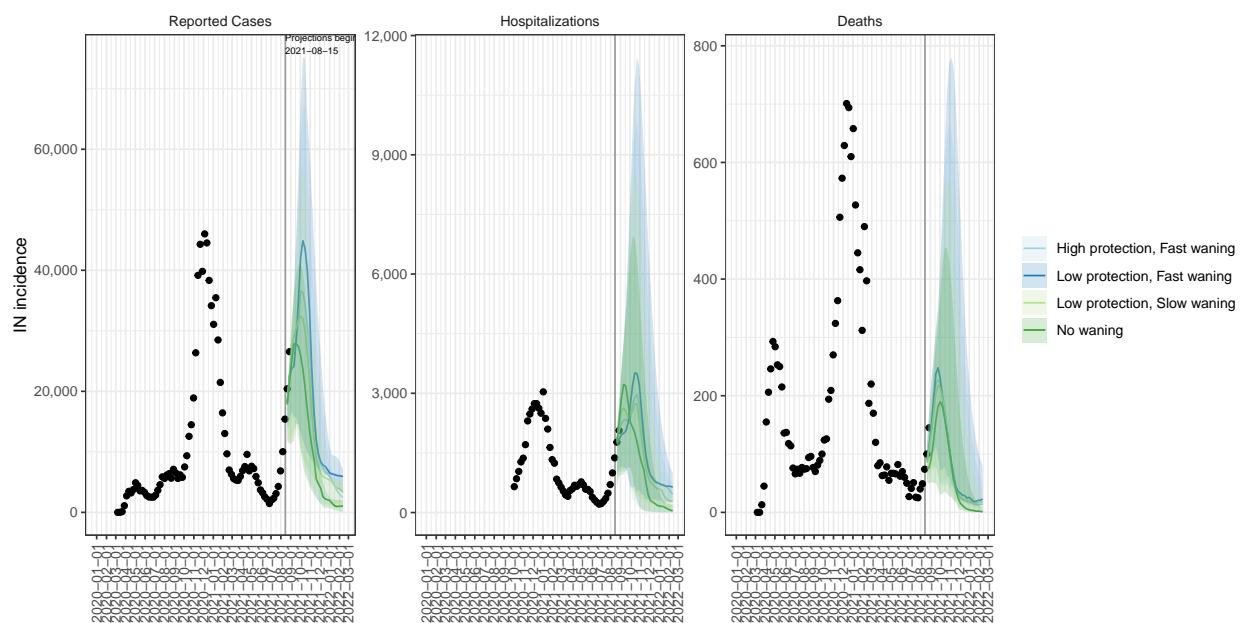
ID ensemble projections & 50% projection intervals



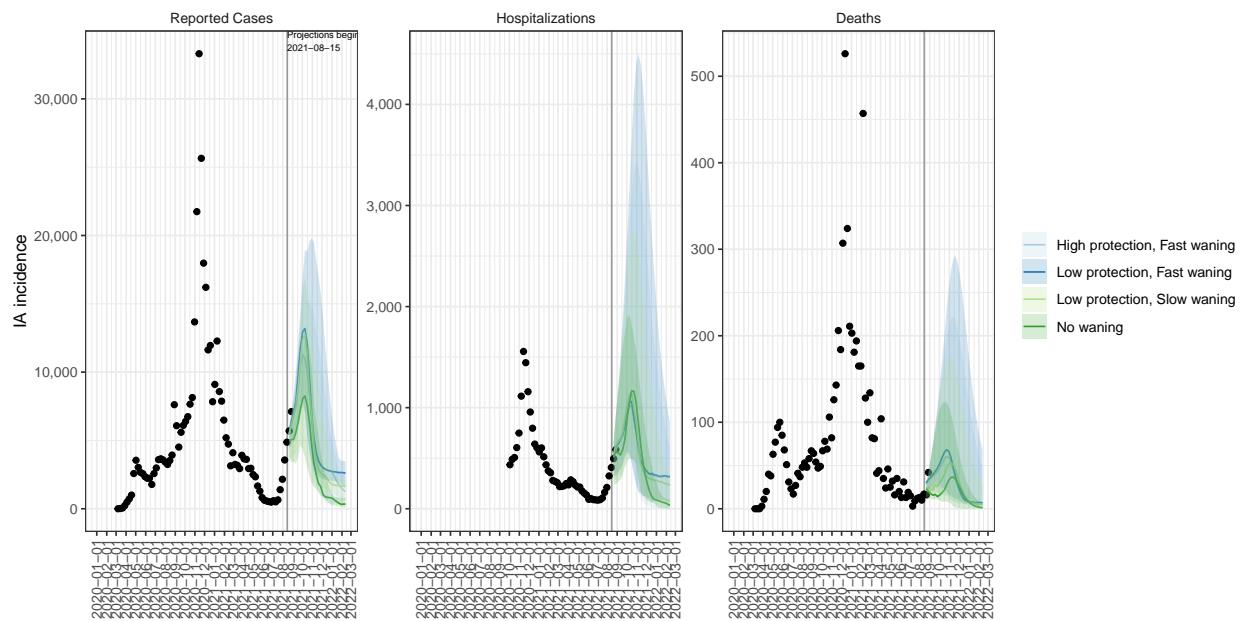
IL ensemble projections & 50% projection intervals



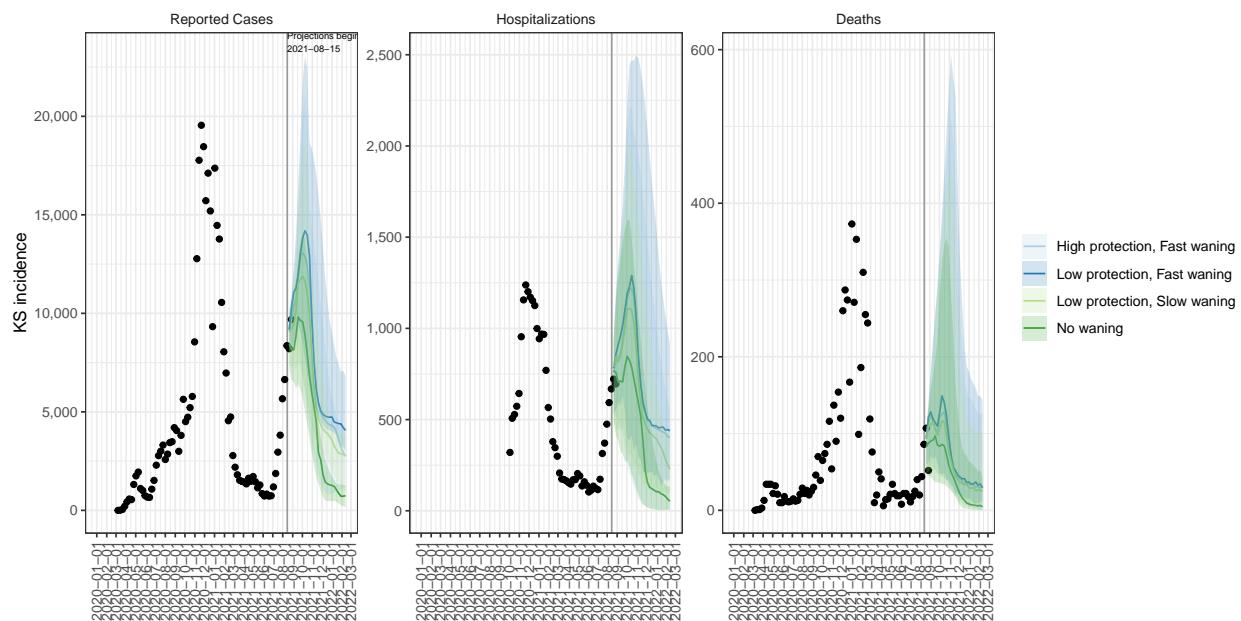
IN ensemble projections & 50% projection intervals



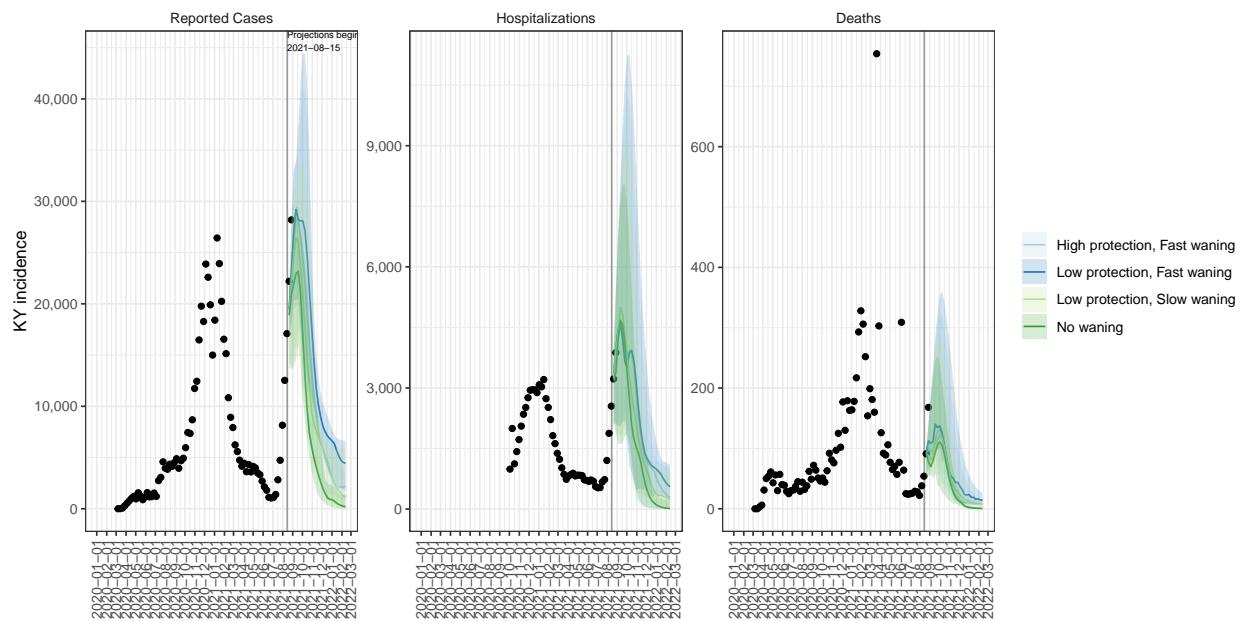
IA ensemble projections & 50% projection intervals



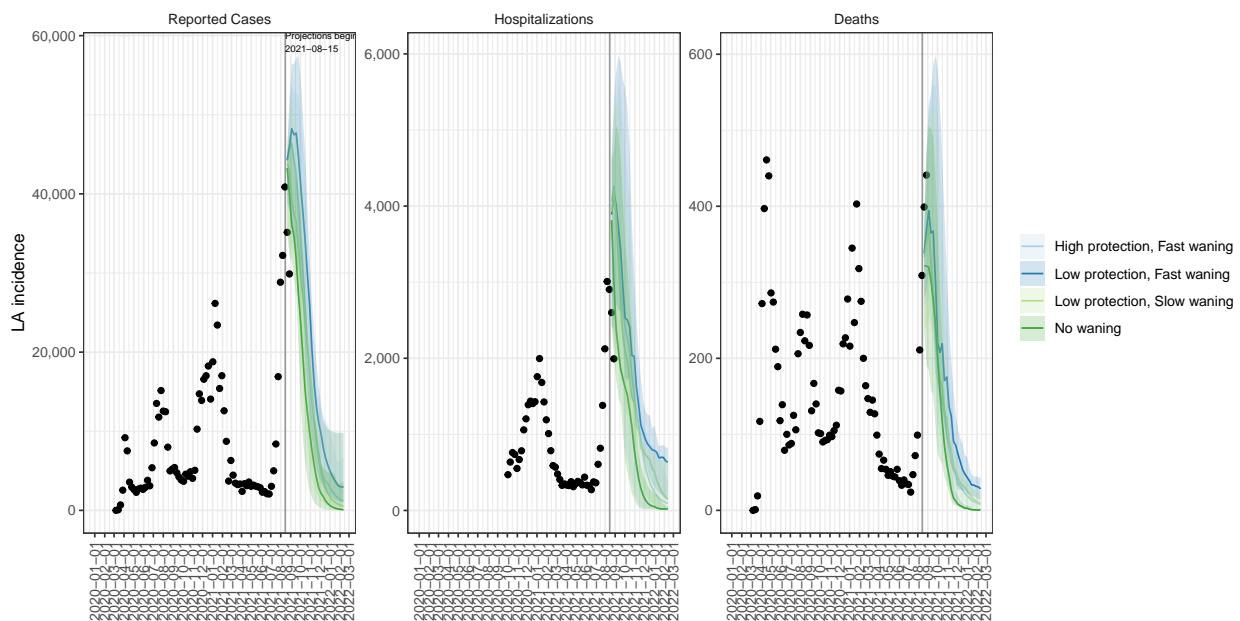
KS ensemble projections & 50% projection intervals



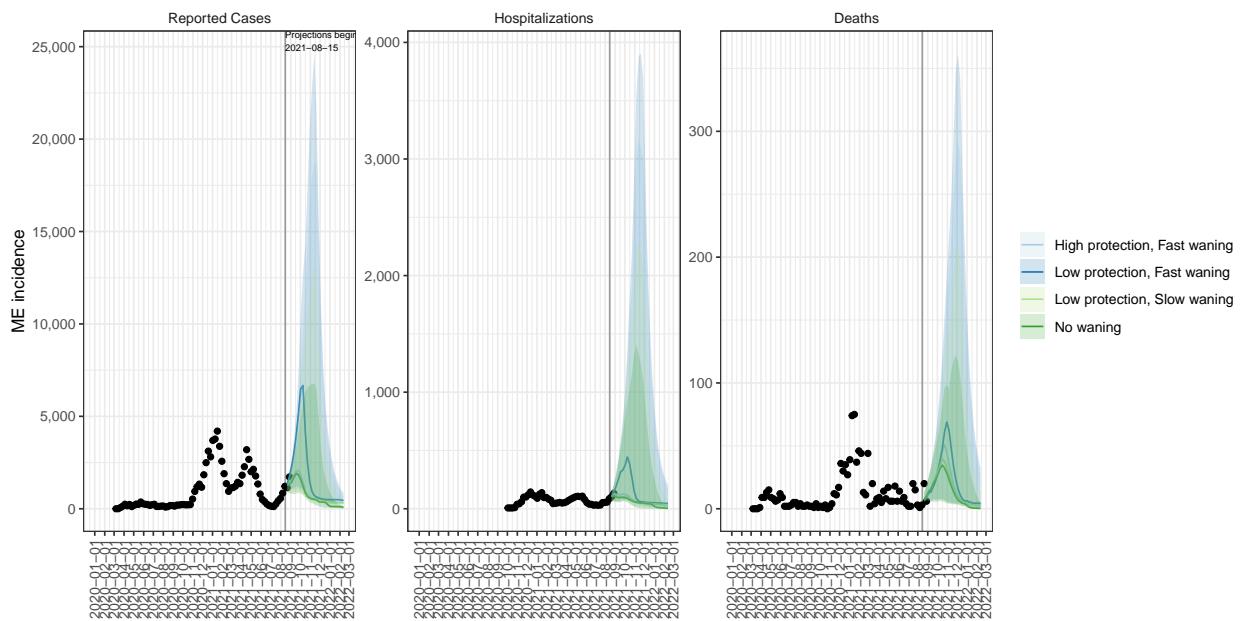
KY ensemble projections & 50% projection intervals



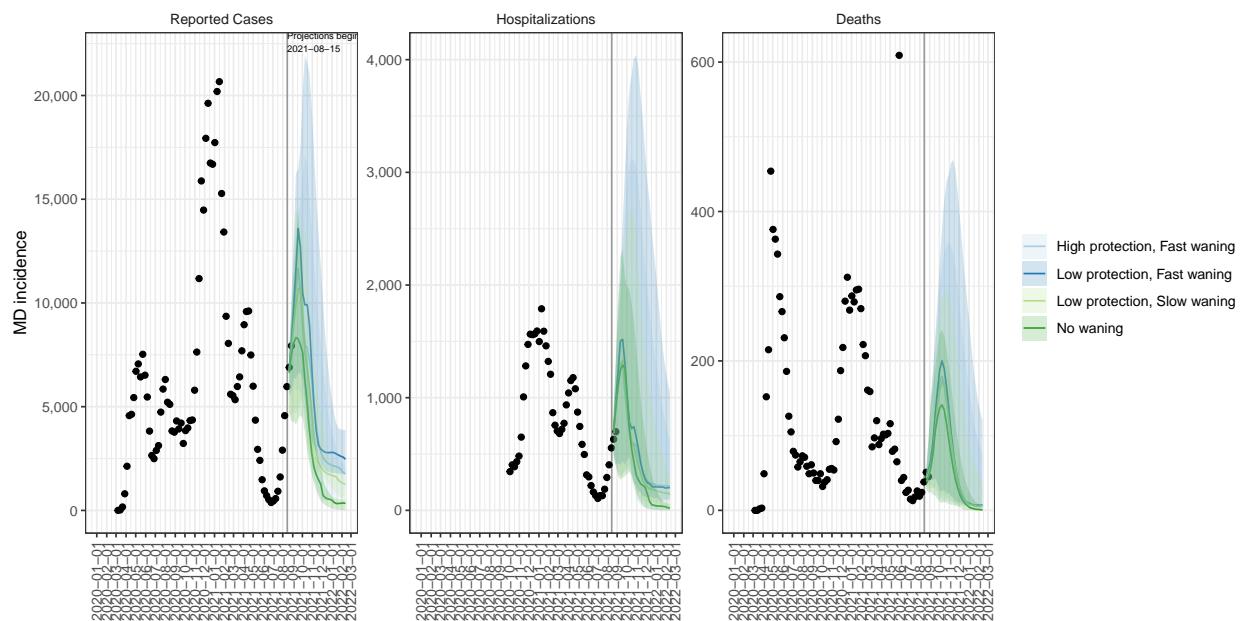
LA ensemble projections & 50% projection intervals



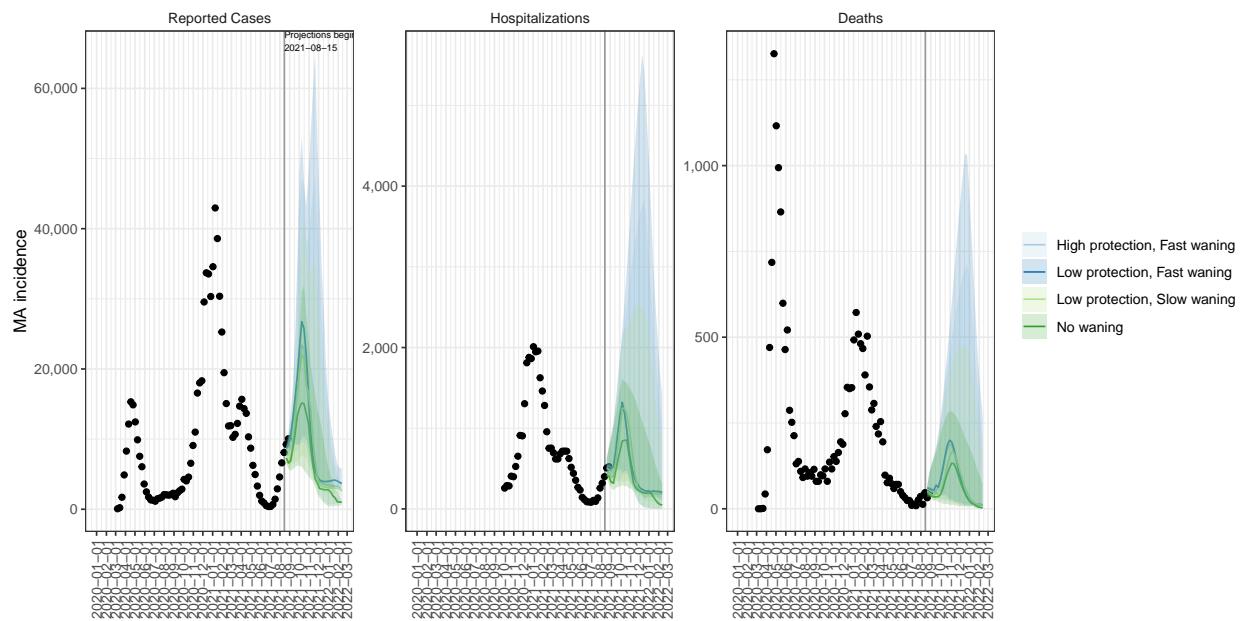
ME ensemble projections & 50% projection intervals



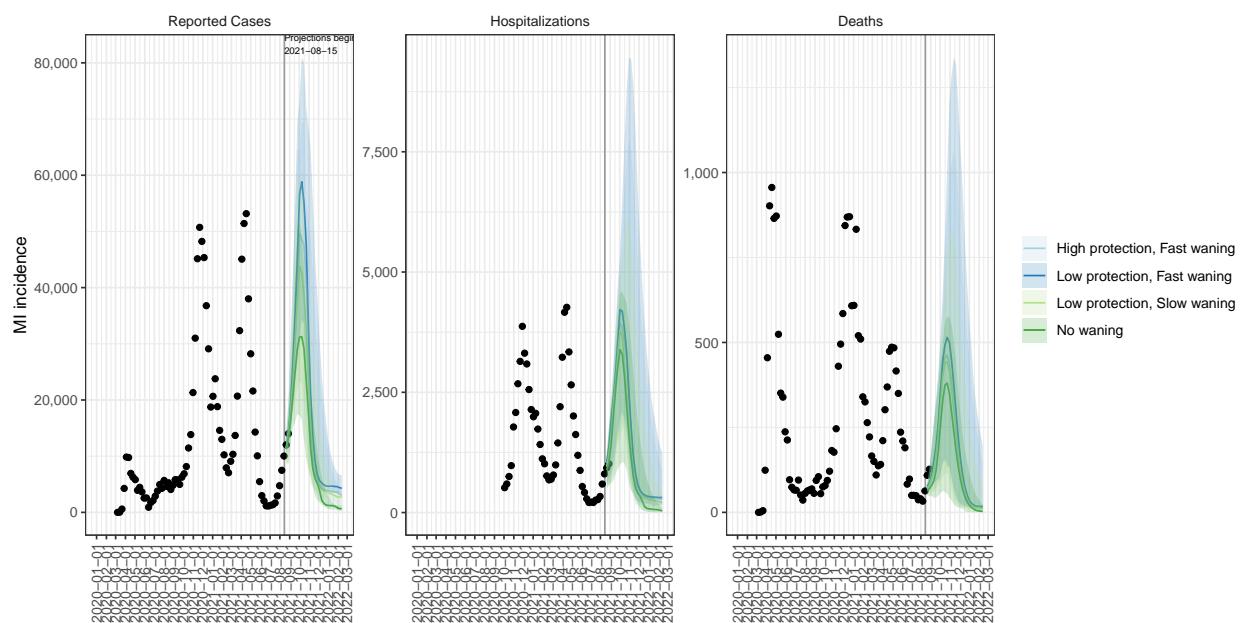
MD ensemble projections & 50% projection intervals



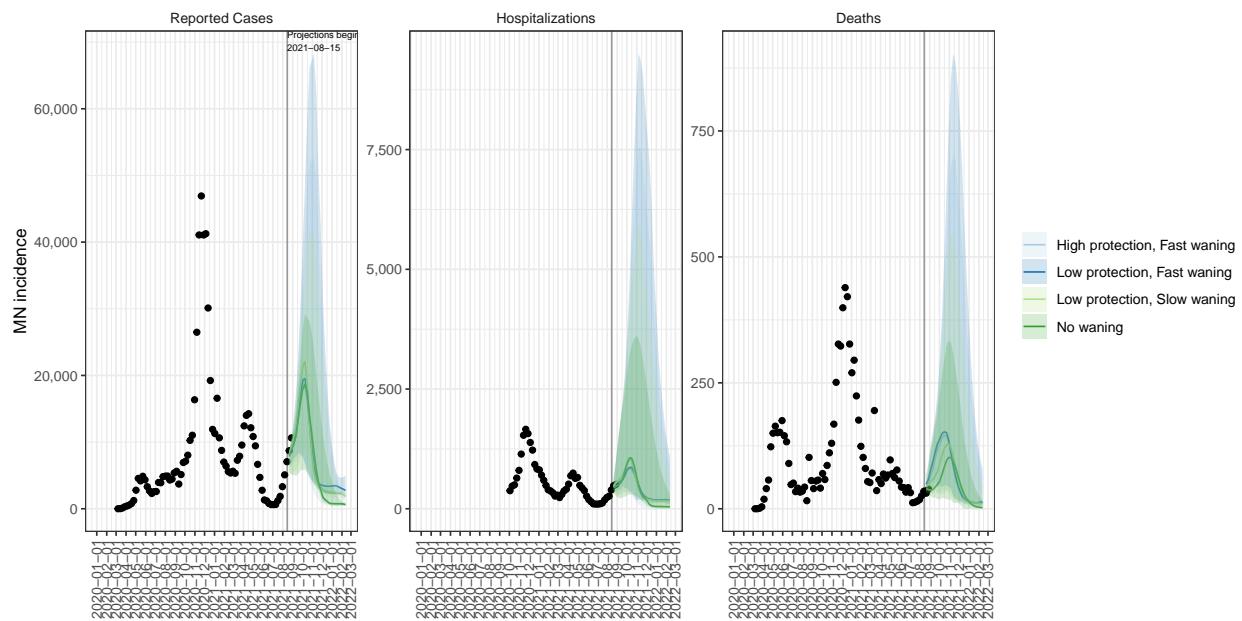
MA ensemble projections & 50% projection intervals



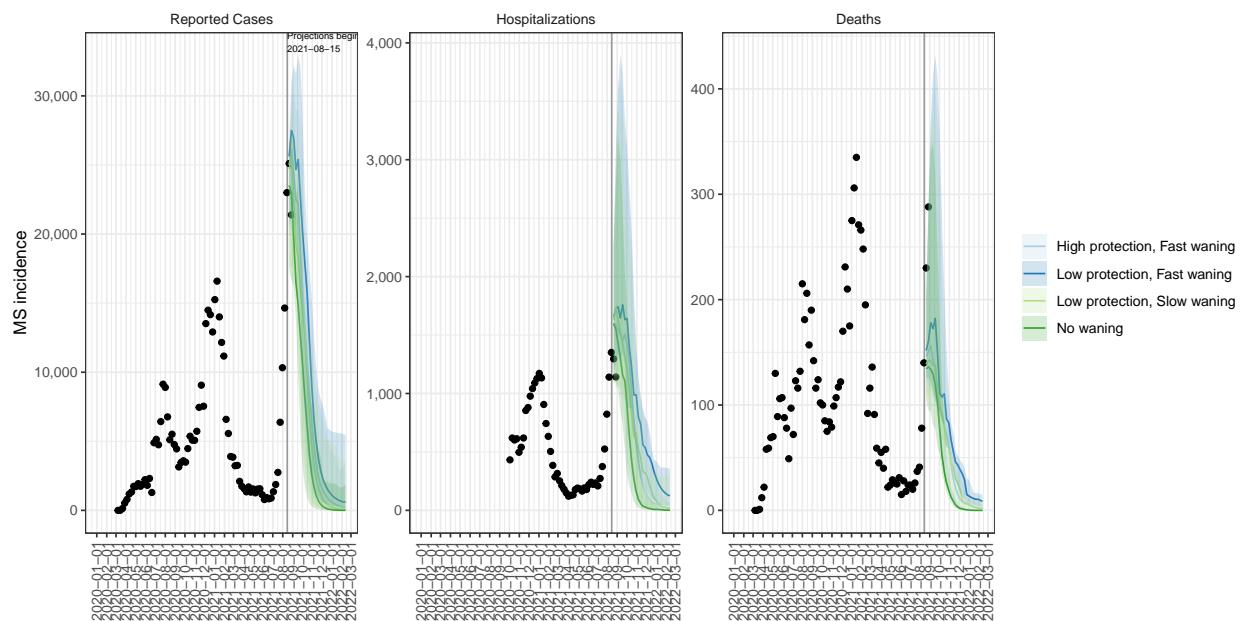
MI ensemble projections & 50% projection intervals



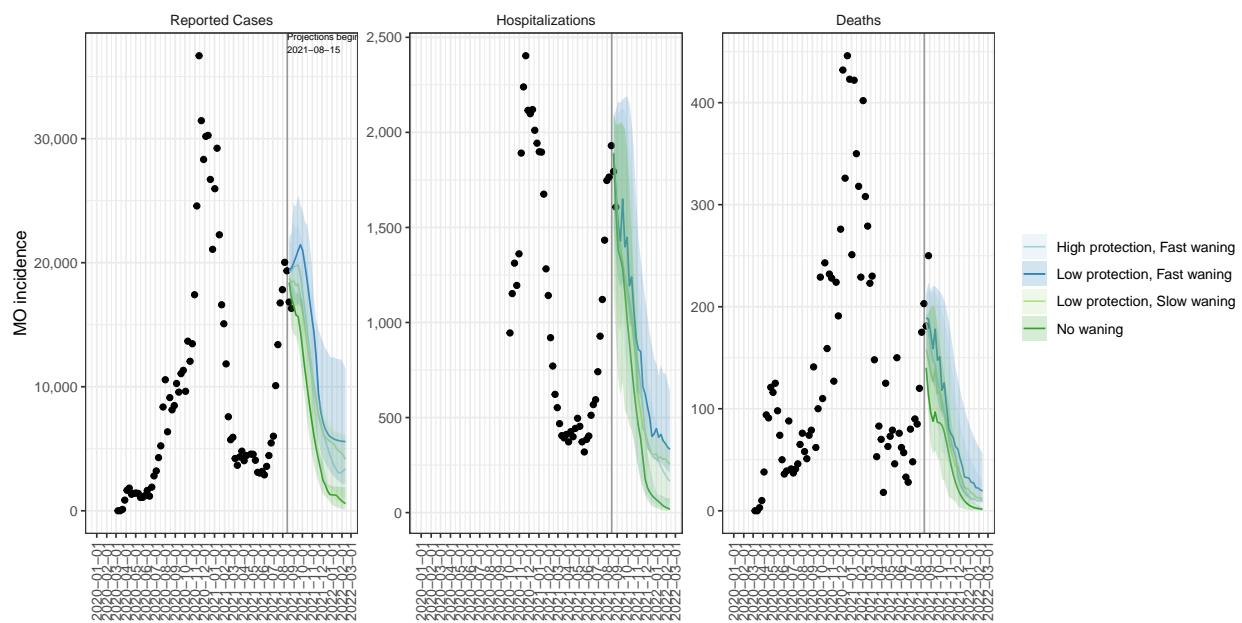
MN ensemble projections & 50% projection intervals



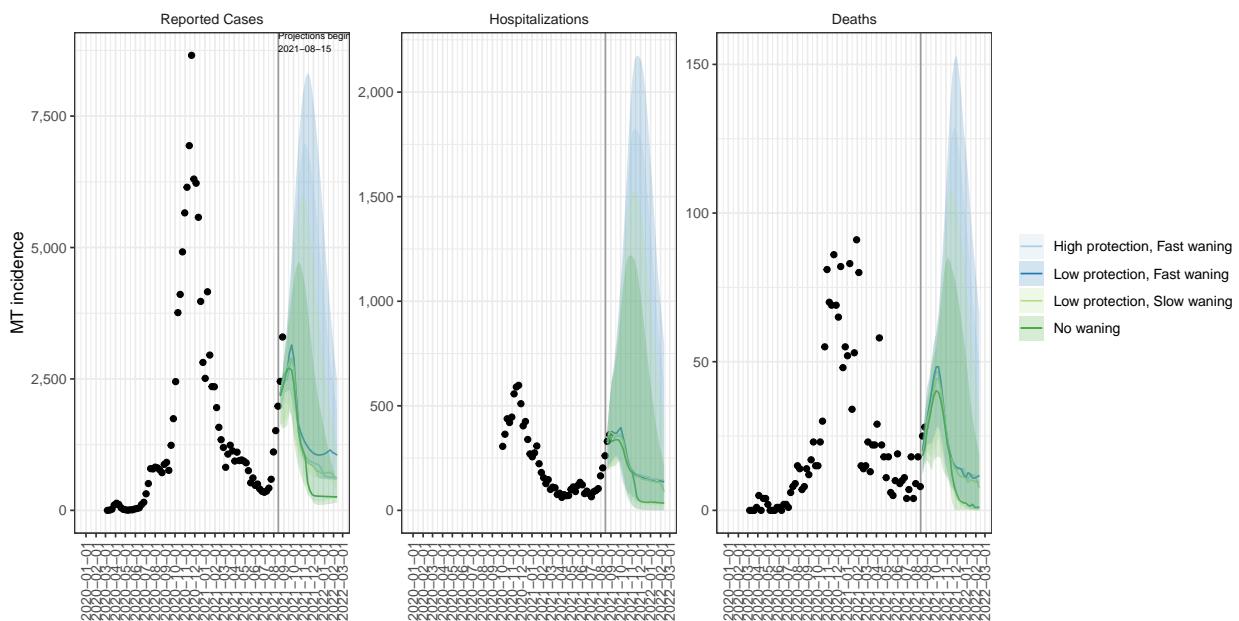
MS ensemble projections & 50% projection intervals



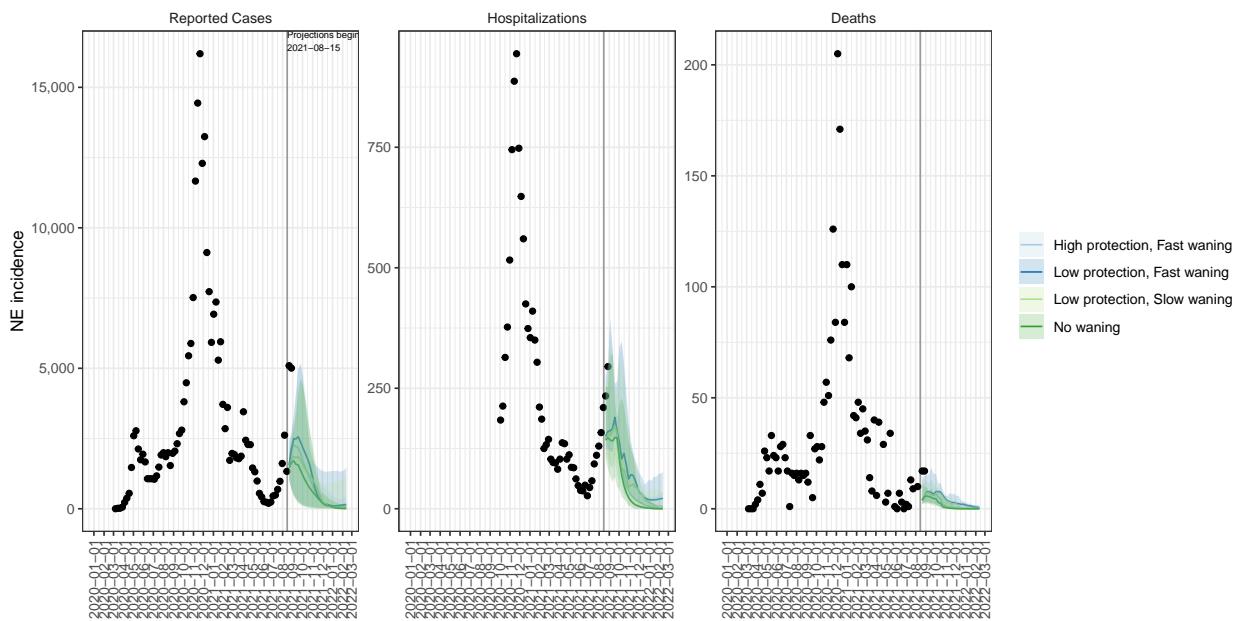
MO ensemble projections & 50% projection intervals



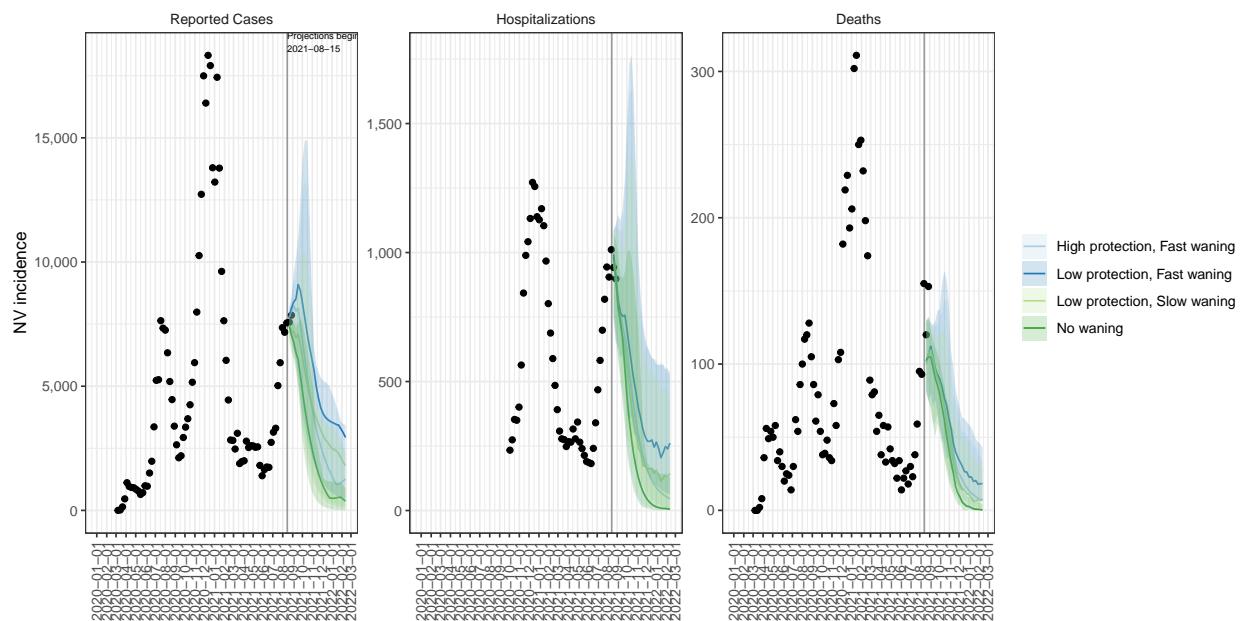
MT ensemble projections & 50% projection intervals



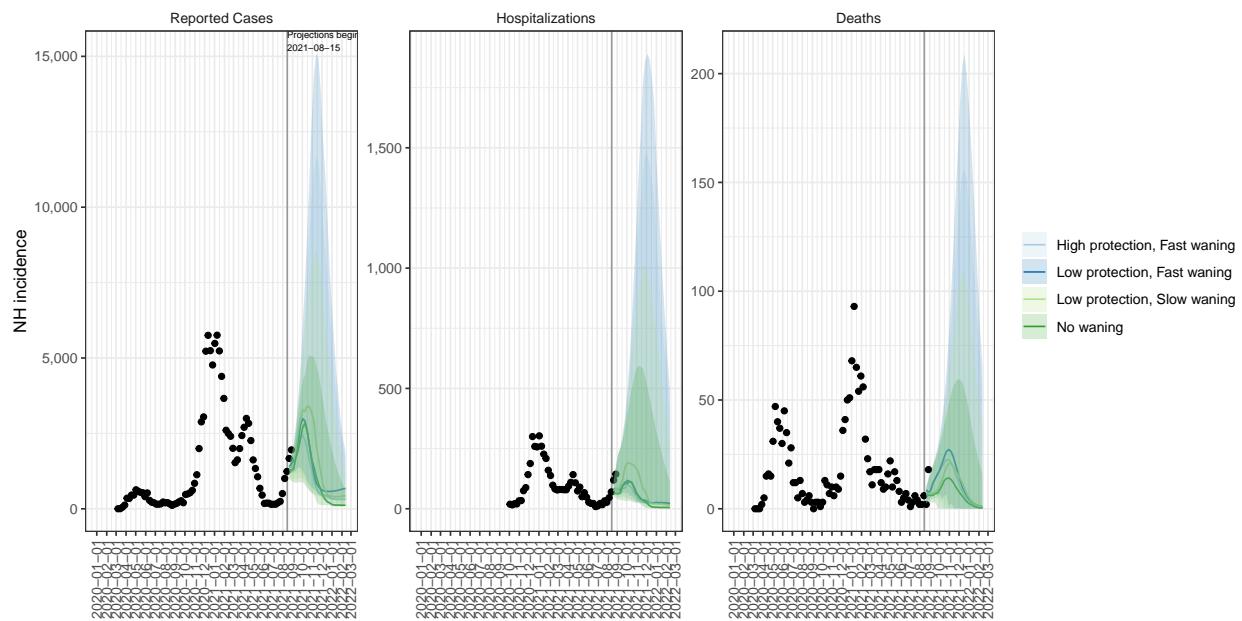
NE ensemble projections & 50% projection intervals



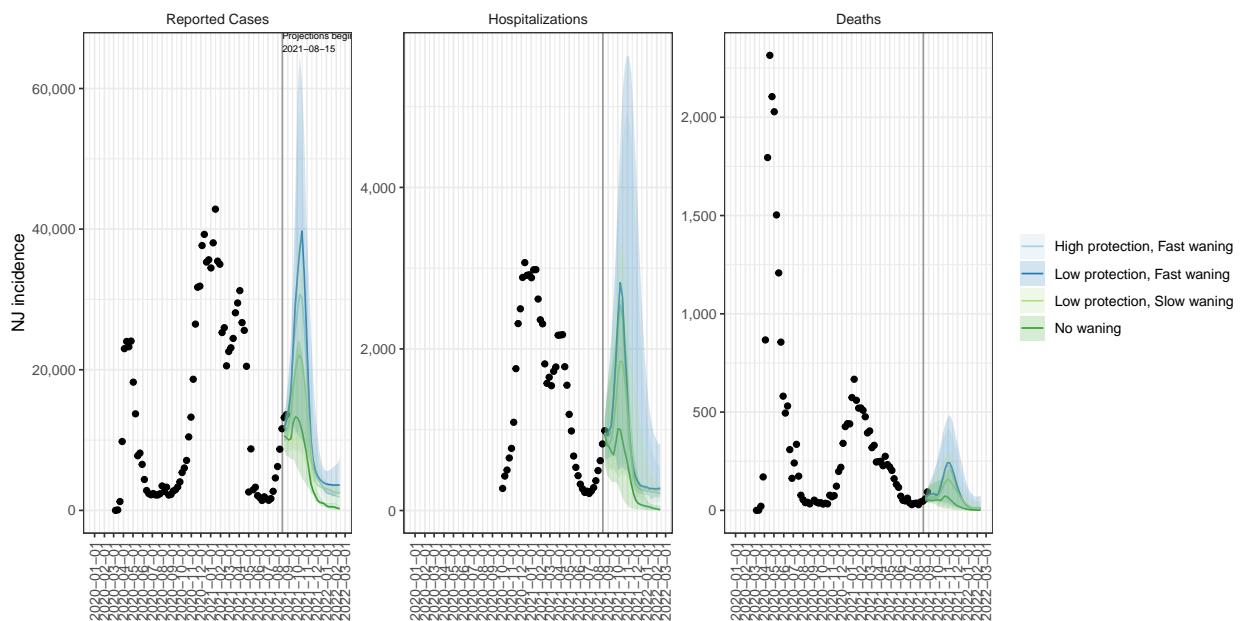
NV ensemble projections & 50% projection intervals



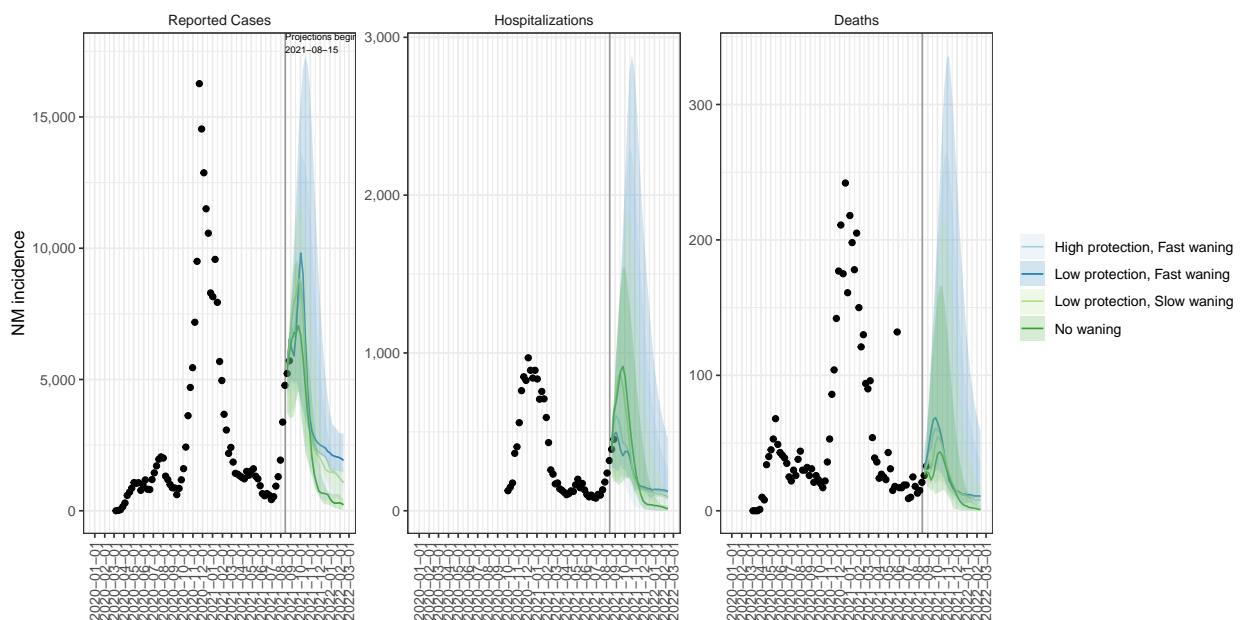
NH ensemble projections & 50% projection intervals



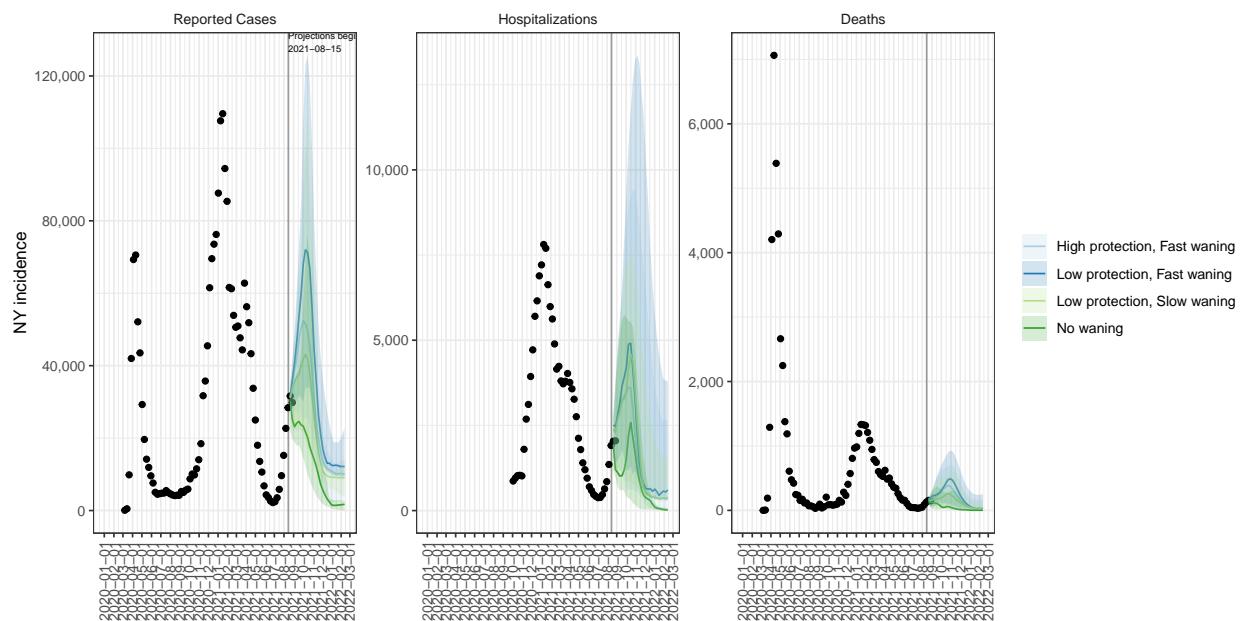
NJ ensemble projections & 50% projection intervals



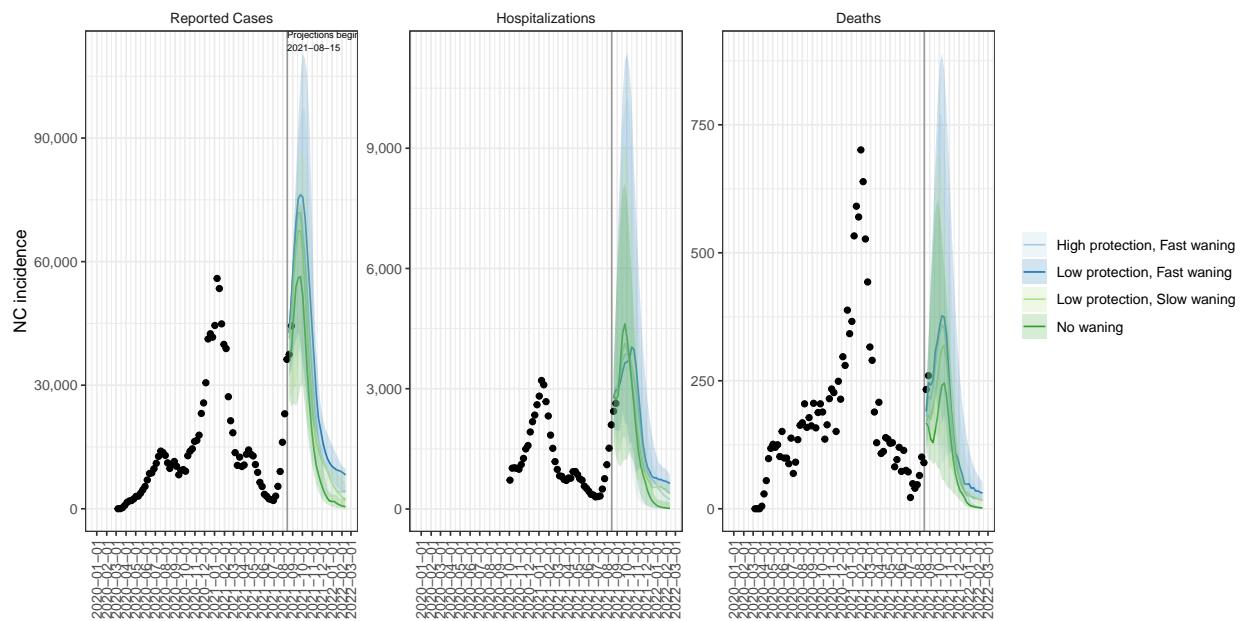
NM ensemble projections & 50% projection intervals



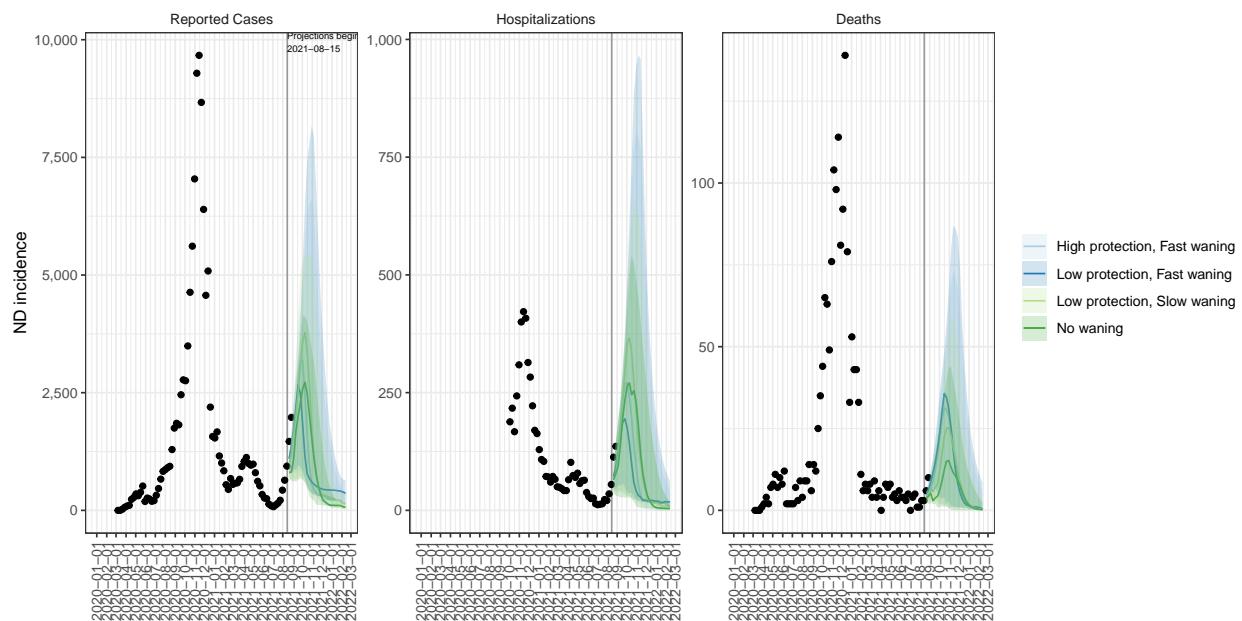
NY ensemble projections & 50% projection intervals



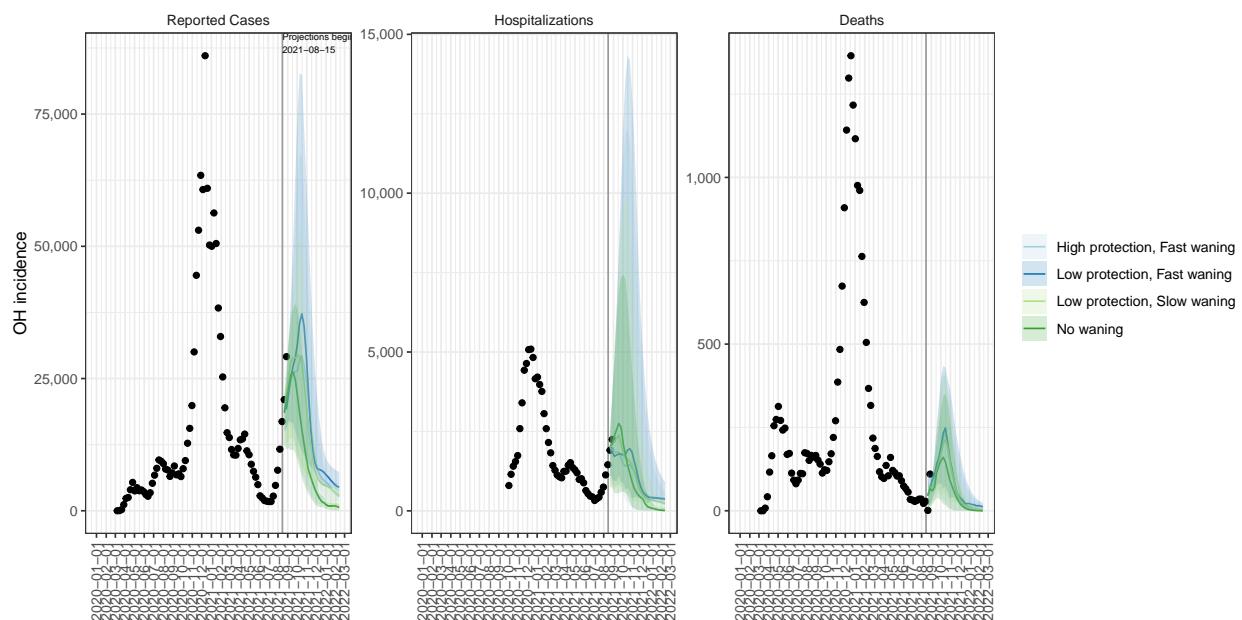
NC ensemble projections & 50% projection intervals



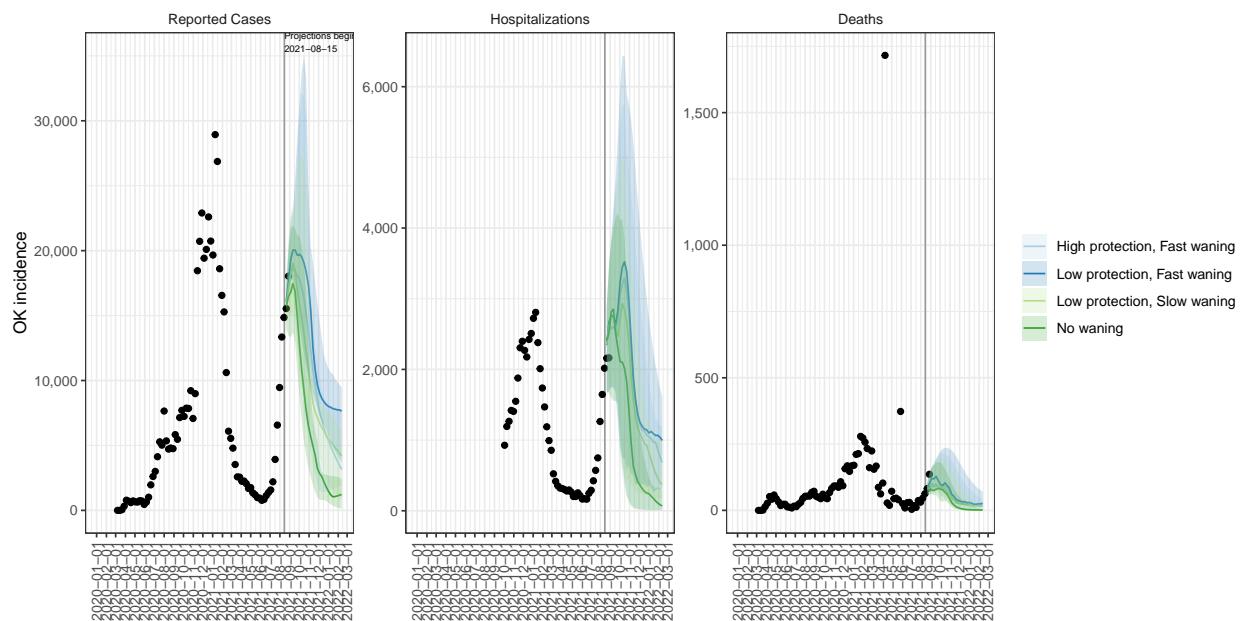
ND ensemble projections & 50% projection intervals



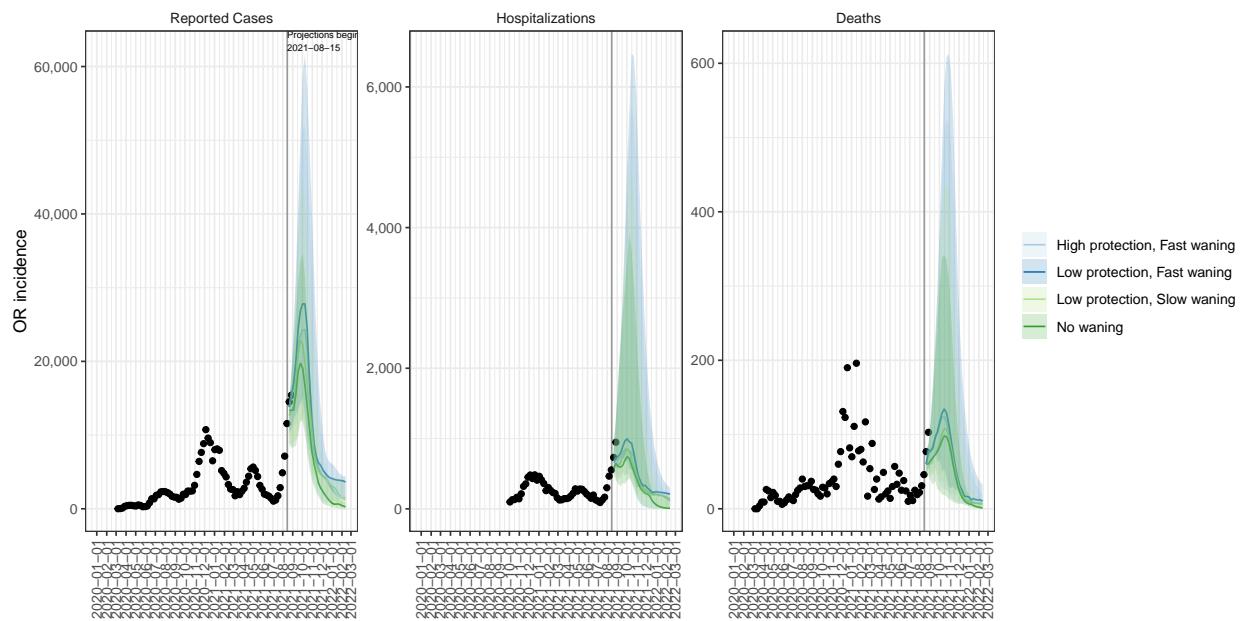
OH ensemble projections & 50% projection intervals



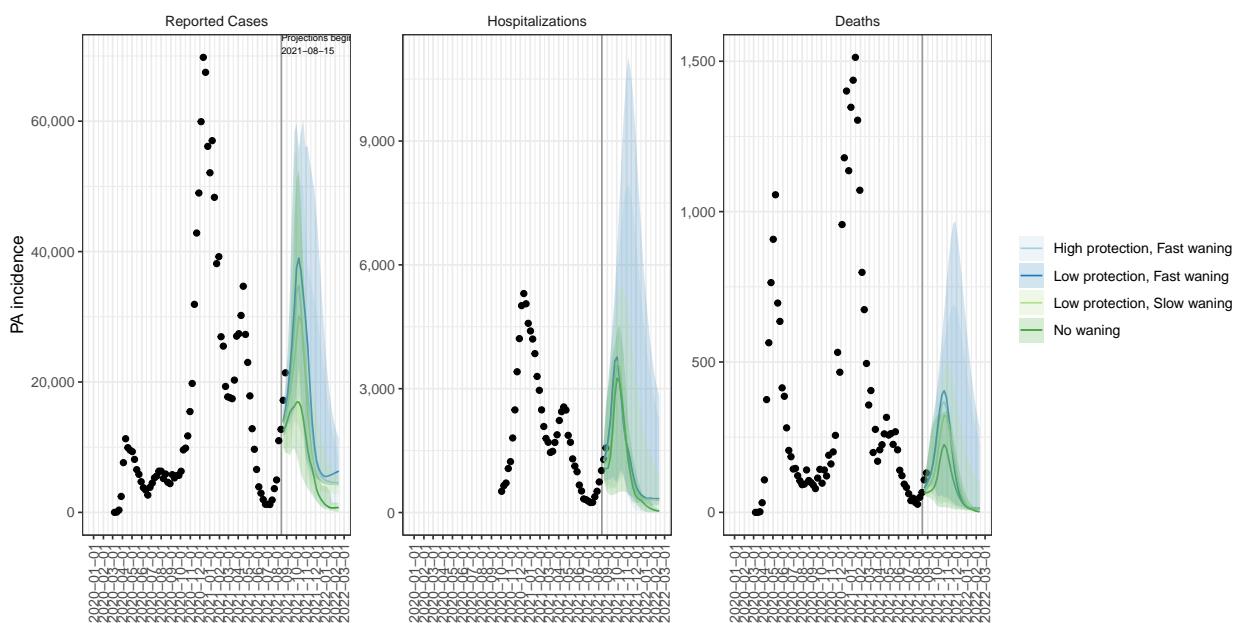
OK ensemble projections & 50% projection intervals



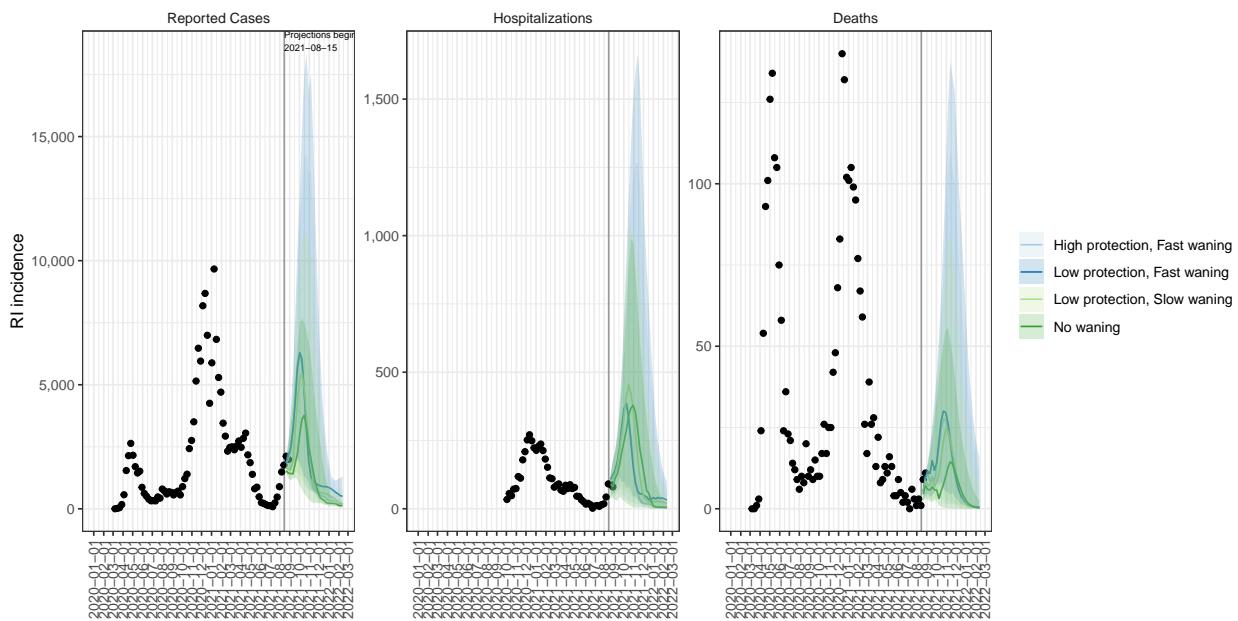
OR ensemble projections & 50% projection intervals



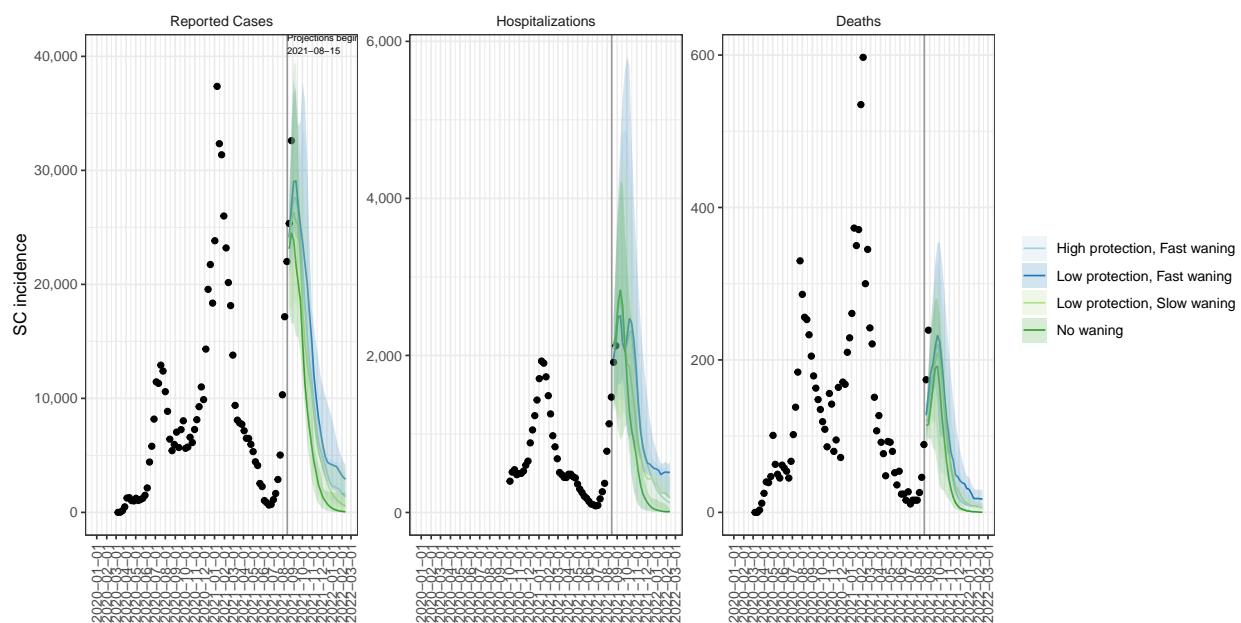
PA ensemble projections & 50% projection intervals



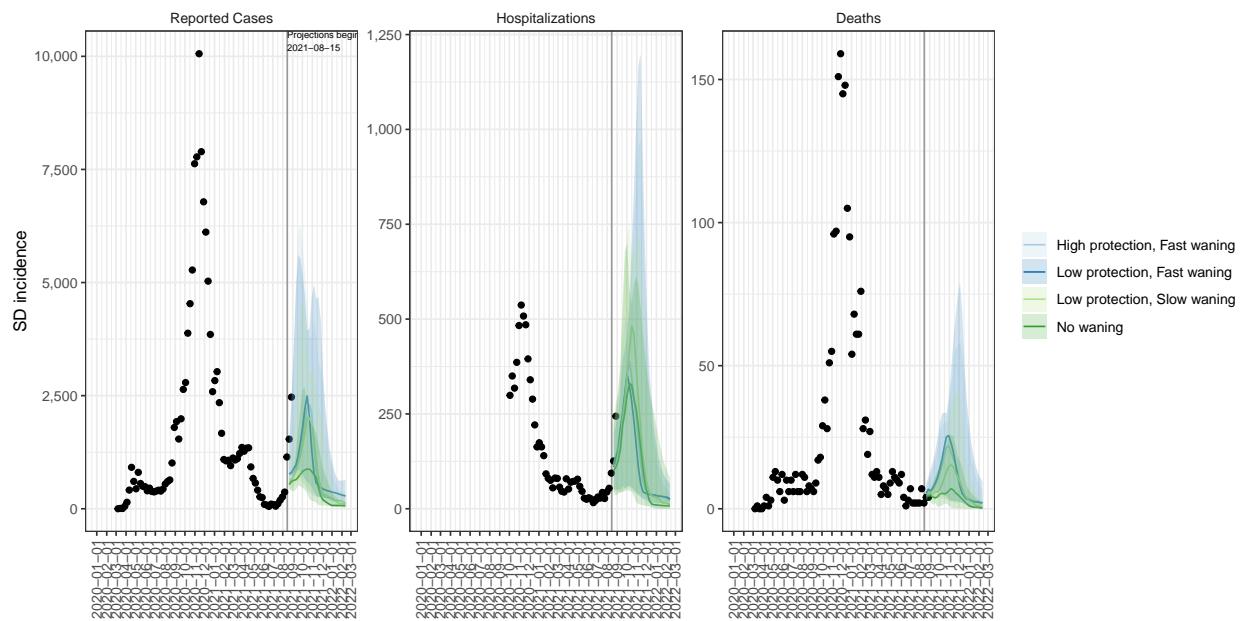
RI ensemble projections & 50% projection intervals



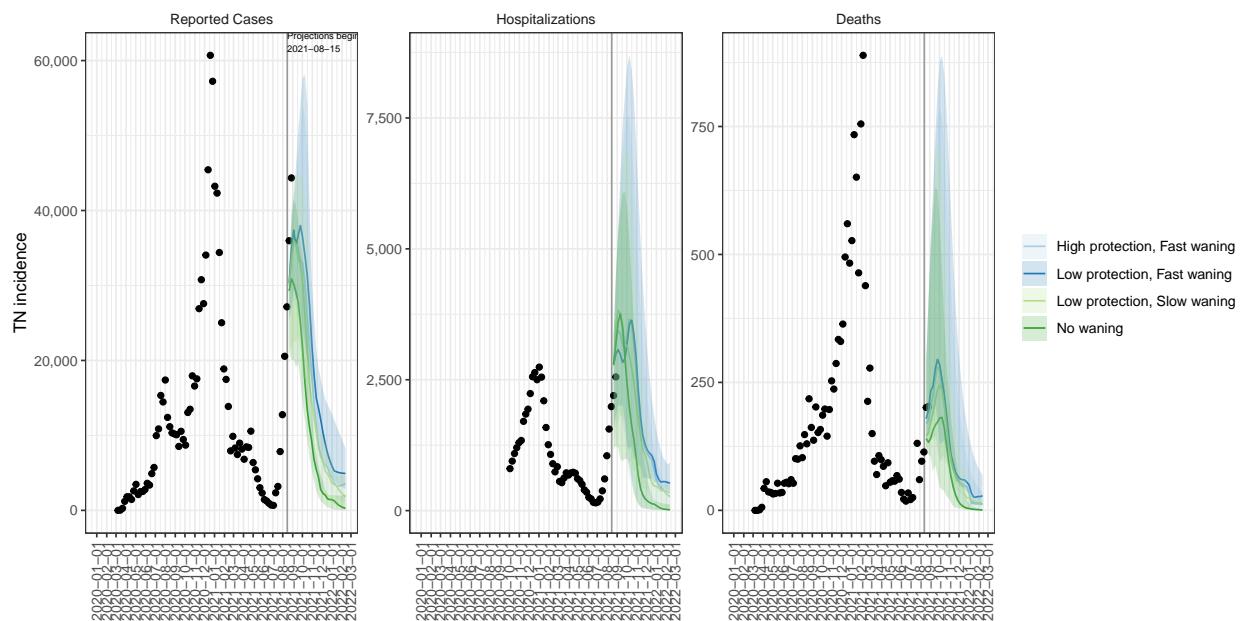
SC ensemble projections & 50% projection intervals



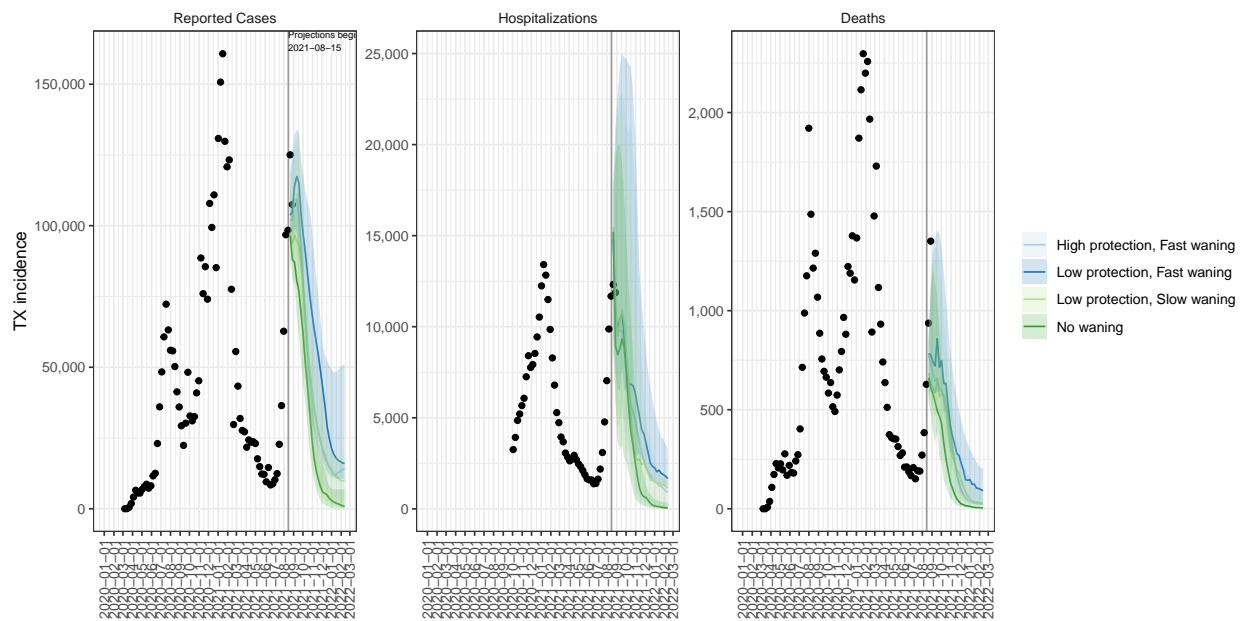
SD ensemble projections & 50% projection intervals



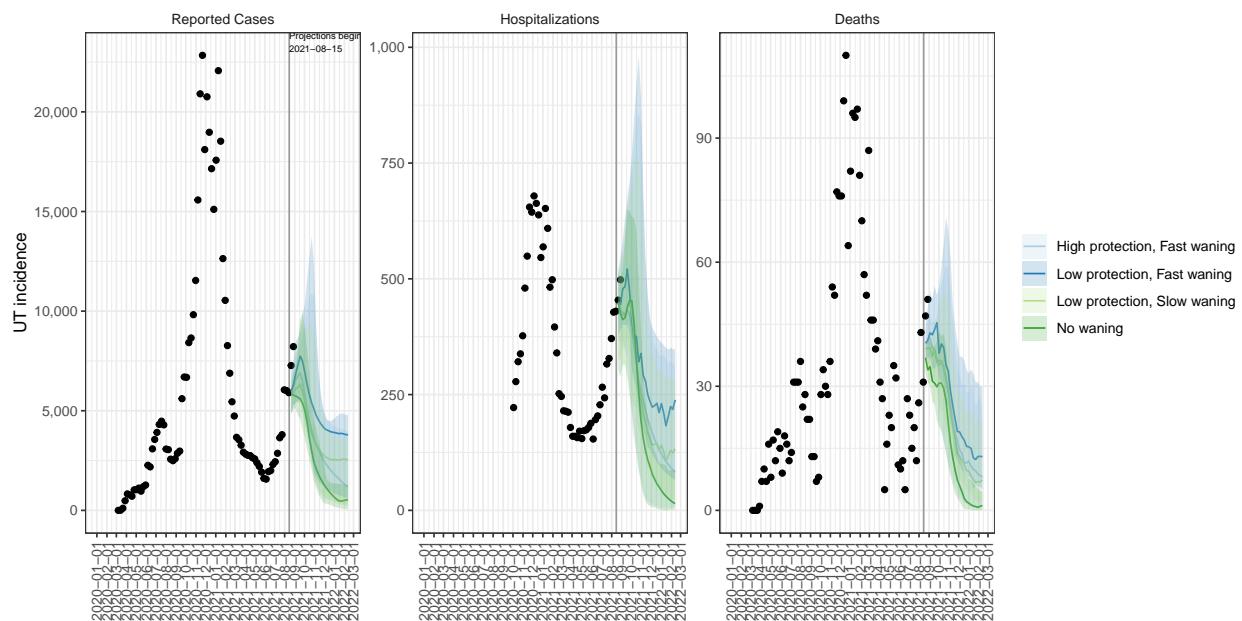
TN ensemble projections & 50% projection intervals



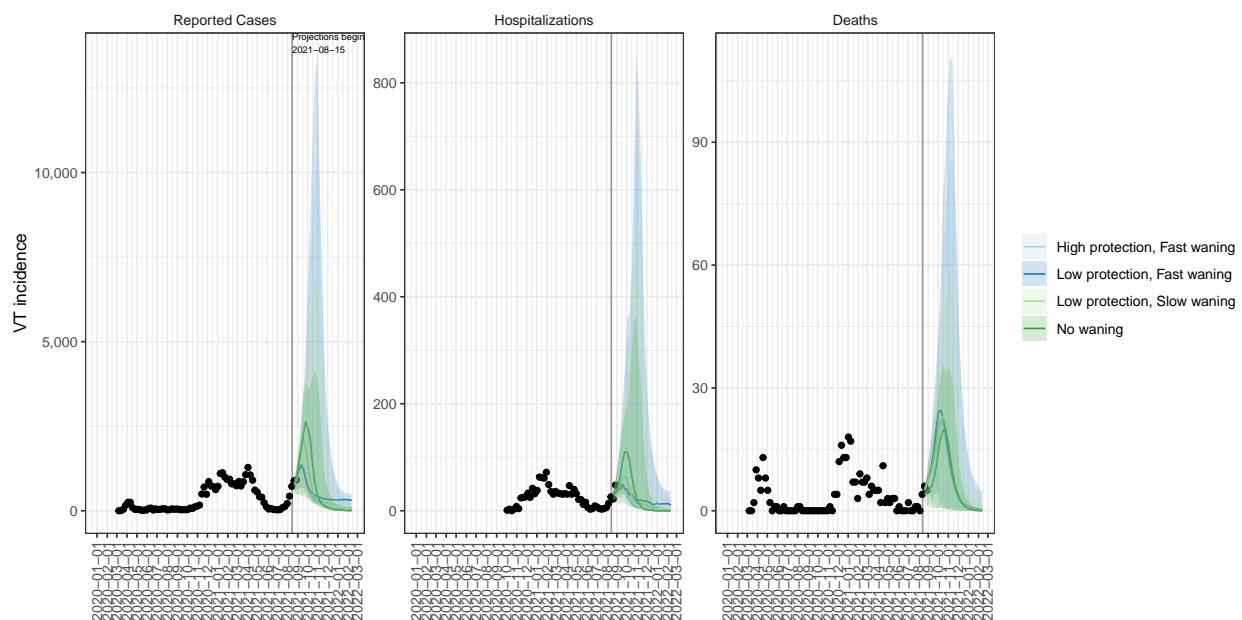
TX ensemble projections & 50% projection intervals



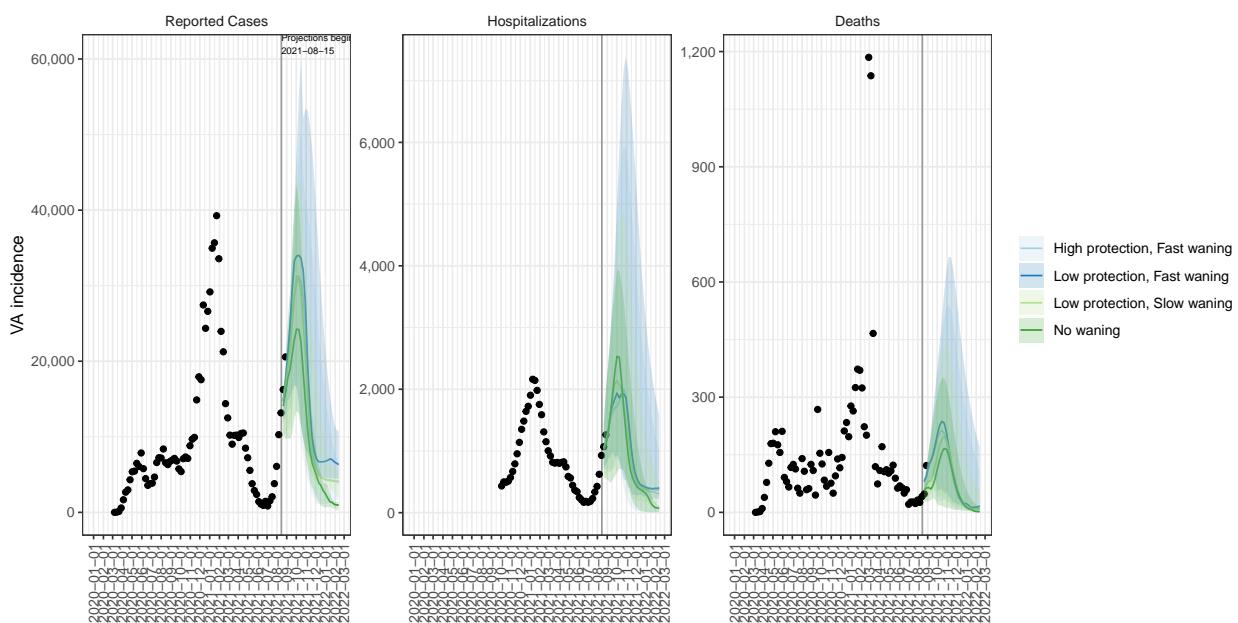
UT ensemble projections & 50% projection intervals



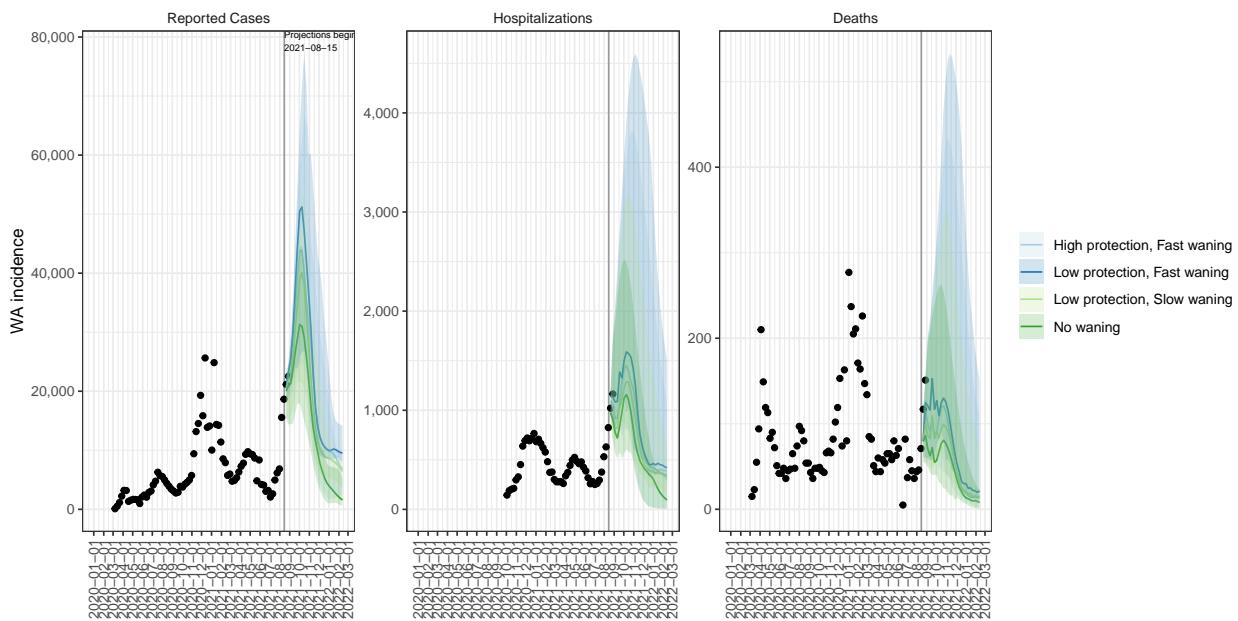
VT ensemble projections & 50% projection intervals



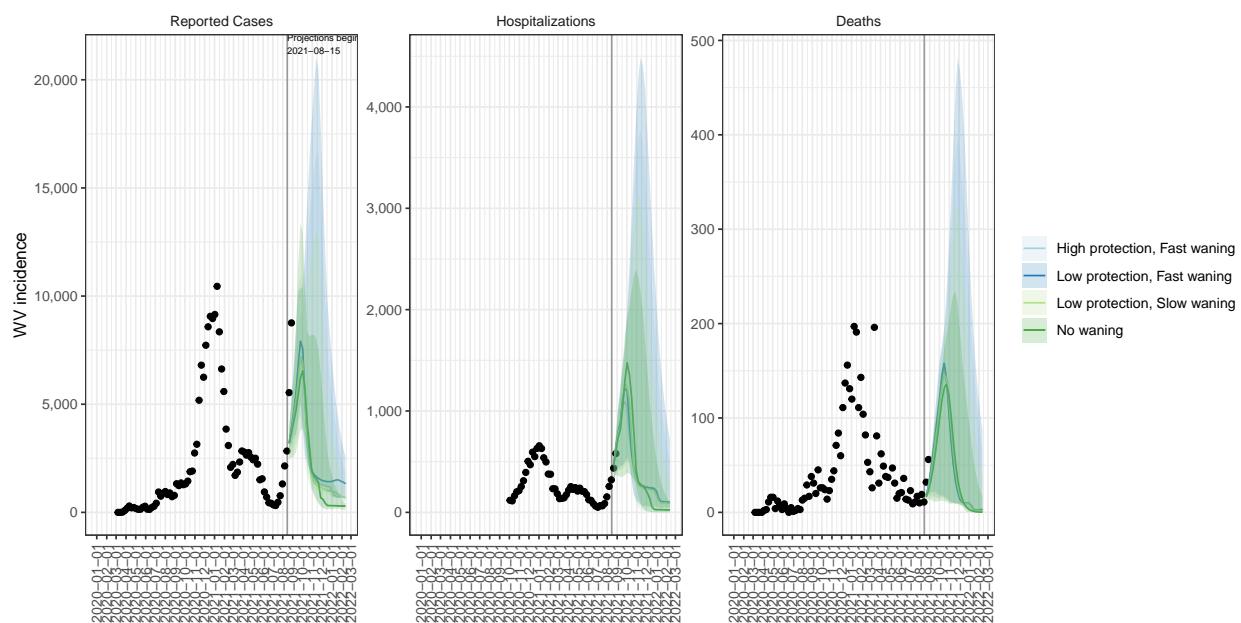
VA ensemble projections & 50% projection intervals



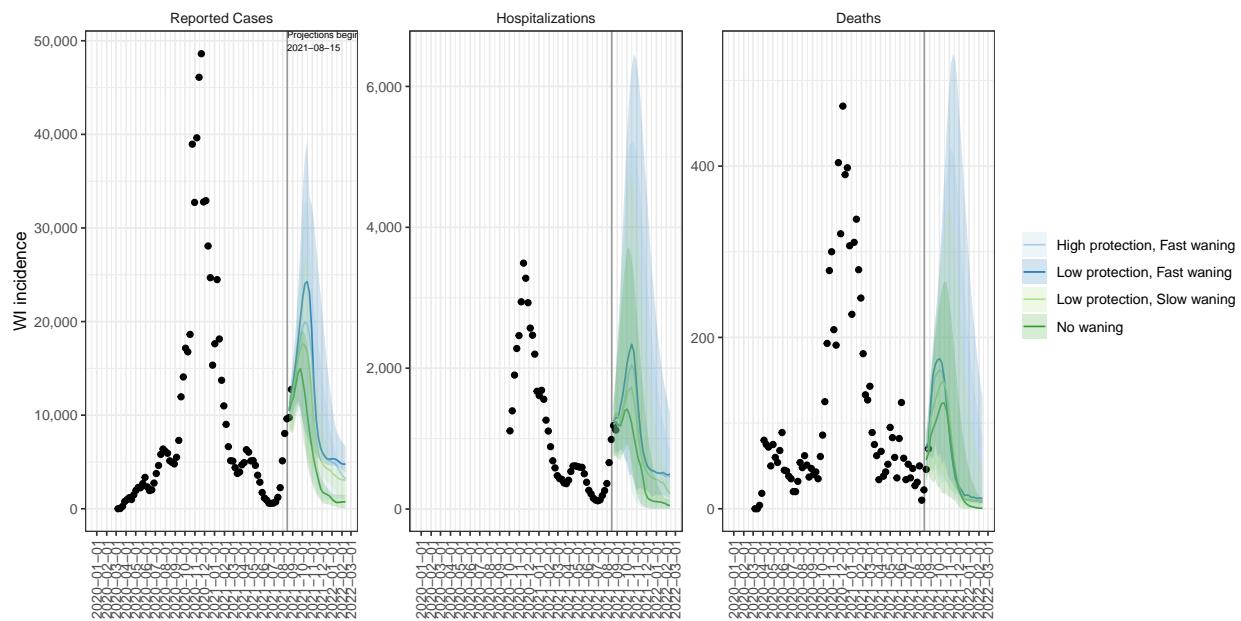
WA ensemble projections & 50% projection intervals



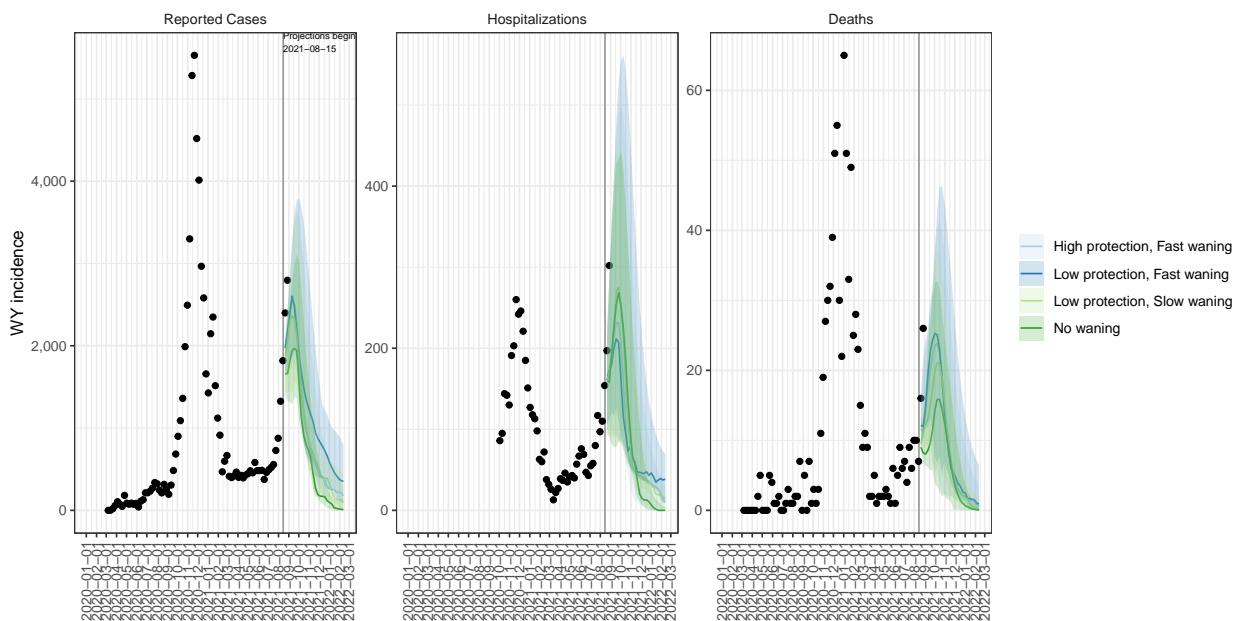
WV ensemble projections & 50% projection intervals



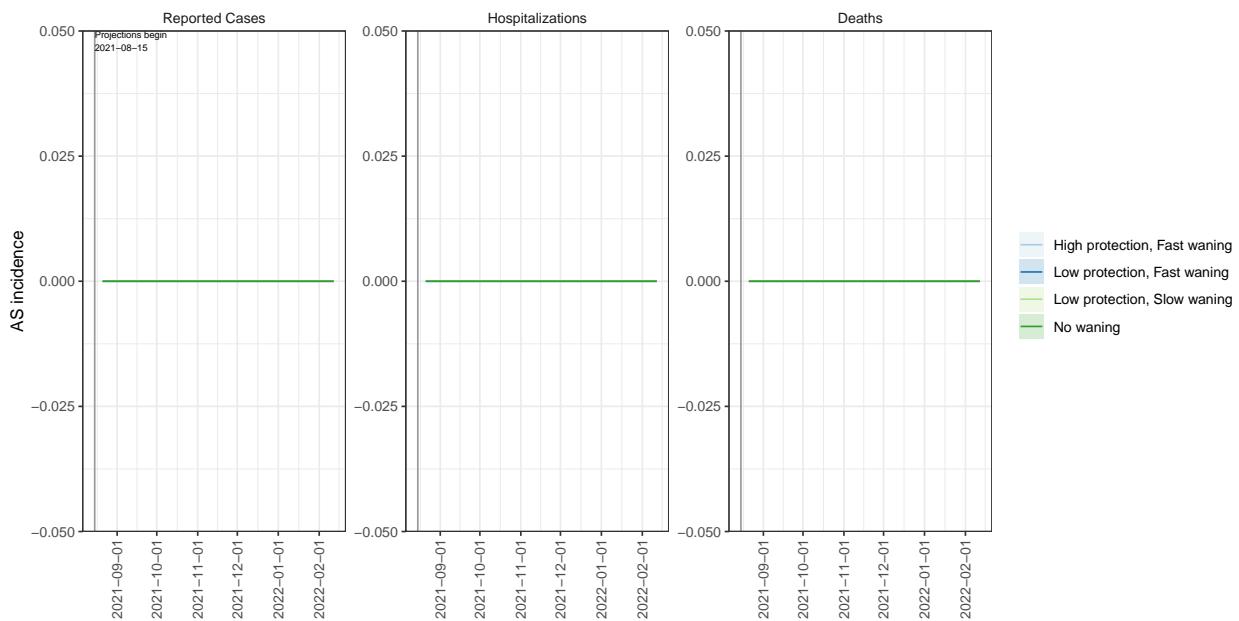
WI ensemble projections & 50% projection intervals



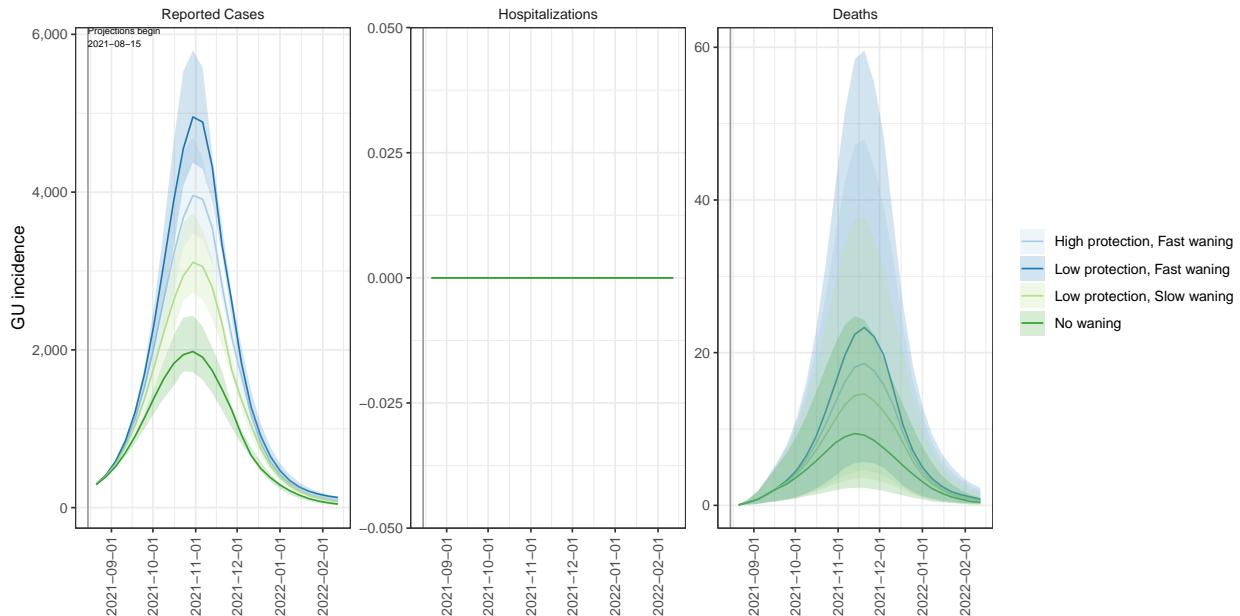
WY ensemble projections & 50% projection intervals



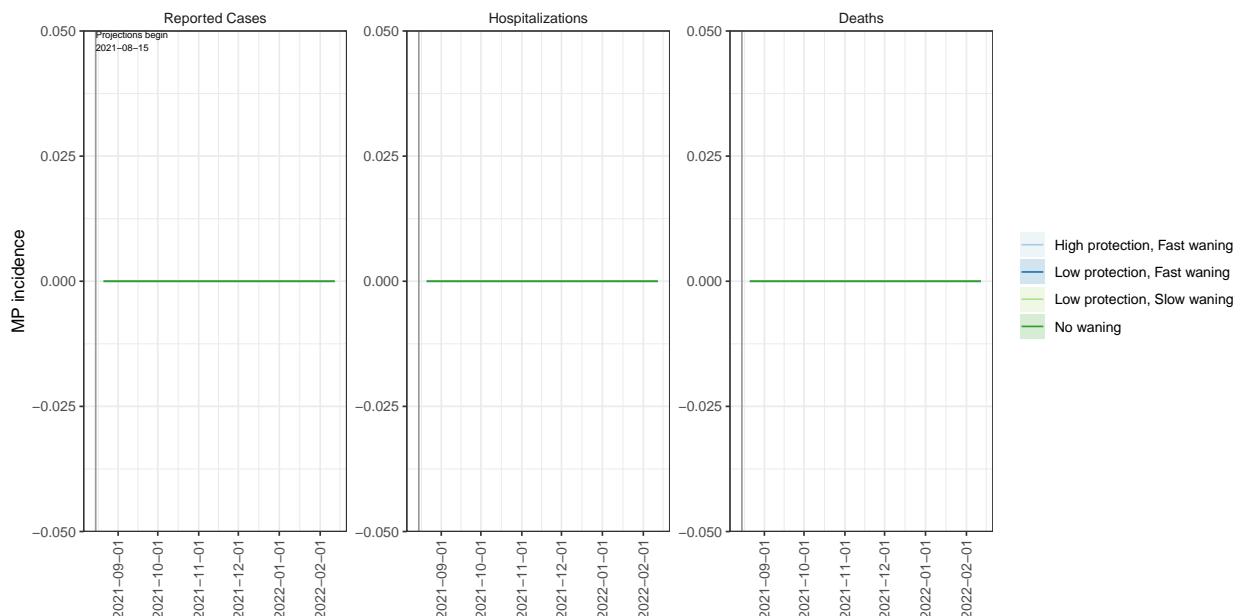
AS ensemble projections & 50% projection intervals



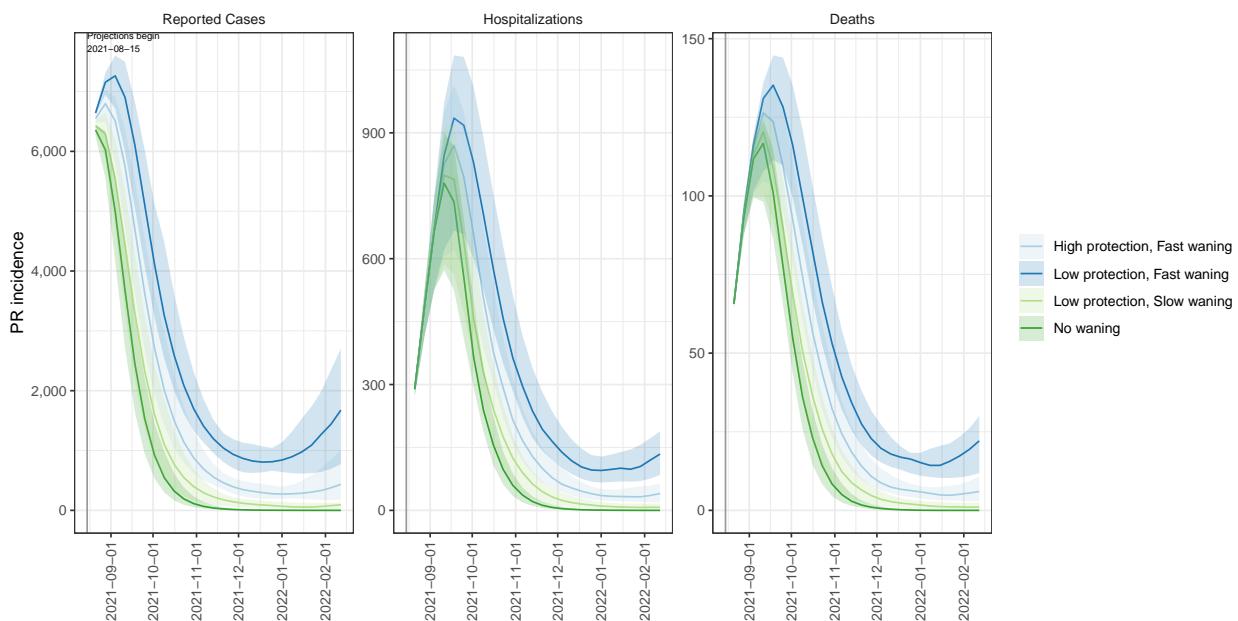
GU ensemble projections & 50% projection intervals



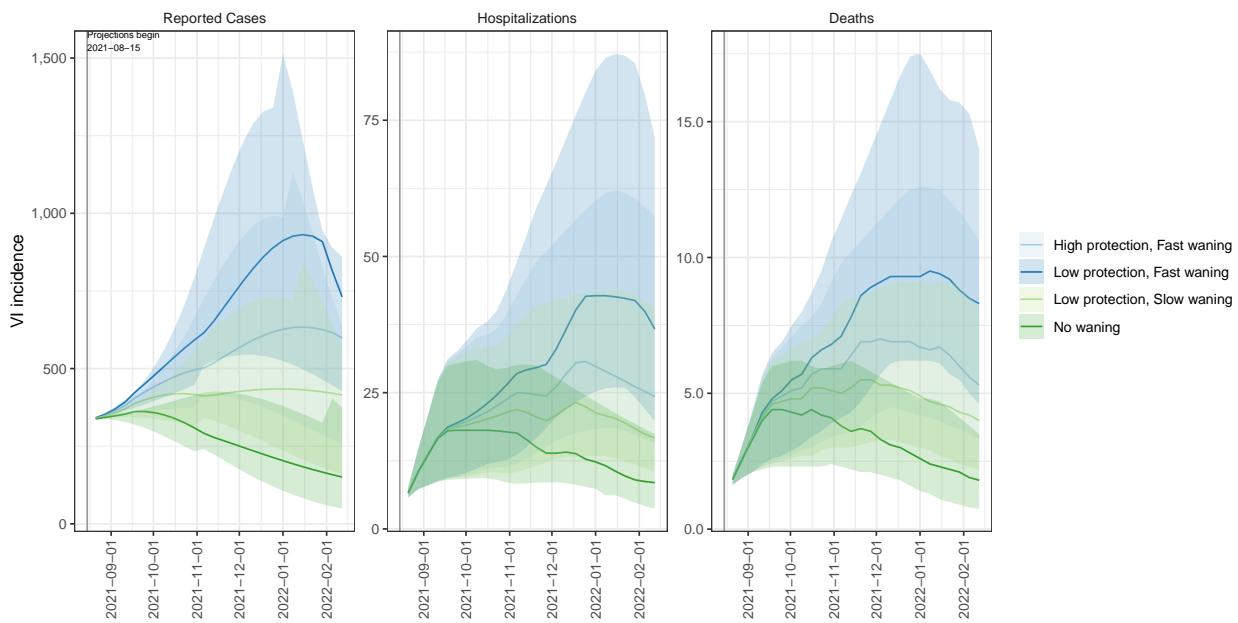
MP ensemble projections & 50% projection intervals



PR ensemble projections & 50% projection intervals



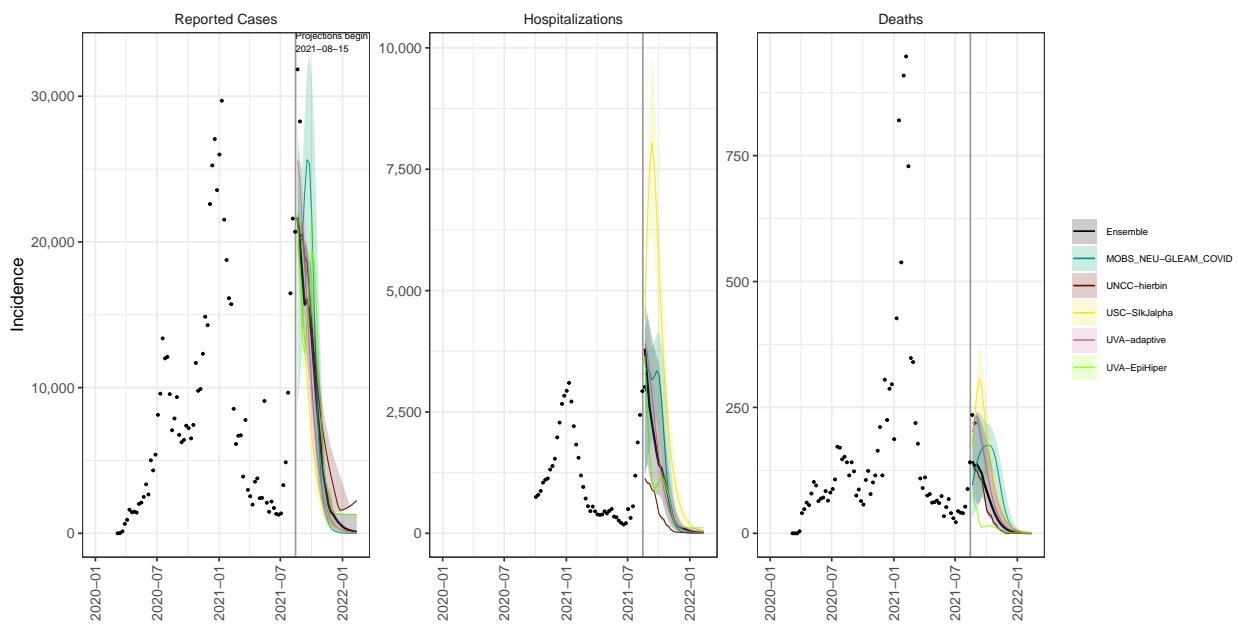
VI ensemble projections & 50% projection intervals



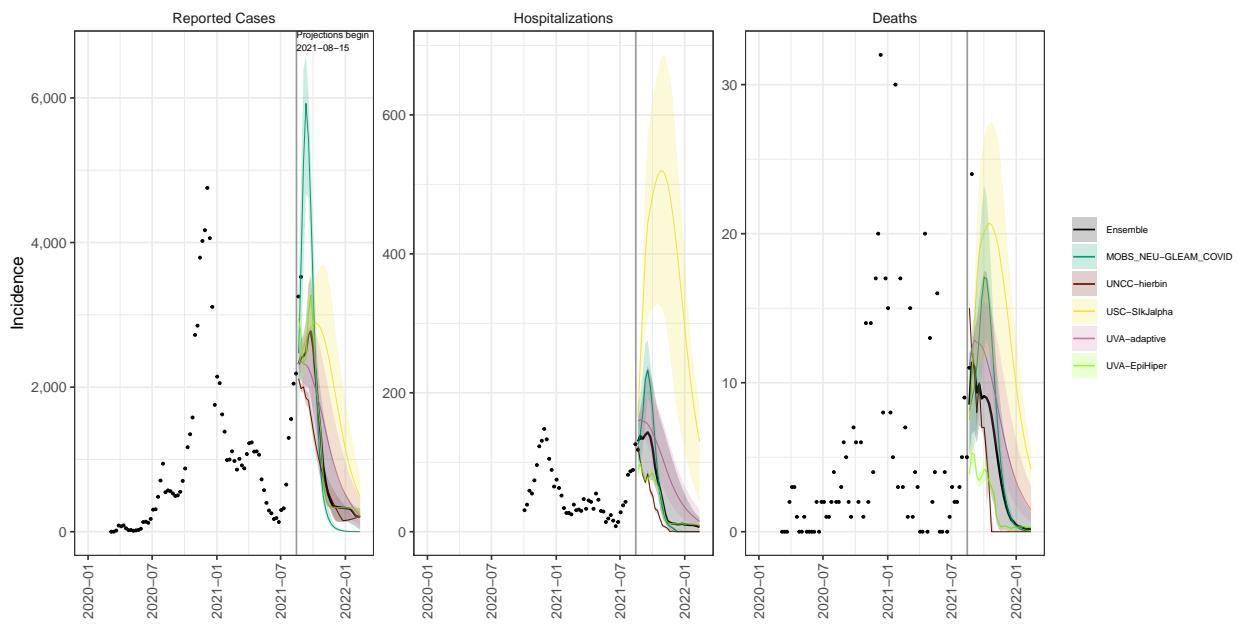
State-level model variation

National model variation for the no waning scenario

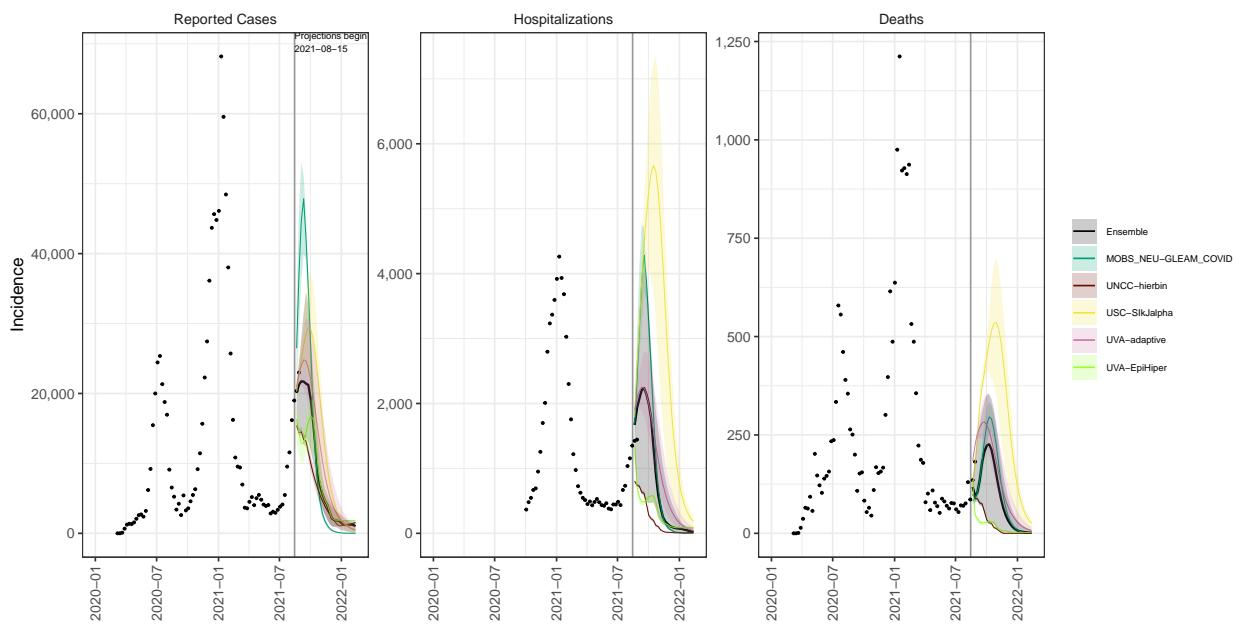
AL model variance & 50% projection intervals – No waning



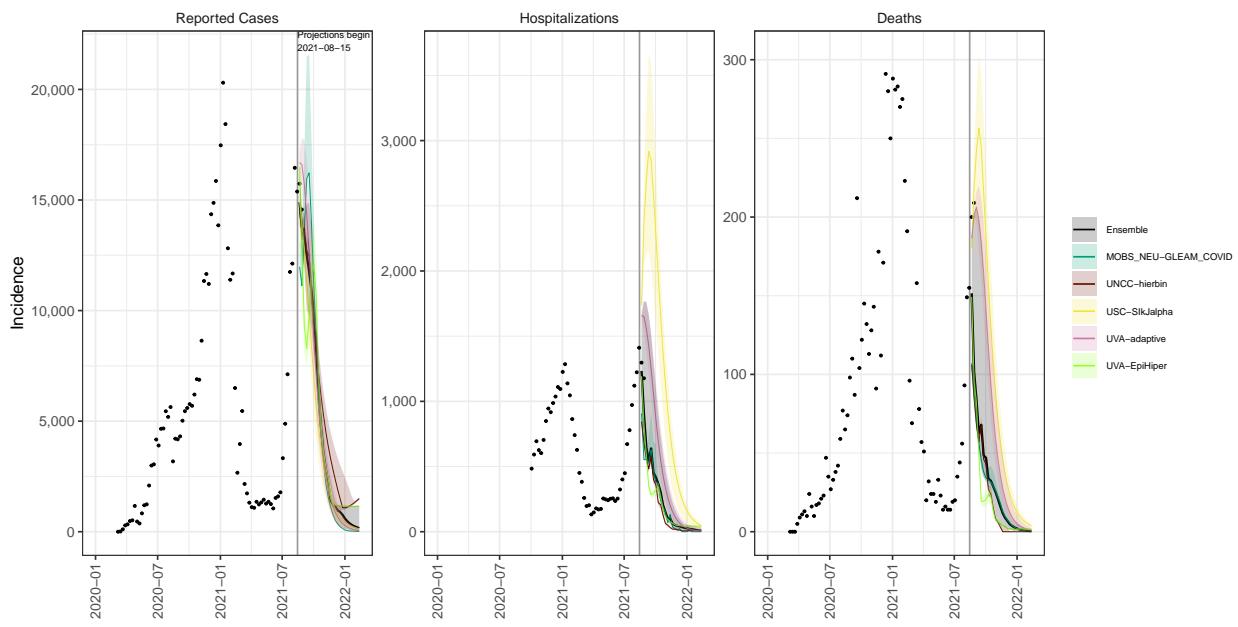
AK model variance & 50% projection intervals – No waning



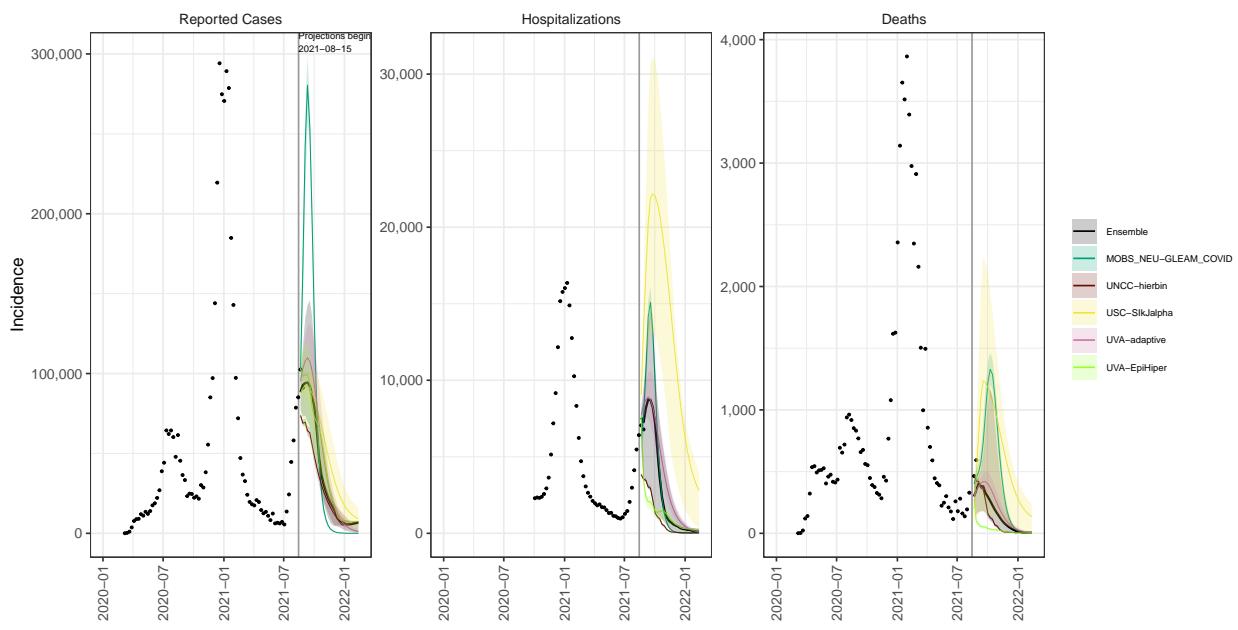
AZ model variance & 50% projection intervals – No waning



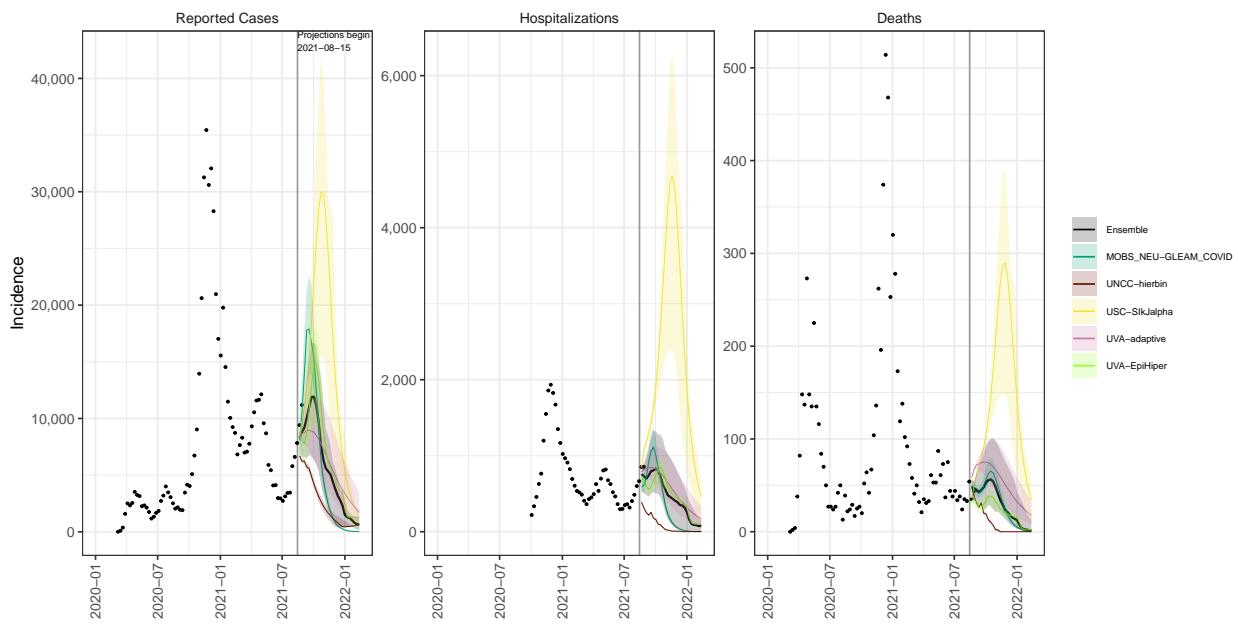
AR model variance & 50% projection intervals – No waning



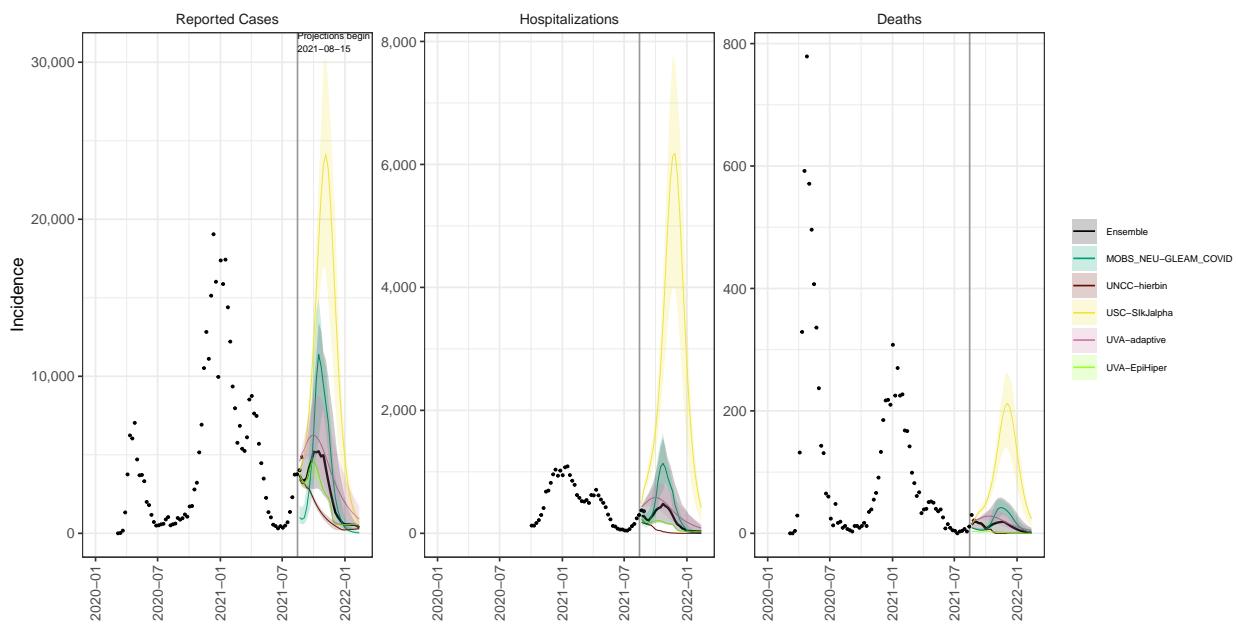
CA model variance & 50% projection intervals – No waning



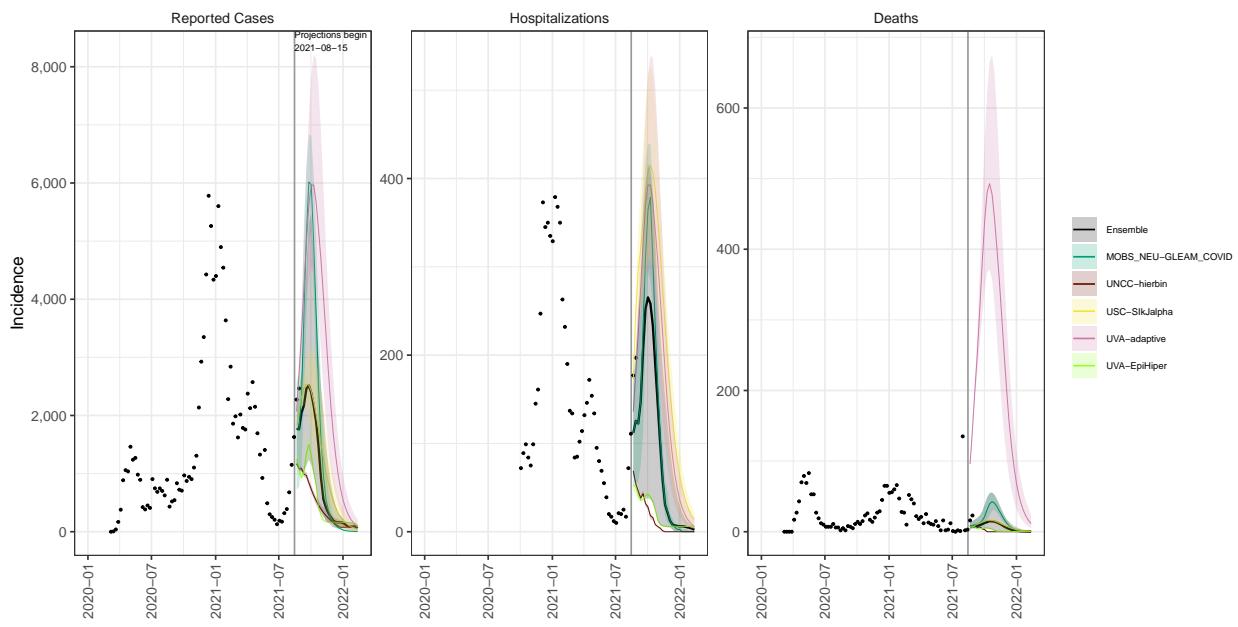
CO model variance & 50% projection intervals – No waning



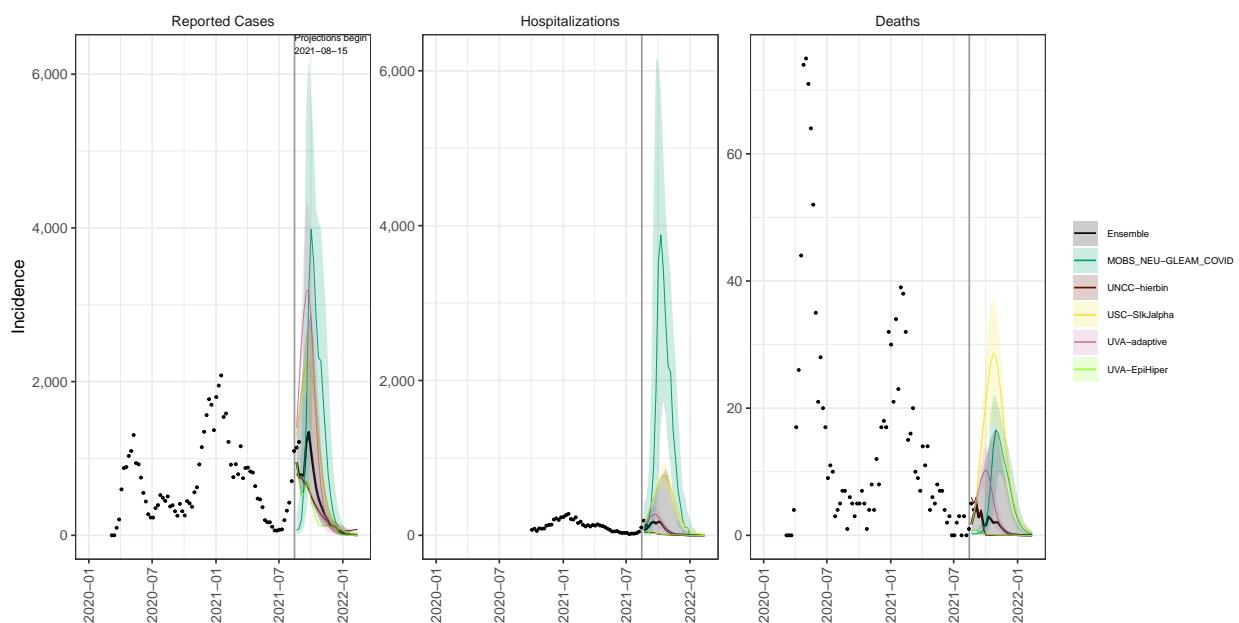
CT model variance & 50% projection intervals – No waning



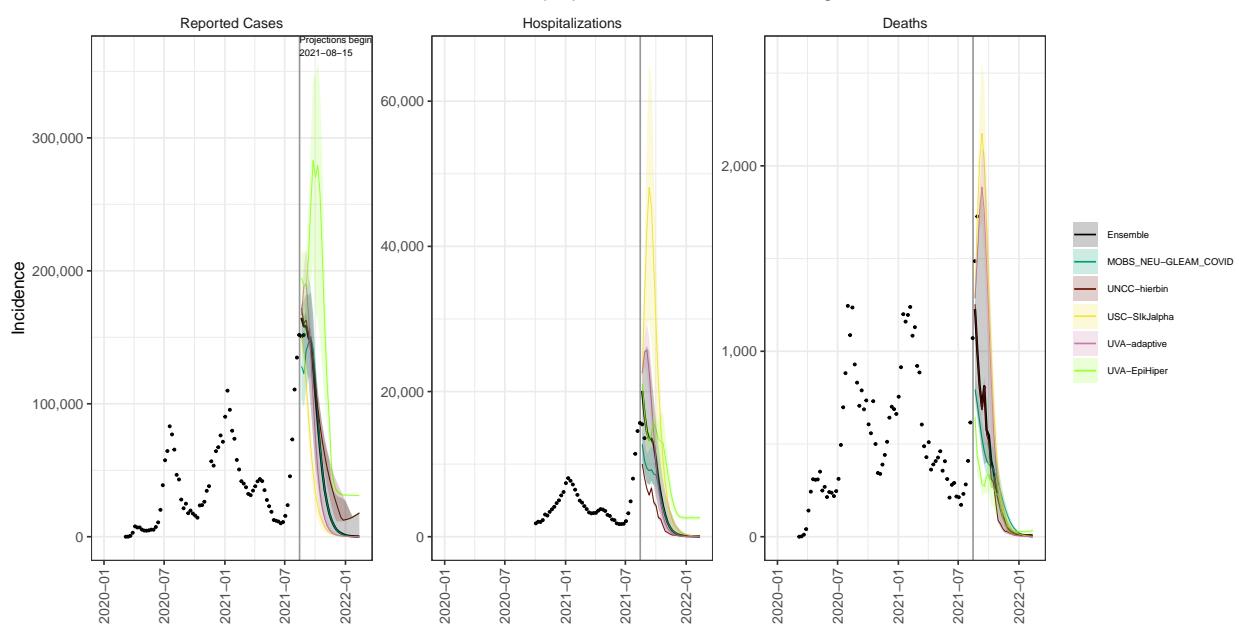
DE model variance & 50% projection intervals – No waning



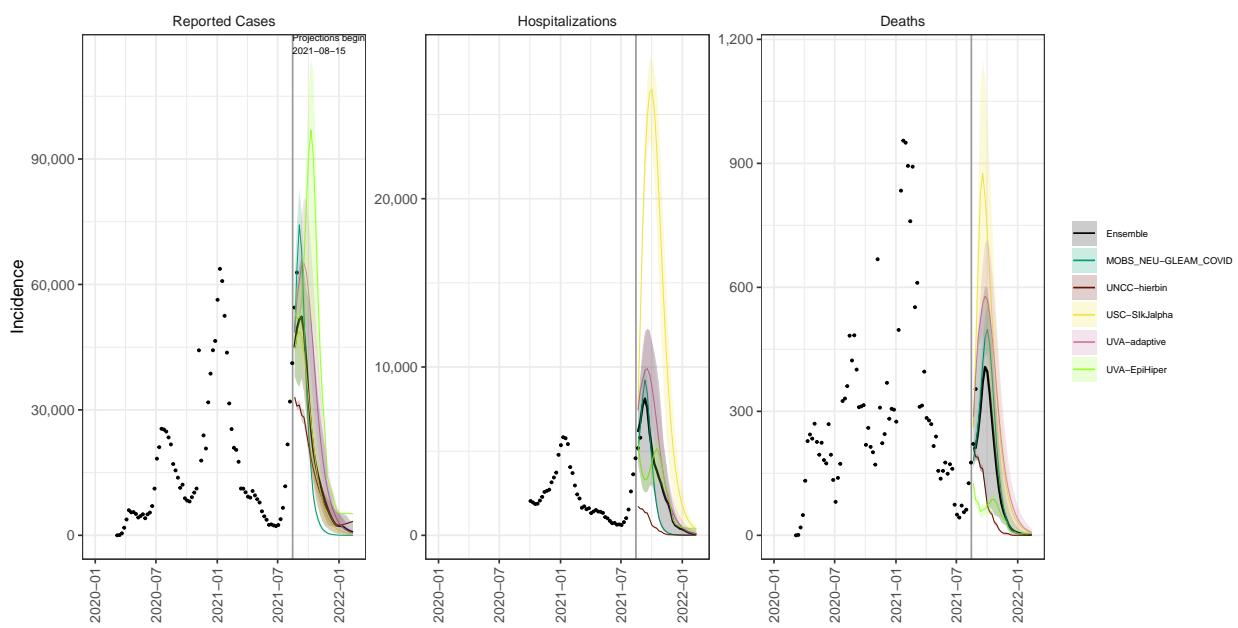
DC model variance & 50% projection intervals – No waning



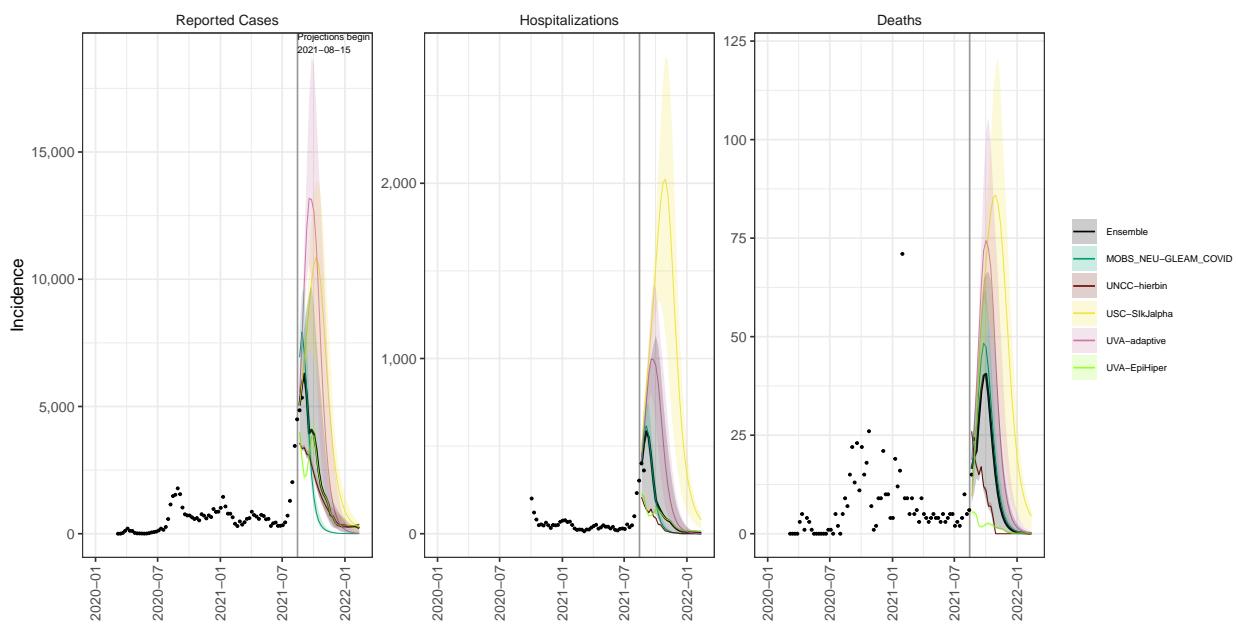
FL model variance & 50% projection intervals – No waning



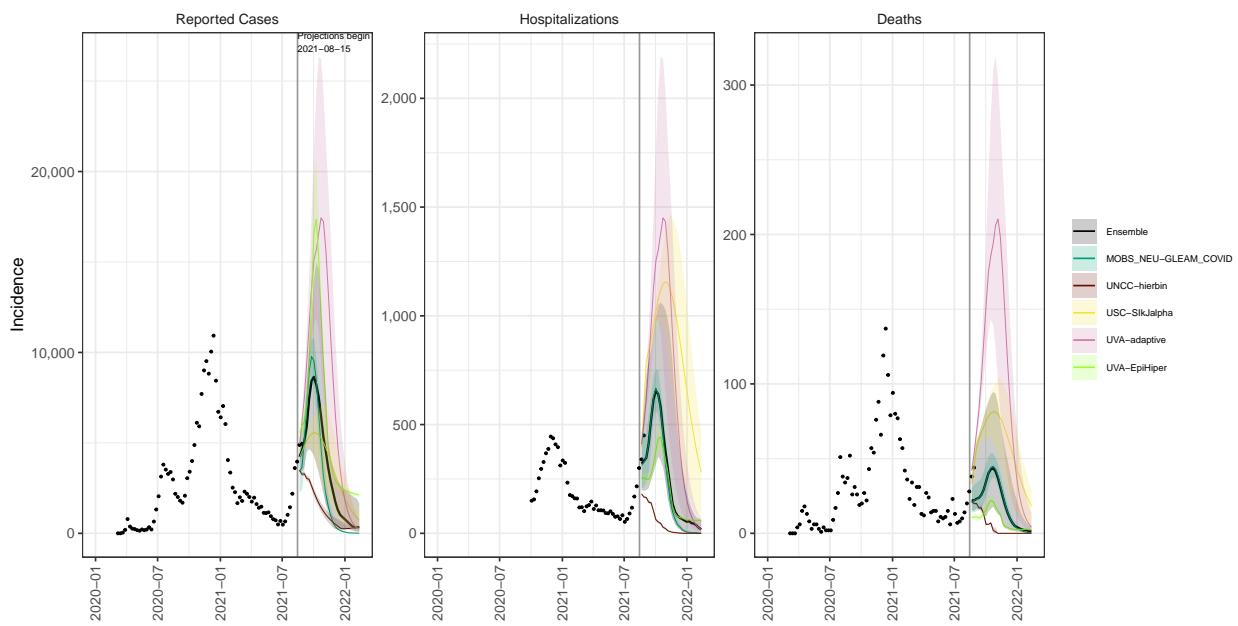
GA model variance & 50% projection intervals – No waning



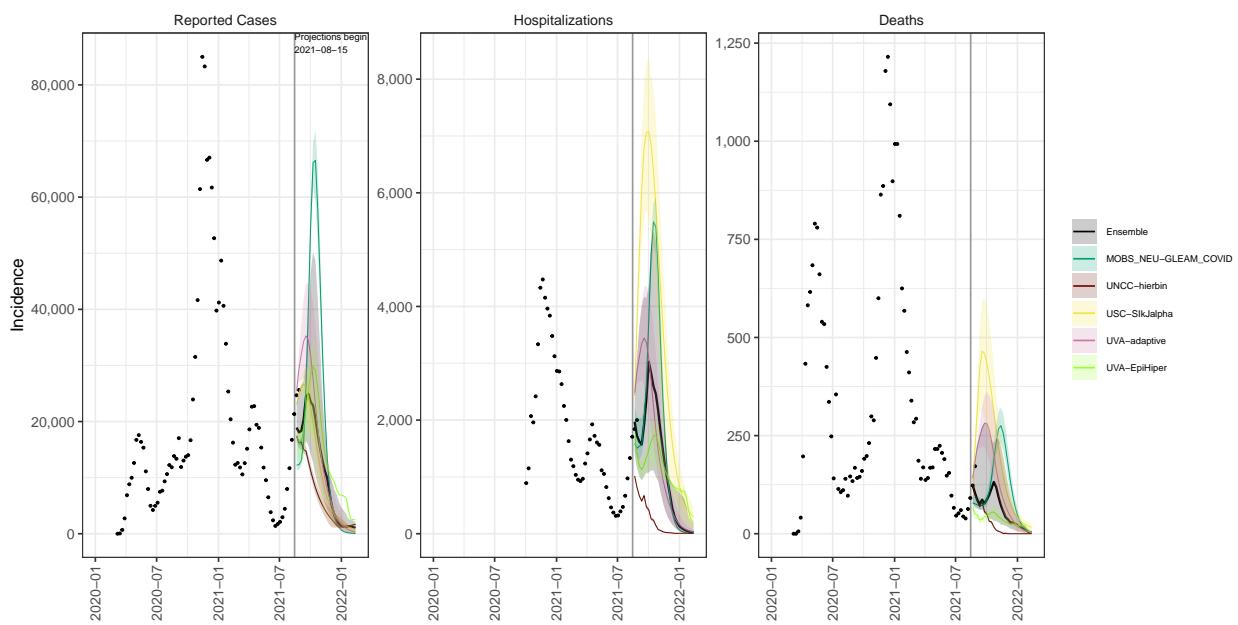
HI model variance & 50% projection intervals – No waning



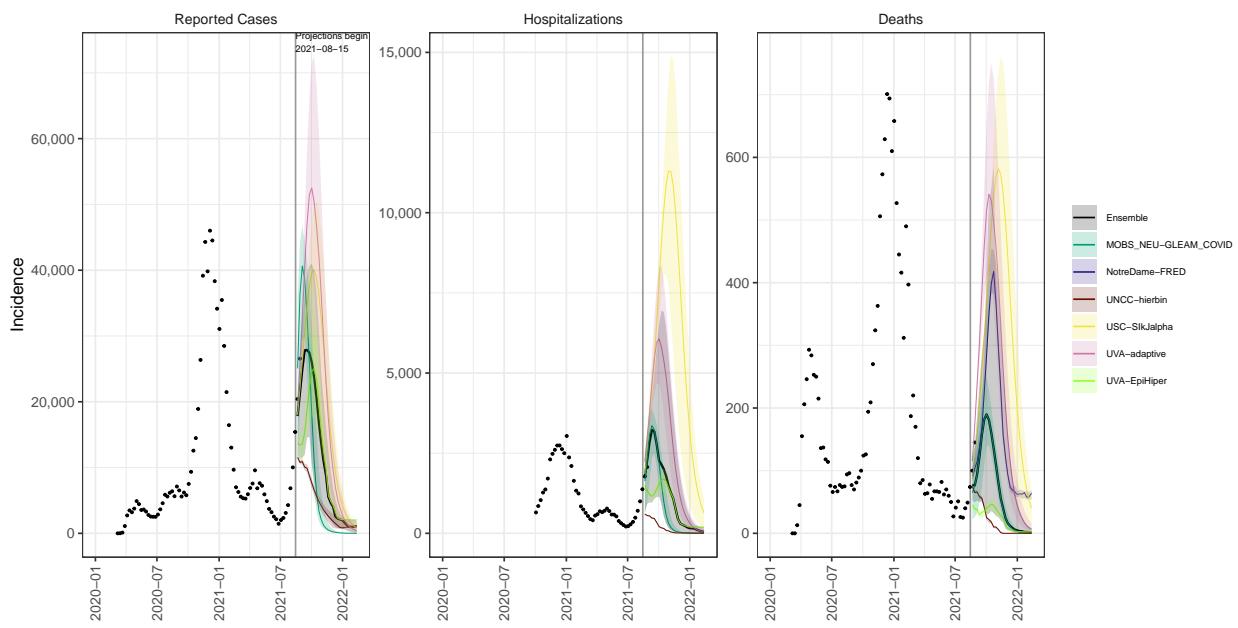
ID model variance & 50% projection intervals – No waning



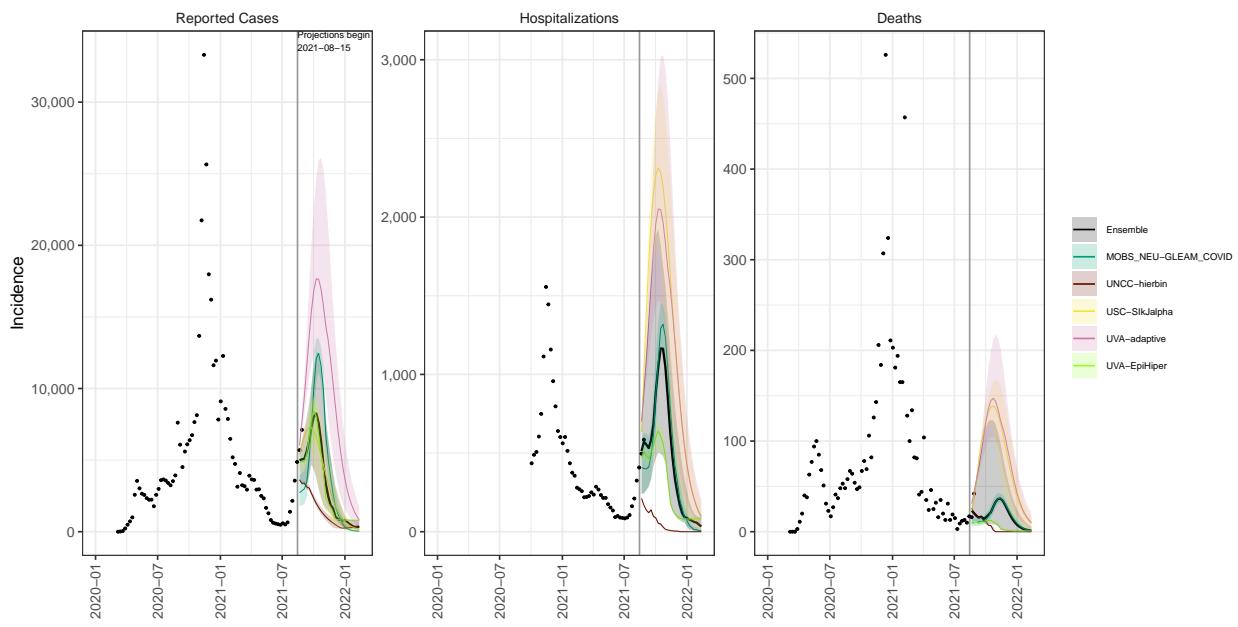
IL model variance & 50% projection intervals – No waning



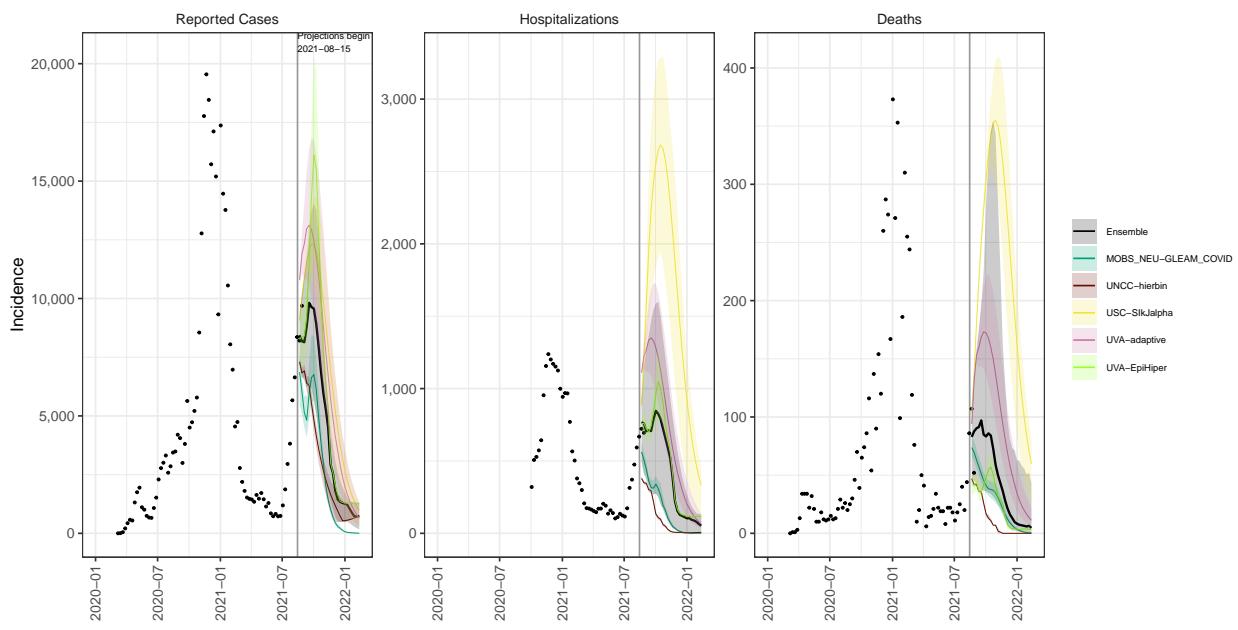
IN model variance & 50% projection intervals – No waning



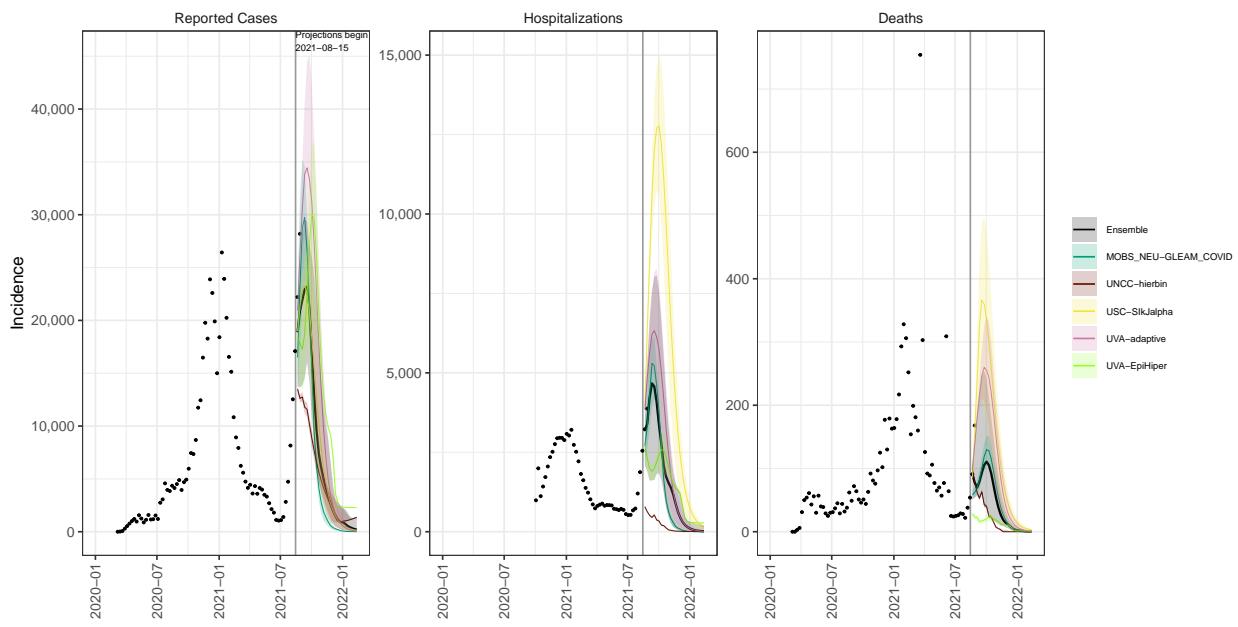
IA model variance & 50% projection intervals – No waning



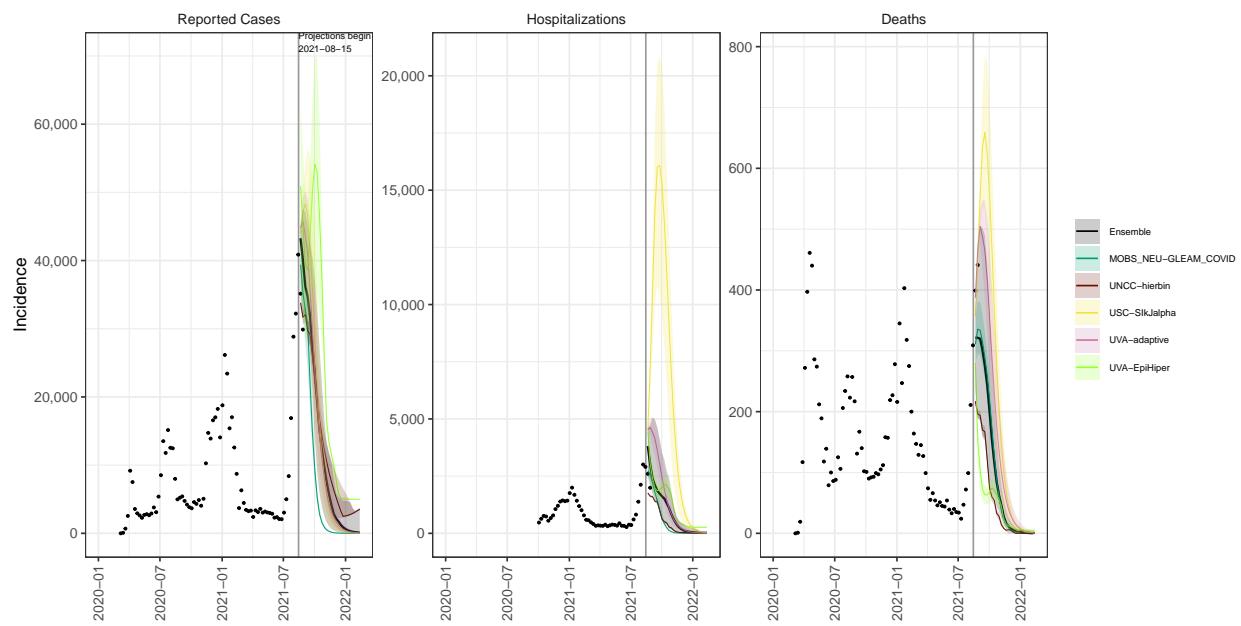
KS model variance & 50% projection intervals – No waning



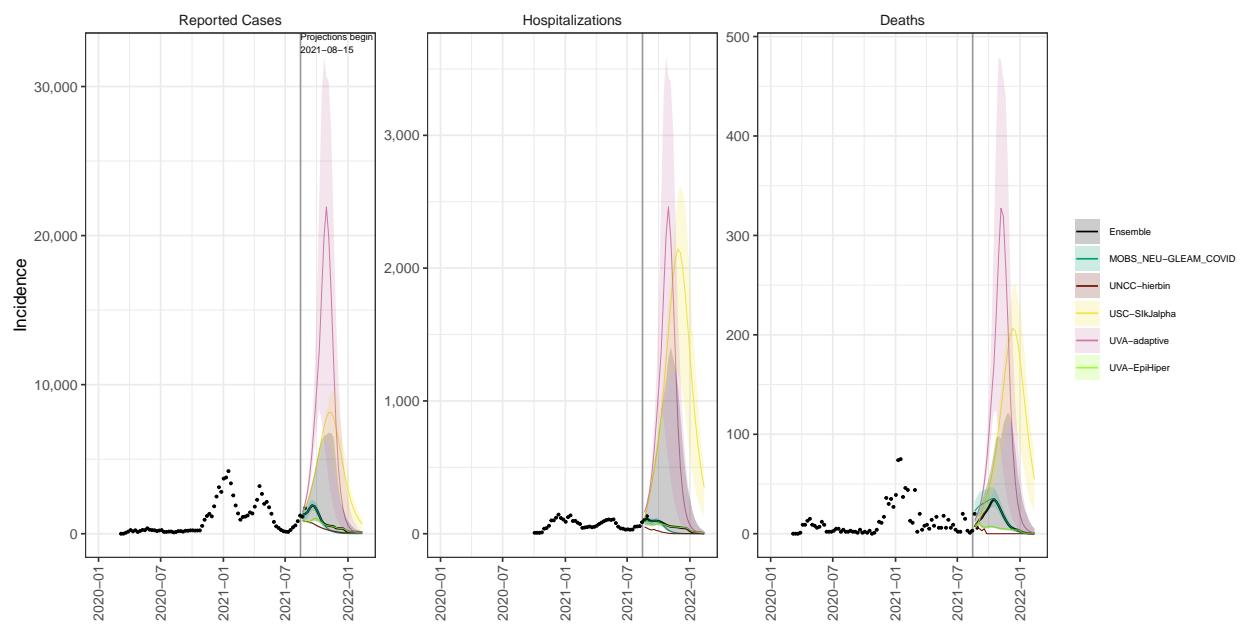
KY model variance & 50% projection intervals – No waning



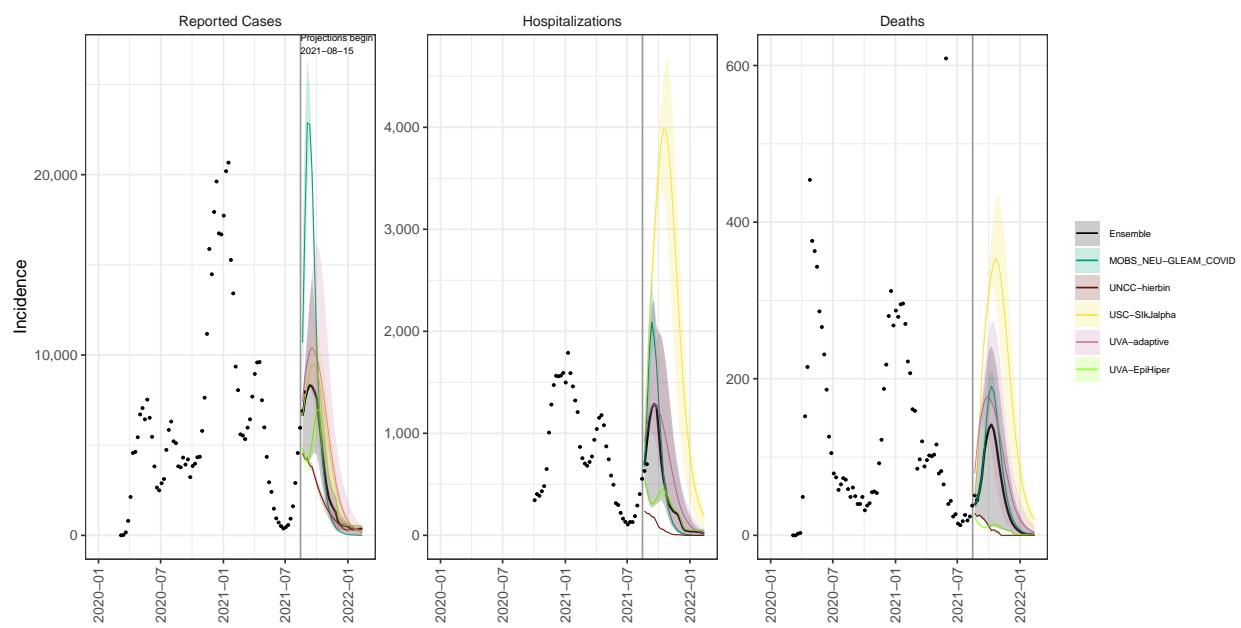
LA model variance & 50% projection intervals – No waning



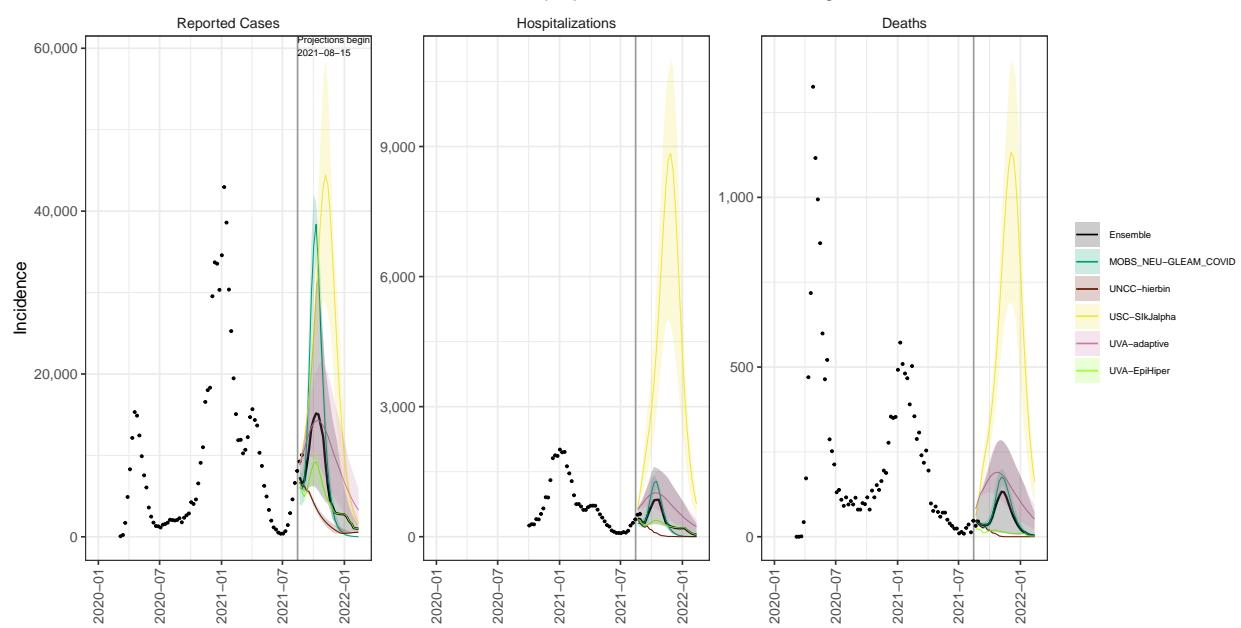
ME model variance & 50% projection intervals – No waning



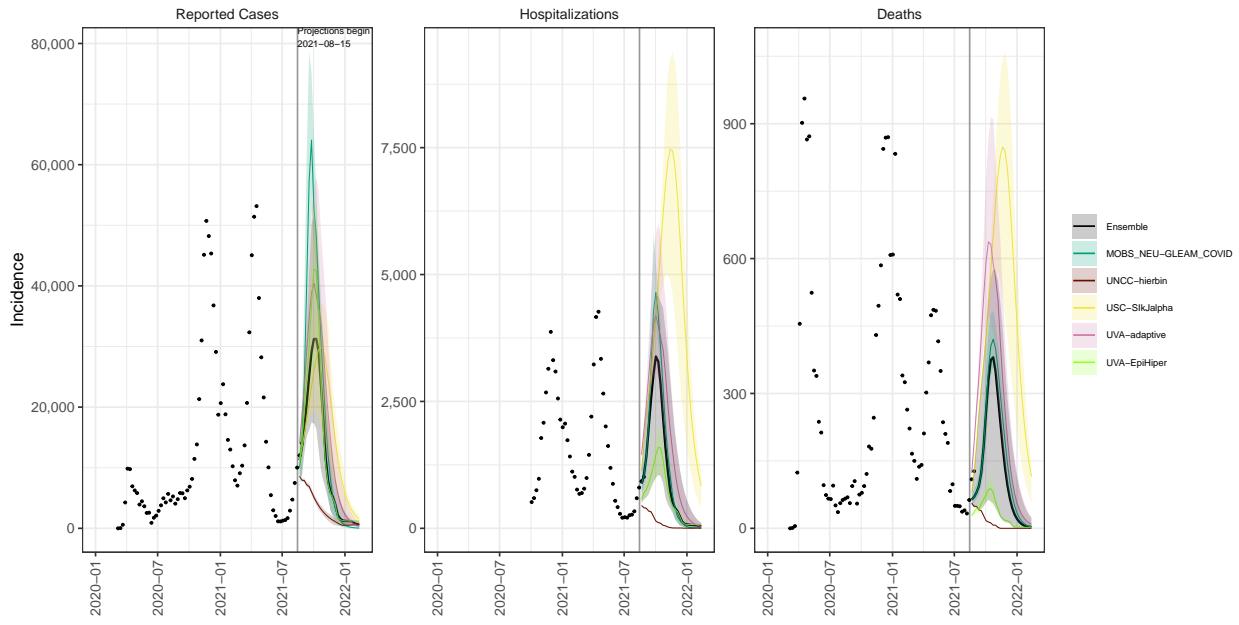
MD model variance & 50% projection intervals – No waning



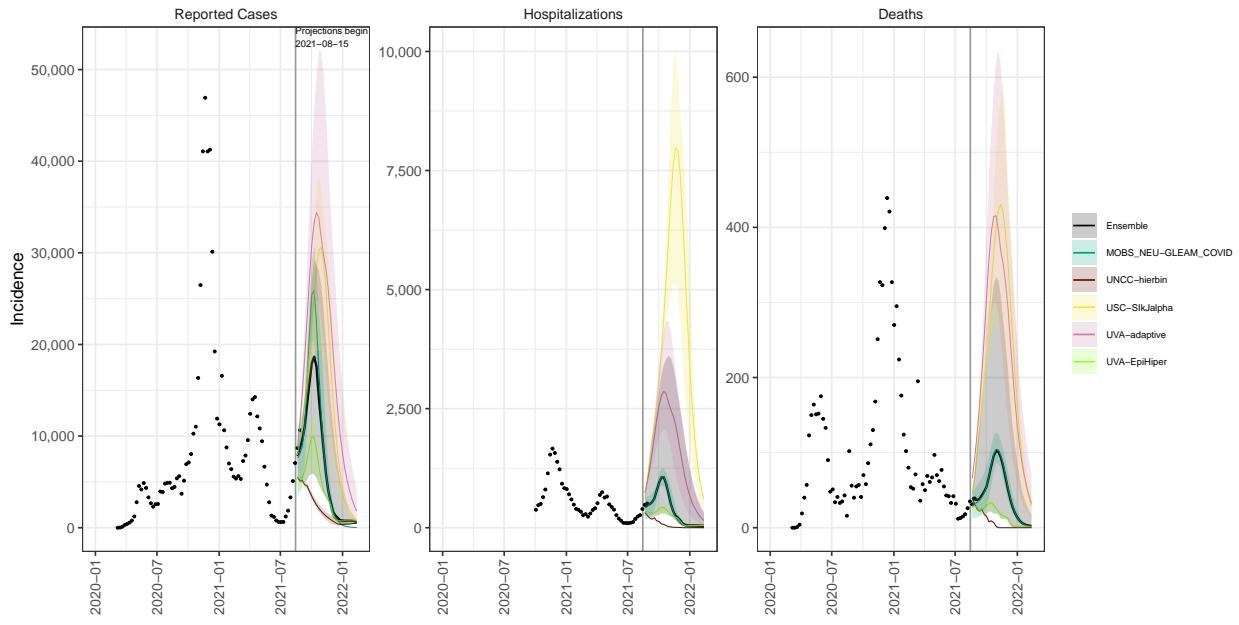
MA model variance & 50% projection intervals – No waning



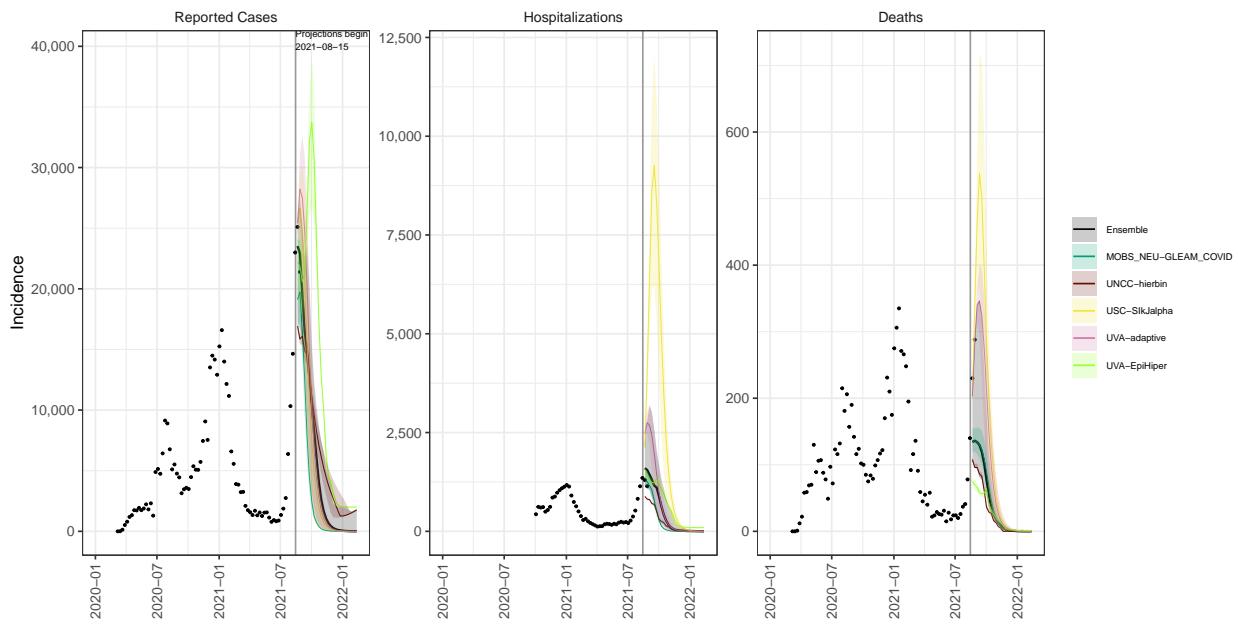
MI model variance & 50% projection intervals – No waning



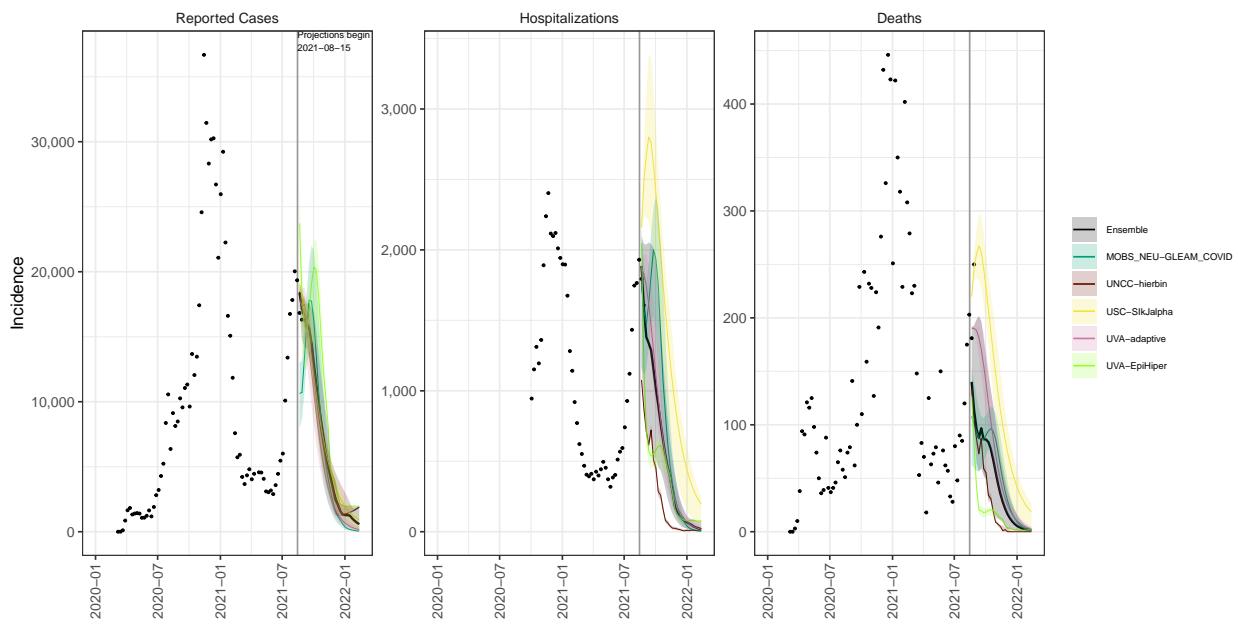
MN model variance & 50% projection intervals – No waning



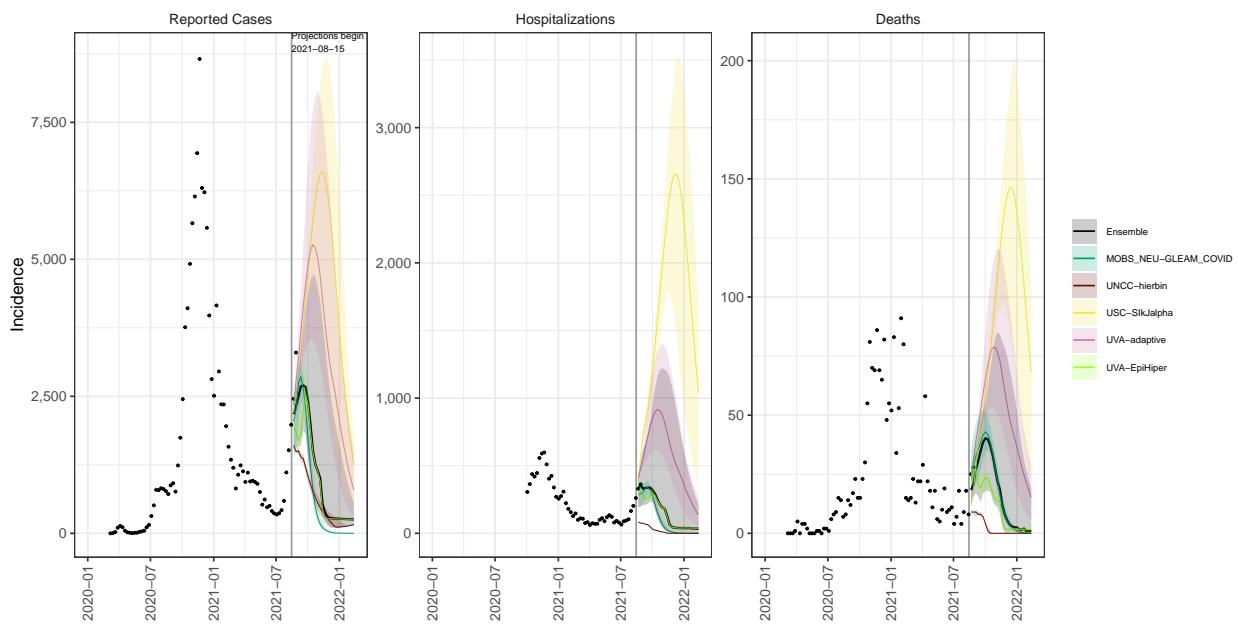
MS model variance & 50% projection intervals – No waning



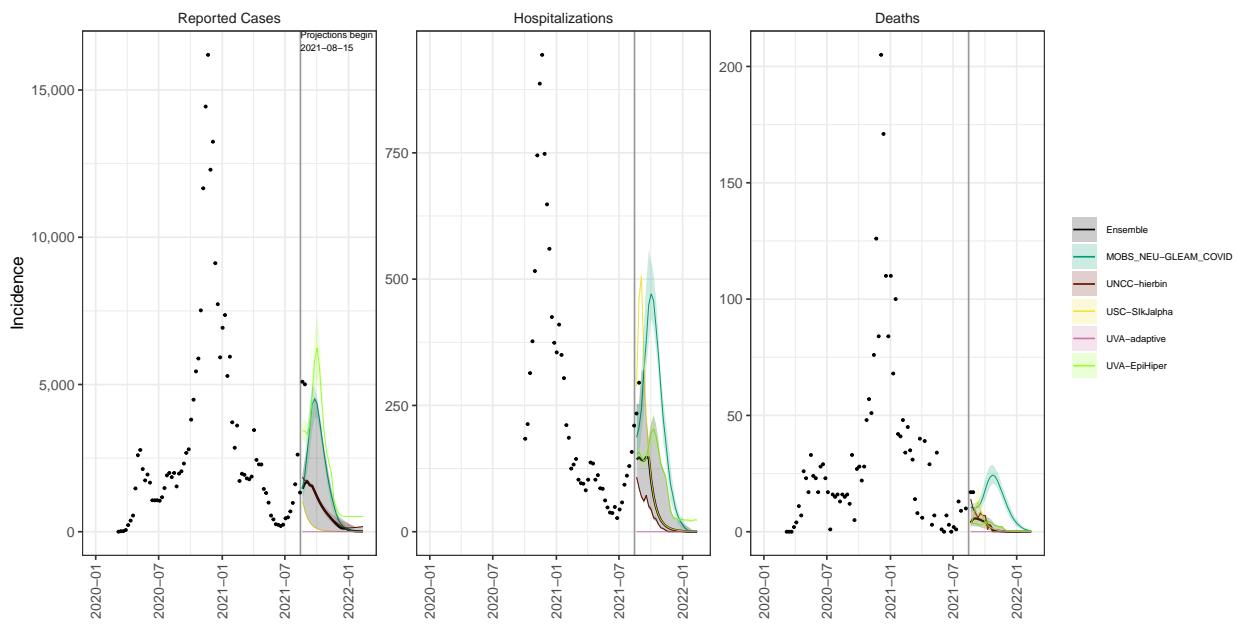
MO model variance & 50% projection intervals – No waning



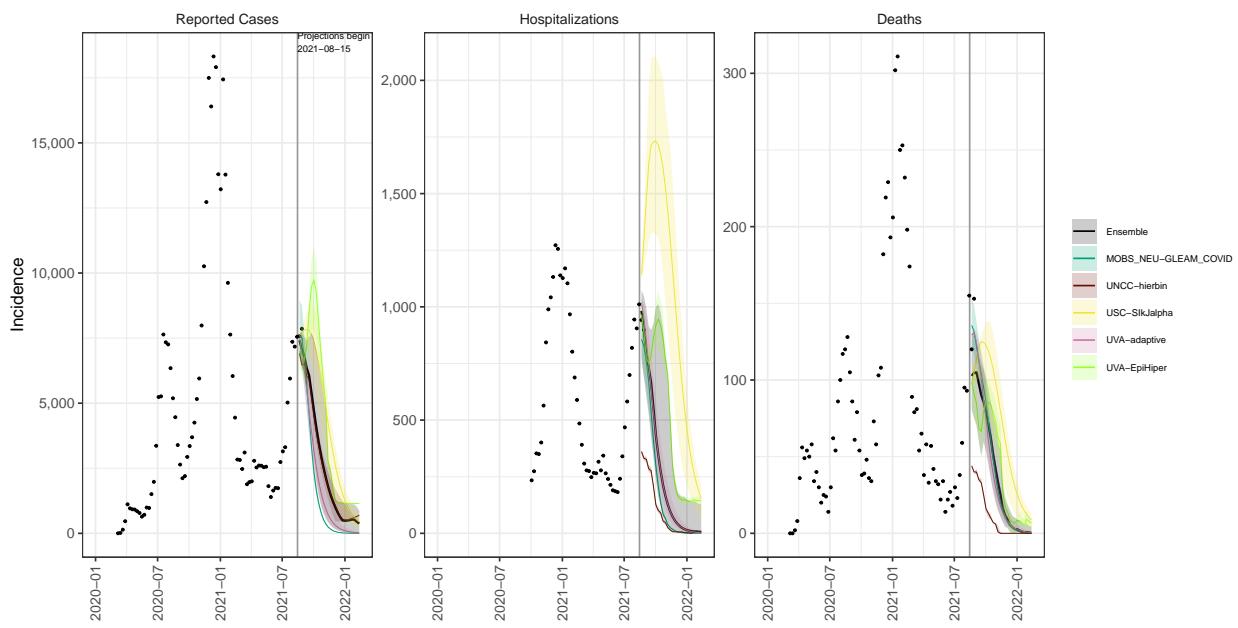
MT model variance & 50% projection intervals – No waning



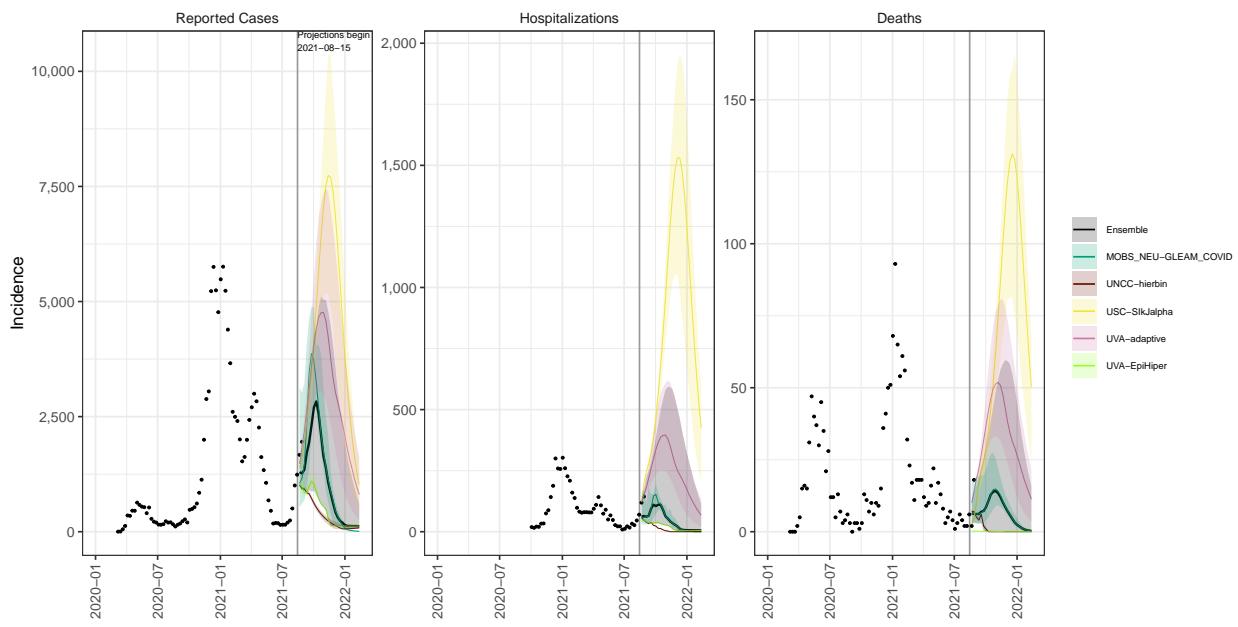
NE model variance & 50% projection intervals – No waning



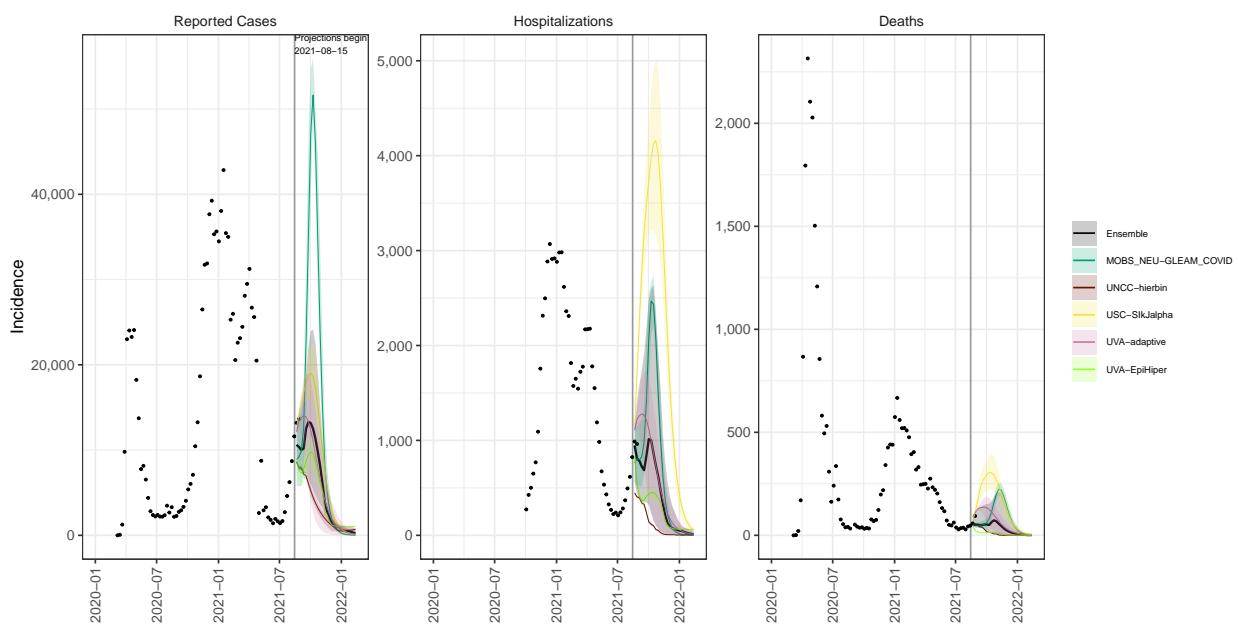
NV model variance & 50% projection intervals – No waning



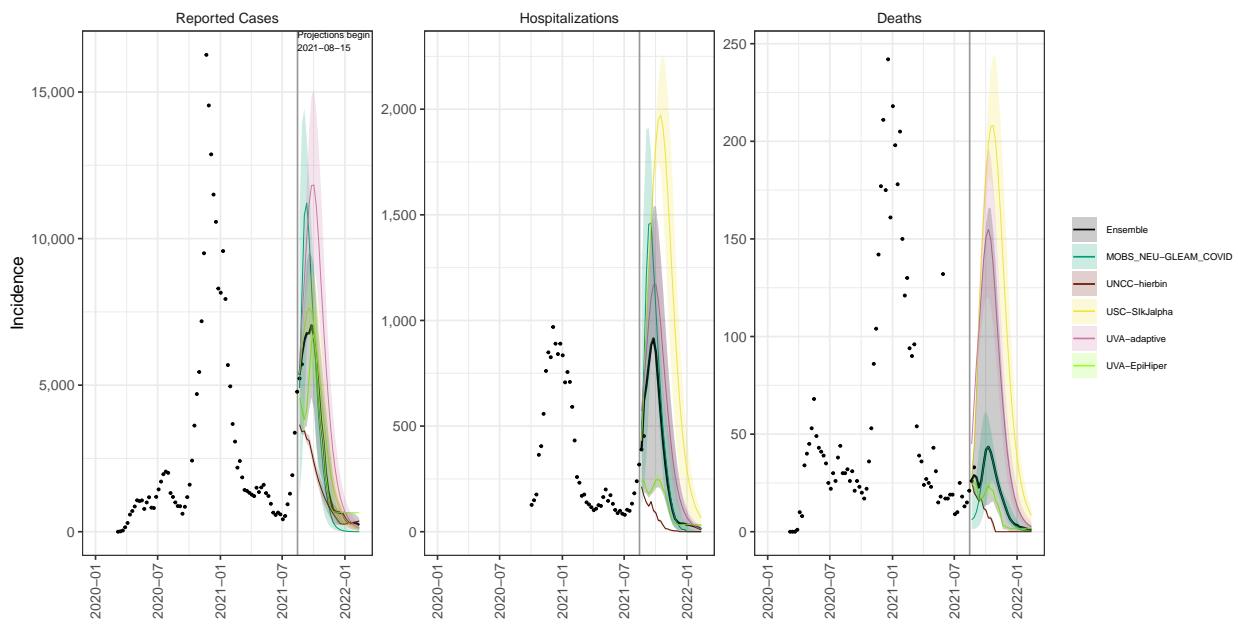
NH model variance & 50% projection intervals – No waning



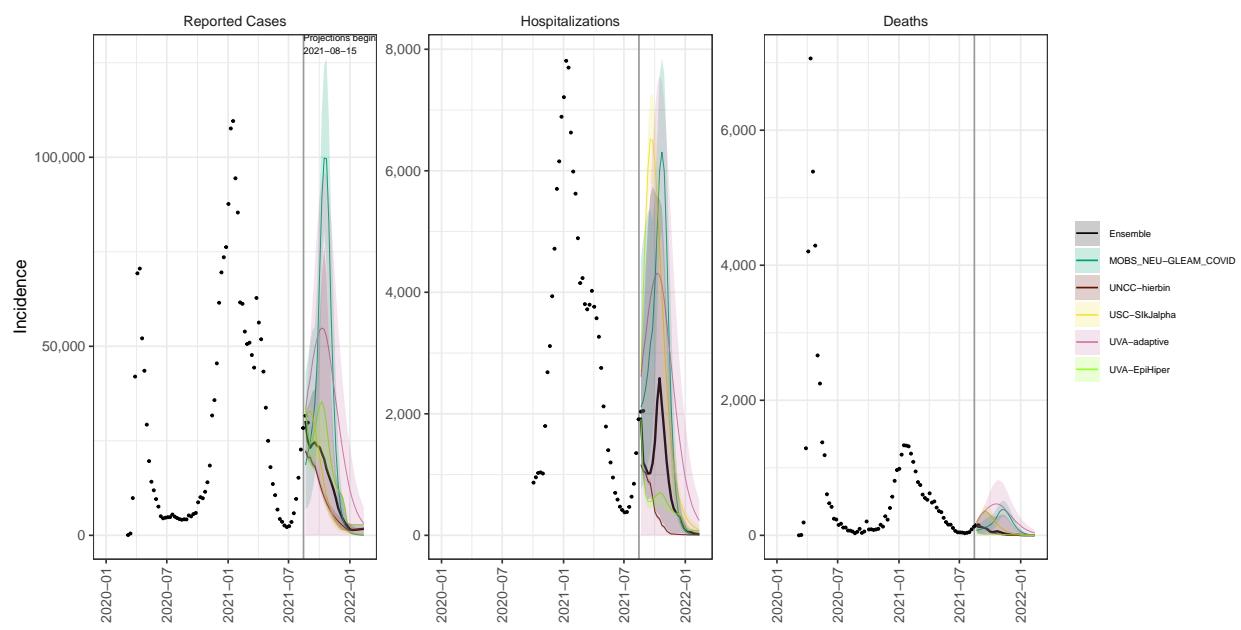
NJ model variance & 50% projection intervals – No waning



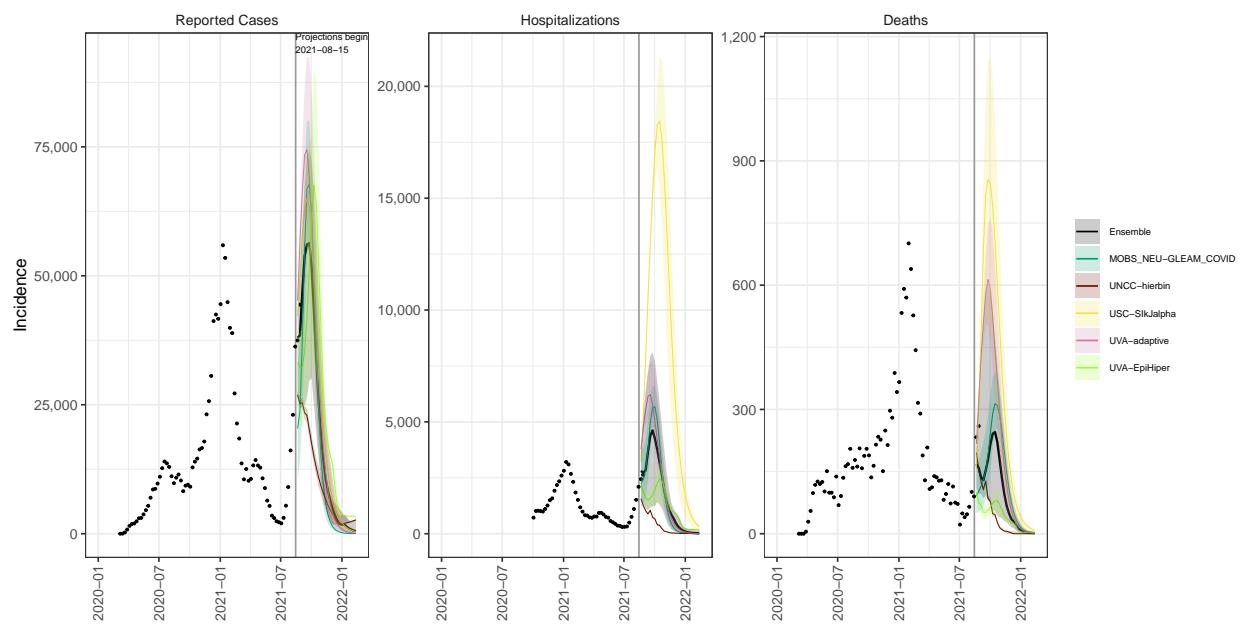
NM model variance & 50% projection intervals – No waning



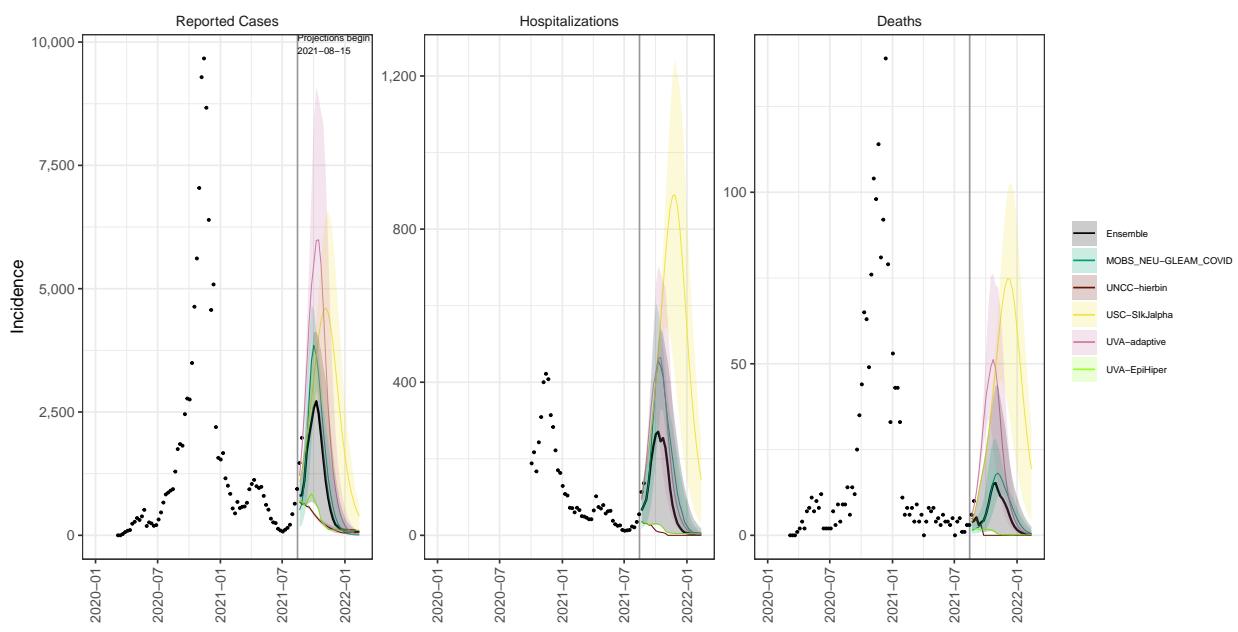
NY model variance & 50% projection intervals – No waning



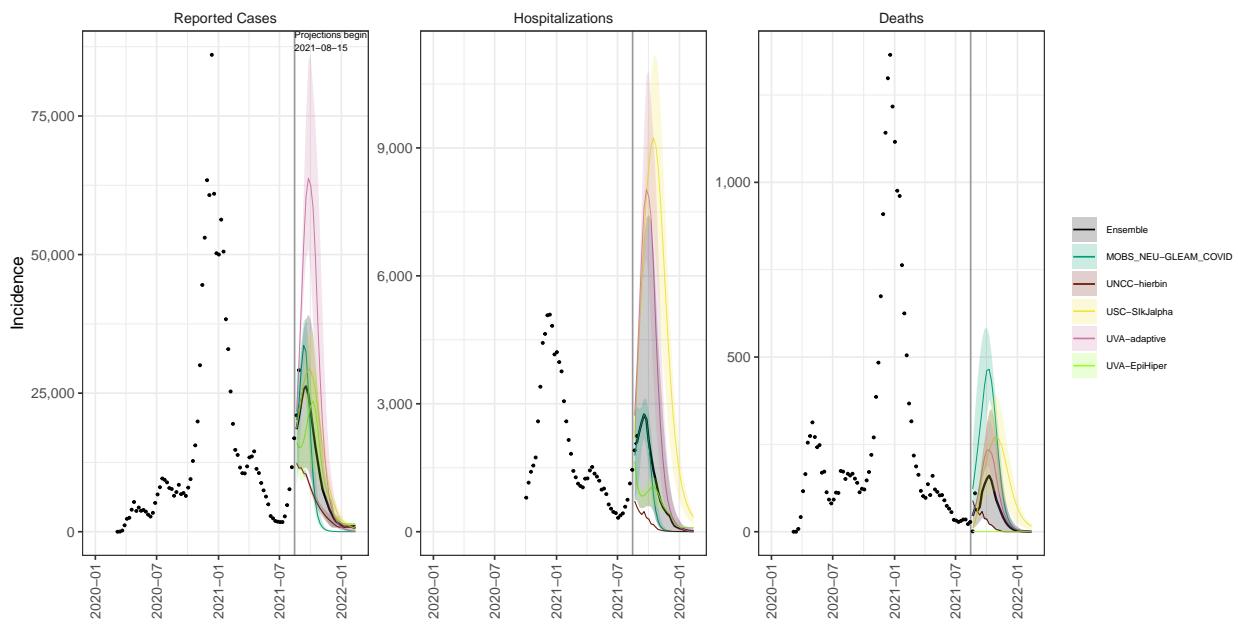
NC model variance & 50% projection intervals – No waning



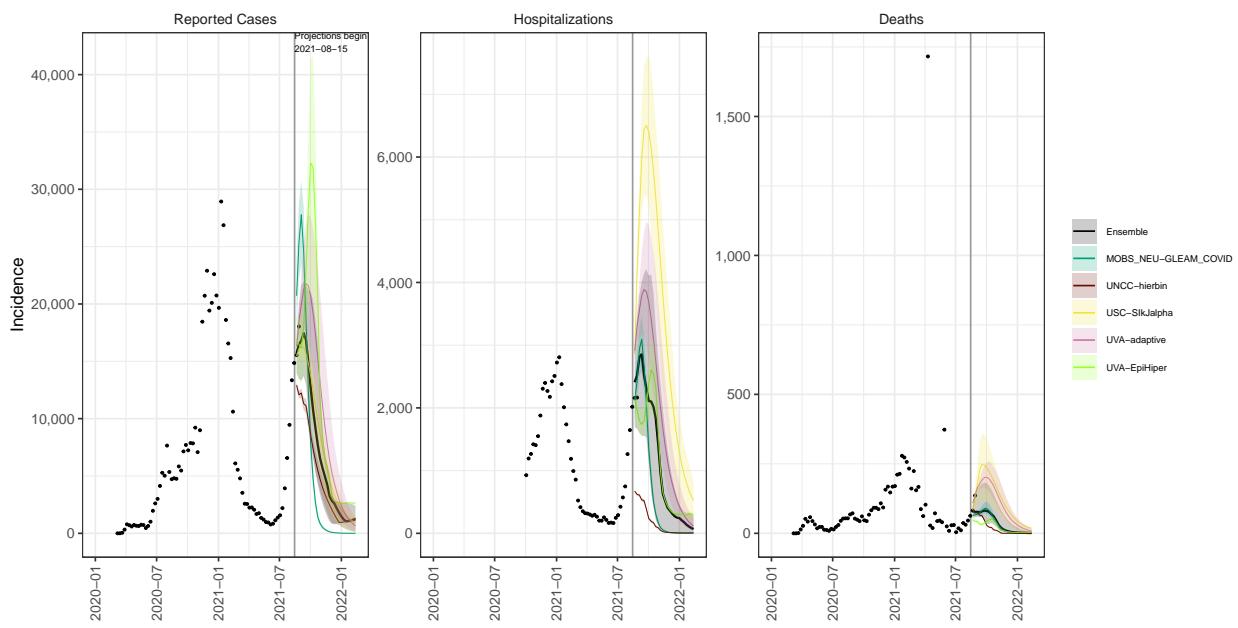
ND model variance & 50% projection intervals – No waning



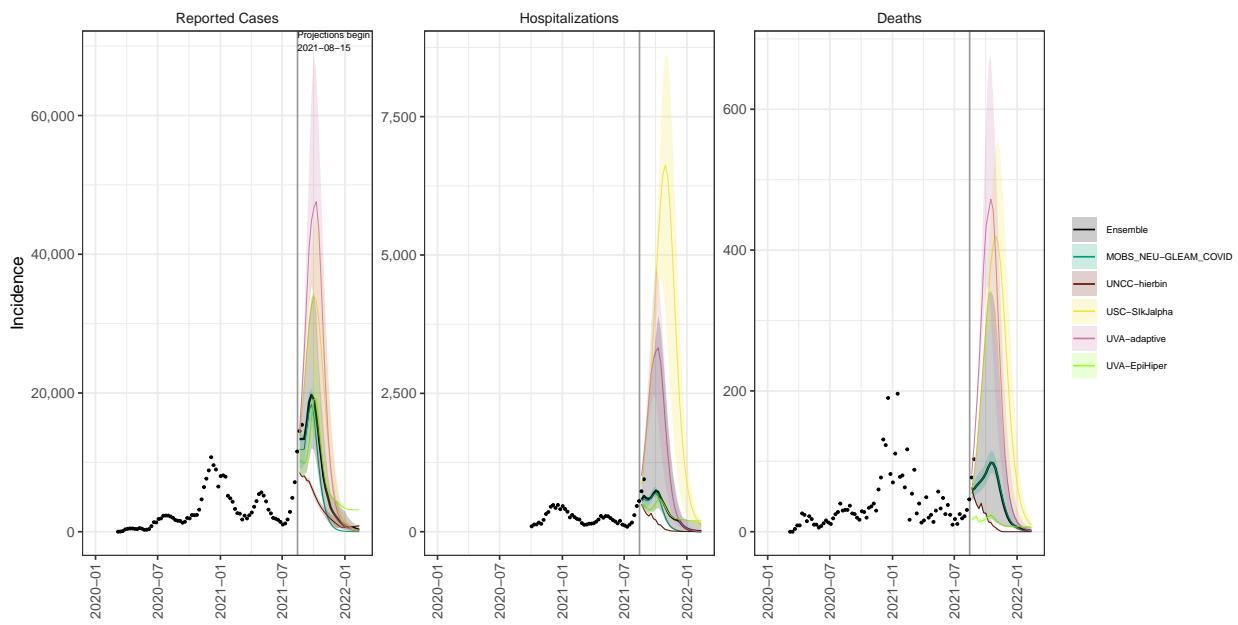
OH model variance & 50% projection intervals – No waning



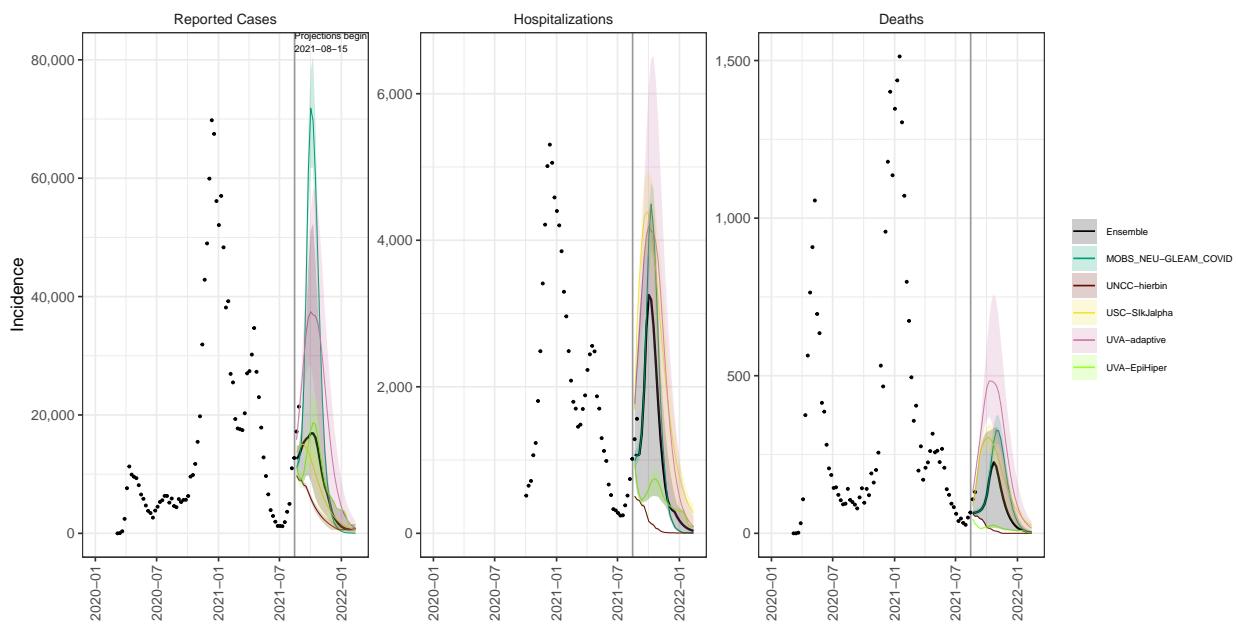
OK model variance & 50% projection intervals – No waning



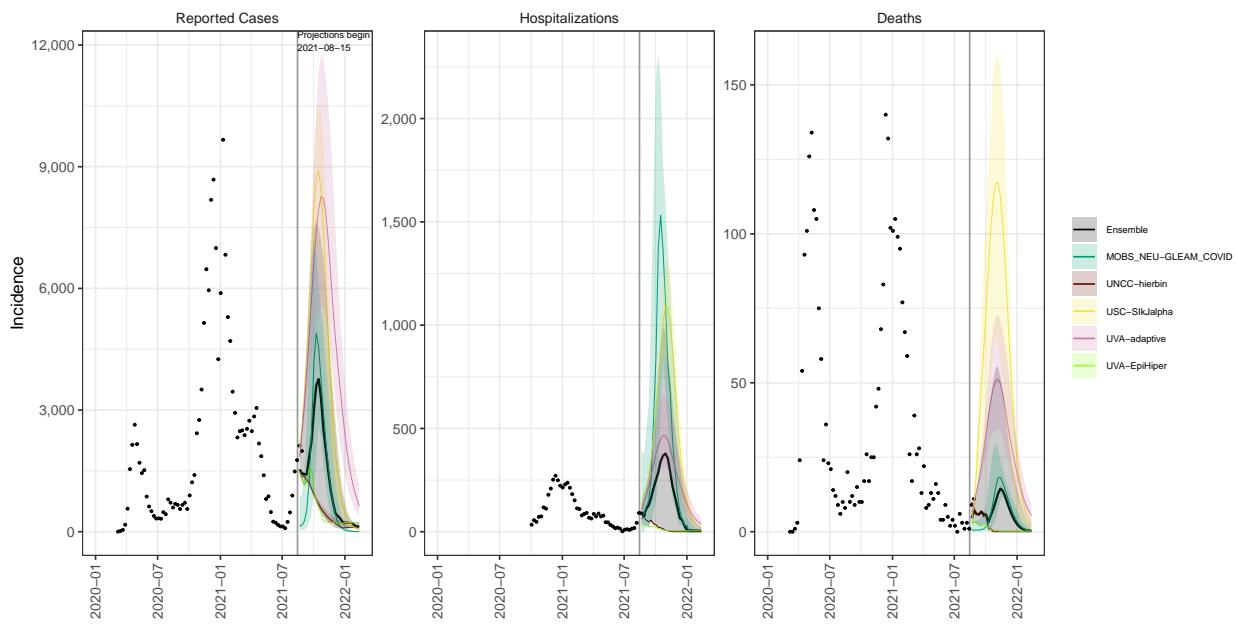
OR model variance & 50% projection intervals – No waning



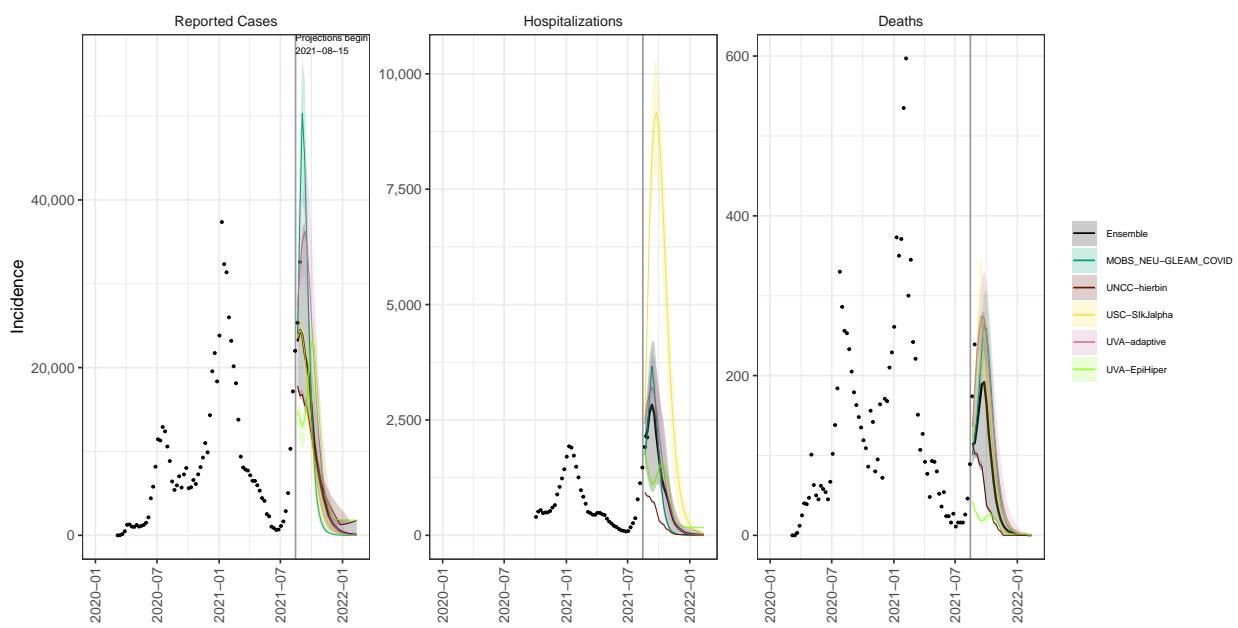
PA model variance & 50% projection intervals – No waning



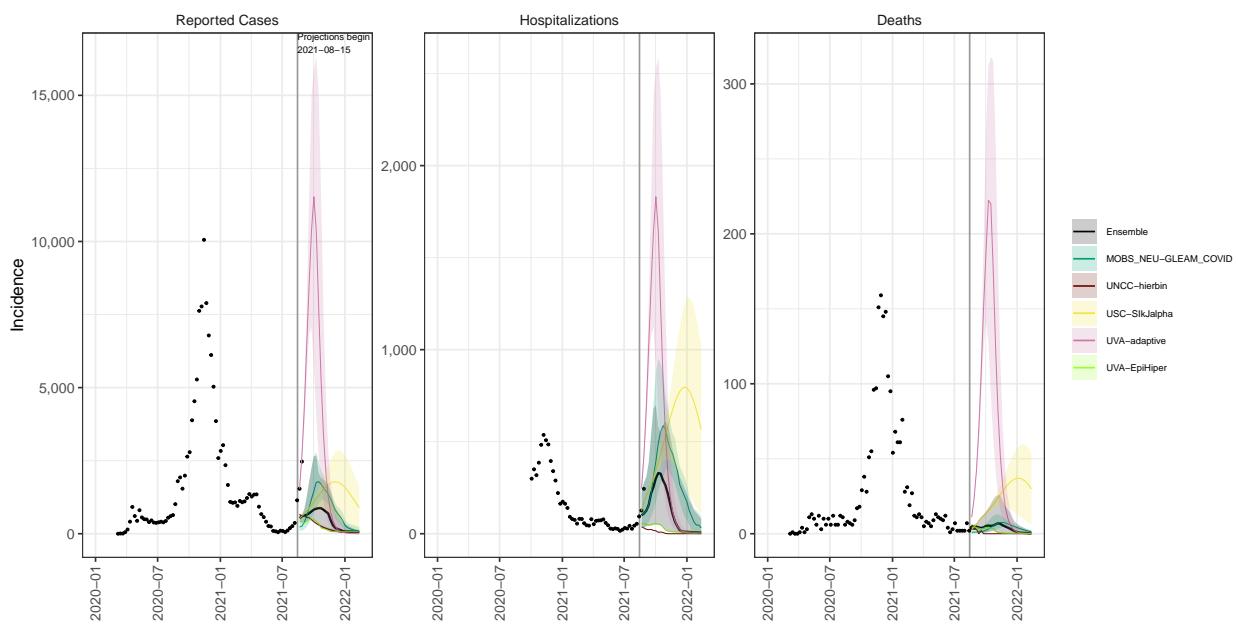
RI model variance & 50% projection intervals – No waning



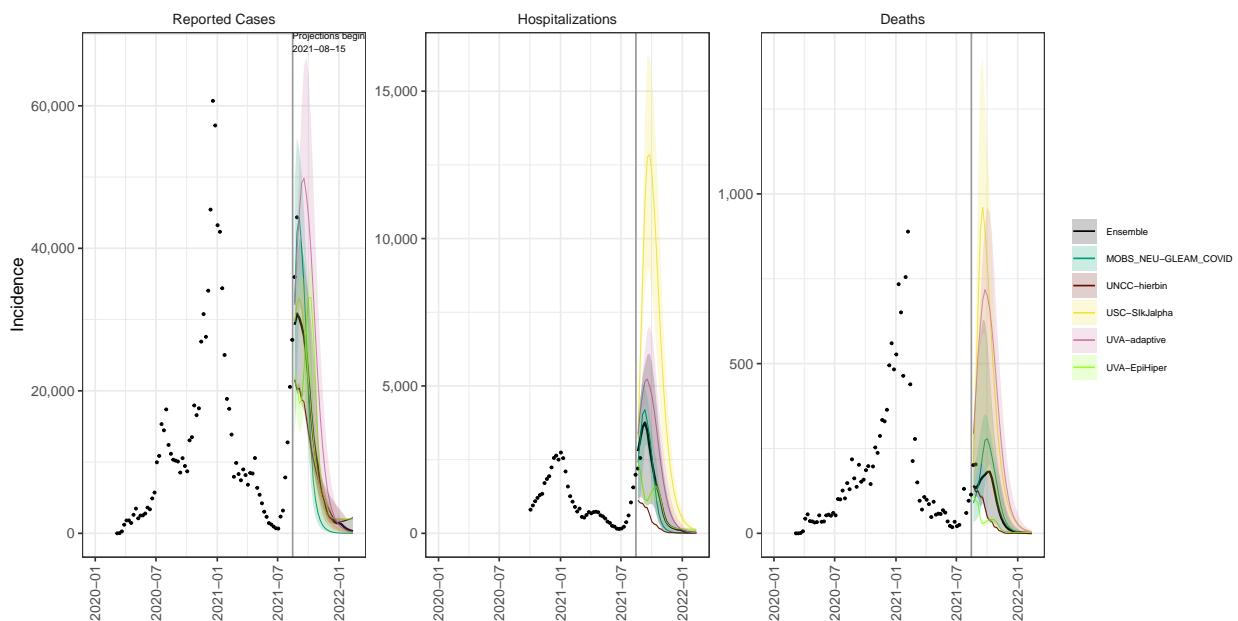
SC model variance & 50% projection intervals – No waning



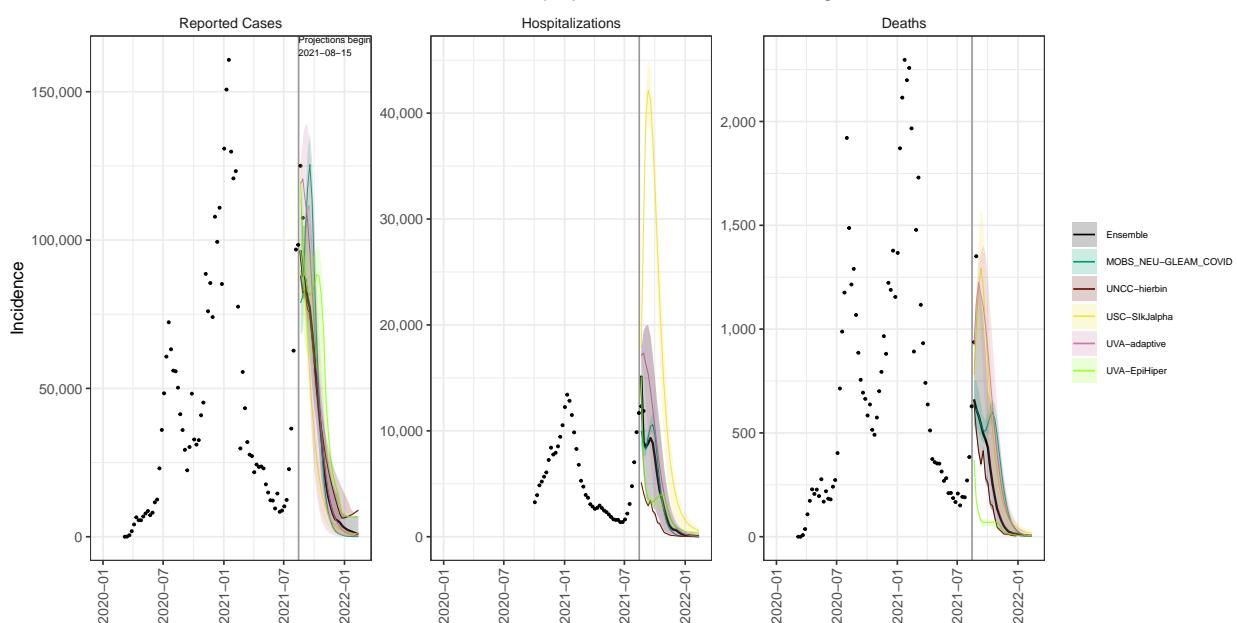
SD model variance & 50% projection intervals – No waning



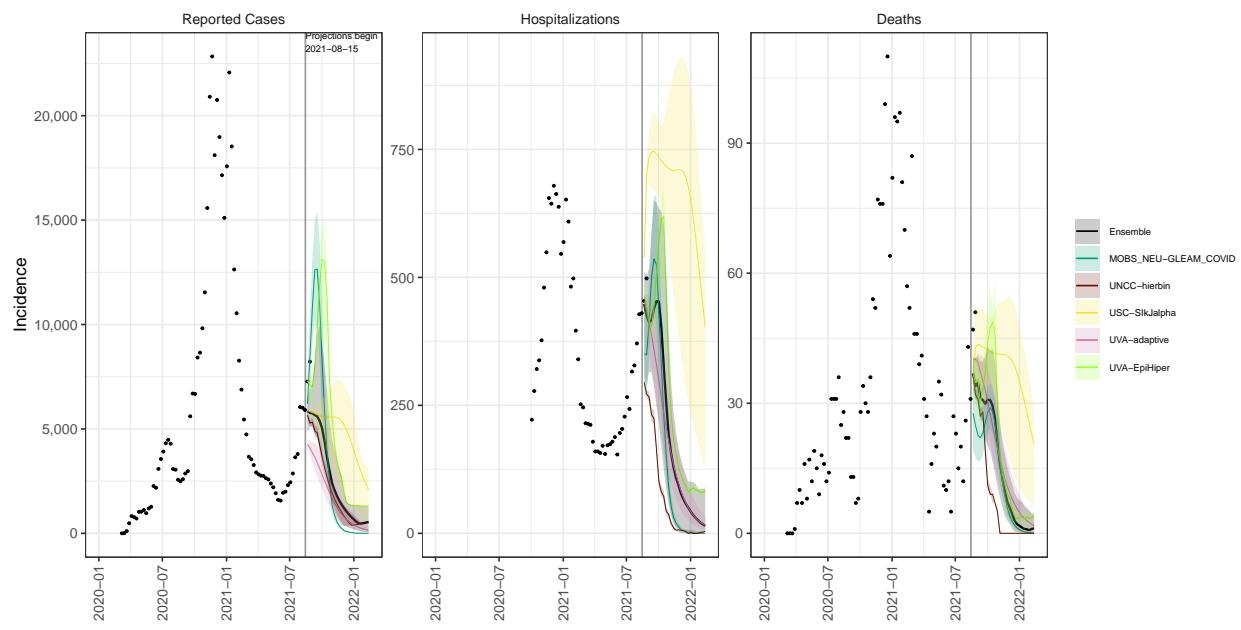
TN model variance & 50% projection intervals – No waning



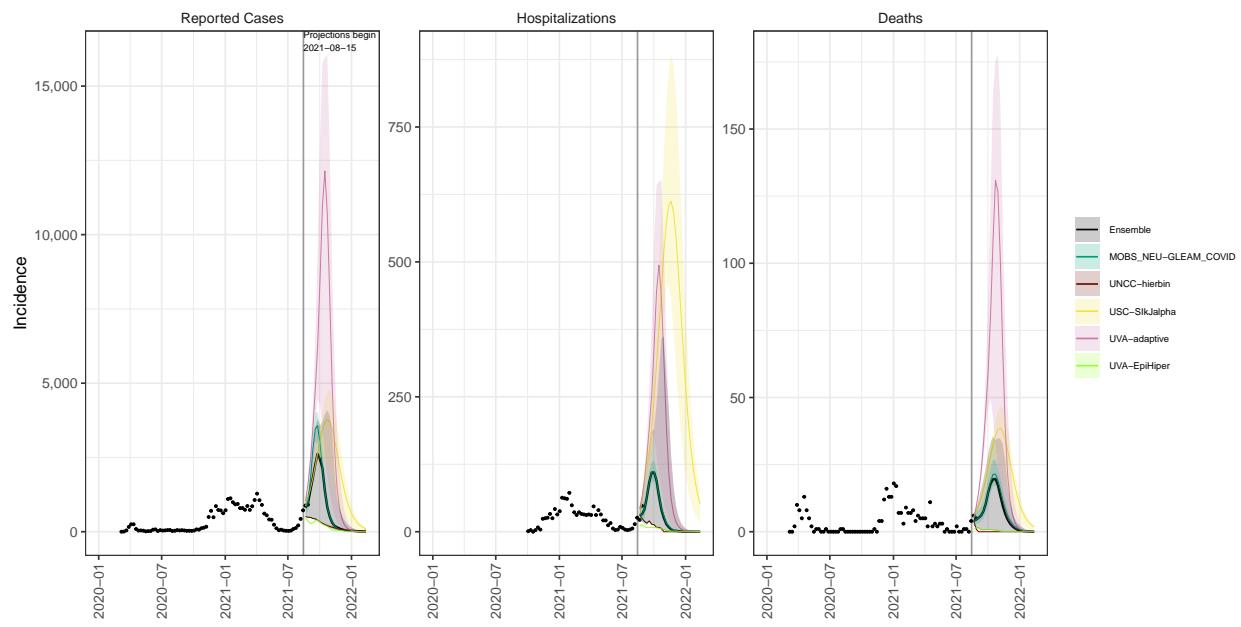
TX model variance & 50% projection intervals – No waning



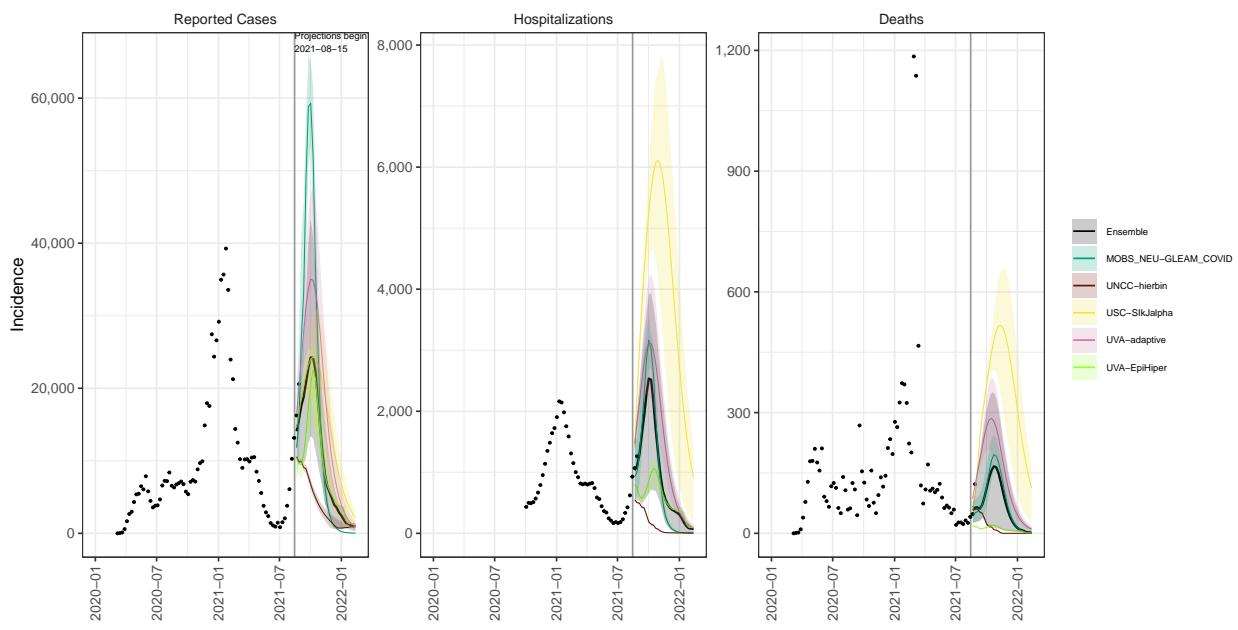
UT model variance & 50% projection intervals – No waning



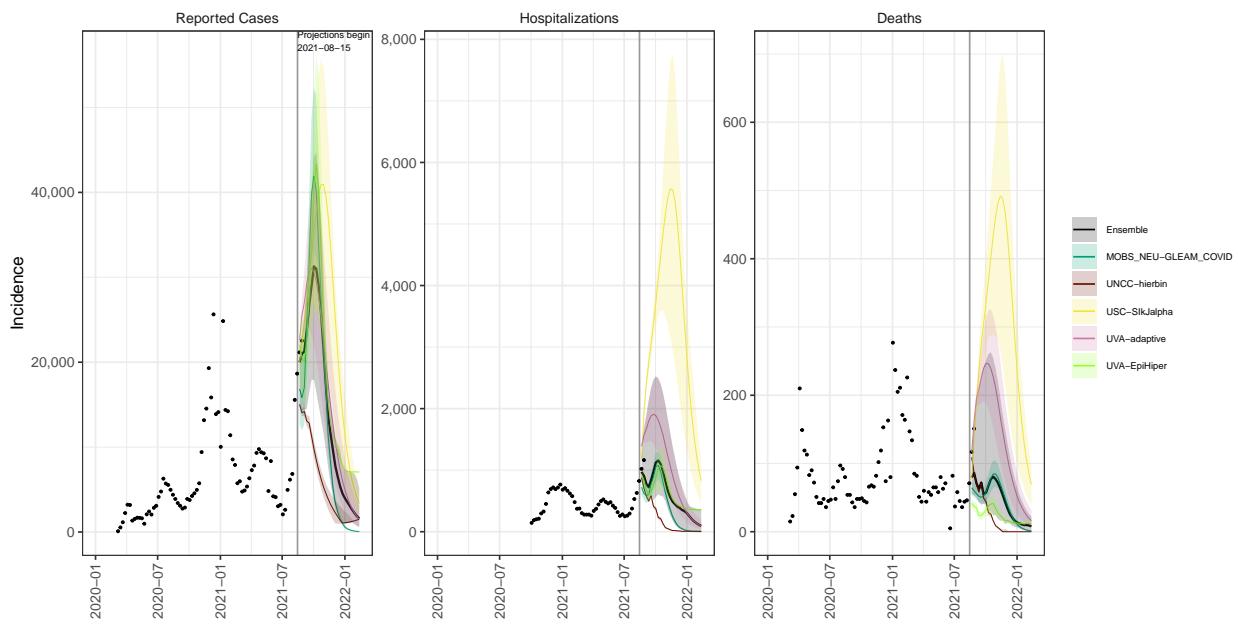
VT model variance & 50% projection intervals – No waning



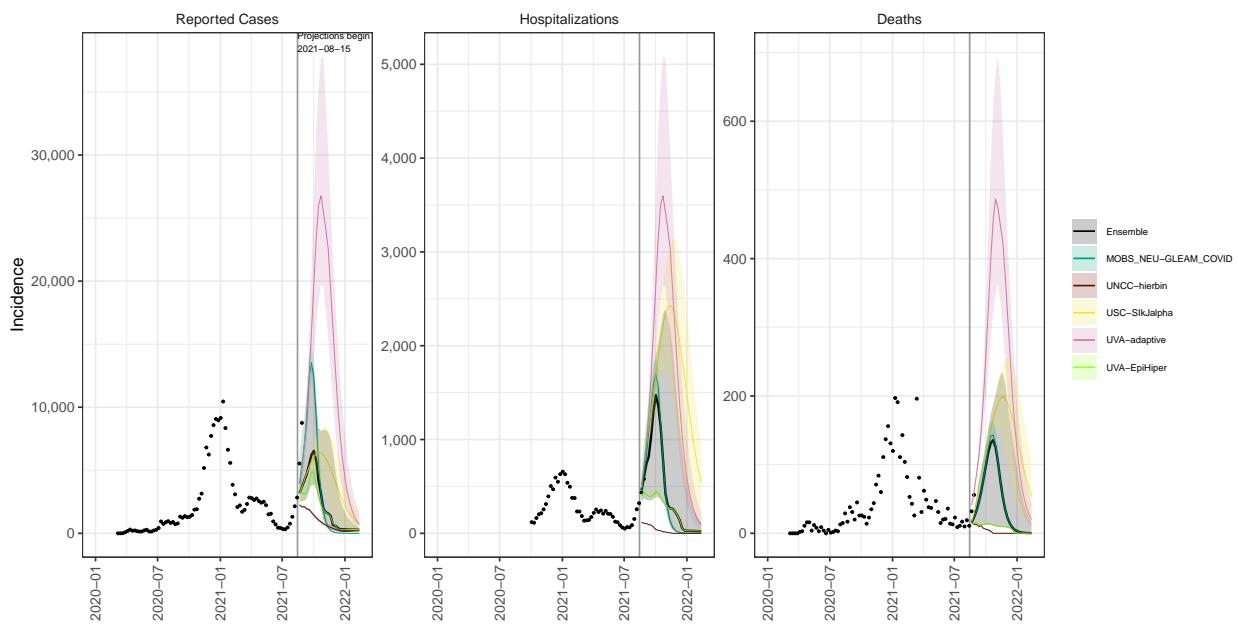
VA model variance & 50% projection intervals – No waning



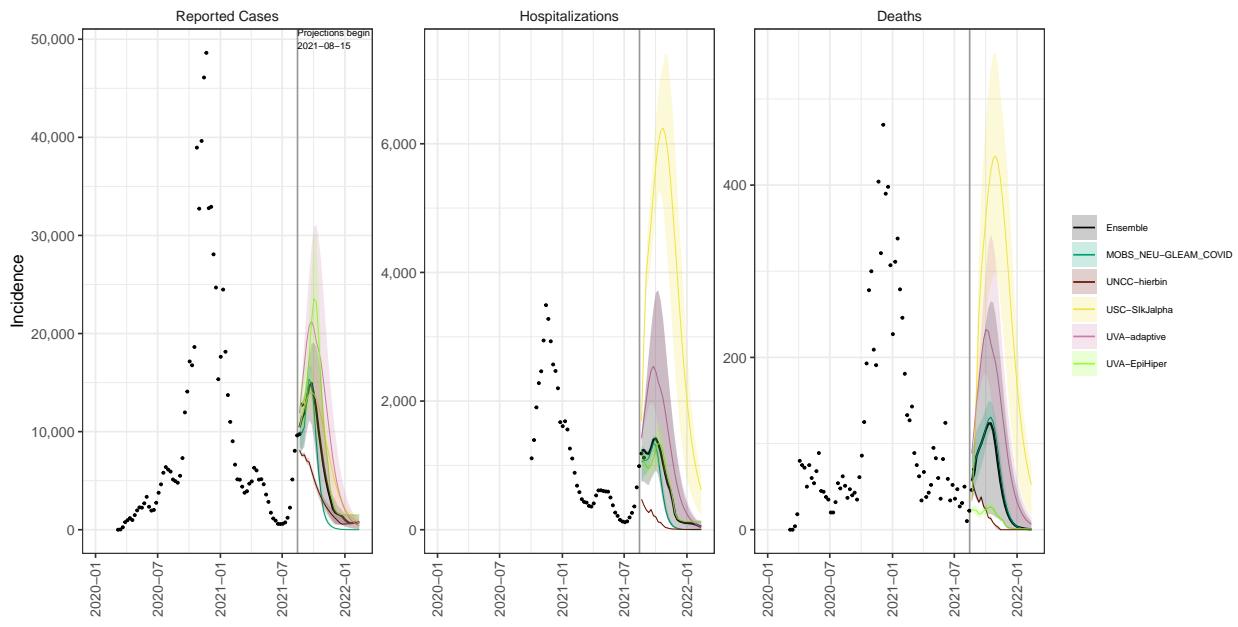
WA model variance & 50% projection intervals – No waning



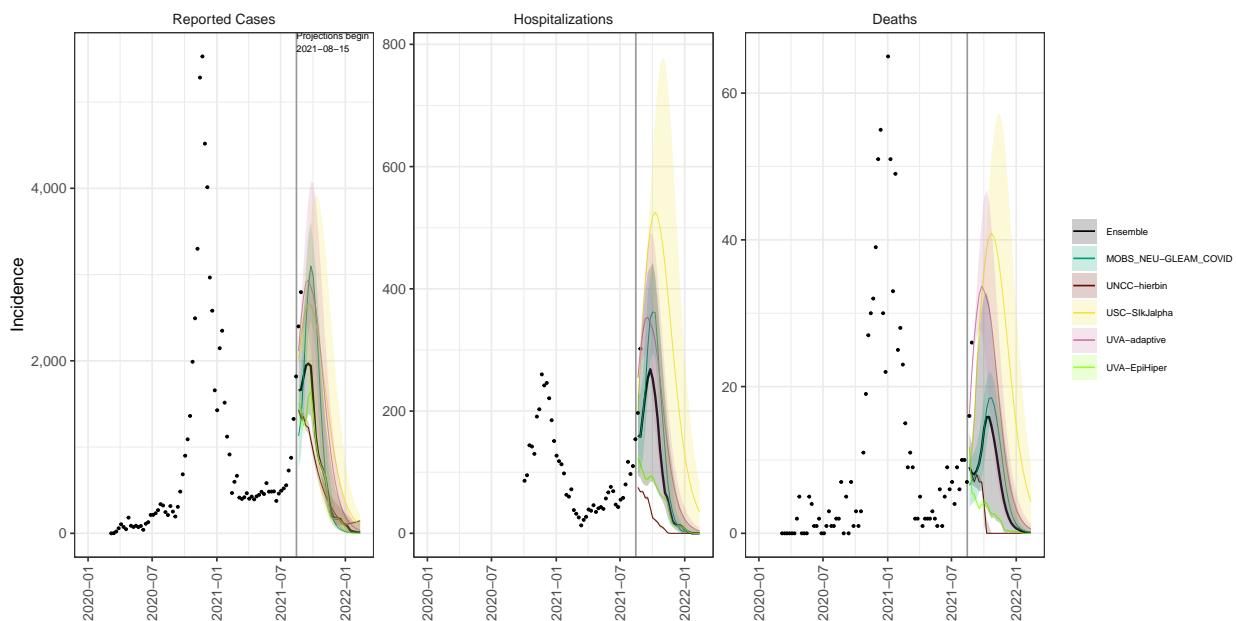
WV model variance & 50% projection intervals – No waning



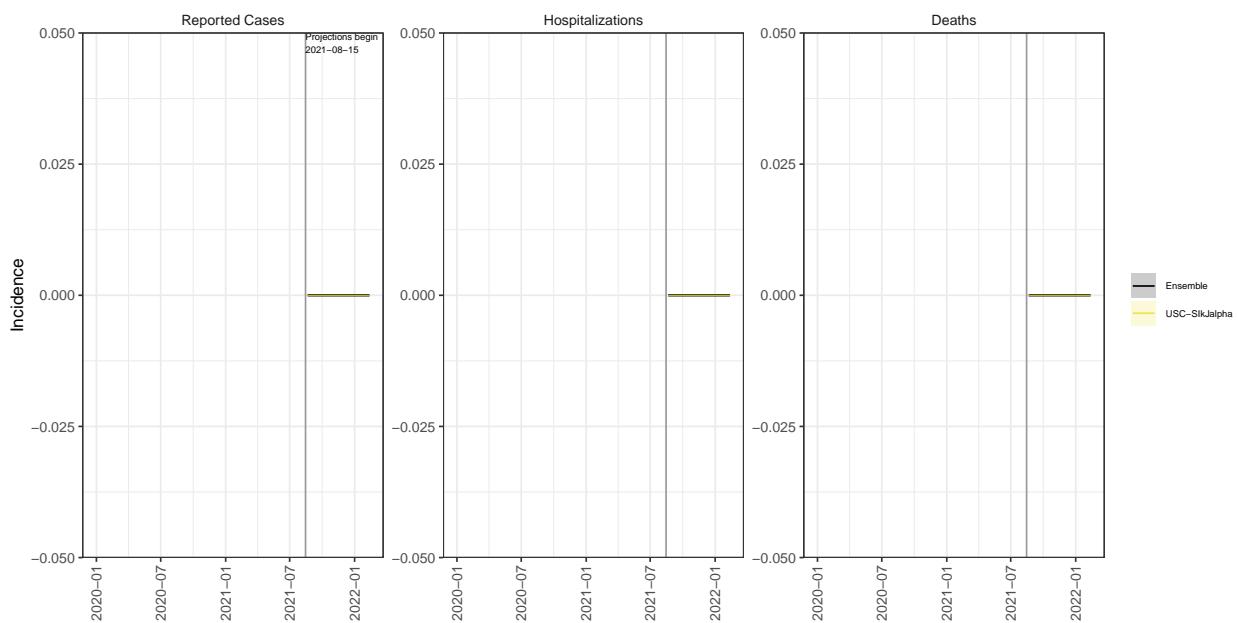
WI model variance & 50% projection intervals – No waning



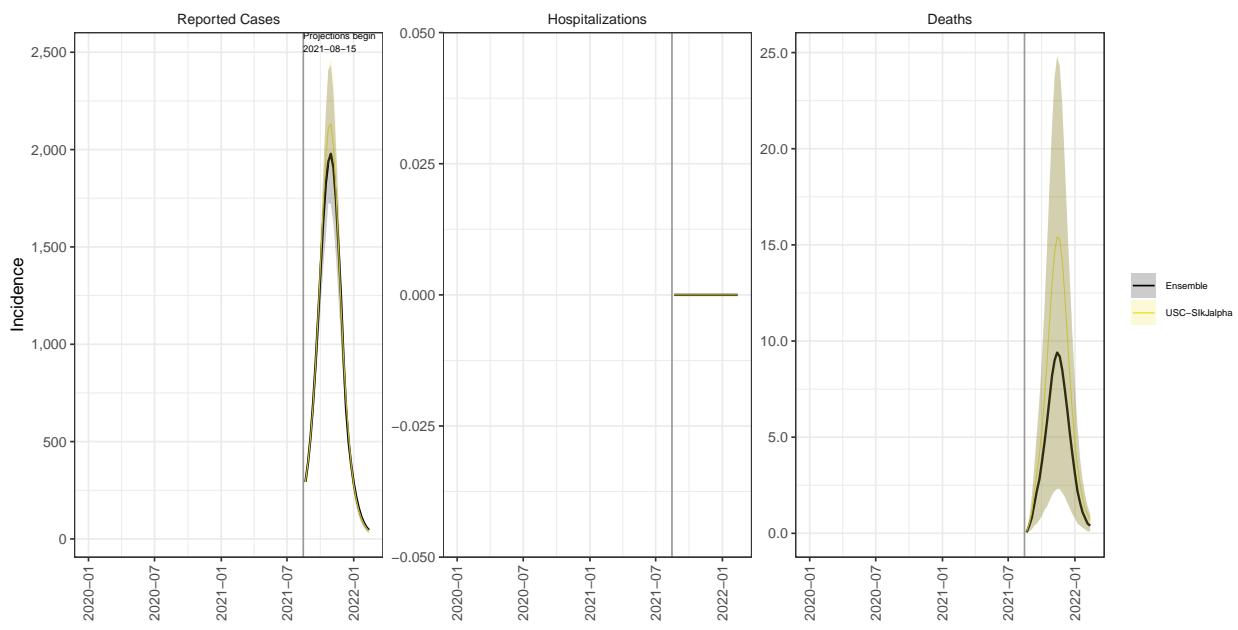
WY model variance & 50% projection intervals – No waning



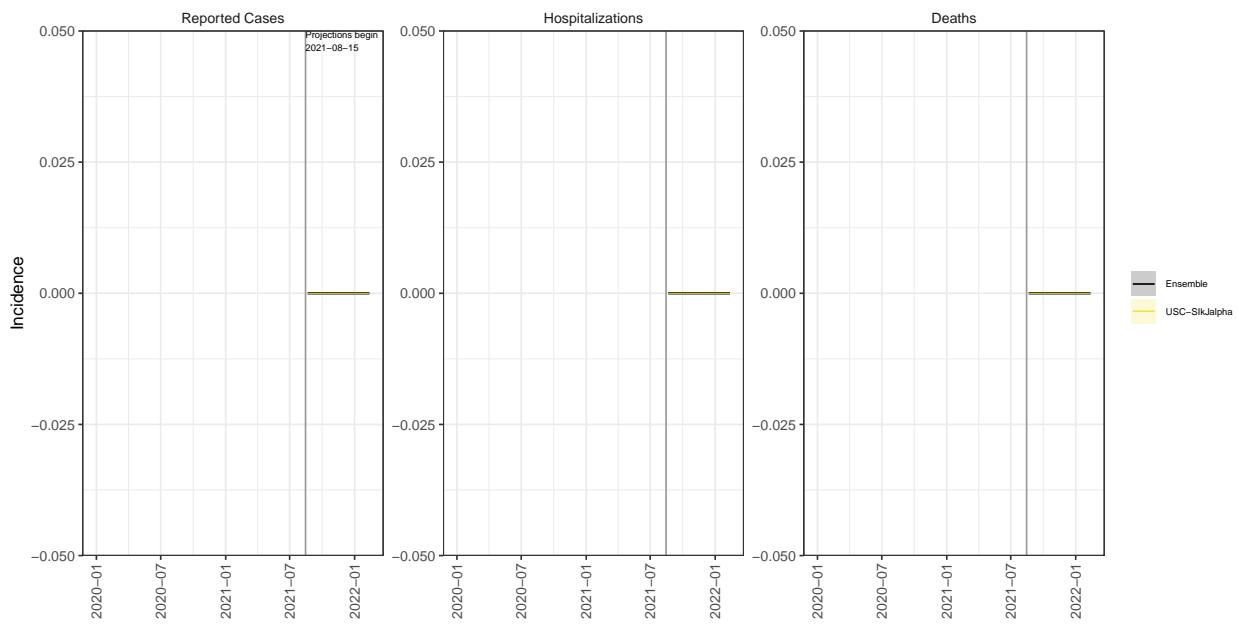
AS model variance & 50% projection intervals – No waning



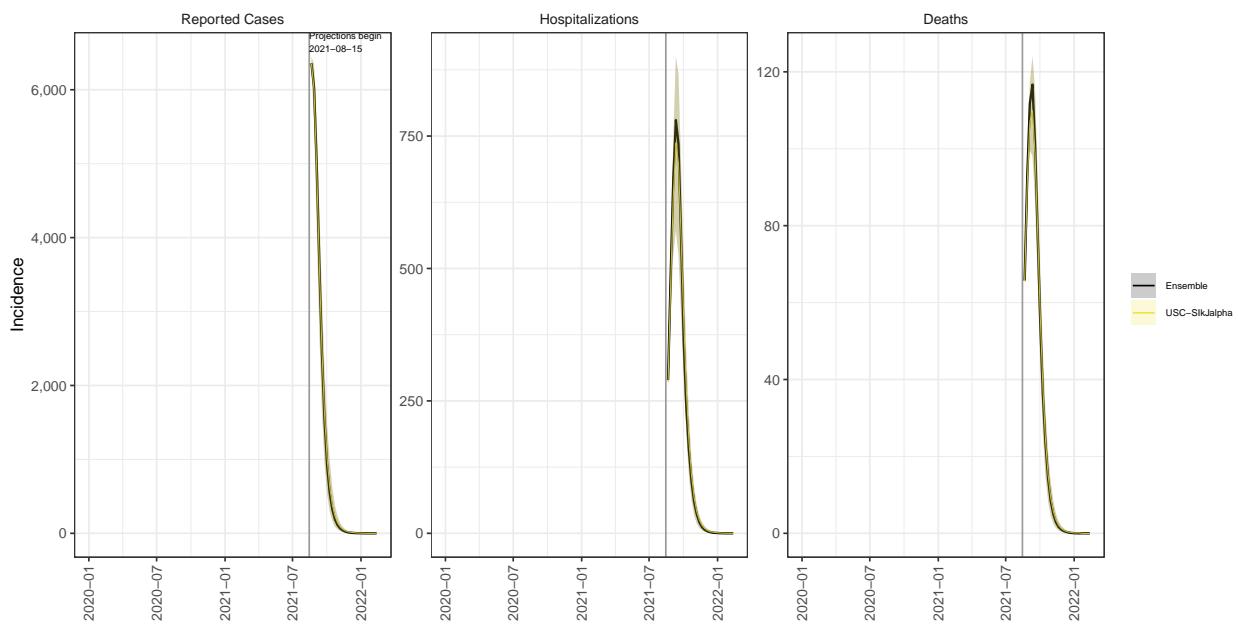
GU model variance & 50% projection intervals – No waning



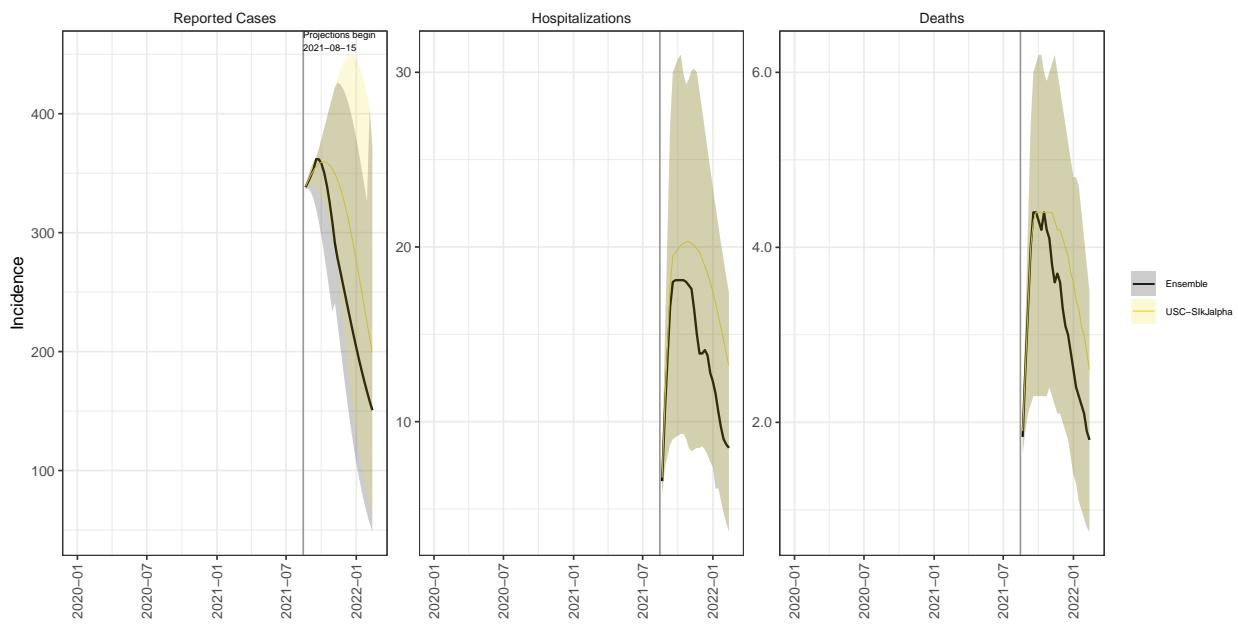
MP model variance & 50% projection intervals – No waning



PR model variance & 50% projection intervals – No waning

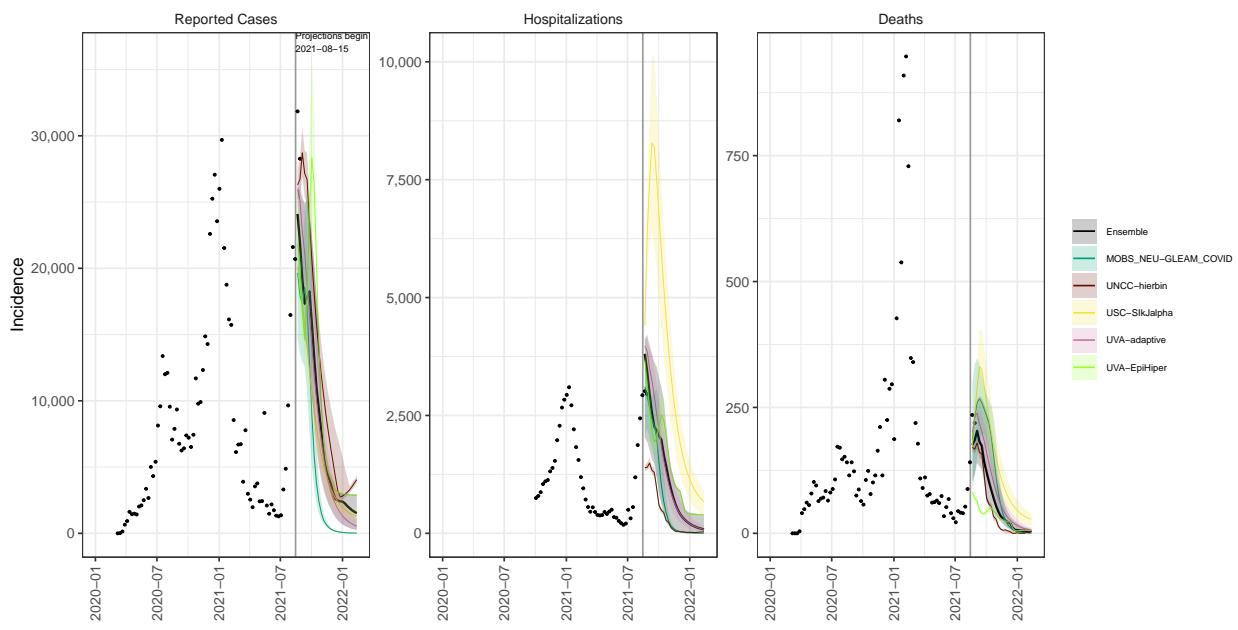


VI model variance & 50% projection intervals – No waning

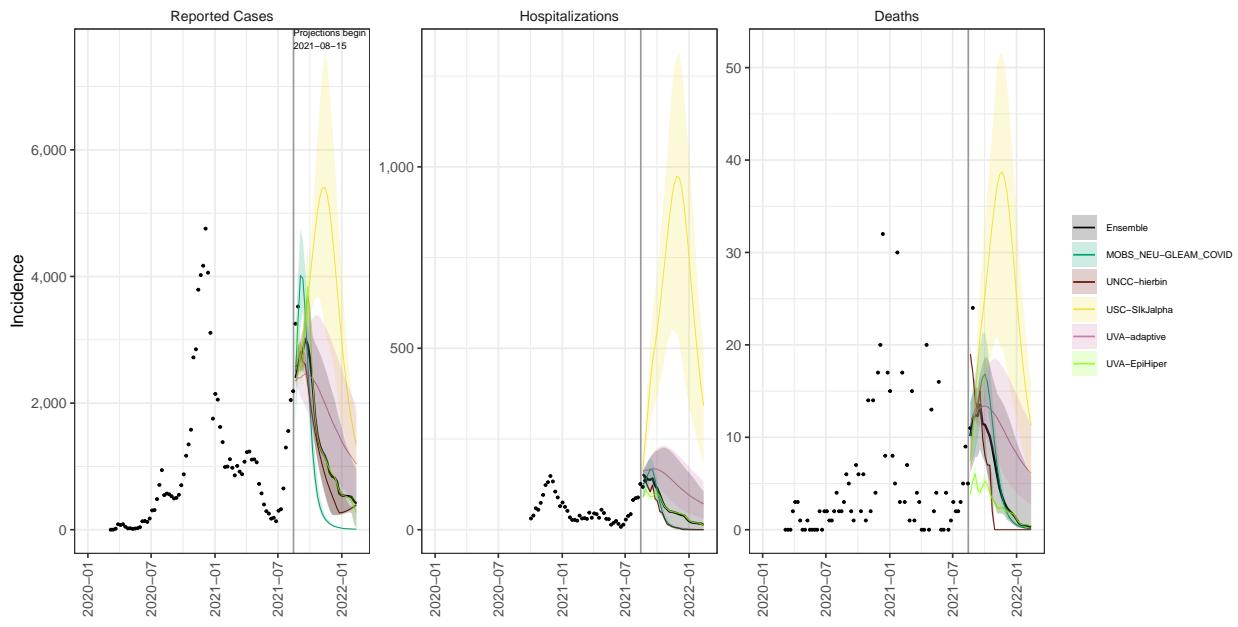


National model variation for the high protection, fast waning scenario

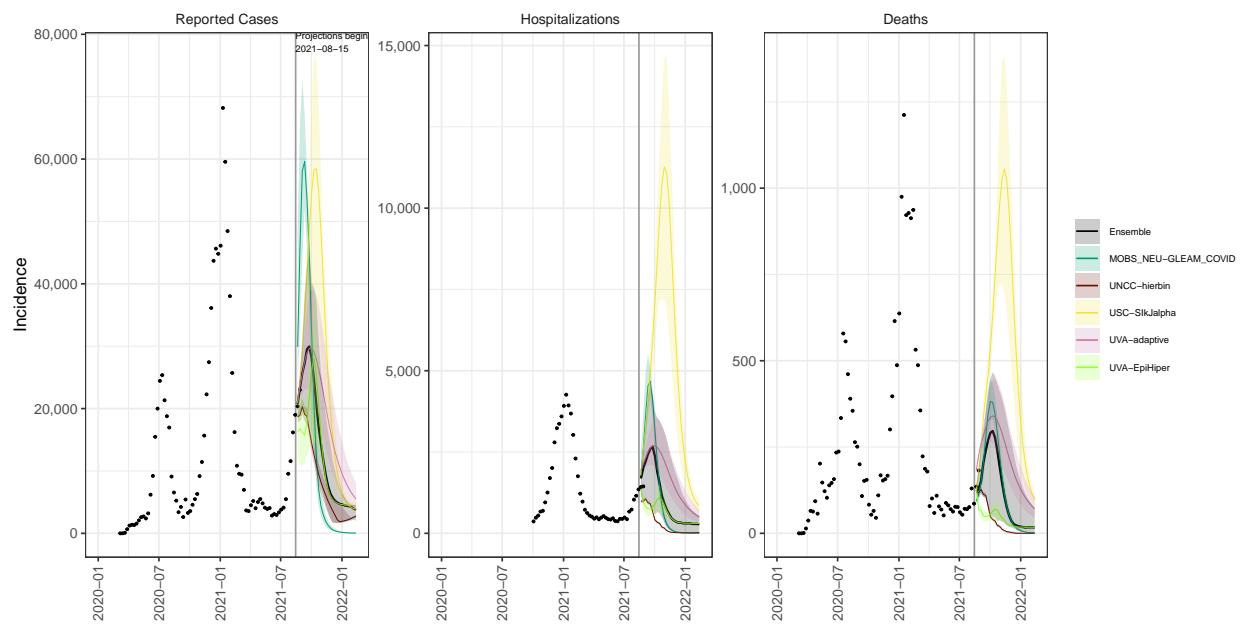
AL model variance & 50% projection intervals – High protection, Fast waning



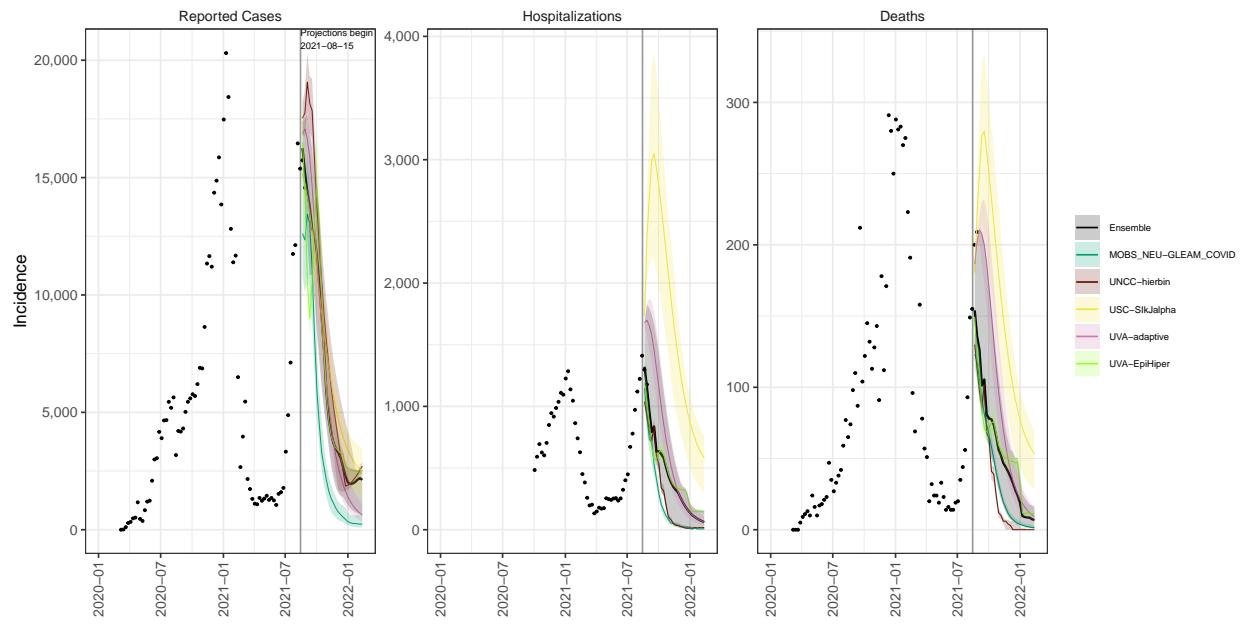
AK model variance & 50% projection intervals – High protection, Fast waning



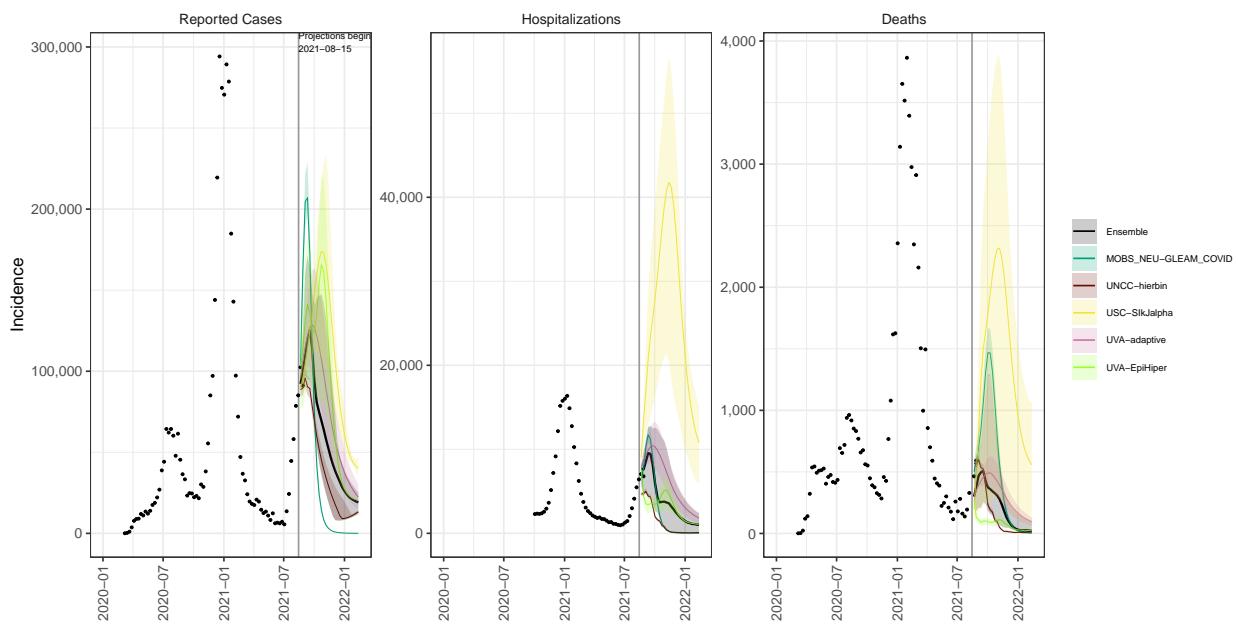
AZ model variance & 50% projection intervals – High protection, Fast waning



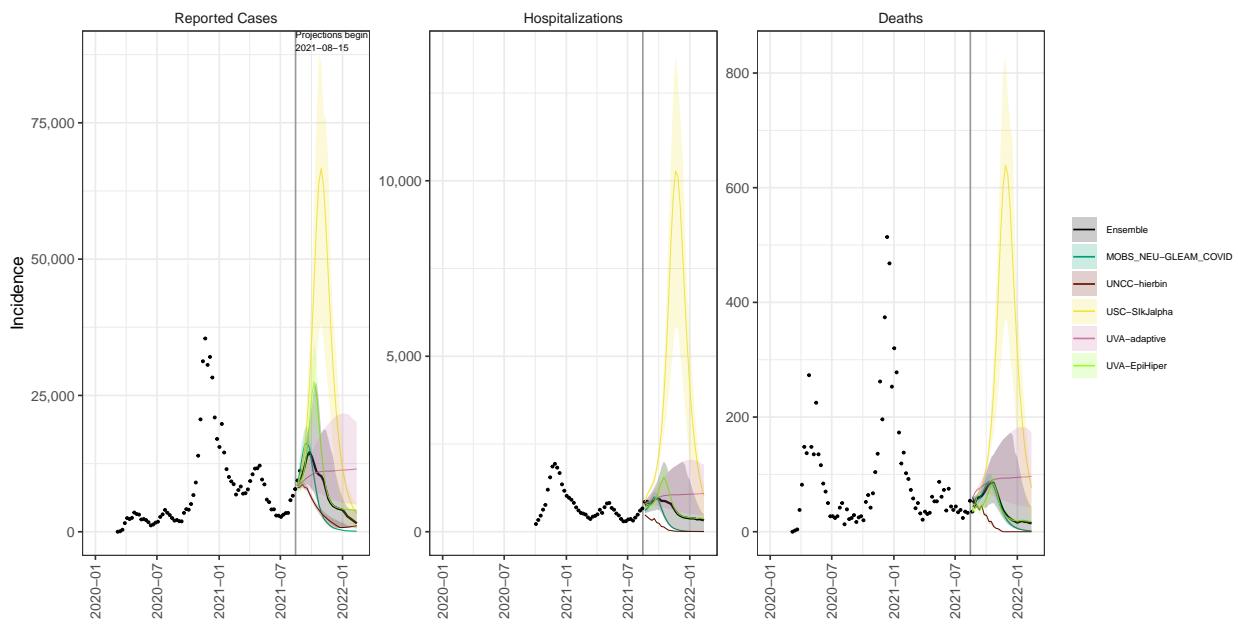
AR model variance & 50% projection intervals – High protection, Fast waning



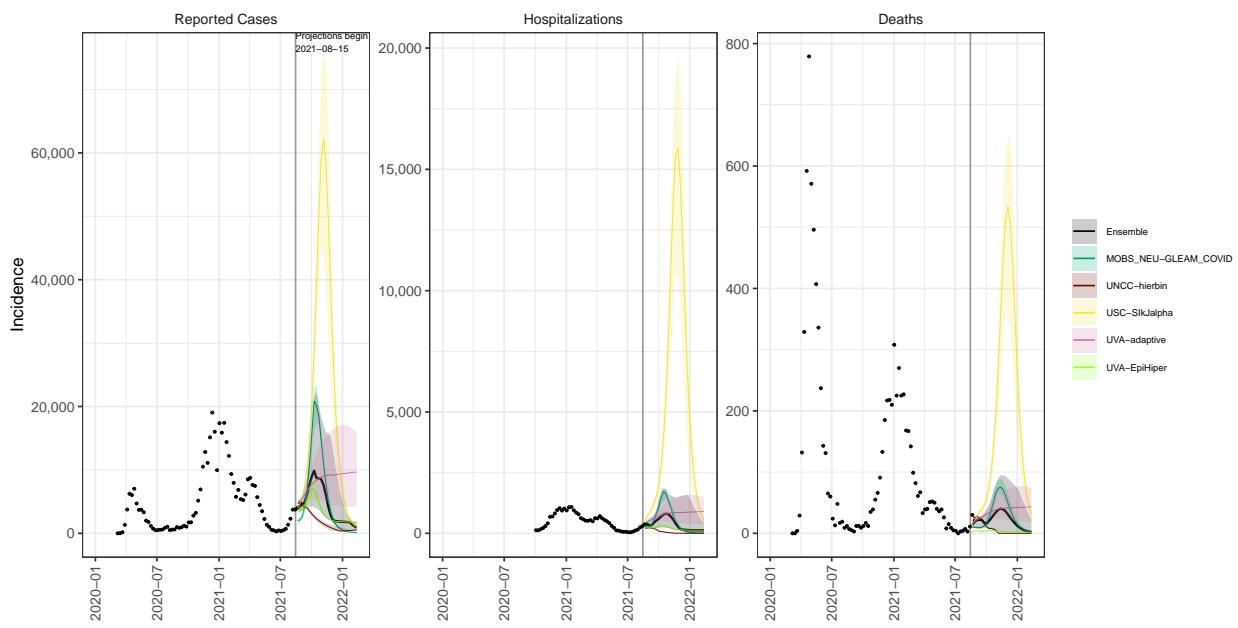
CA model variance & 50% projection intervals – High protection, Fast waning



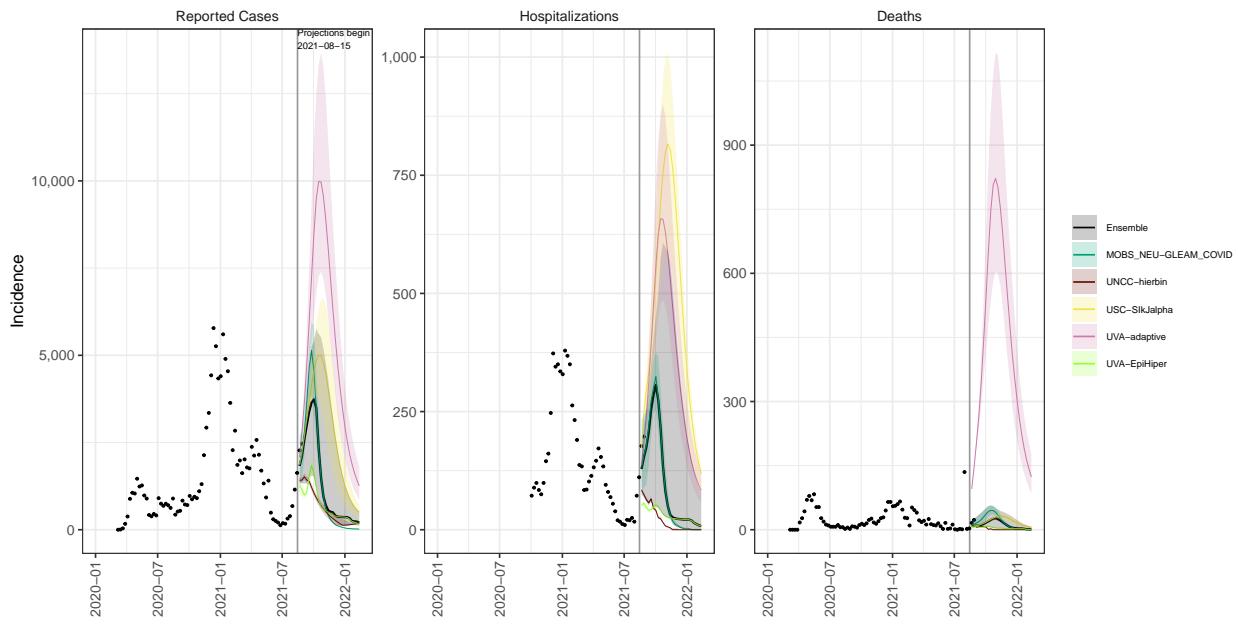
CO model variance & 50% projection intervals – High protection, Fast waning



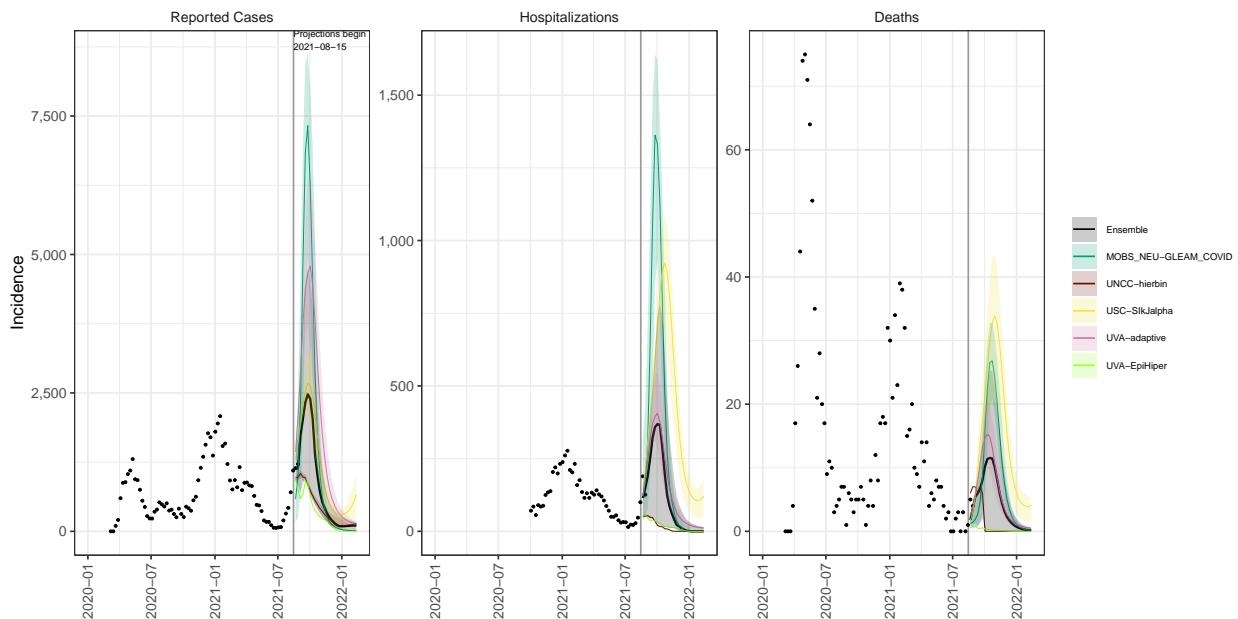
CT model variance & 50% projection intervals – High protection, Fast waning



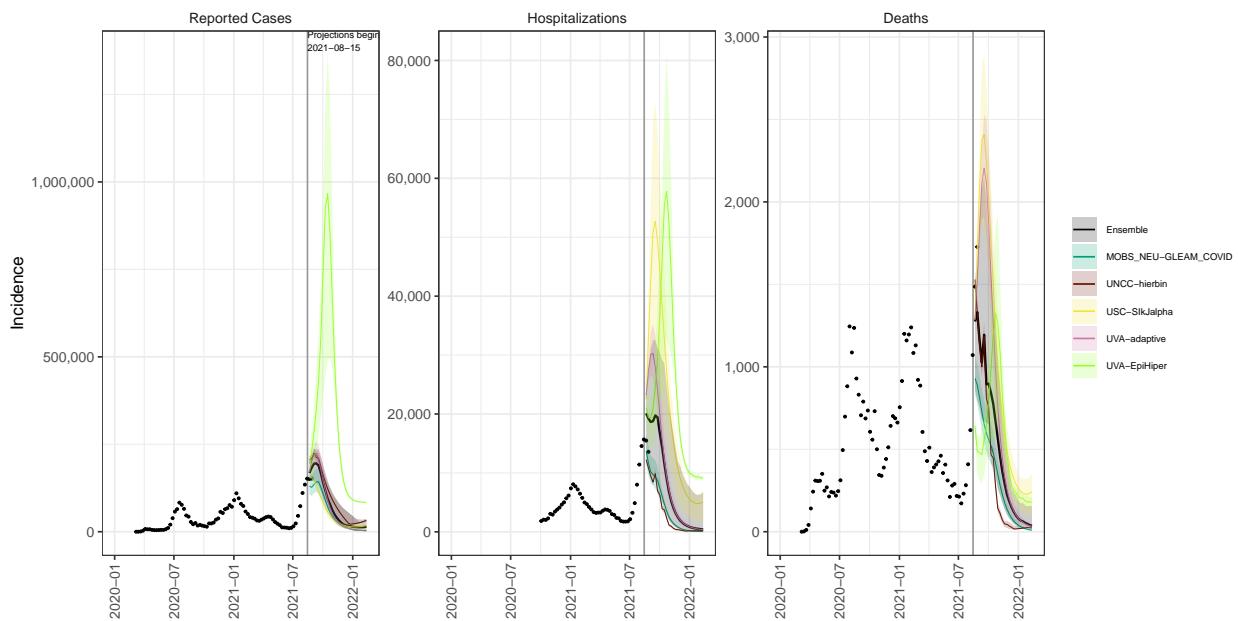
DE model variance & 50% projection intervals – High protection, Fast waning



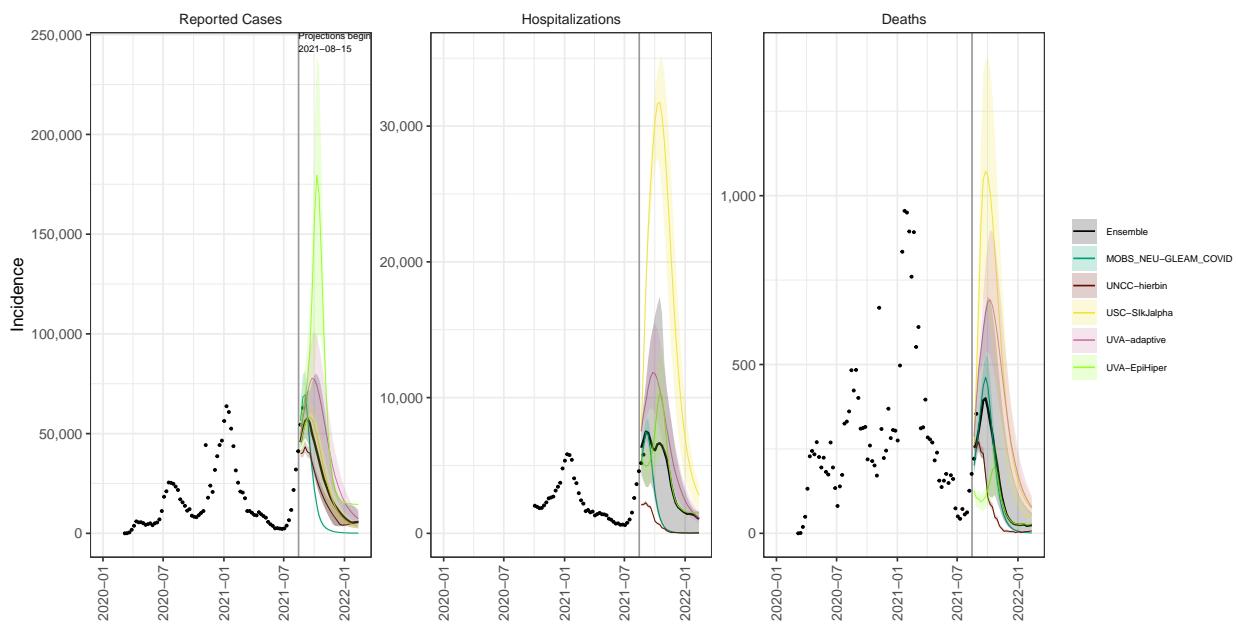
DC model variance & 50% projection intervals – High protection, Fast waning



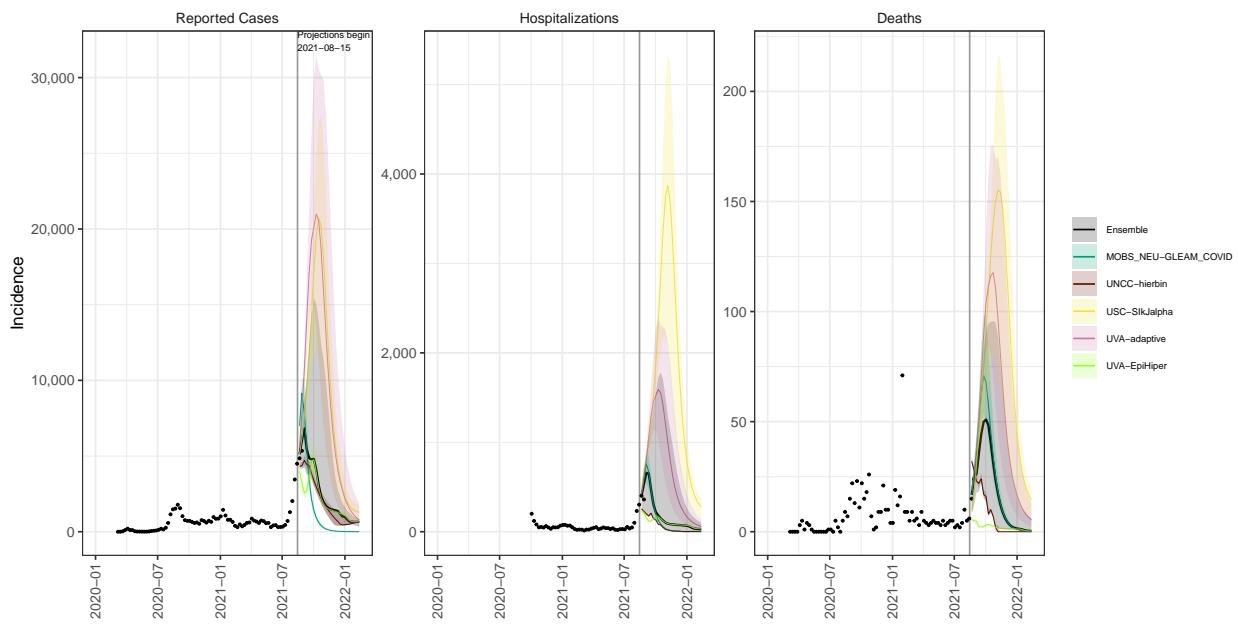
FL model variance & 50% projection intervals – High protection, Fast waning



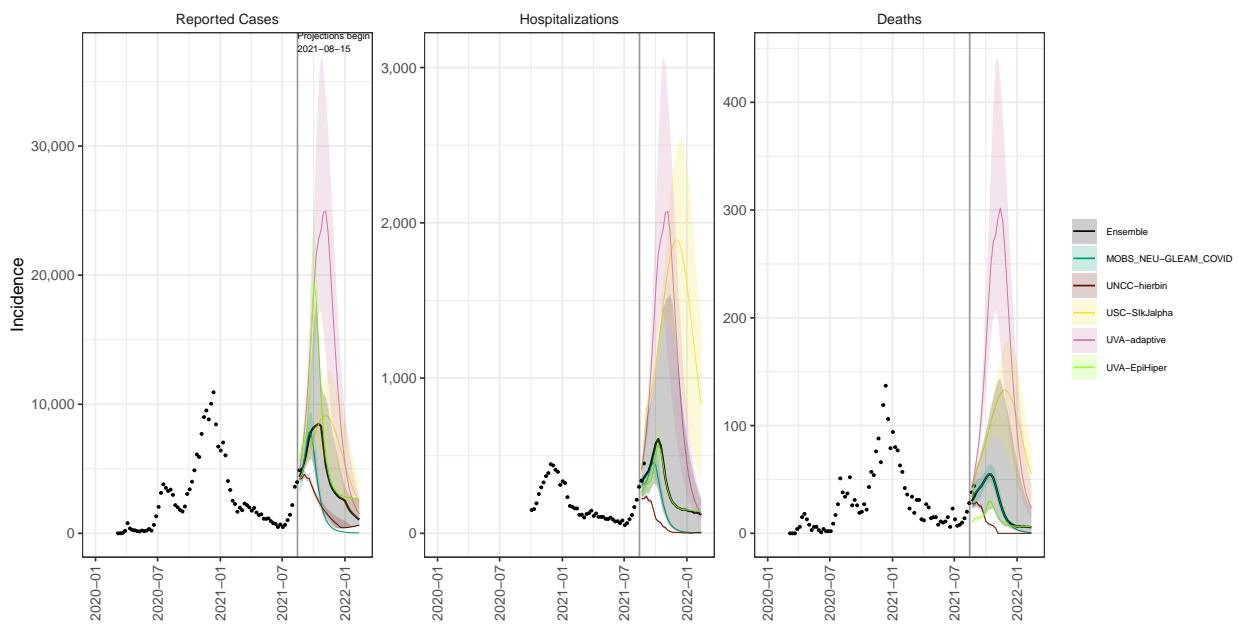
GA model variance & 50% projection intervals – High protection, Fast waning



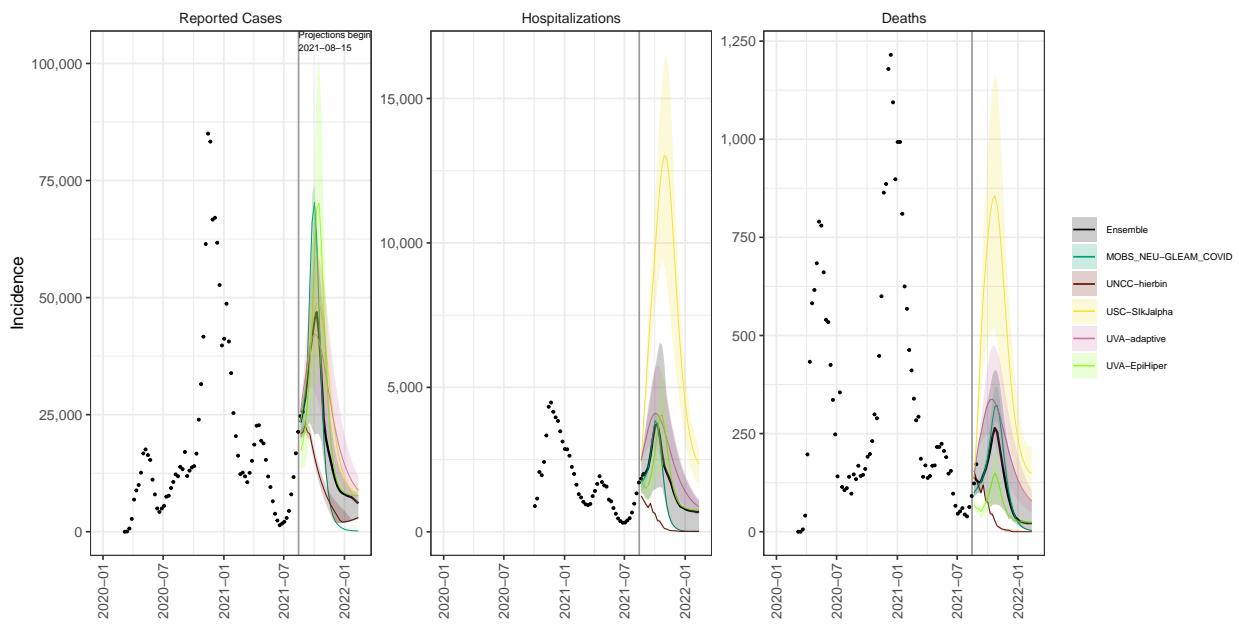
HI model variance & 50% projection intervals – High protection, Fast waning



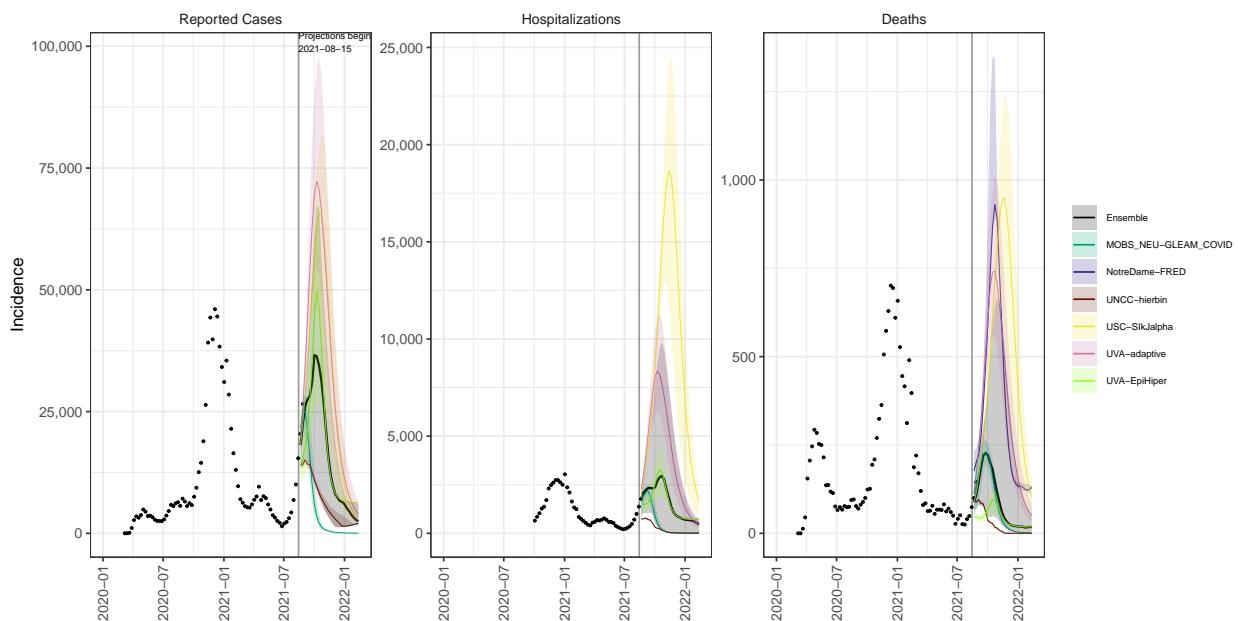
ID model variance & 50% projection intervals – High protection, Fast waning



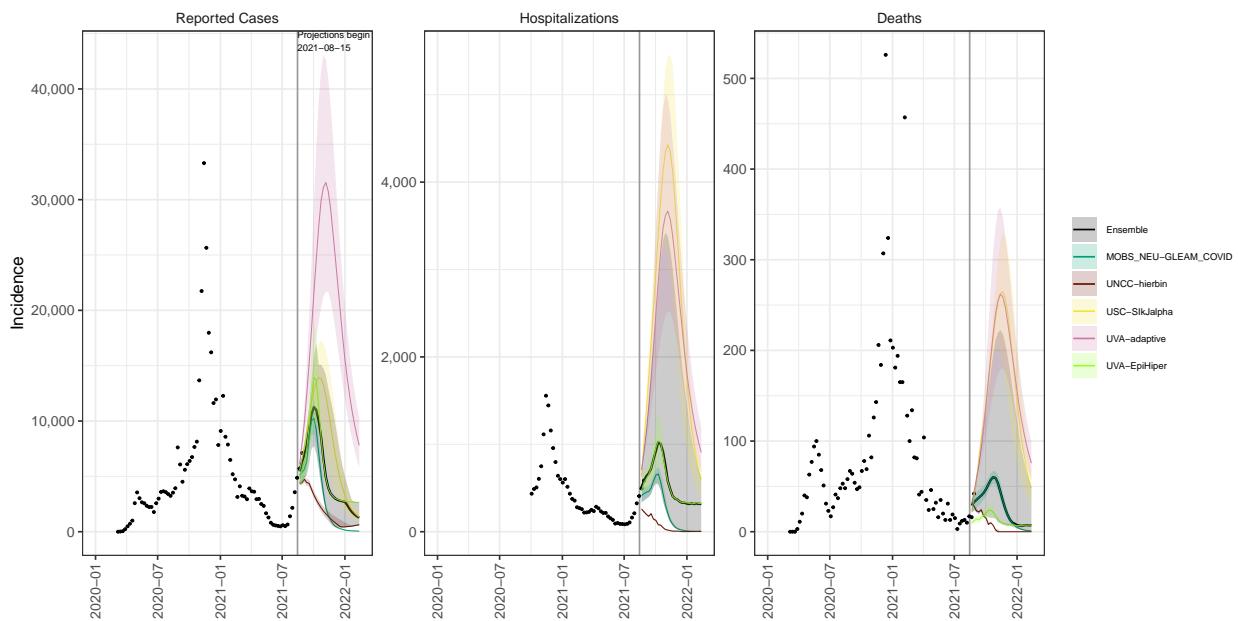
IL model variance & 50% projection intervals – High protection, Fast waning



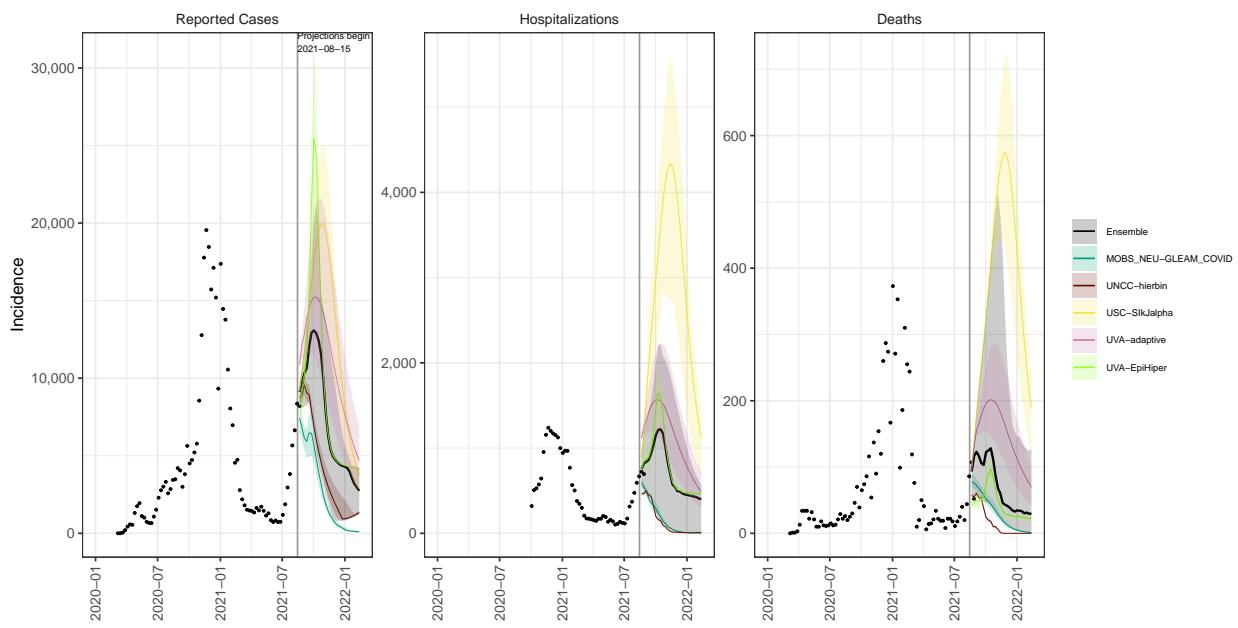
IN model variance & 50% projection intervals – High protection, Fast waning



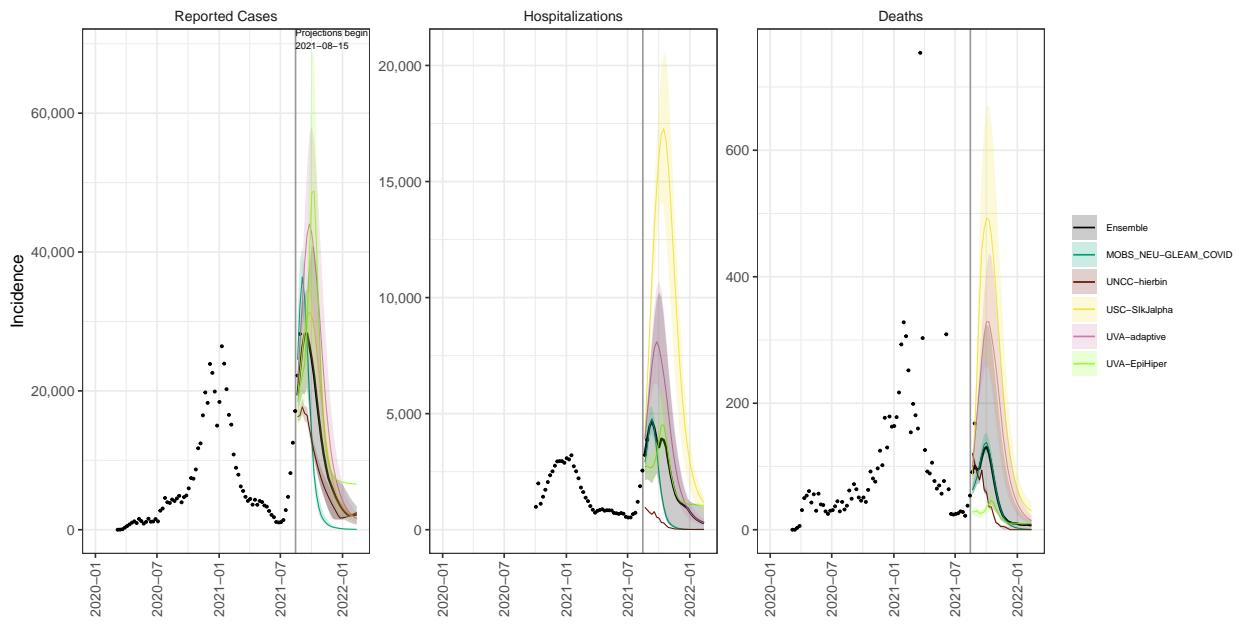
IA model variance & 50% projection intervals – High protection, Fast waning



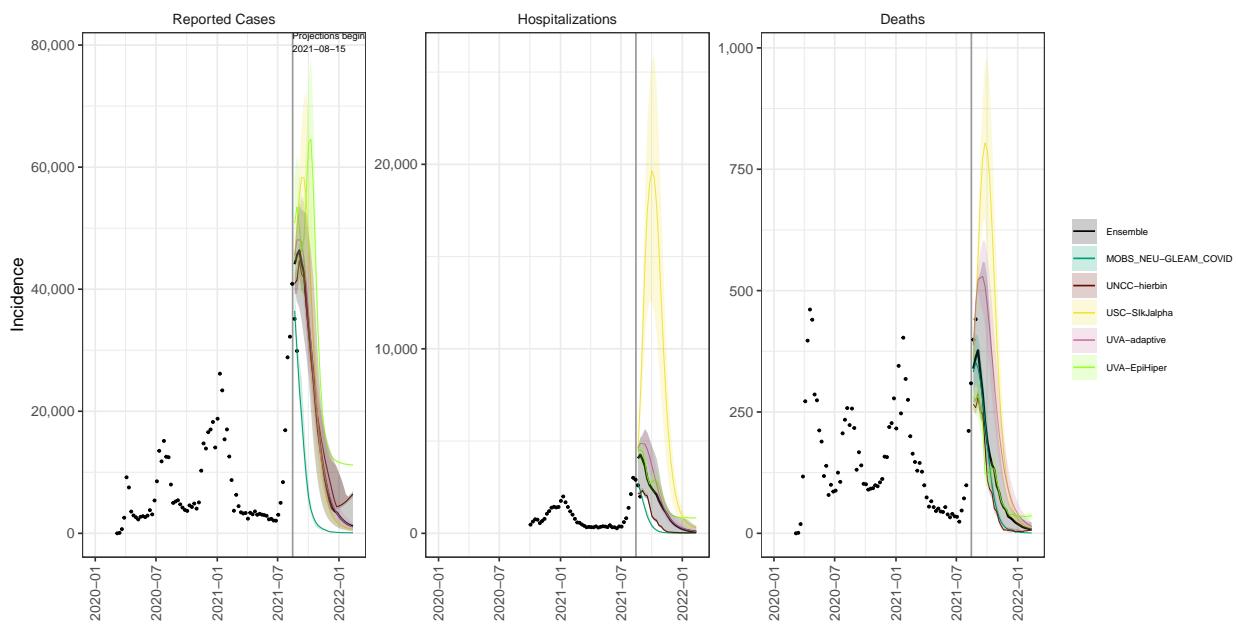
KS model variance & 50% projection intervals – High protection, Fast waning



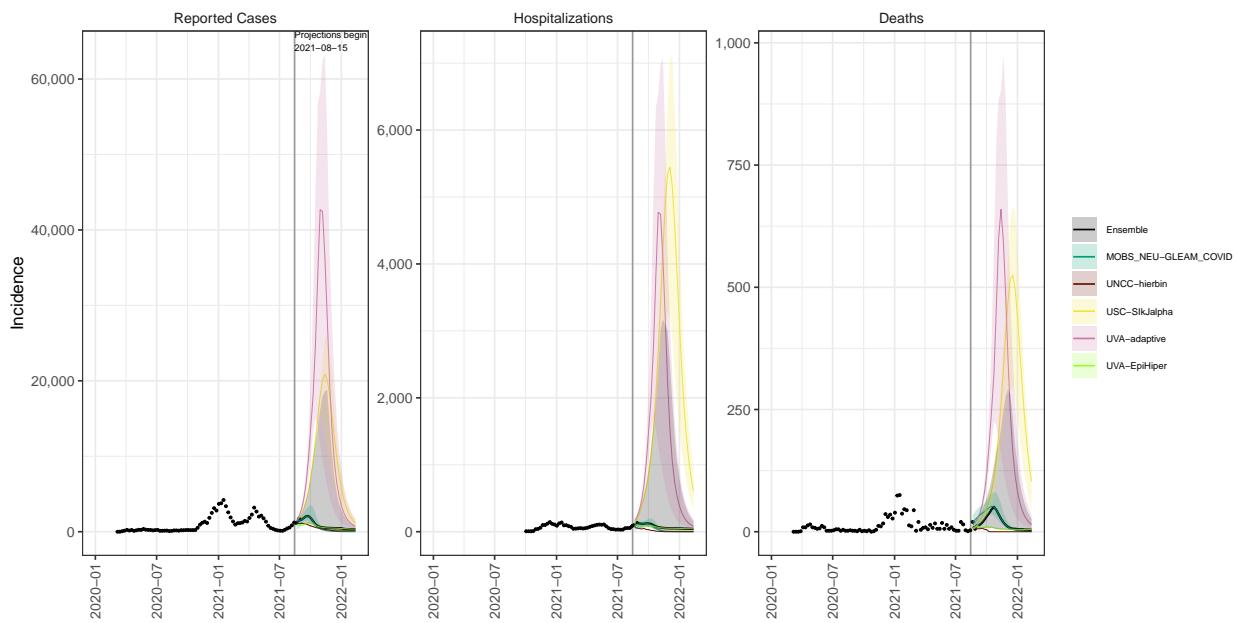
KY model variance & 50% projection intervals – High protection, Fast waning



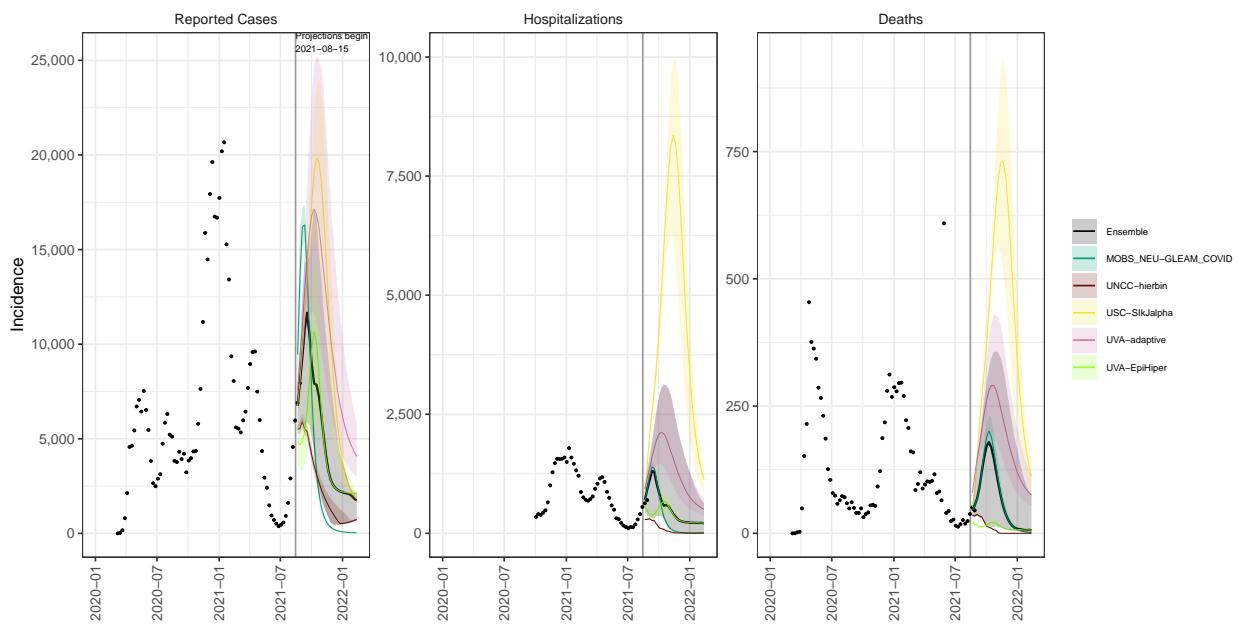
LA model variance & 50% projection intervals – High protection, Fast waning



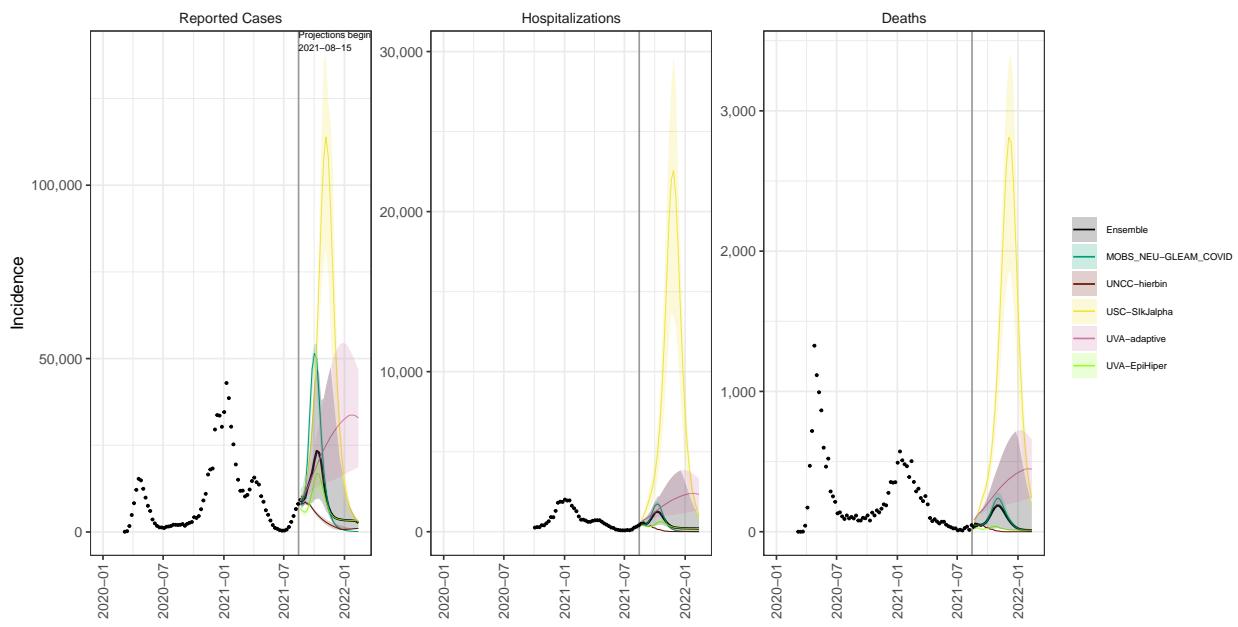
ME model variance & 50% projection intervals – High protection, Fast waning



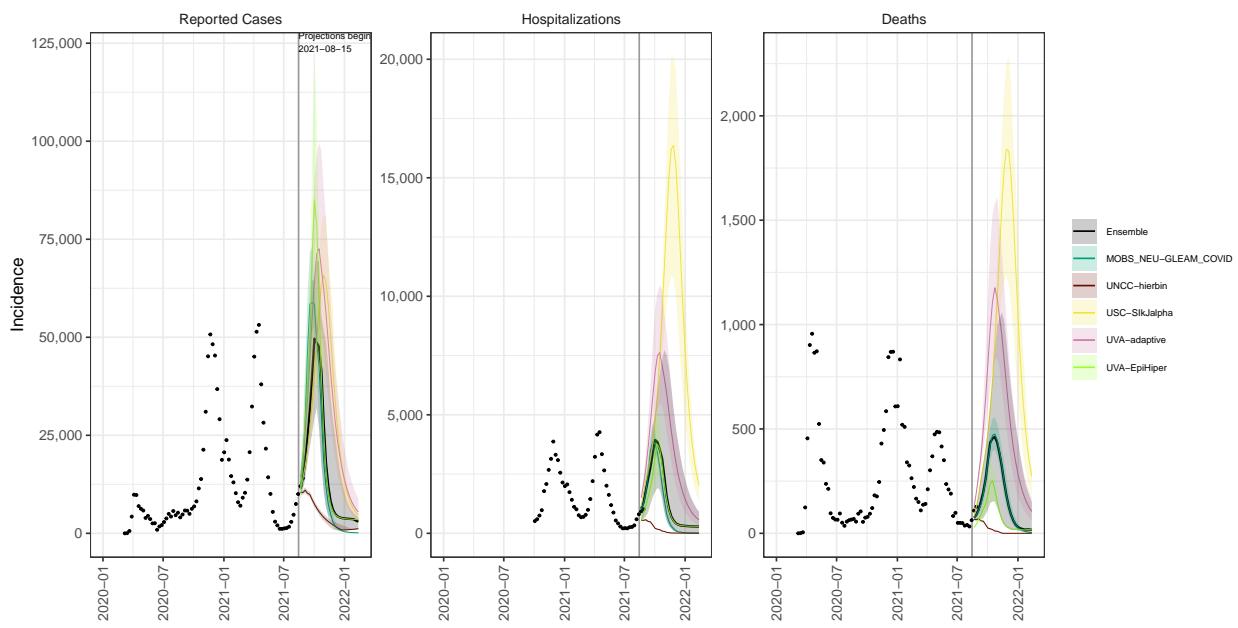
MD model variance & 50% projection intervals – High protection, Fast waning



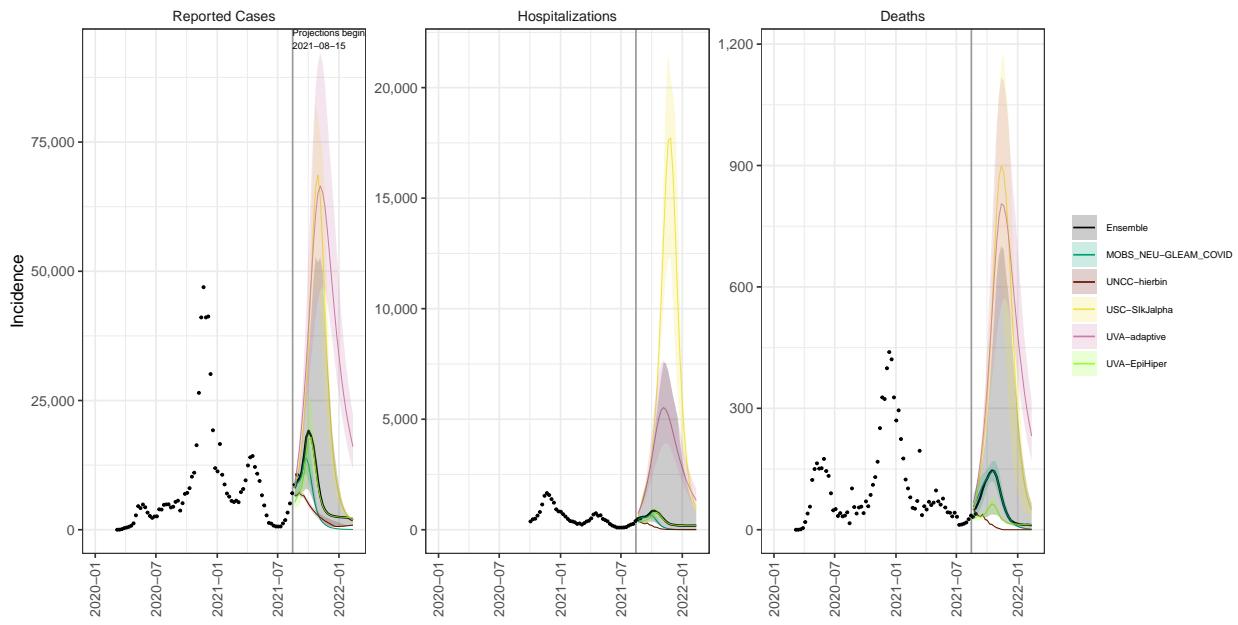
MA model variance & 50% projection intervals – High protection, Fast waning



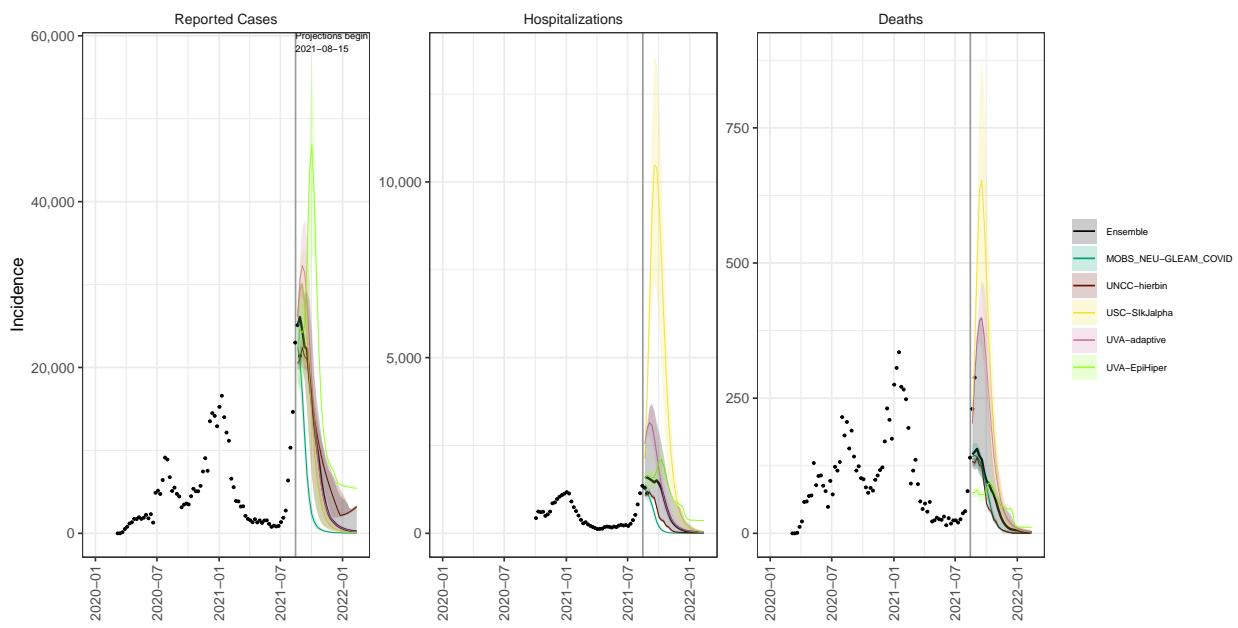
MI model variance & 50% projection intervals – High protection, Fast waning



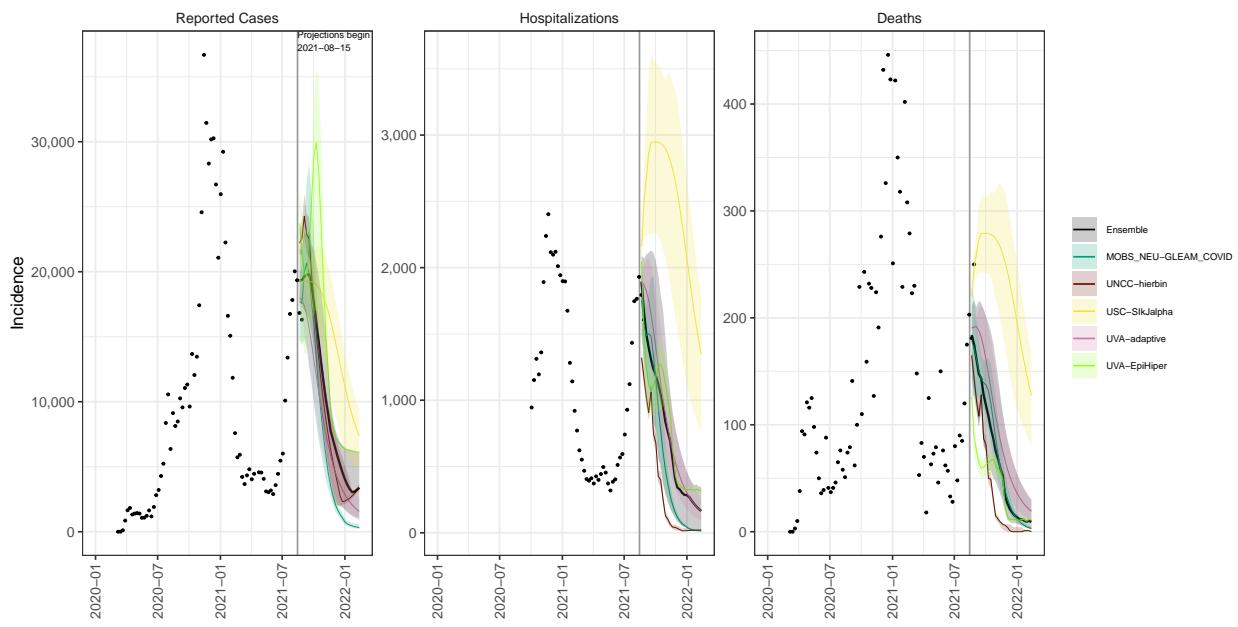
MN model variance & 50% projection intervals – High protection, Fast waning



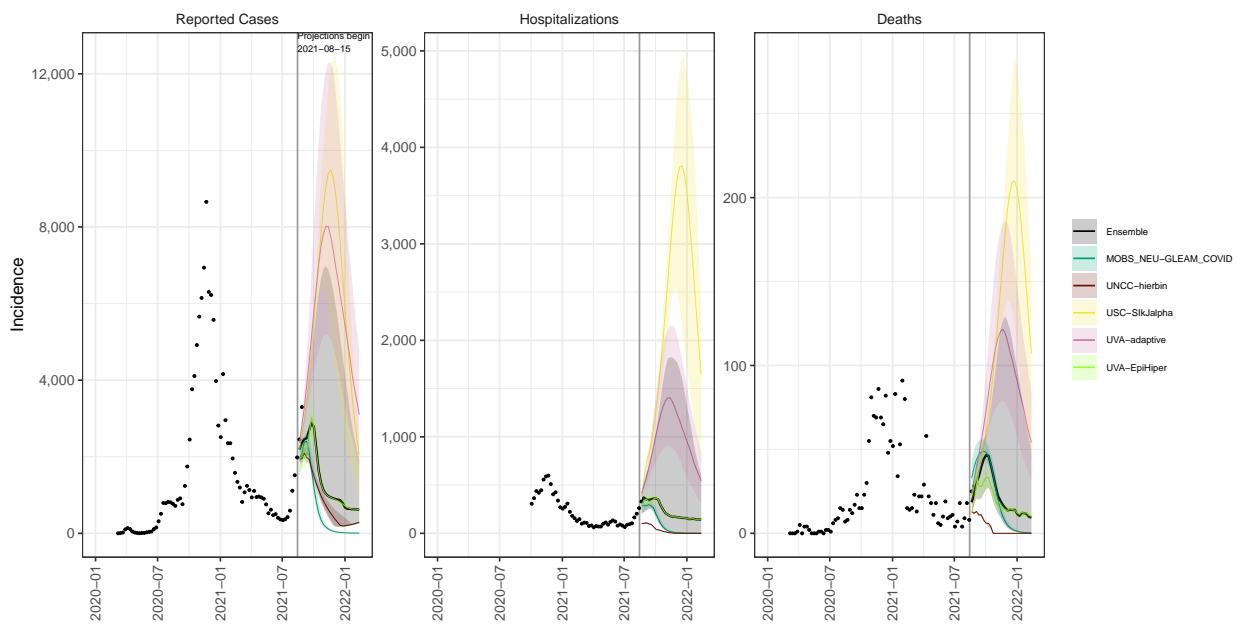
MS model variance & 50% projection intervals – High protection, Fast waning



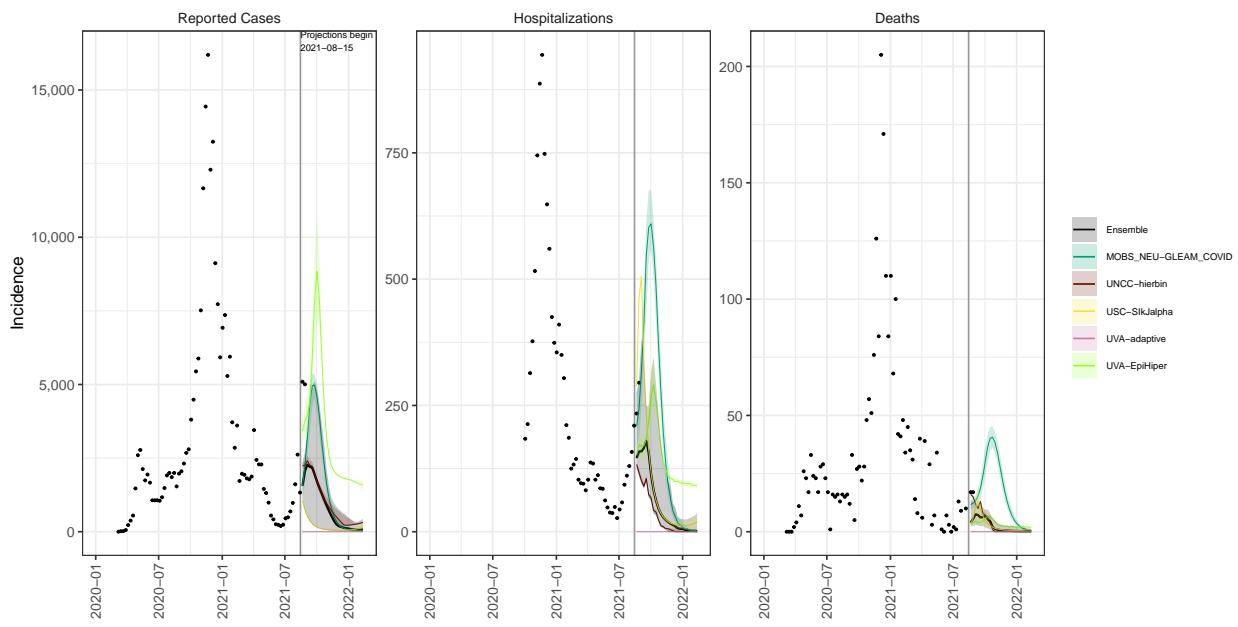
MO model variance & 50% projection intervals – High protection, Fast waning



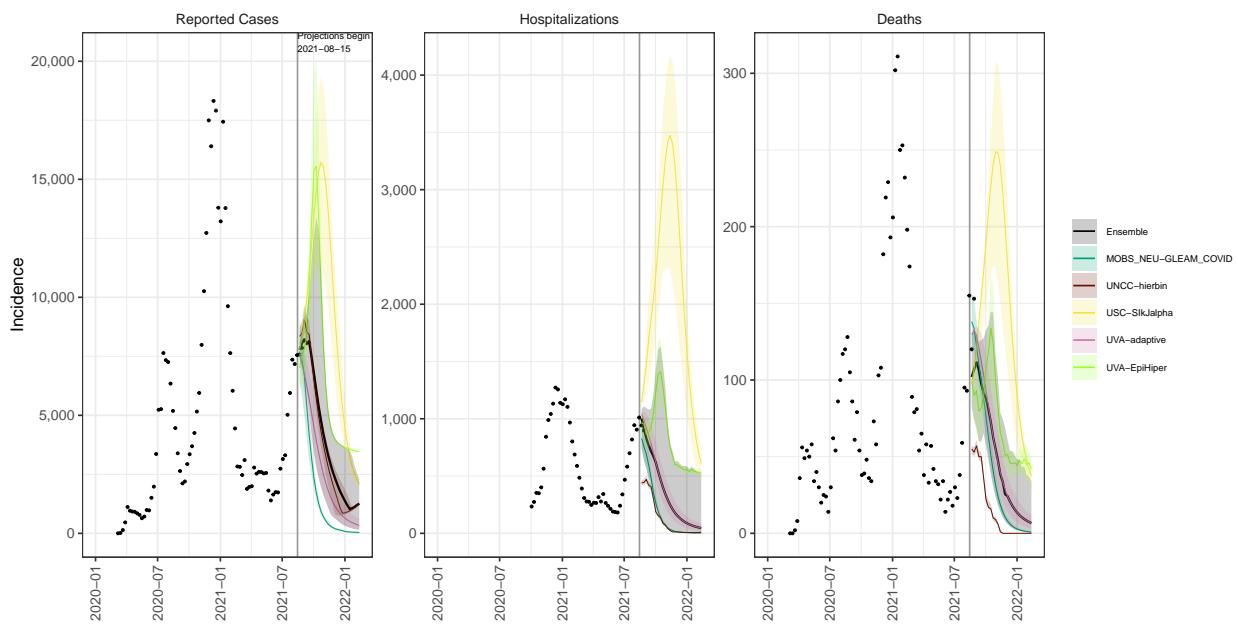
MT model variance & 50% projection intervals – High protection, Fast waning



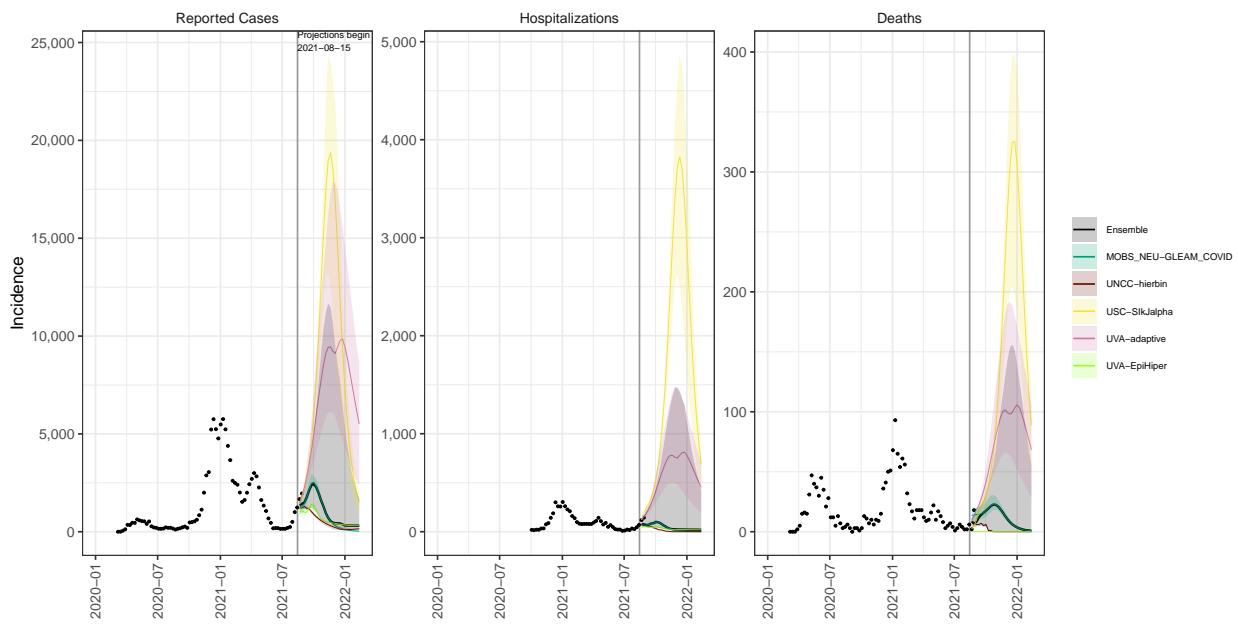
NE model variance & 50% projection intervals – High protection, Fast waning



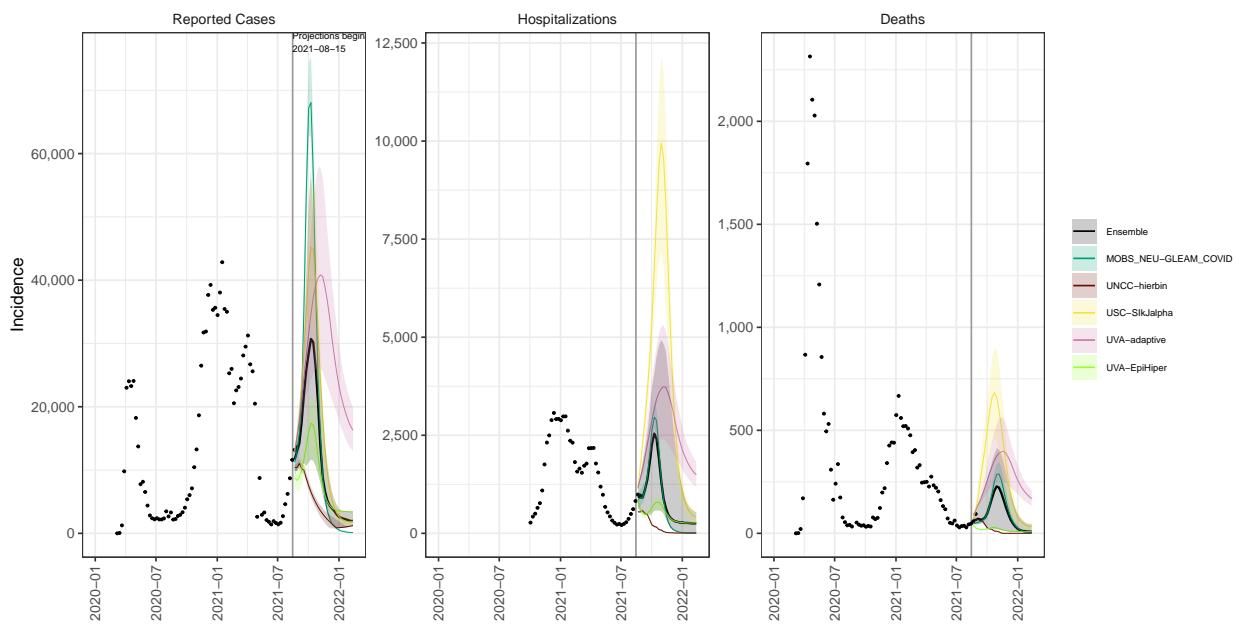
NV model variance & 50% projection intervals – High protection, Fast waning



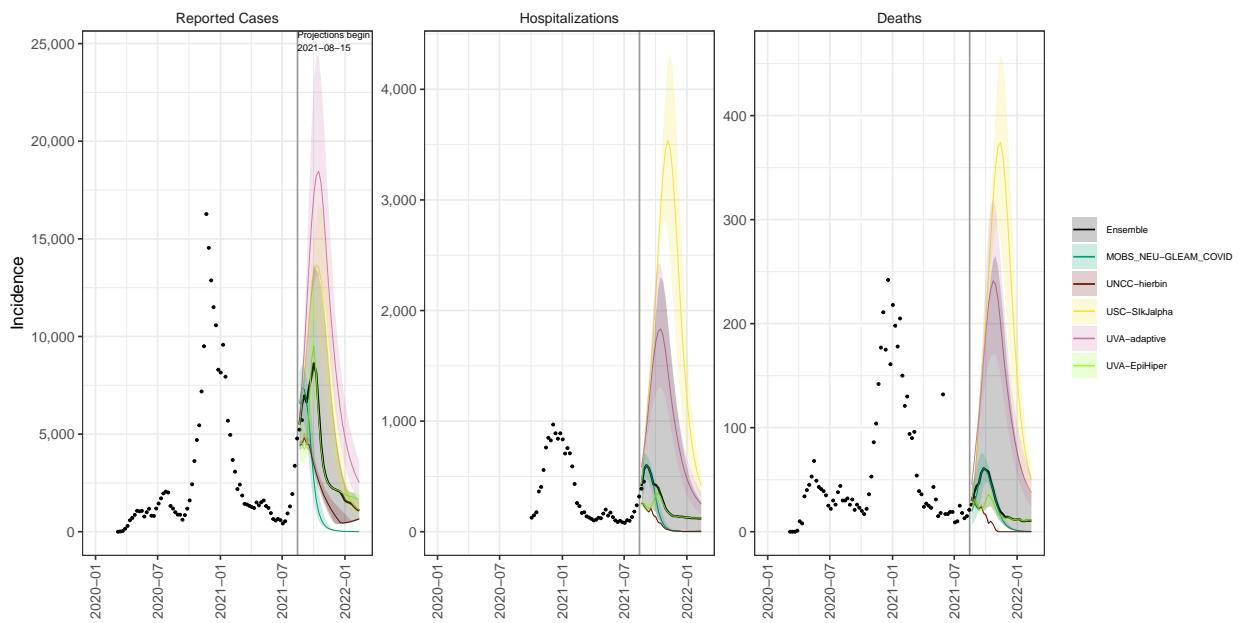
NH model variance & 50% projection intervals – High protection, Fast waning



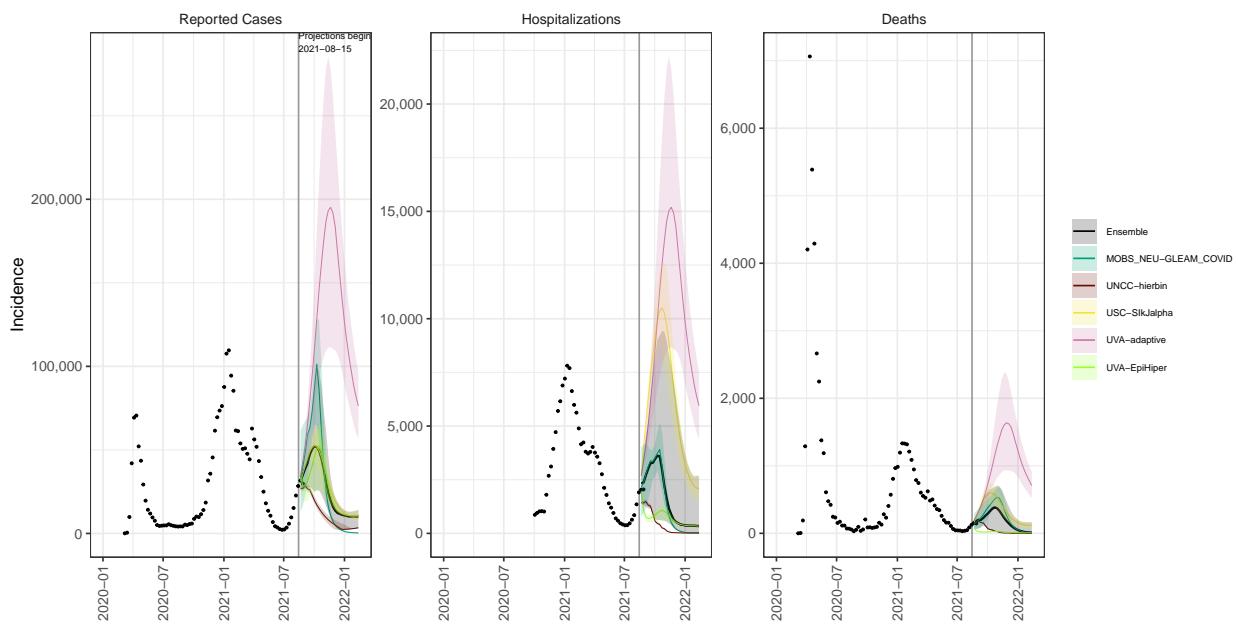
NJ model variance & 50% projection intervals – High protection, Fast waning



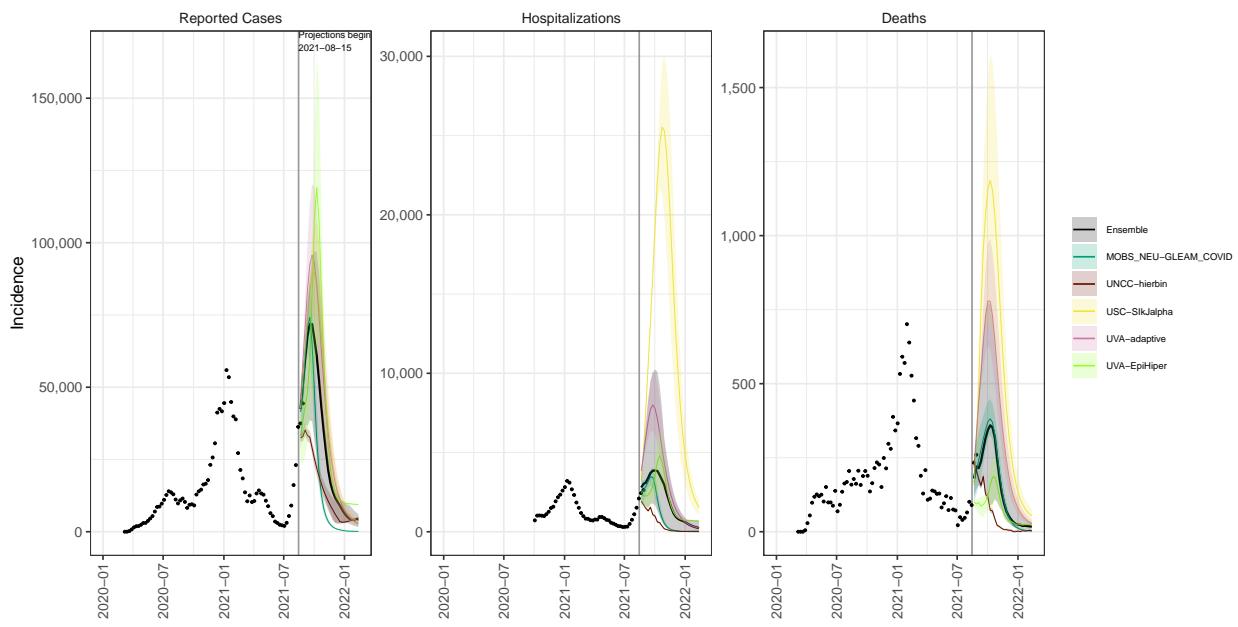
NM model variance & 50% projection intervals – High protection, Fast waning



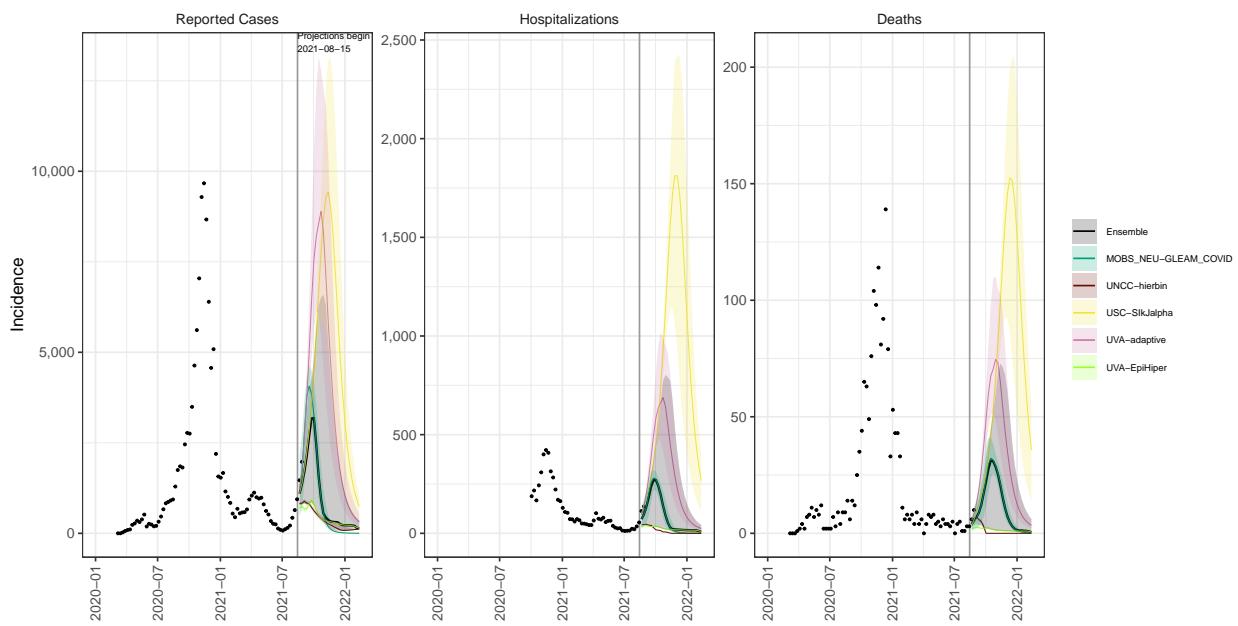
NY model variance & 50% projection intervals – High protection, Fast waning



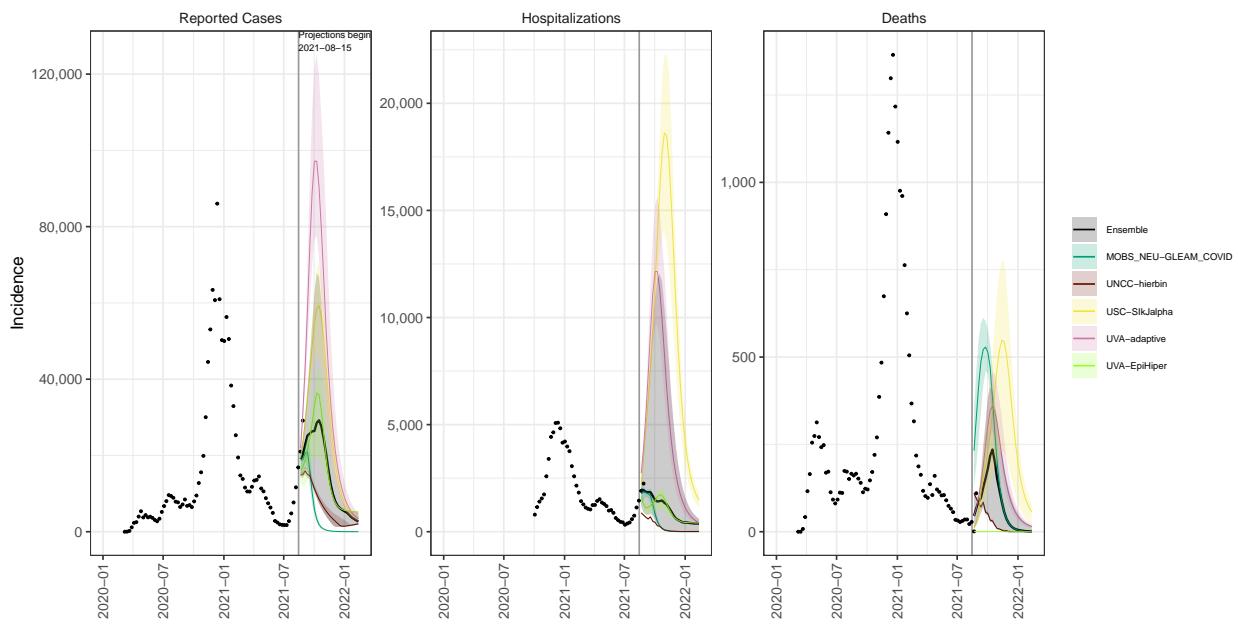
NC model variance & 50% projection intervals – High protection, Fast waning



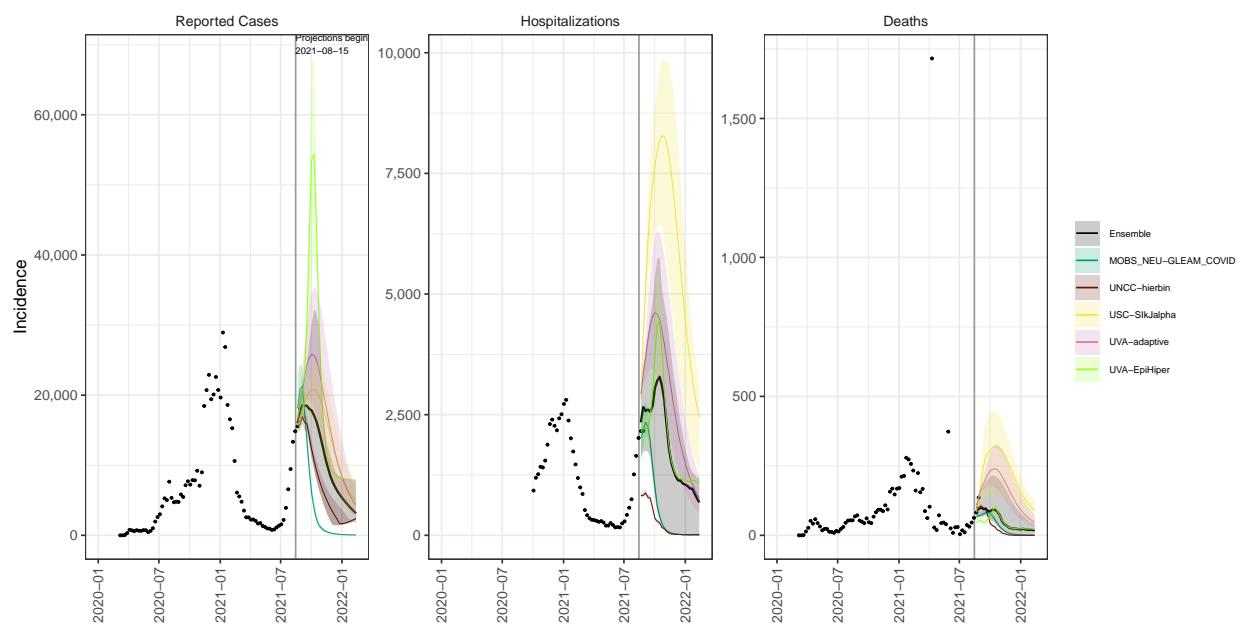
ND model variance & 50% projection intervals – High protection, Fast waning



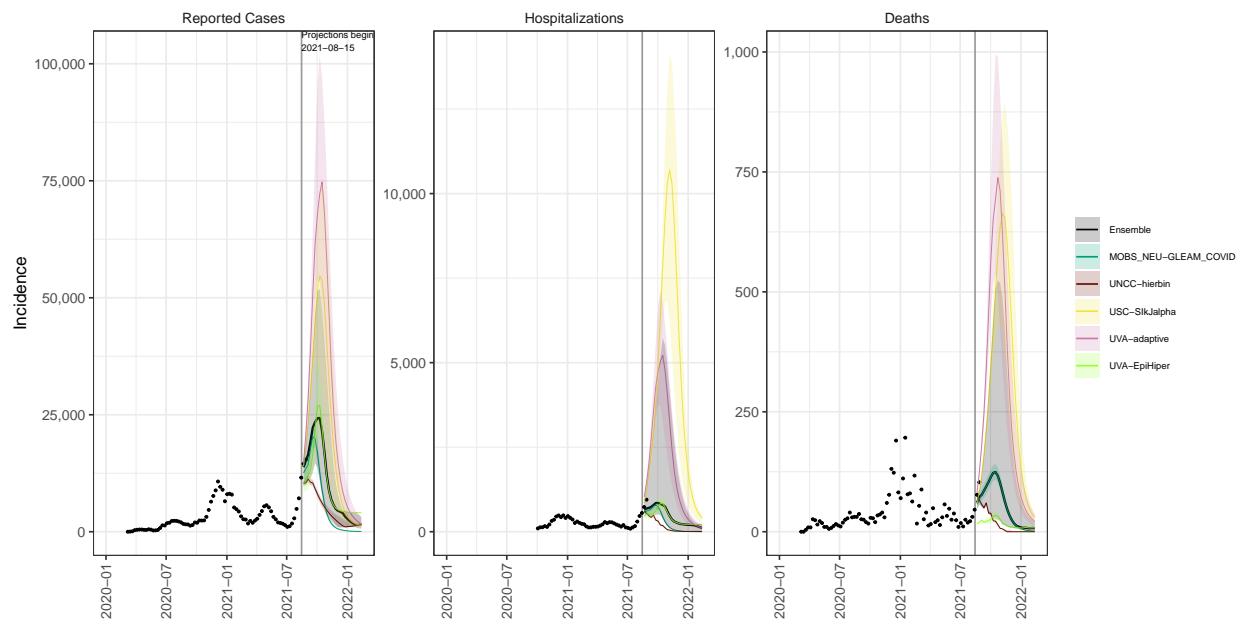
OH model variance & 50% projection intervals – High protection, Fast waning



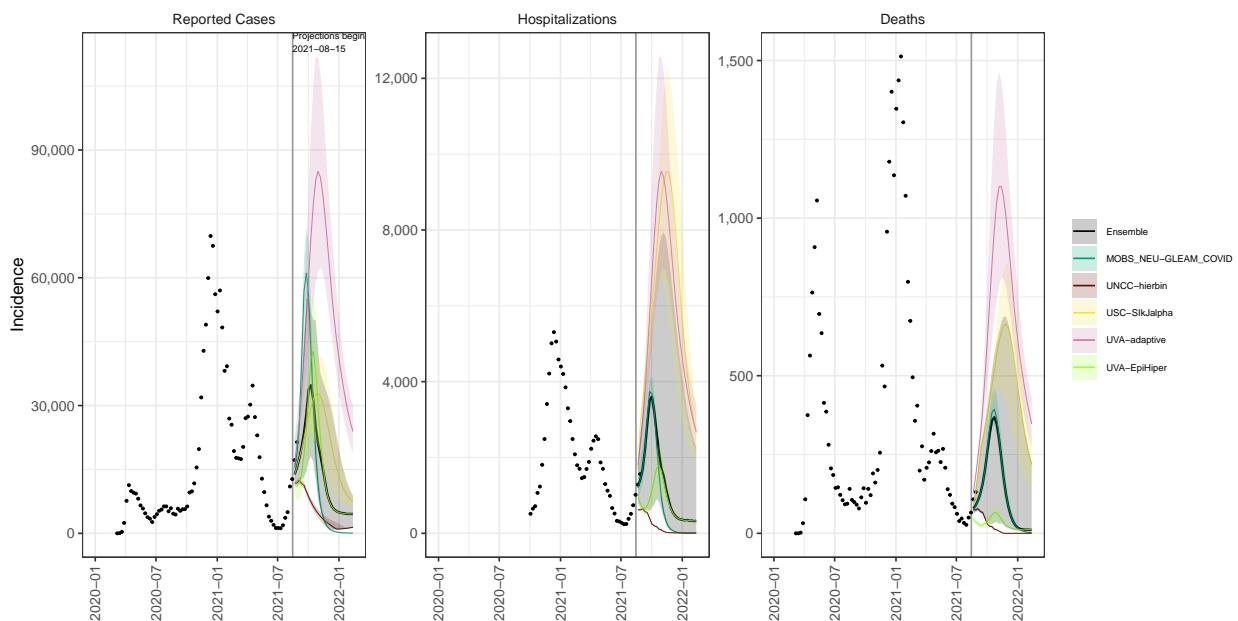
OK model variance & 50% projection intervals – High protection, Fast waning



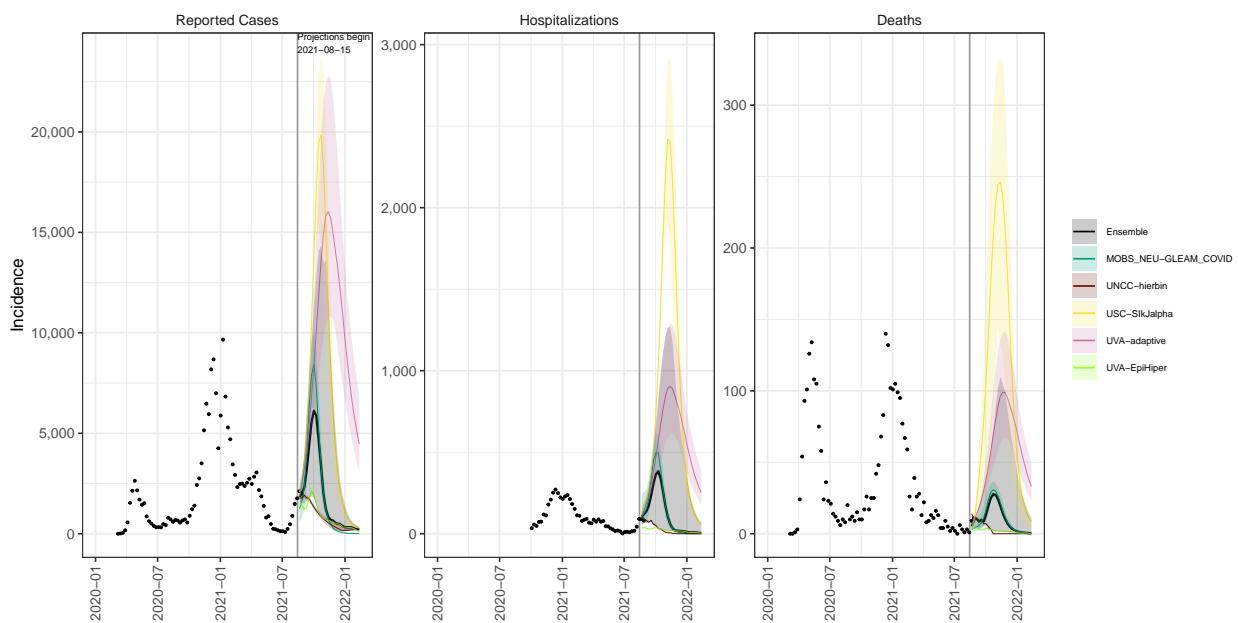
OR model variance & 50% projection intervals – High protection, Fast waning



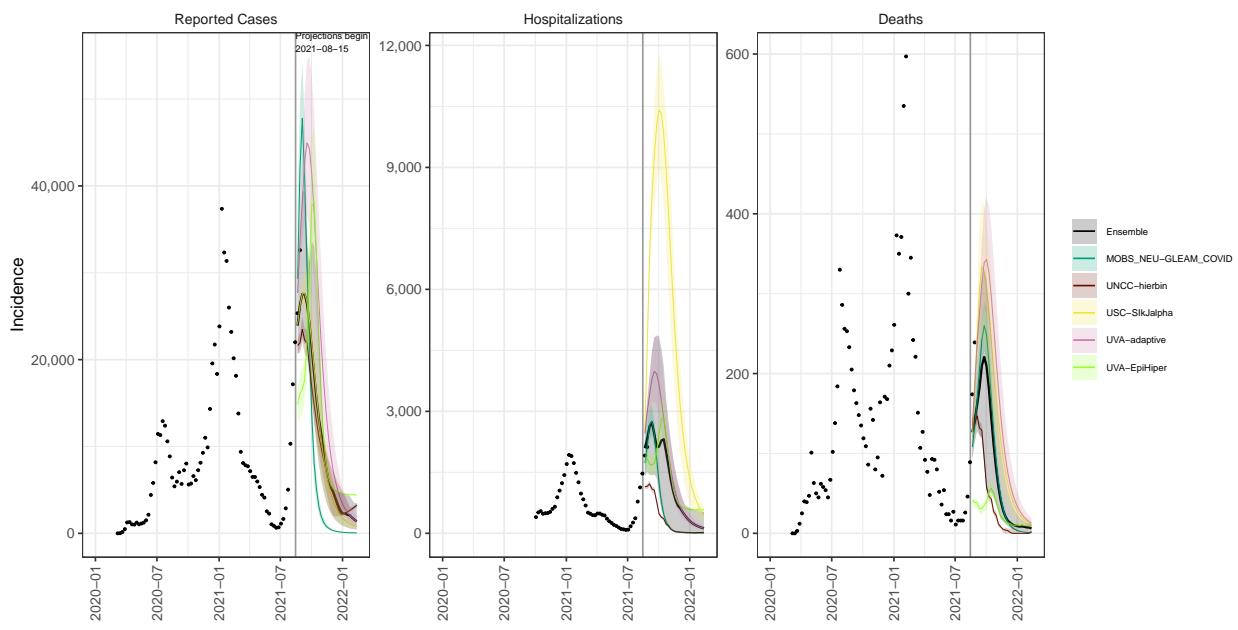
PA model variance & 50% projection intervals – High protection, Fast waning



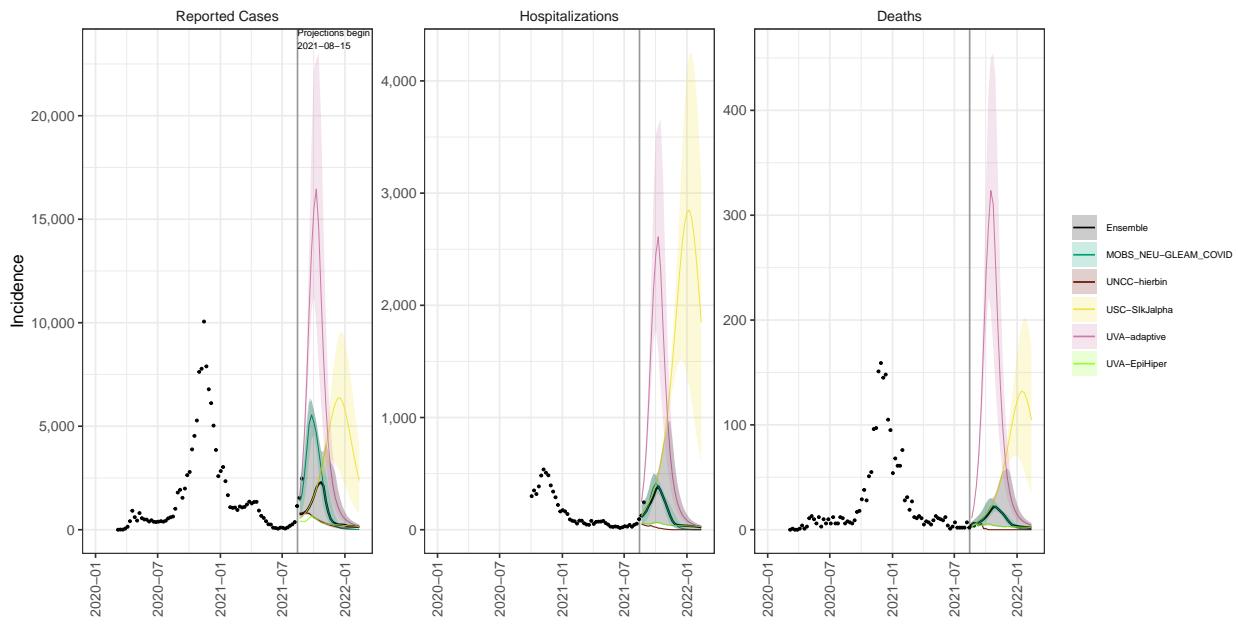
RI model variance & 50% projection intervals – High protection, Fast waning



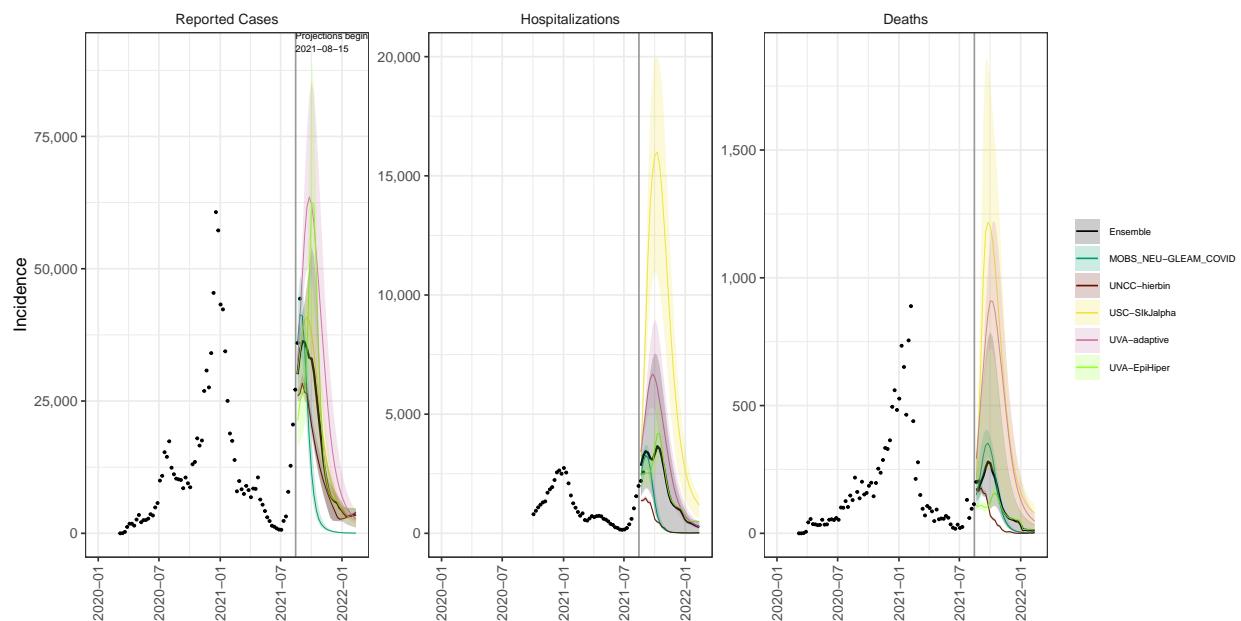
SC model variance & 50% projection intervals – High protection, Fast waning



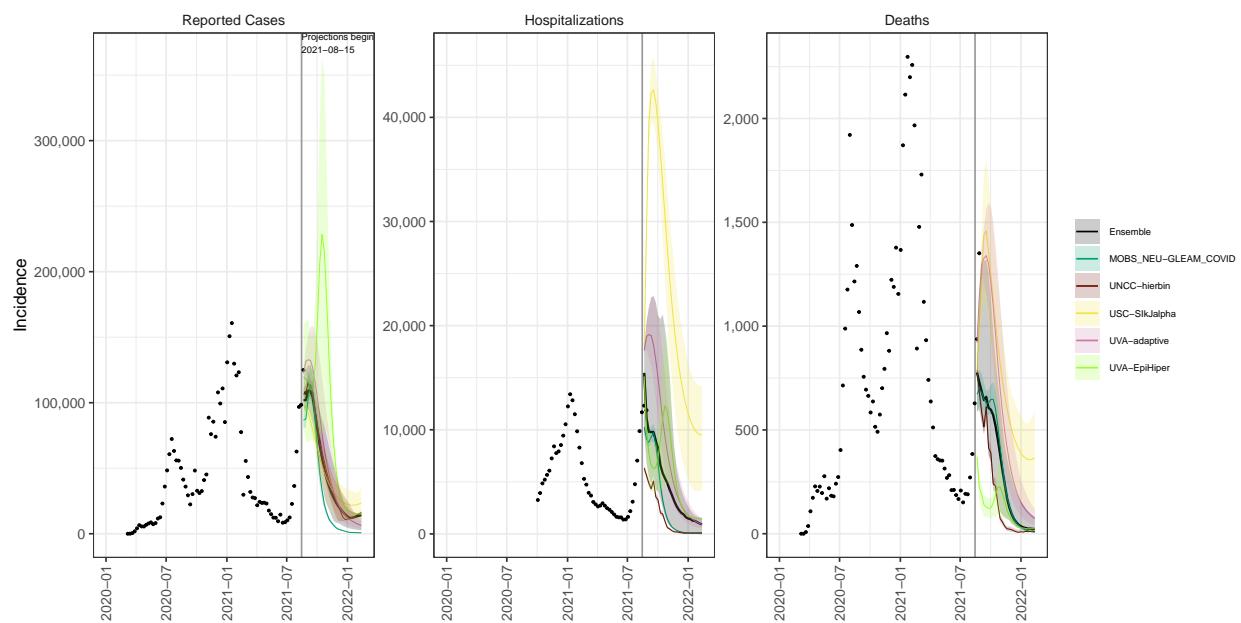
SD model variance & 50% projection intervals – High protection, Fast waning



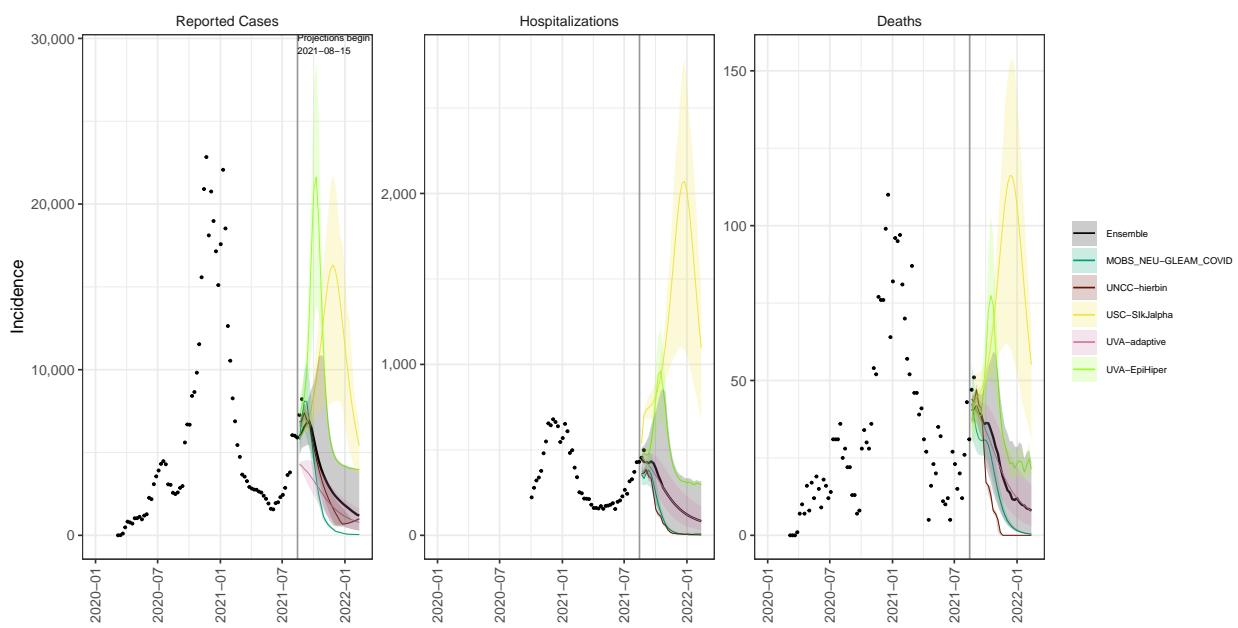
TN model variance & 50% projection intervals – High protection, Fast waning



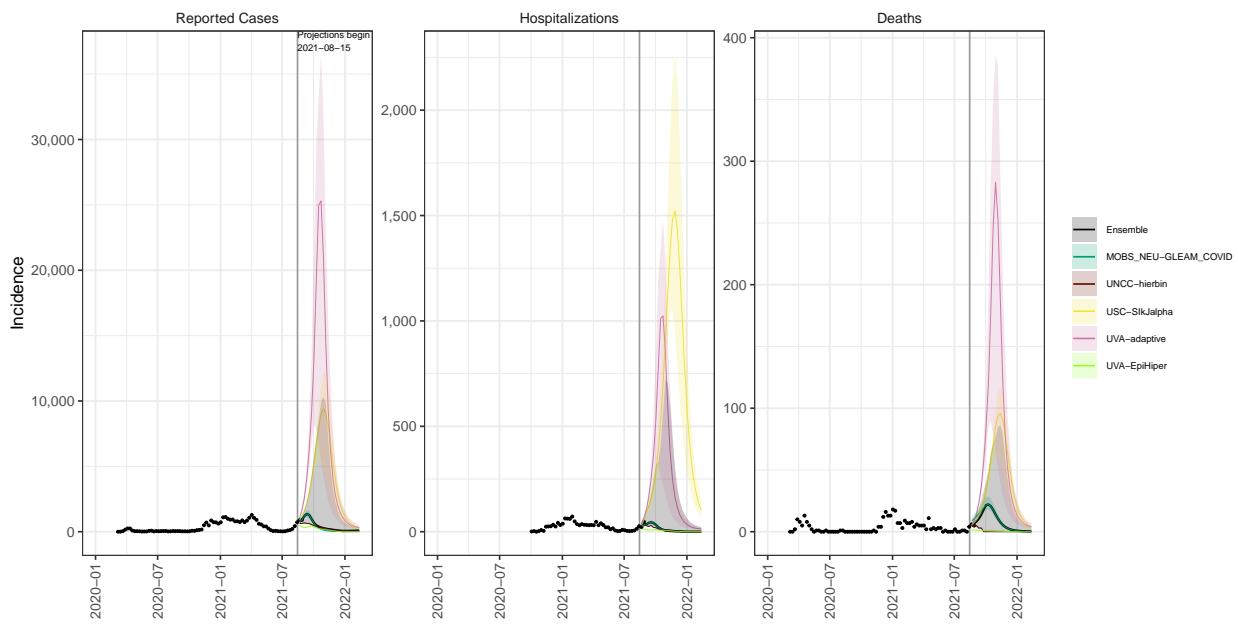
TX model variance & 50% projection intervals – High protection, Fast waning



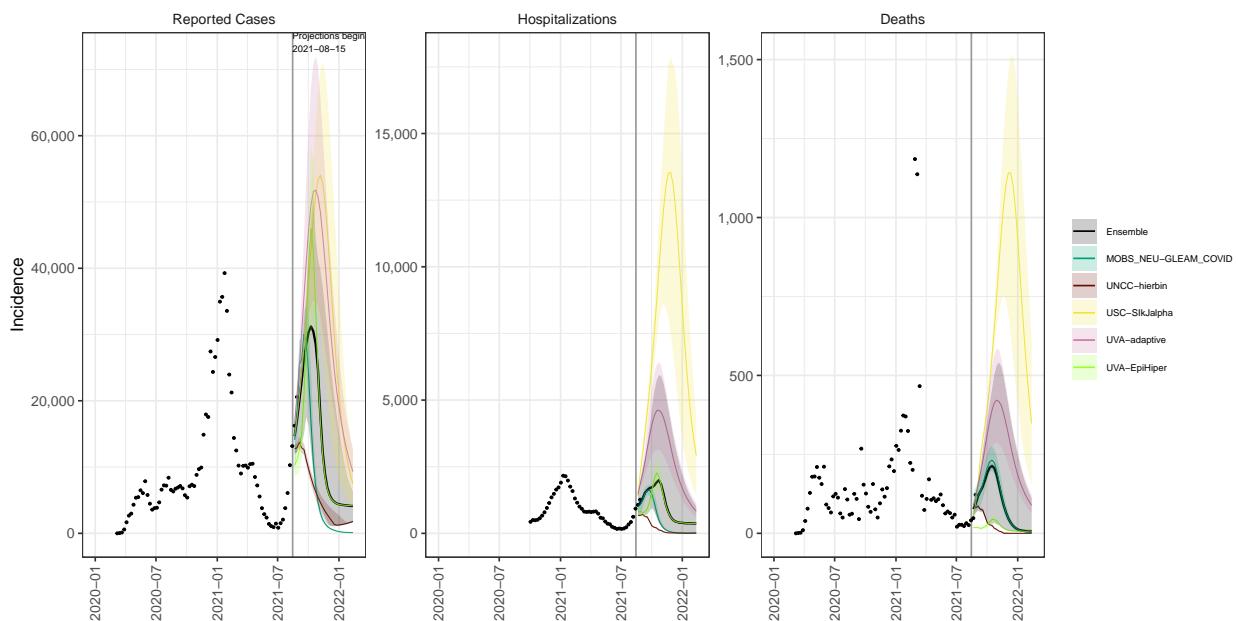
UT model variance & 50% projection intervals – High protection, Fast waning



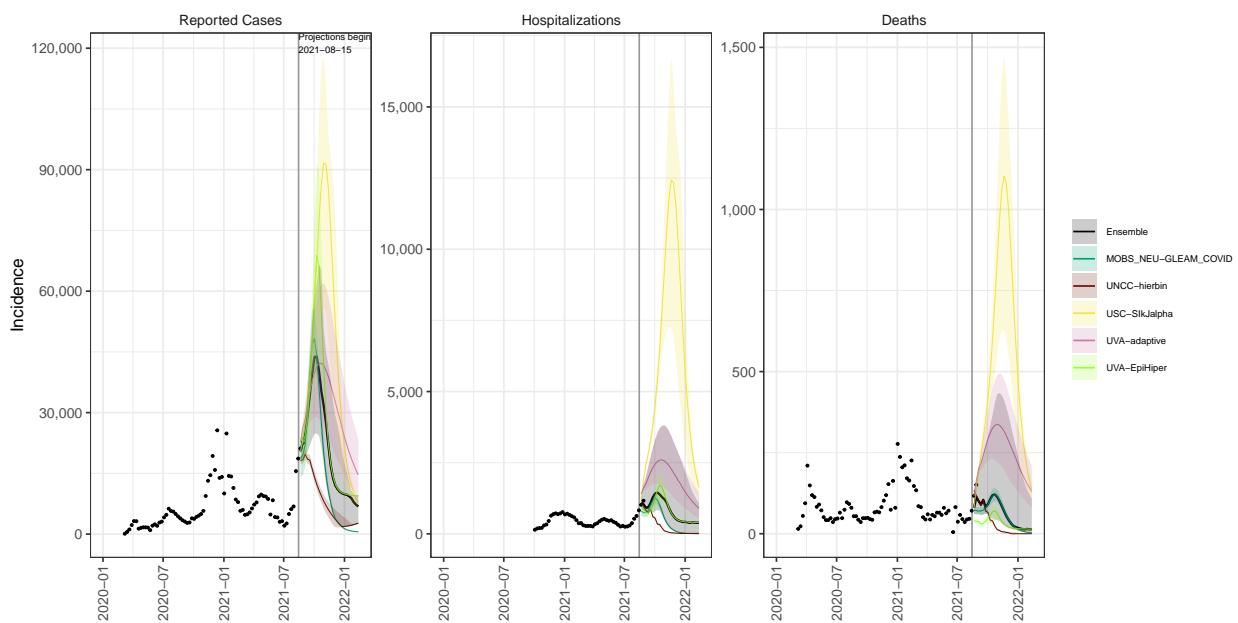
VT model variance & 50% projection intervals – High protection, Fast waning



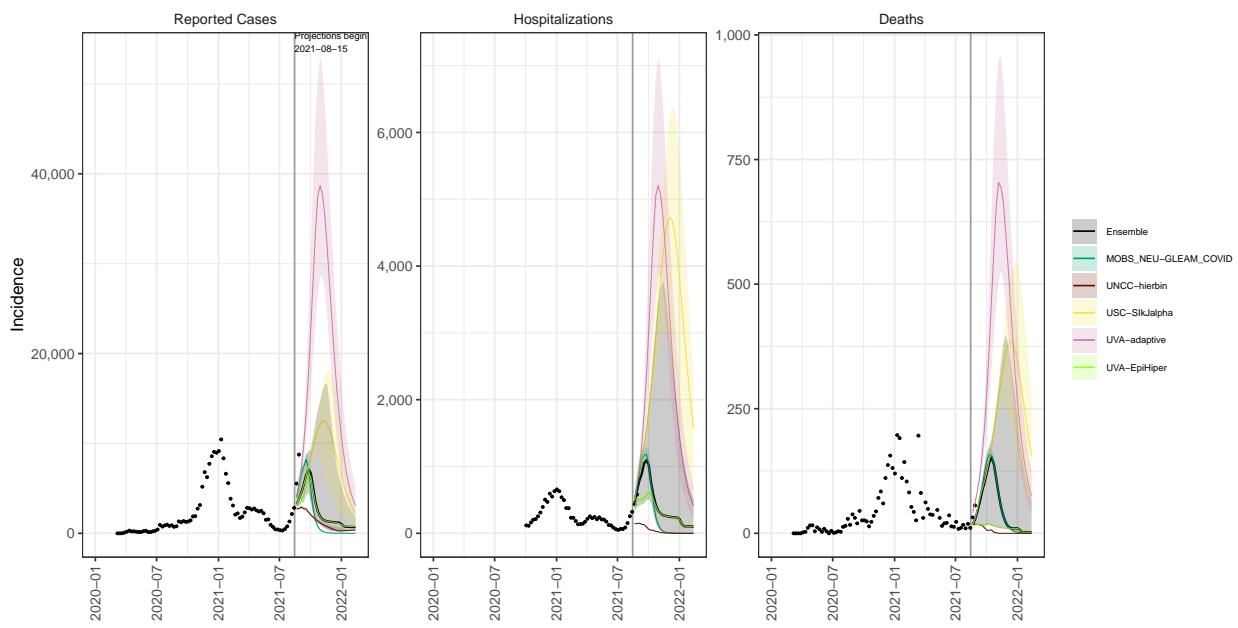
VA model variance & 50% projection intervals – High protection, Fast waning



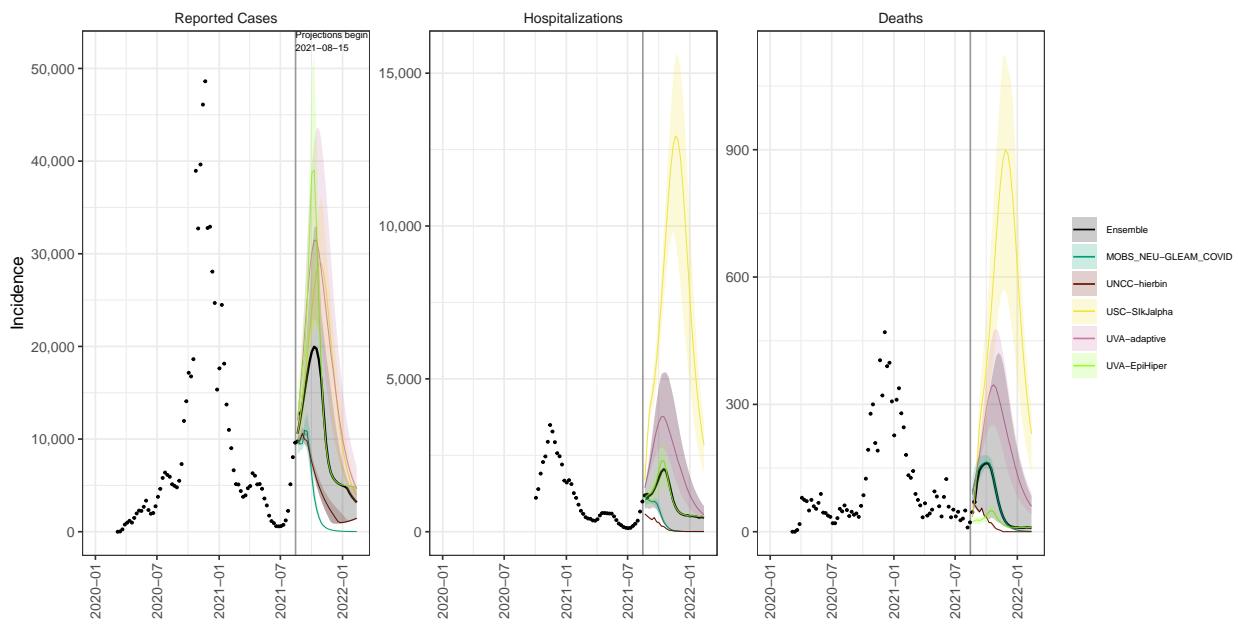
WA model variance & 50% projection intervals – High protection, Fast waning



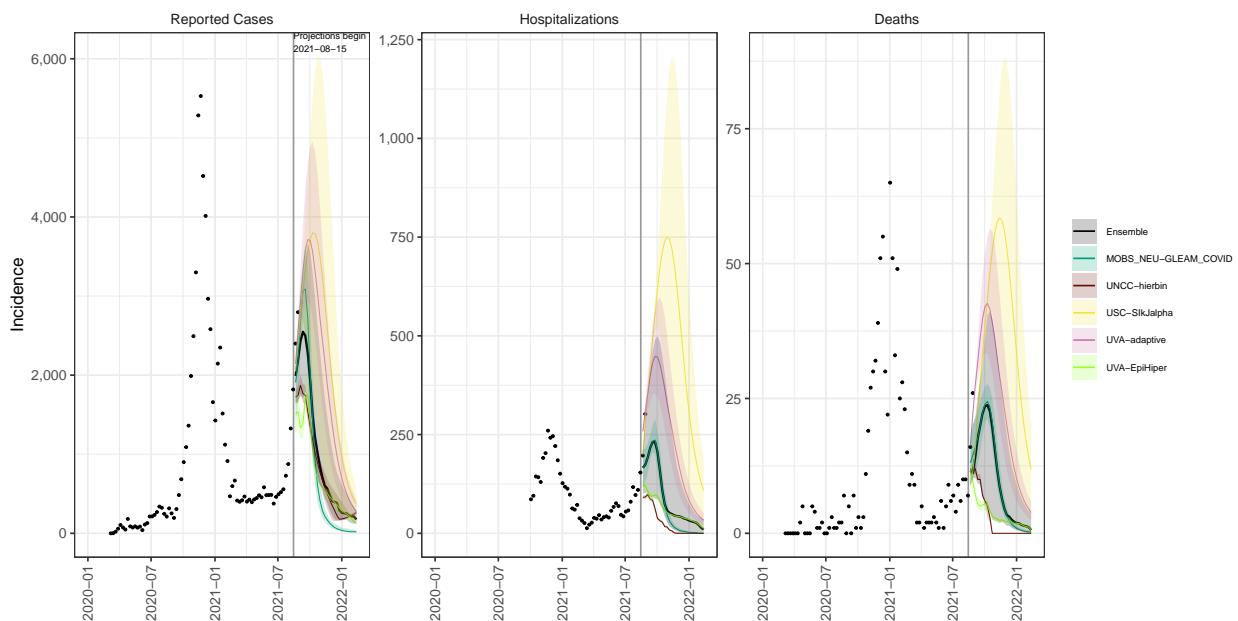
WV model variance & 50% projection intervals – High protection, Fast waning



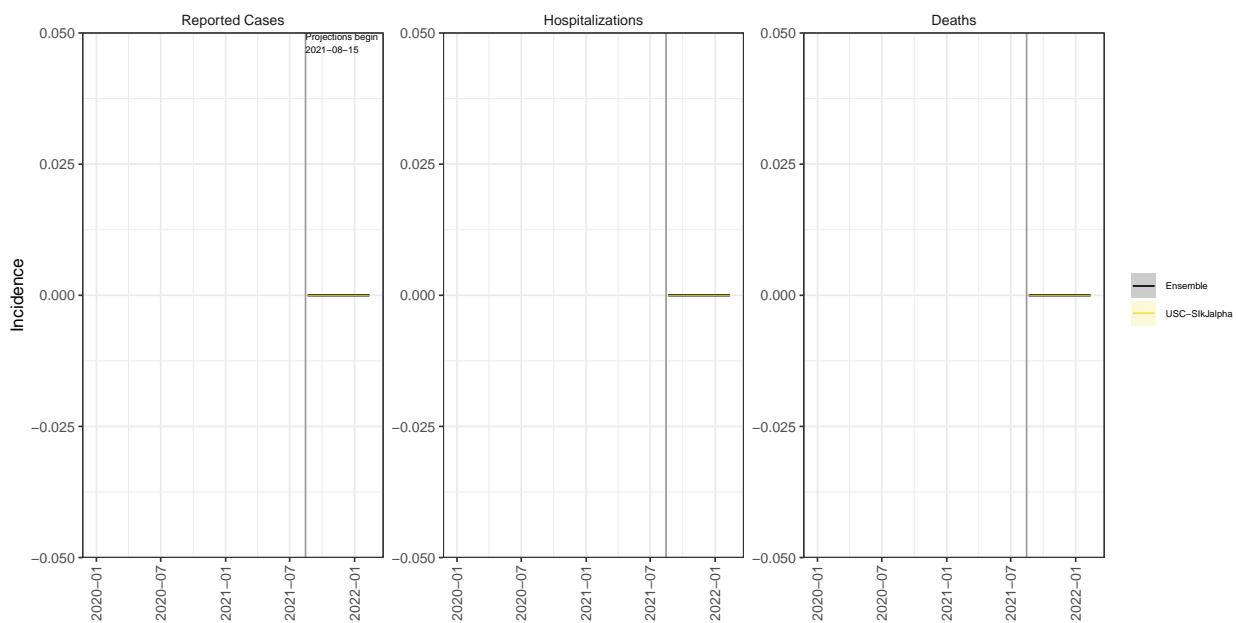
WI model variance & 50% projection intervals – High protection, Fast waning



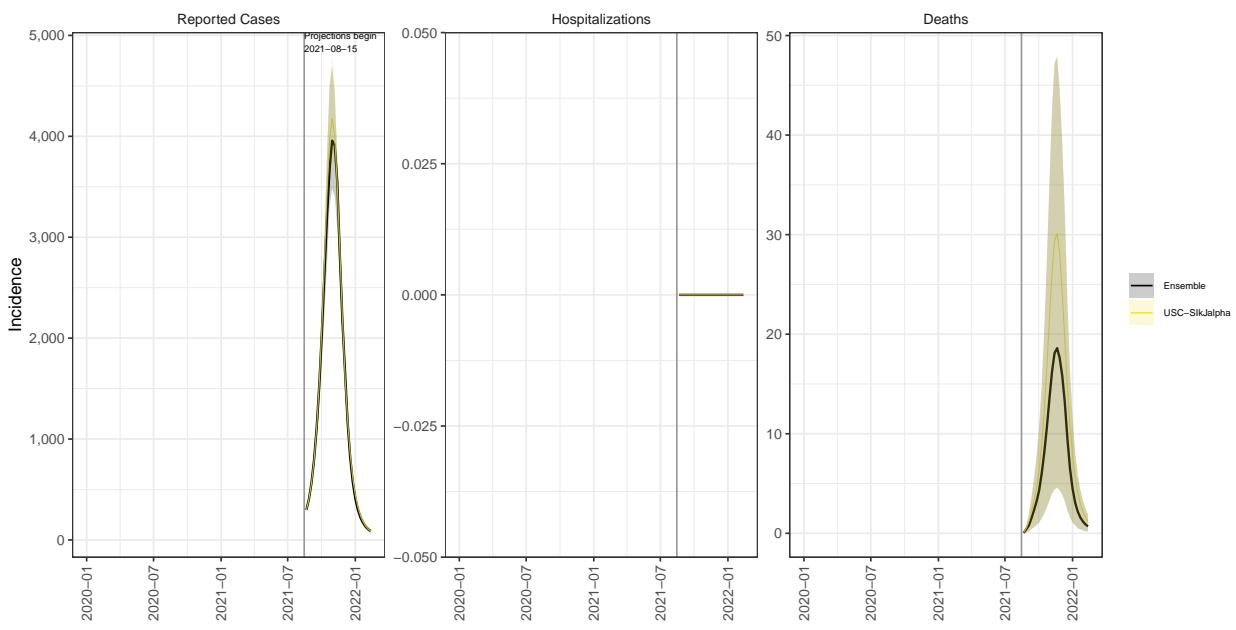
WY model variance & 50% projection intervals – High protection, Fast waning



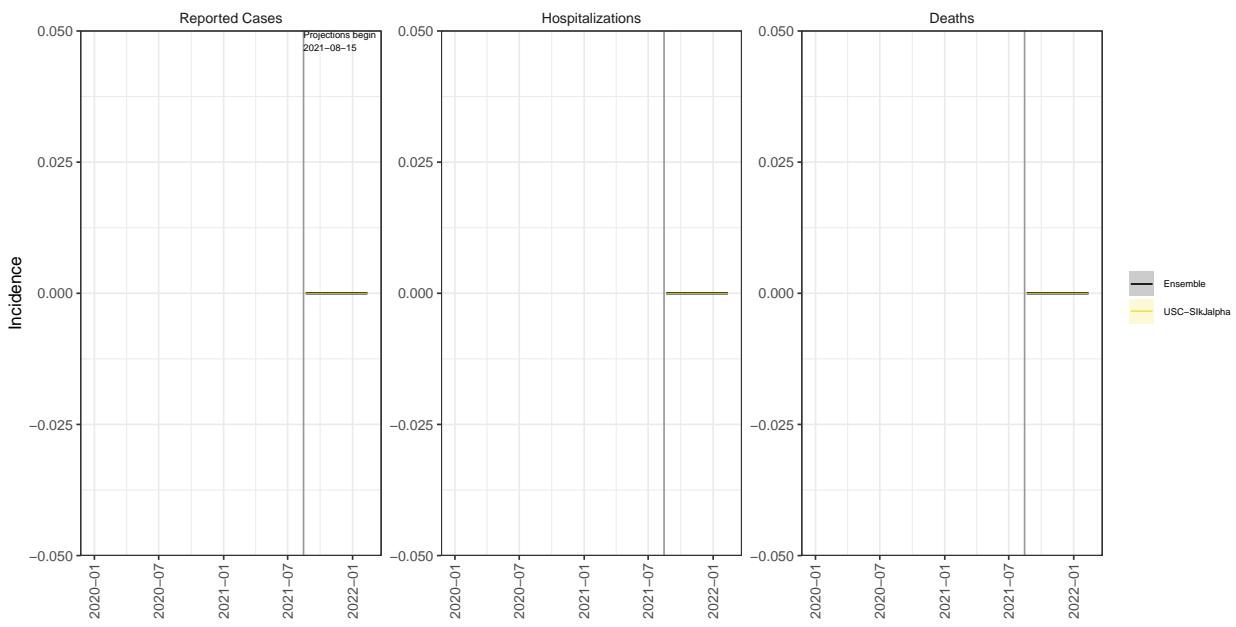
AS model variance & 50% projection intervals – High protection, Fast waning



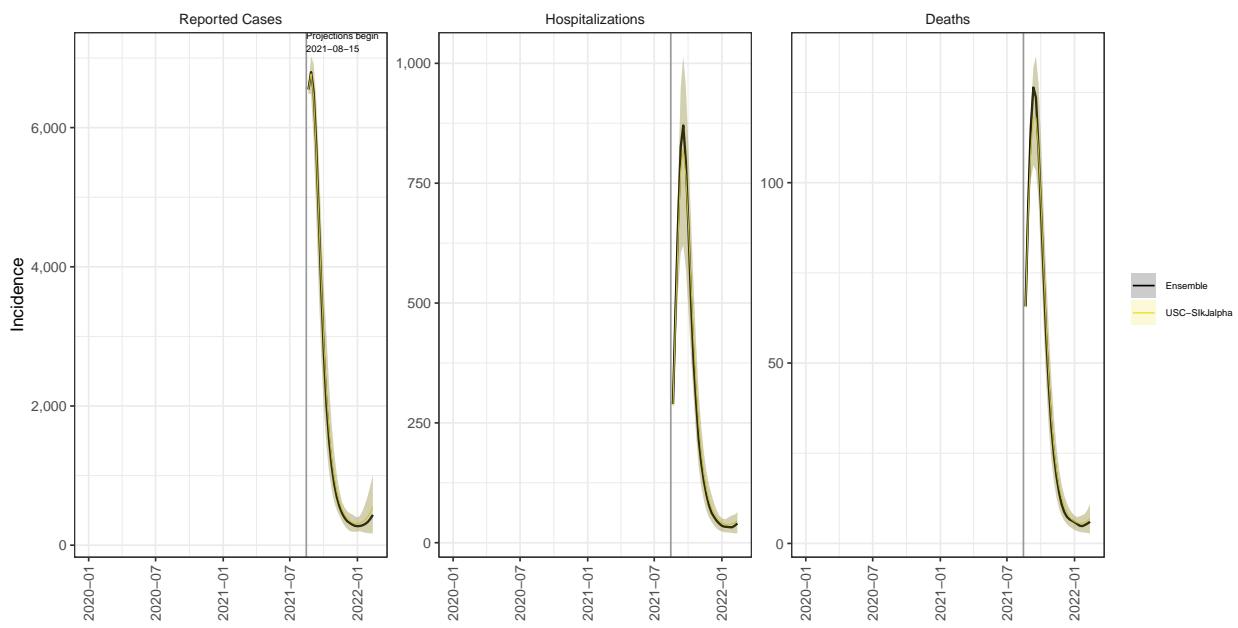
GU model variance & 50% projection intervals – High protection, Fast waning



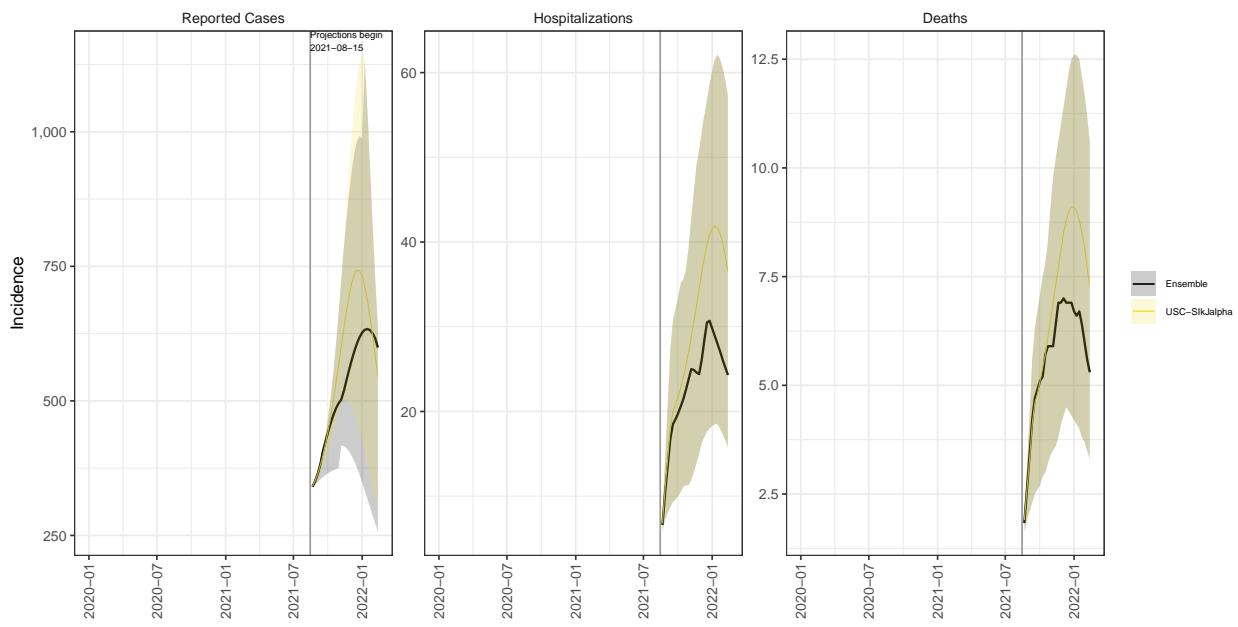
MP model variance & 50% projection intervals – High protection, Fast waning



PR model variance & 50% projection intervals – High protection, Fast waning

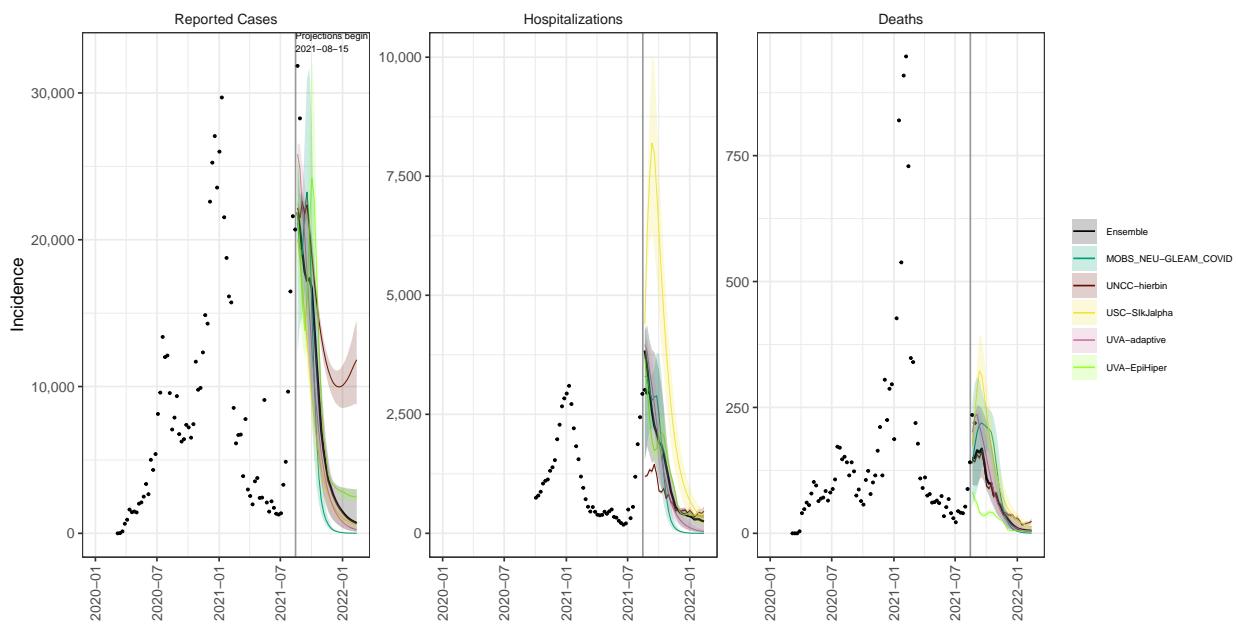


VI model variance & 50% projection intervals – High protection, Fast waning

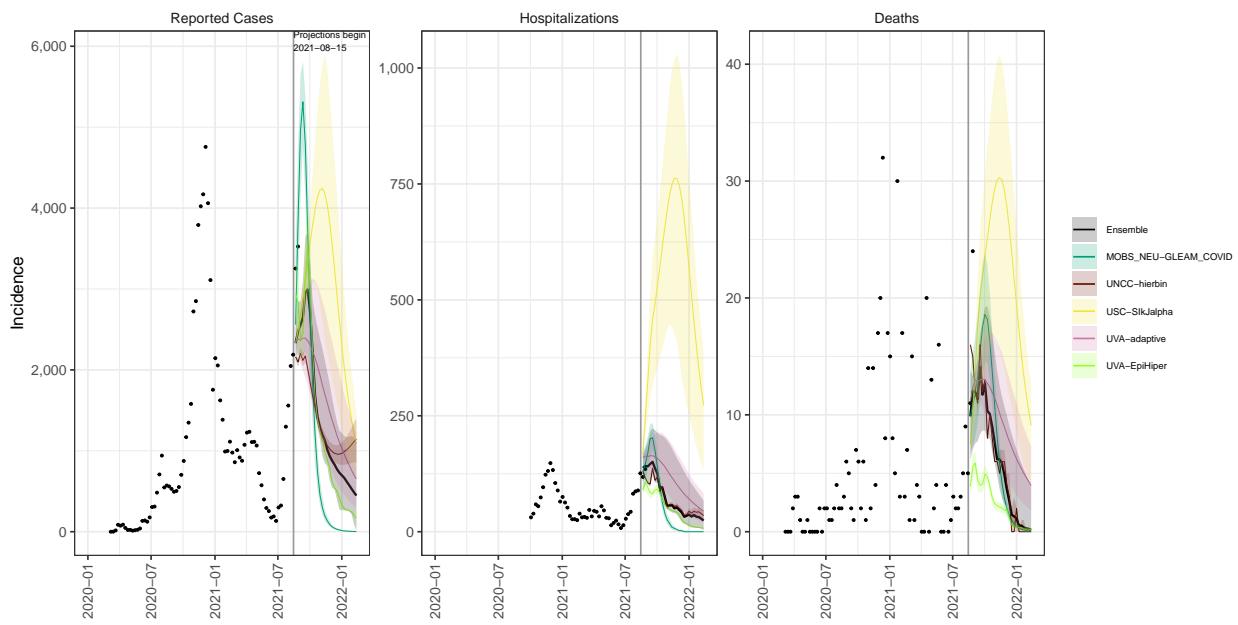


National model variation for the low protection, slow waning scenario

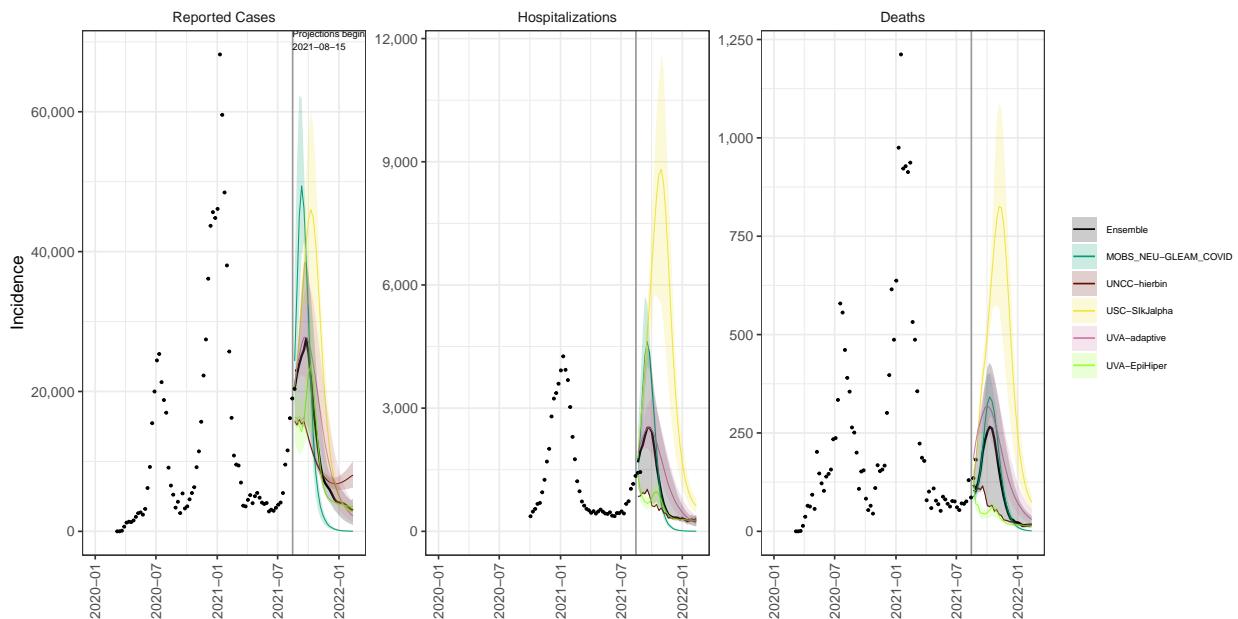
AL model variance & 50% projection intervals – Low protection, Slow waning



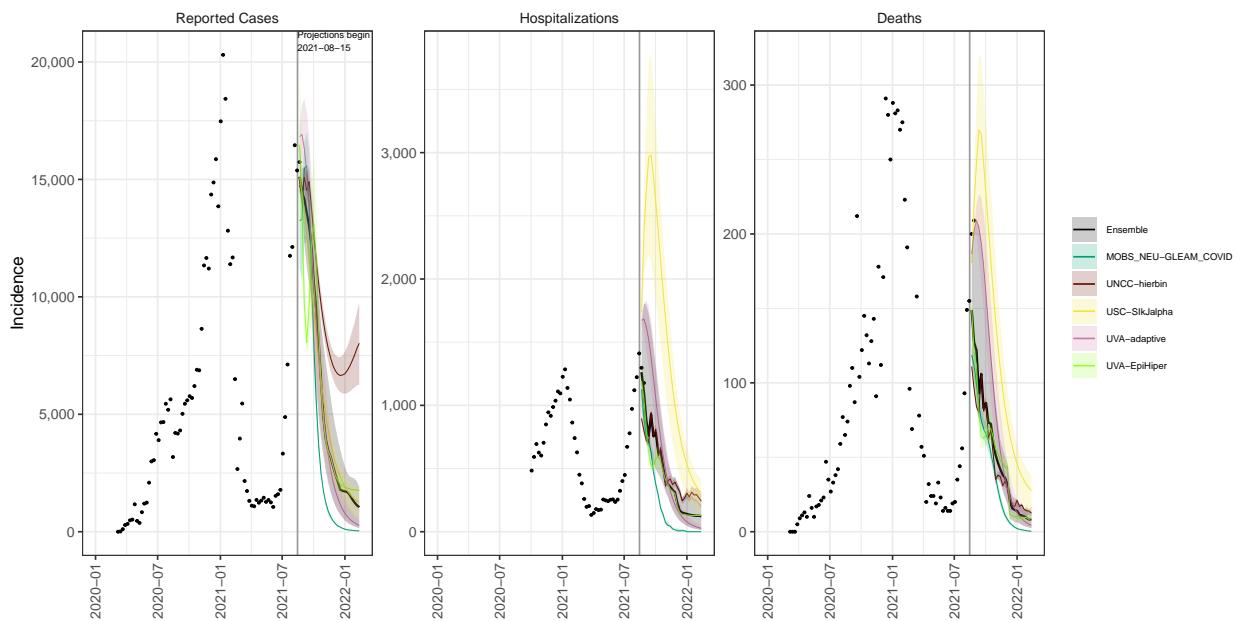
AK model variance & 50% projection intervals – Low protection, Slow waning



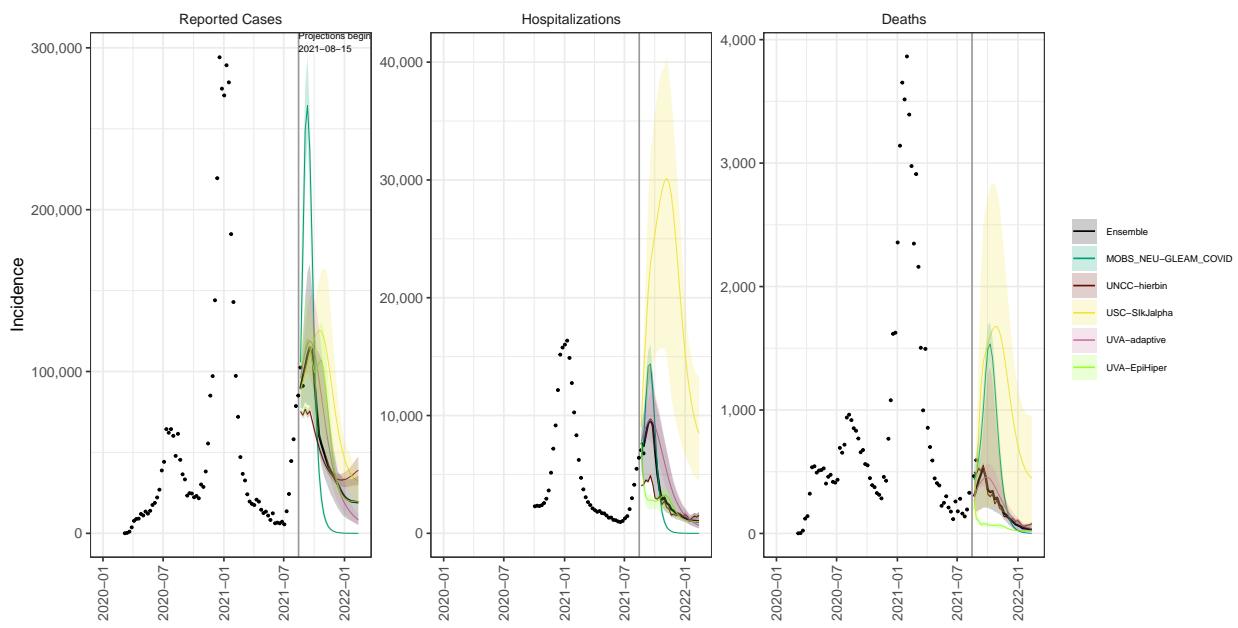
AZ model variance & 50% projection intervals – Low protection, Slow waning



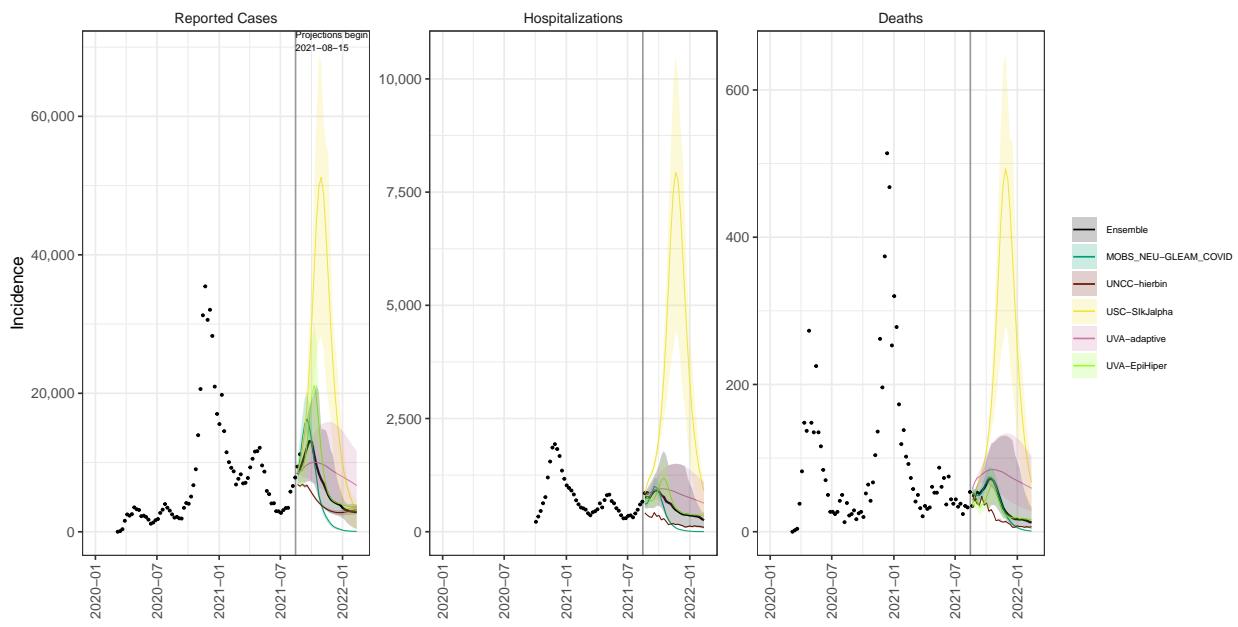
AR model variance & 50% projection intervals – Low protection, Slow waning



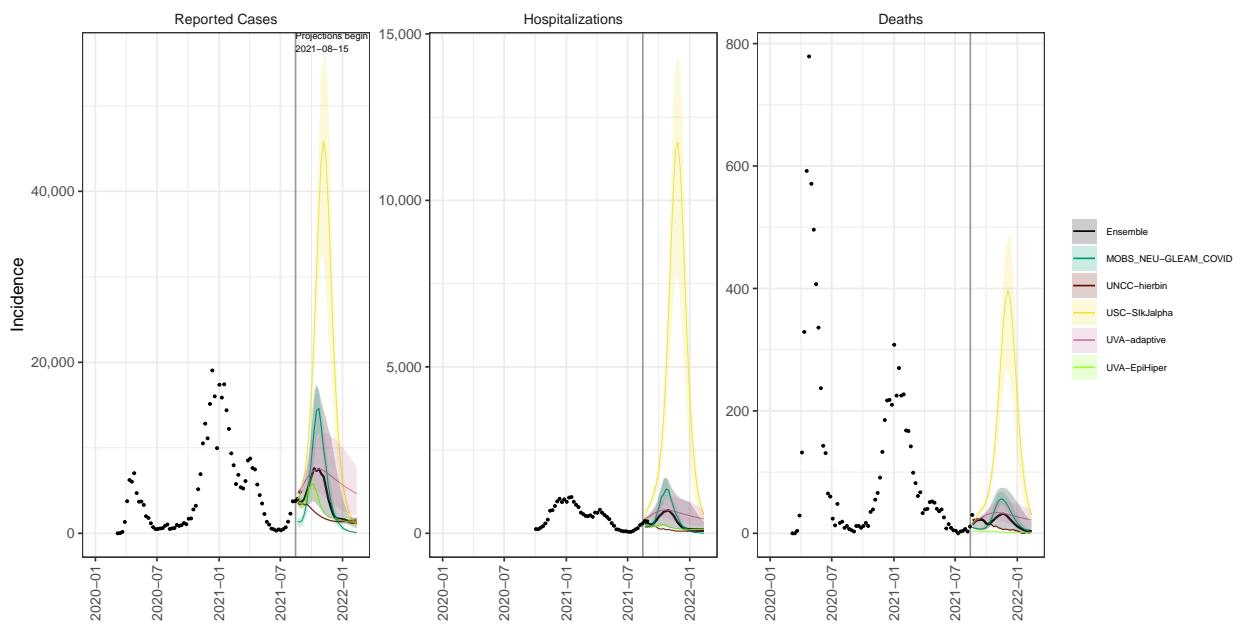
CA model variance & 50% projection intervals – Low protection, Slow waning



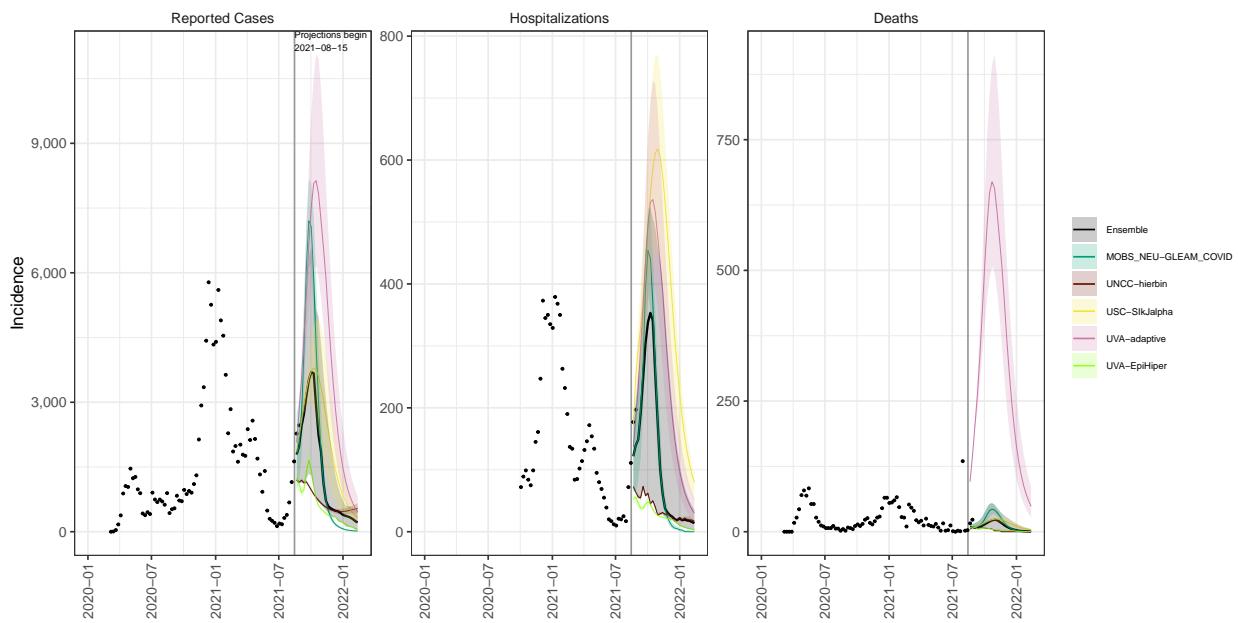
CO model variance & 50% projection intervals – Low protection, Slow waning



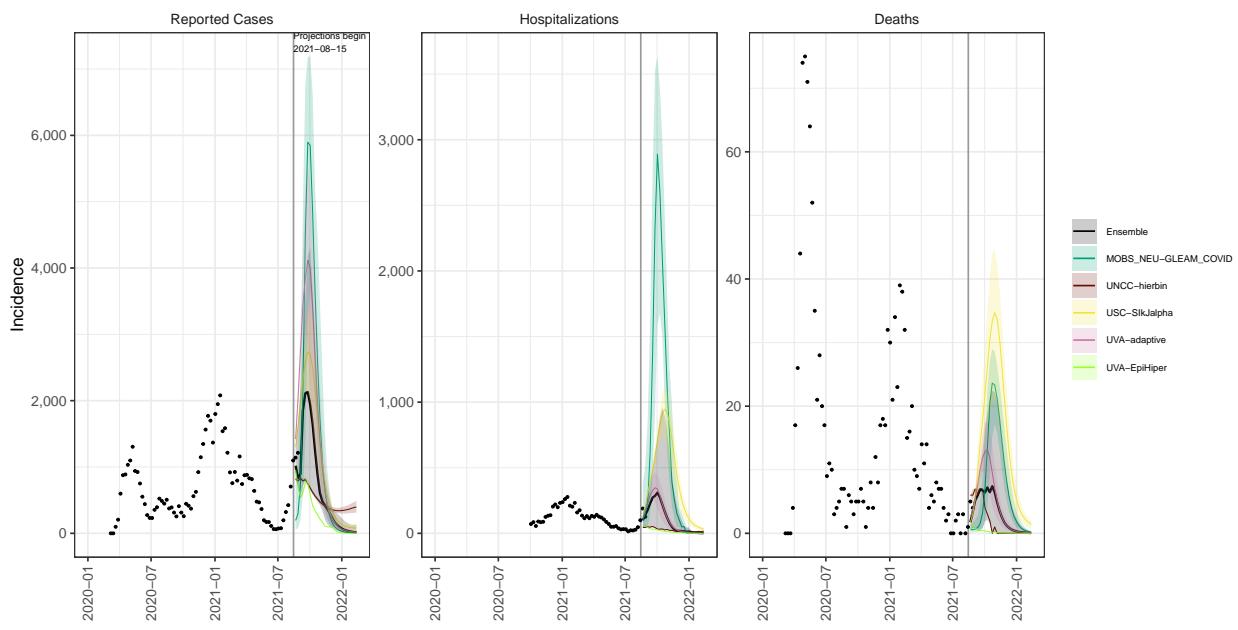
CT model variance & 50% projection intervals – Low protection, Slow waning



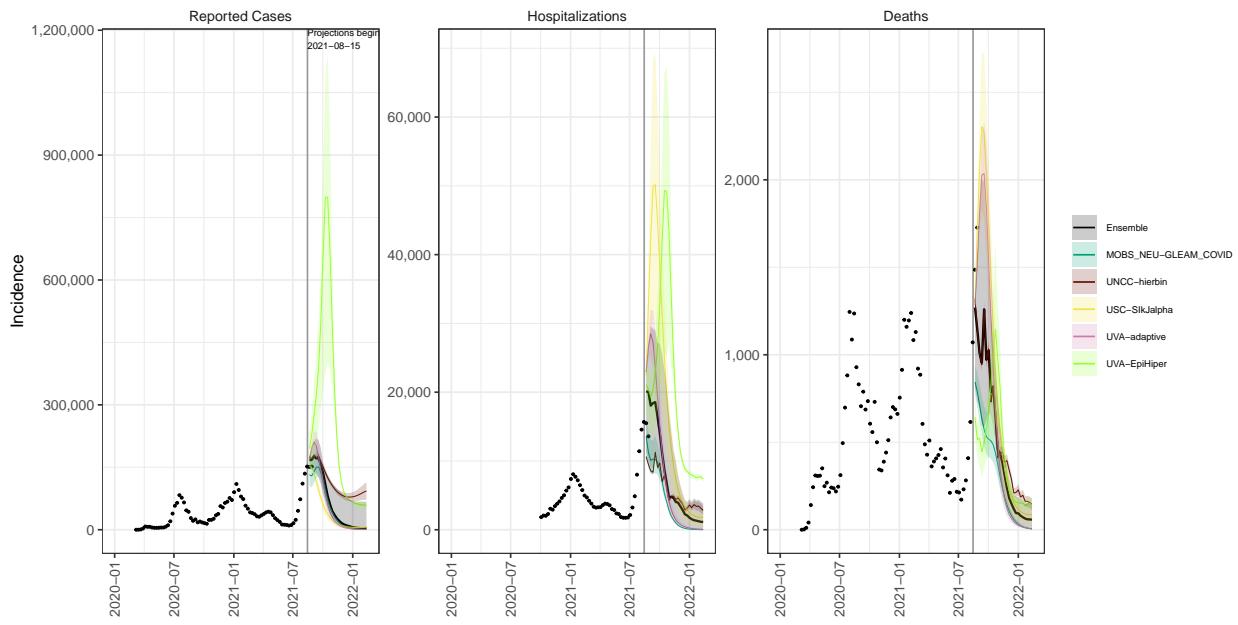
DE model variance & 50% projection intervals – Low protection, Slow waning



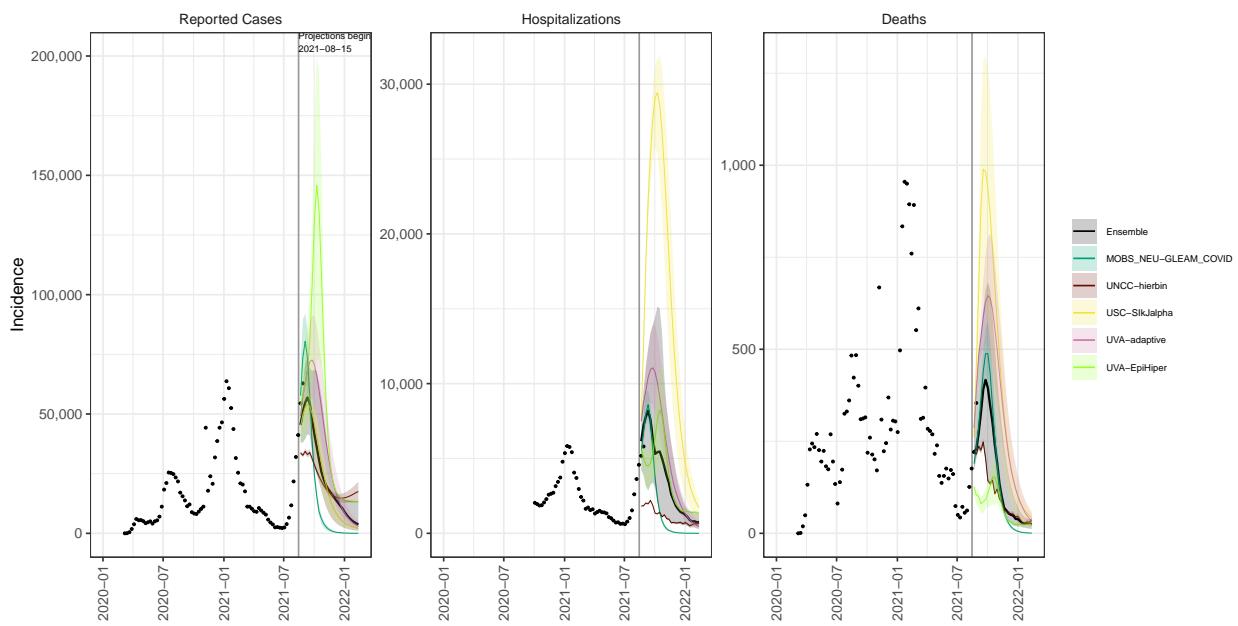
DC model variance & 50% projection intervals – Low protection, Slow waning



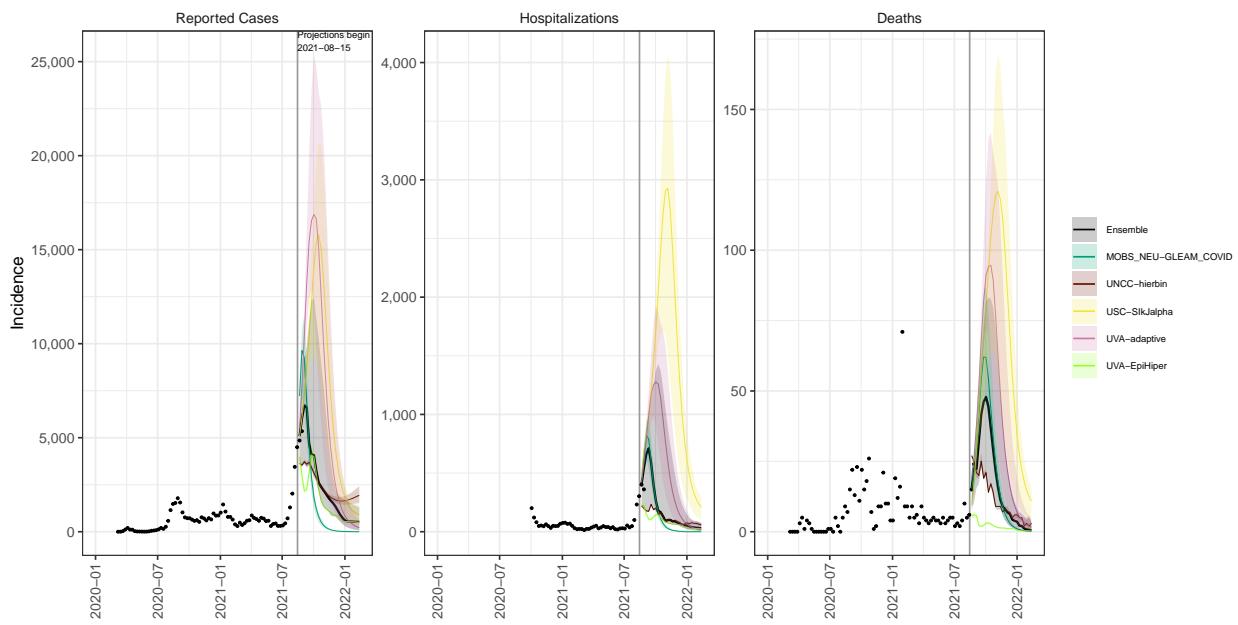
FL model variance & 50% projection intervals – Low protection, Slow waning



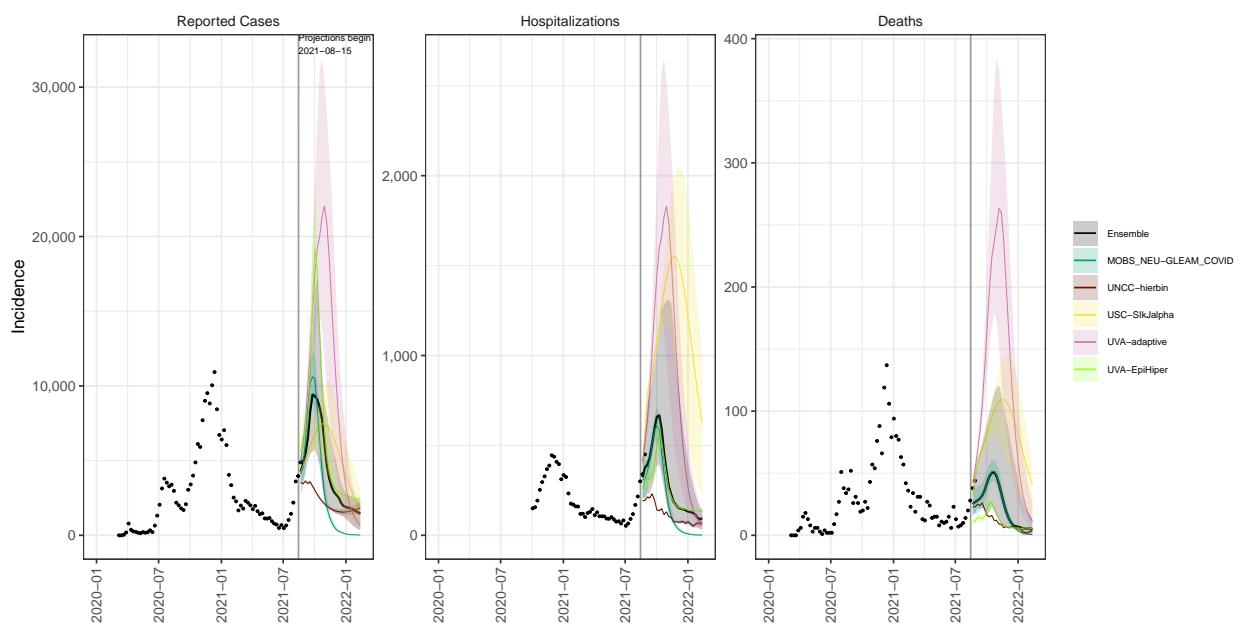
GA model variance & 50% projection intervals – Low protection, Slow waning



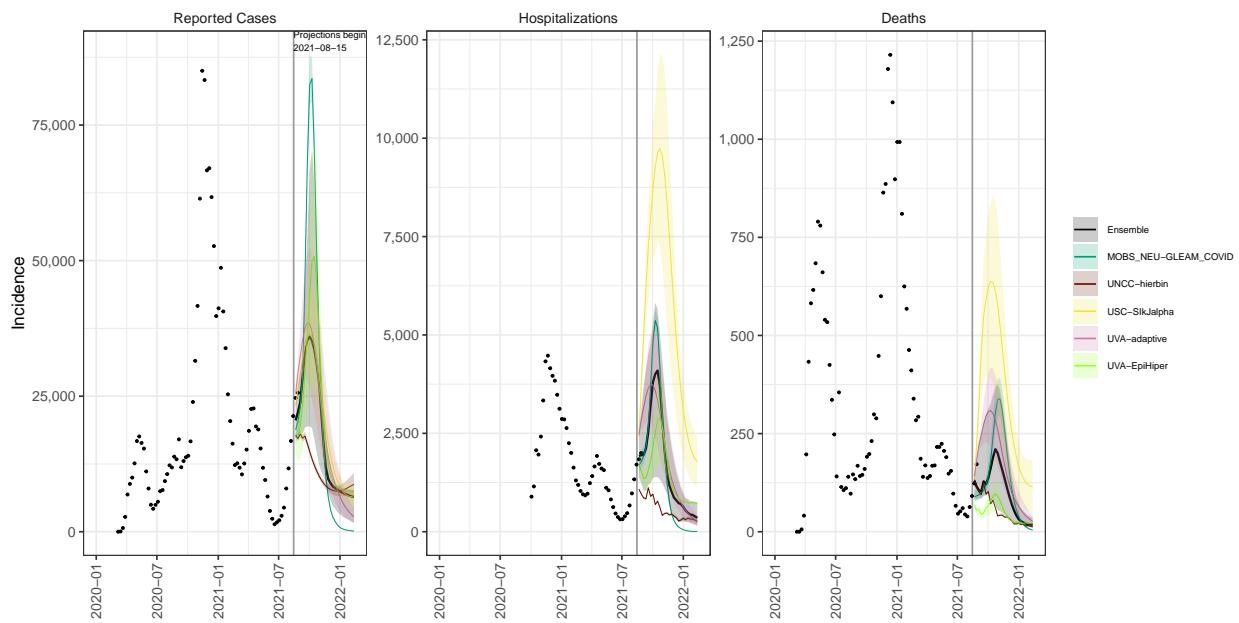
HI model variance & 50% projection intervals – Low protection, Slow waning



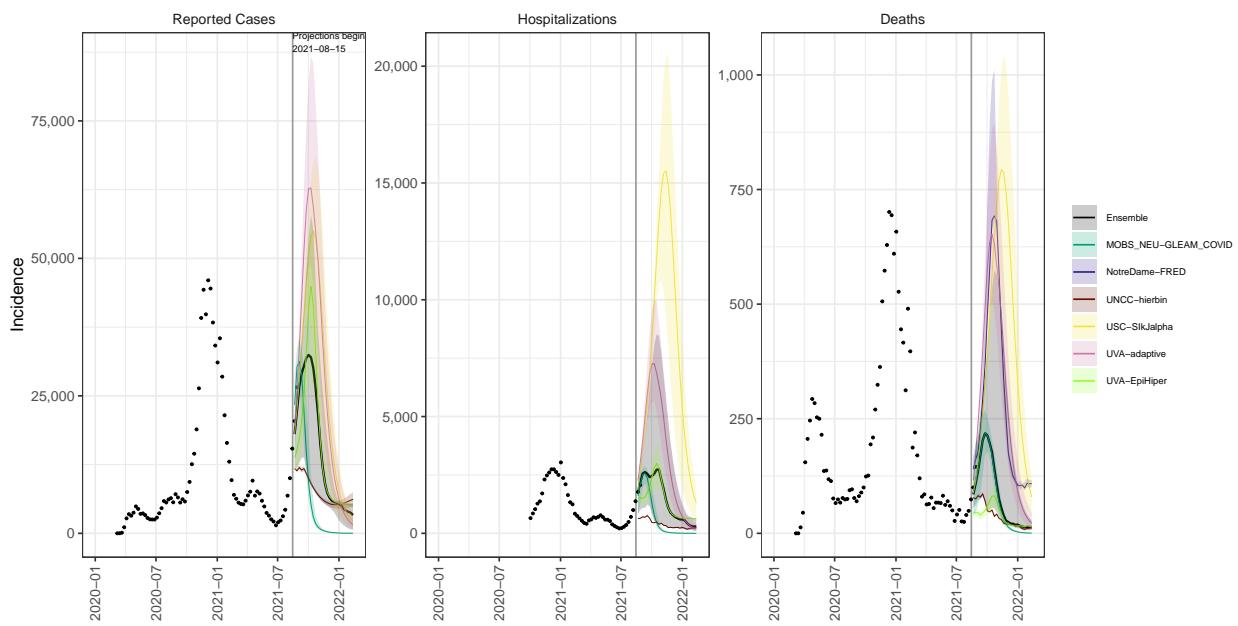
ID model variance & 50% projection intervals – Low protection, Slow waning



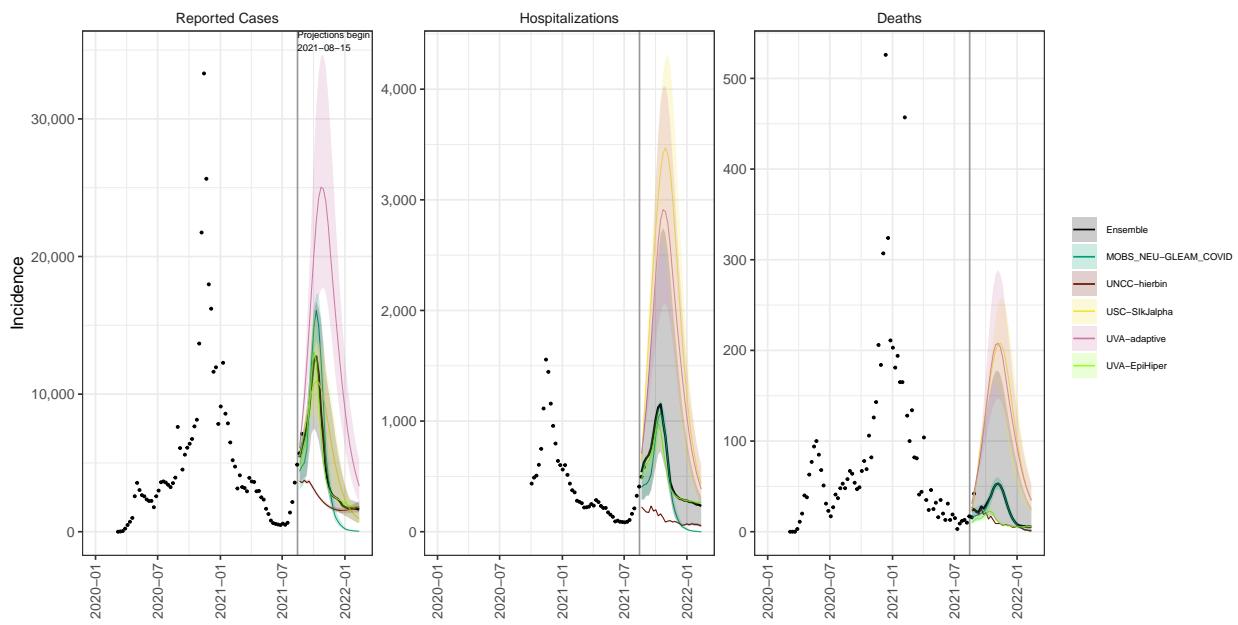
IL model variance & 50% projection intervals – Low protection, Slow waning



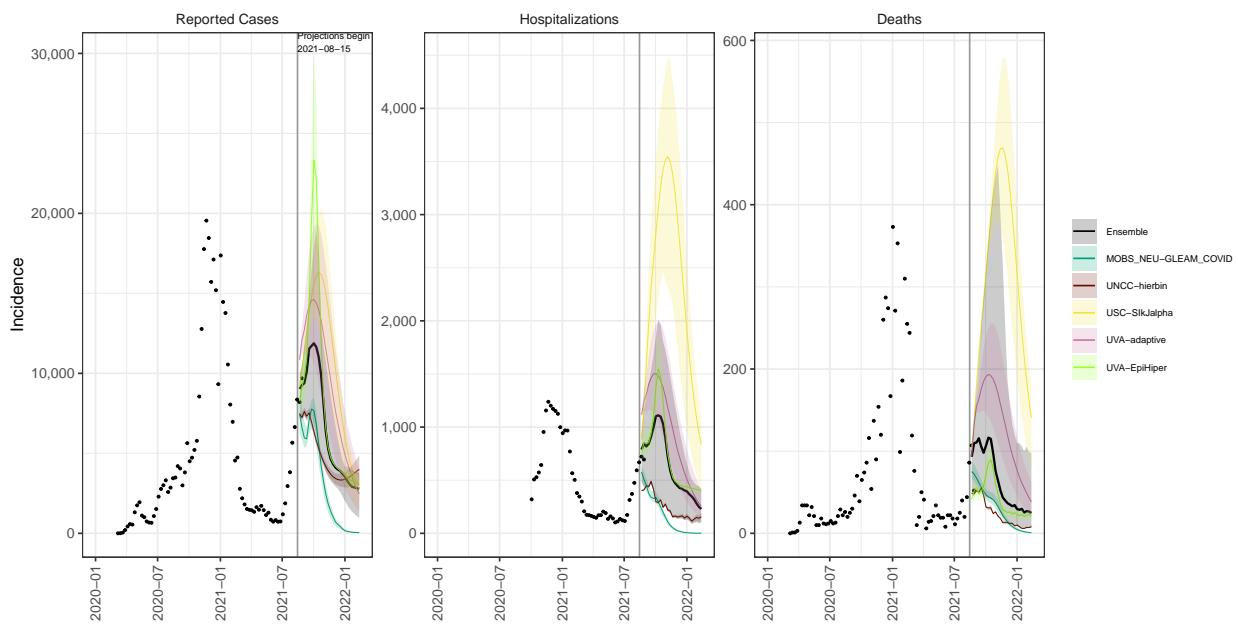
IN model variance & 50% projection intervals – Low protection, Slow waning



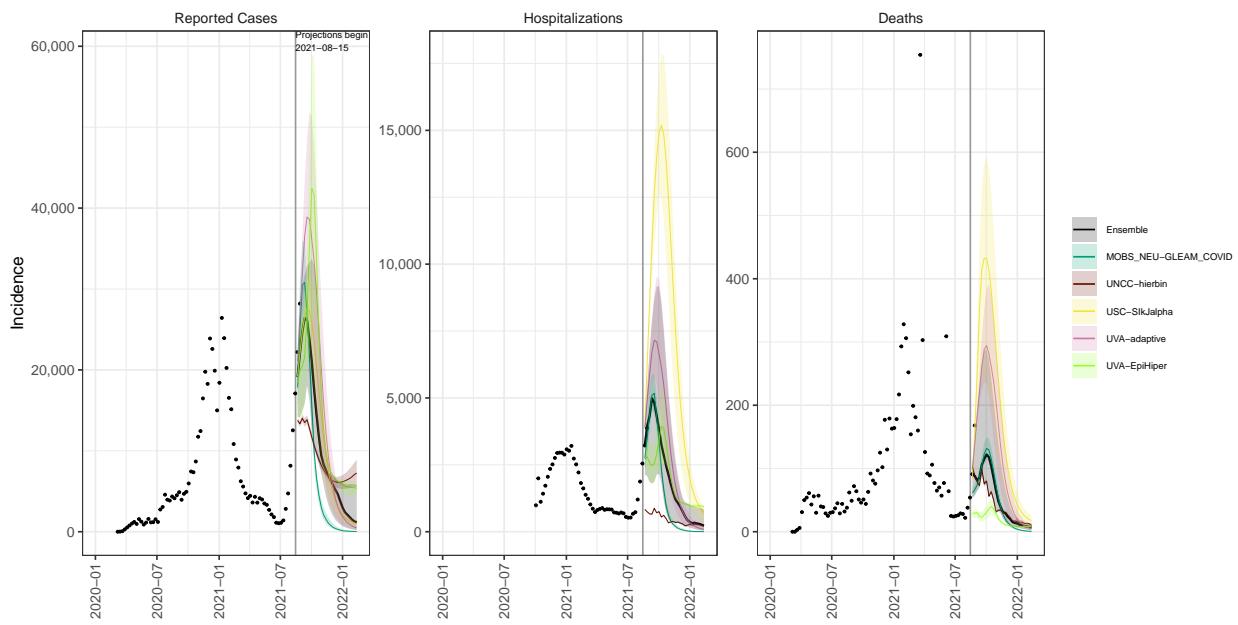
IA model variance & 50% projection intervals – Low protection, Slow waning



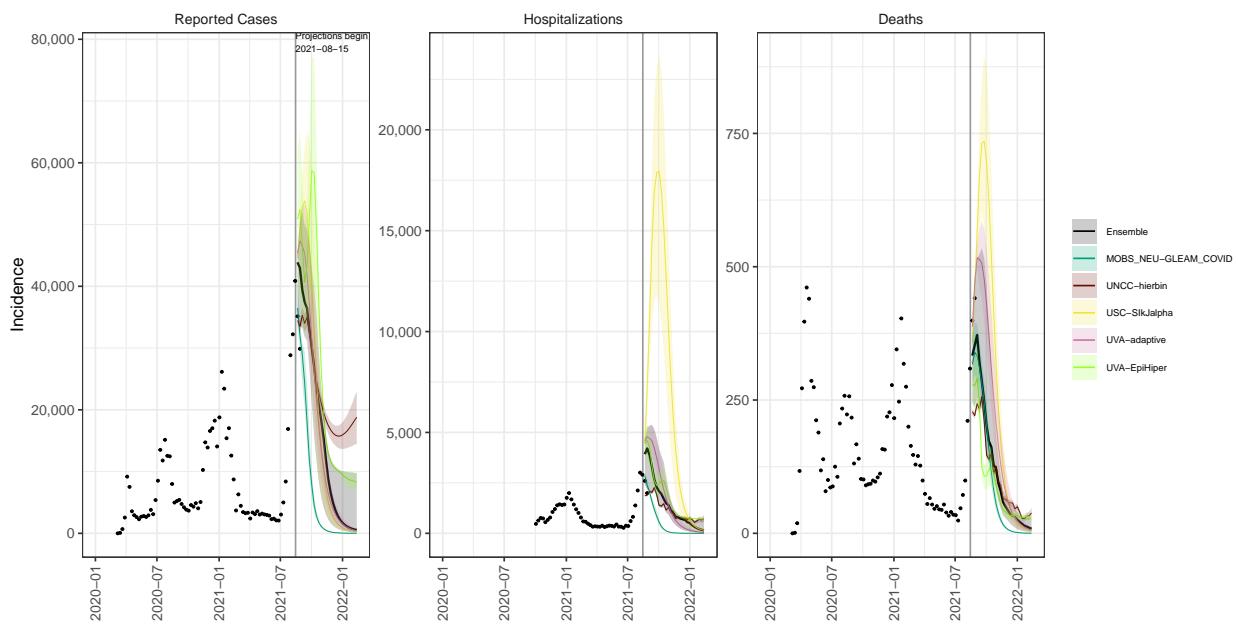
KS model variance & 50% projection intervals – Low protection, Slow waning



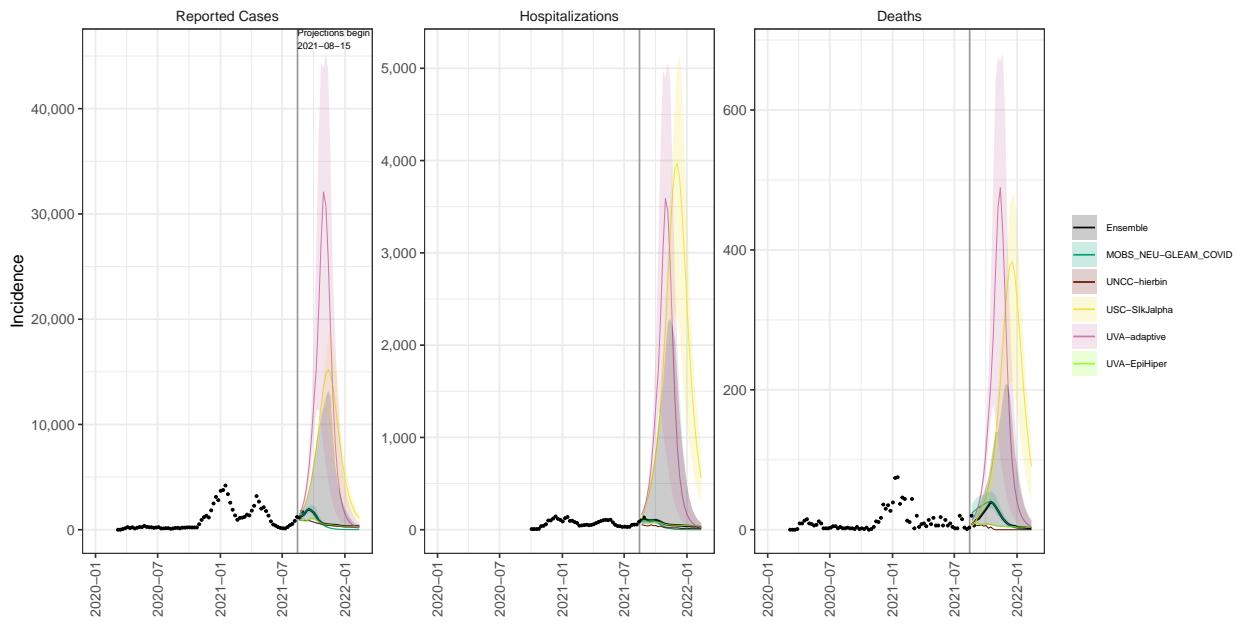
KY model variance & 50% projection intervals – Low protection, Slow waning



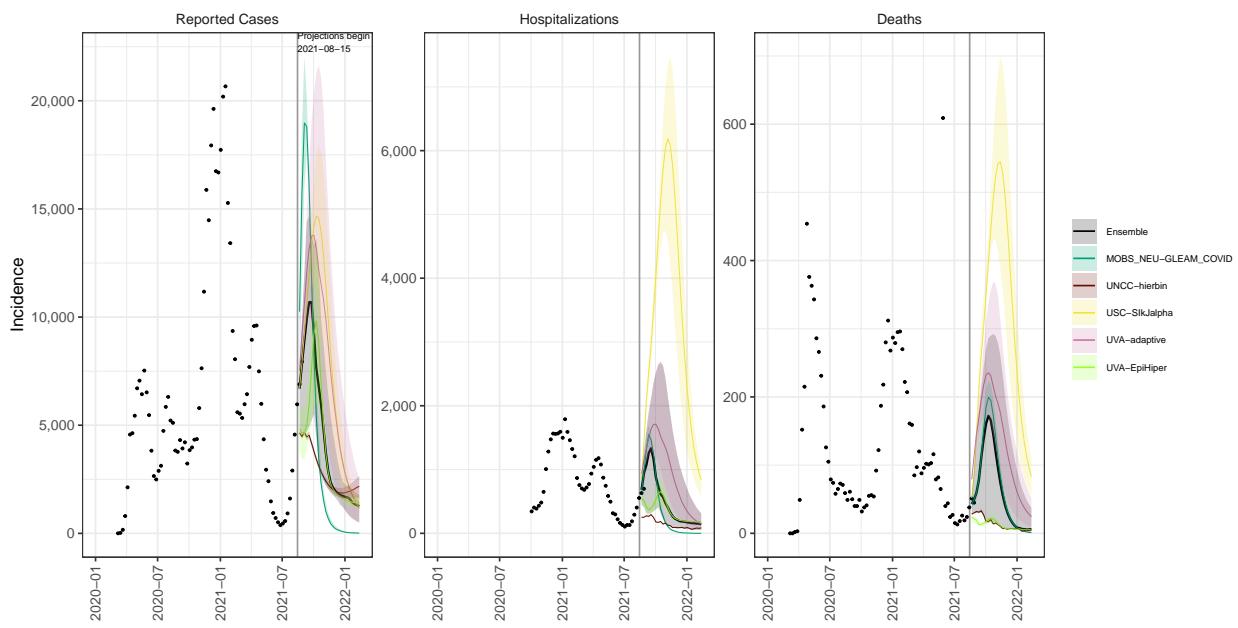
LA model variance & 50% projection intervals – Low protection, Slow waning



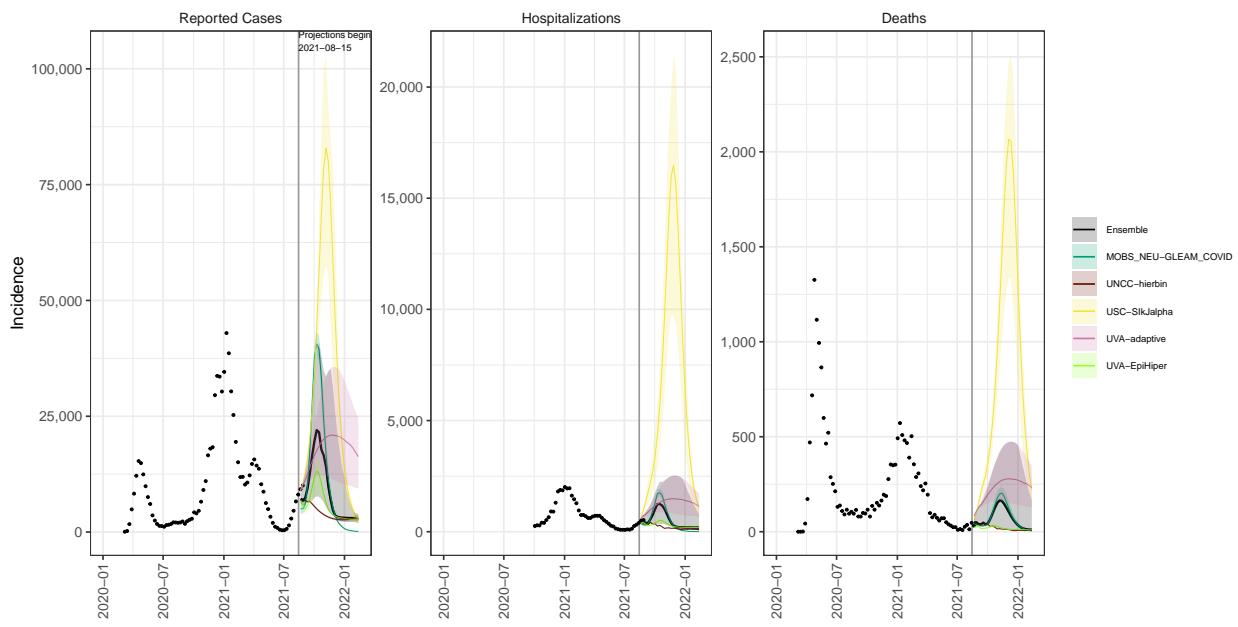
ME model variance & 50% projection intervals – Low protection, Slow waning



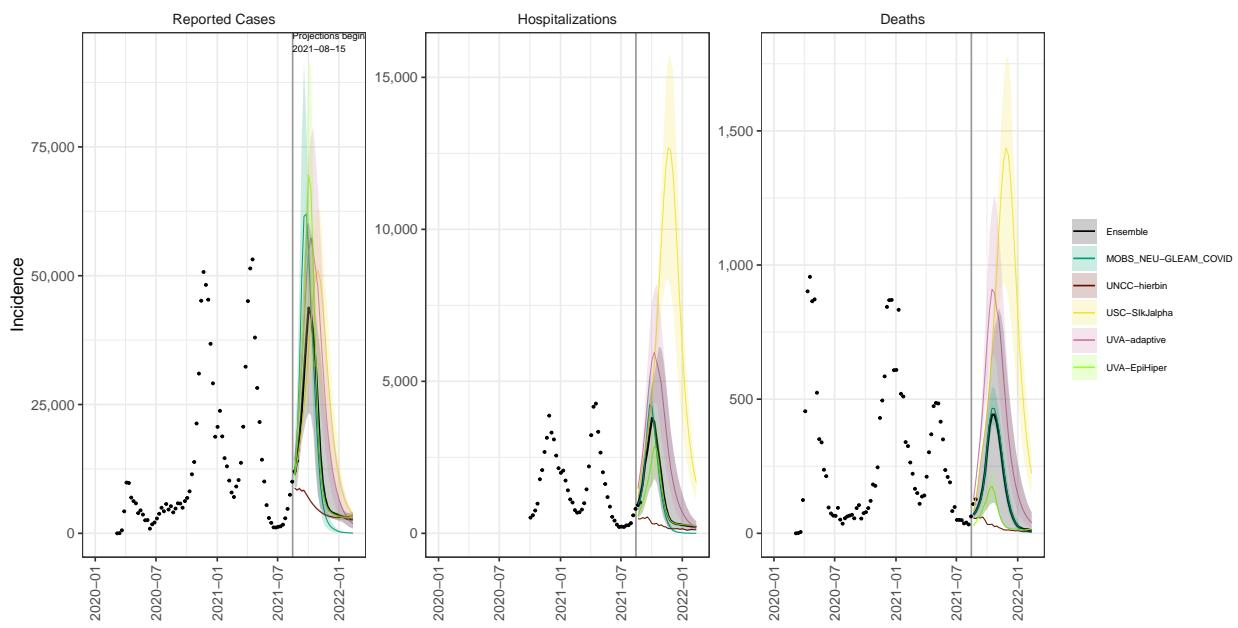
MD model variance & 50% projection intervals – Low protection, Slow waning



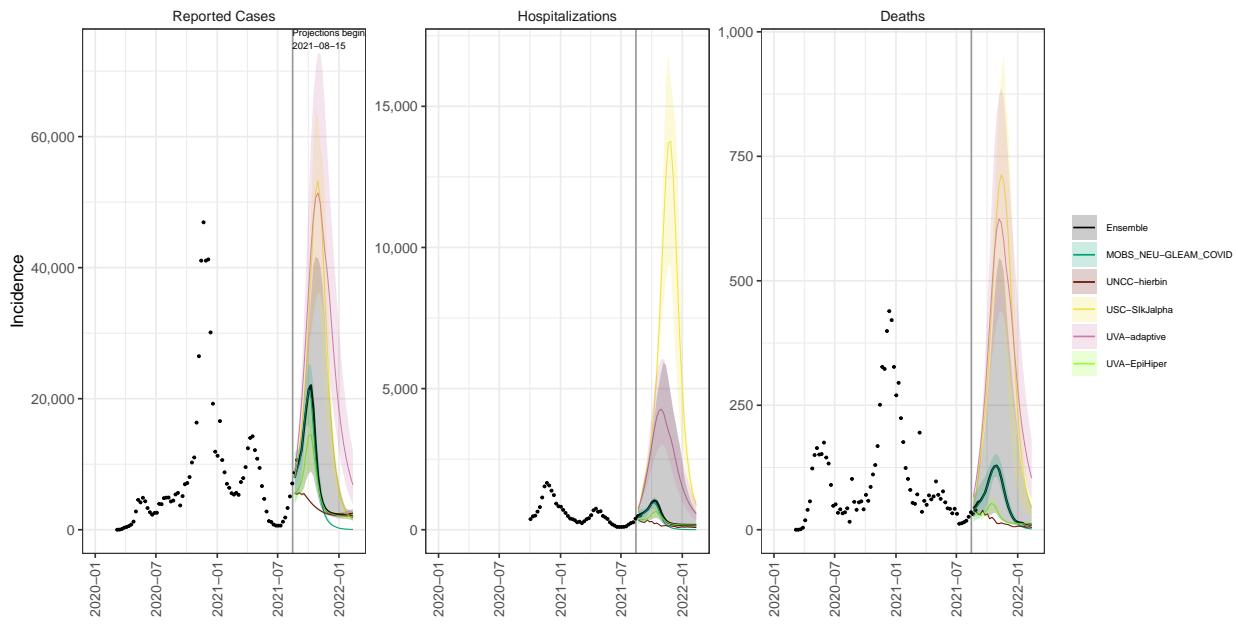
MA model variance & 50% projection intervals – Low protection, Slow waning



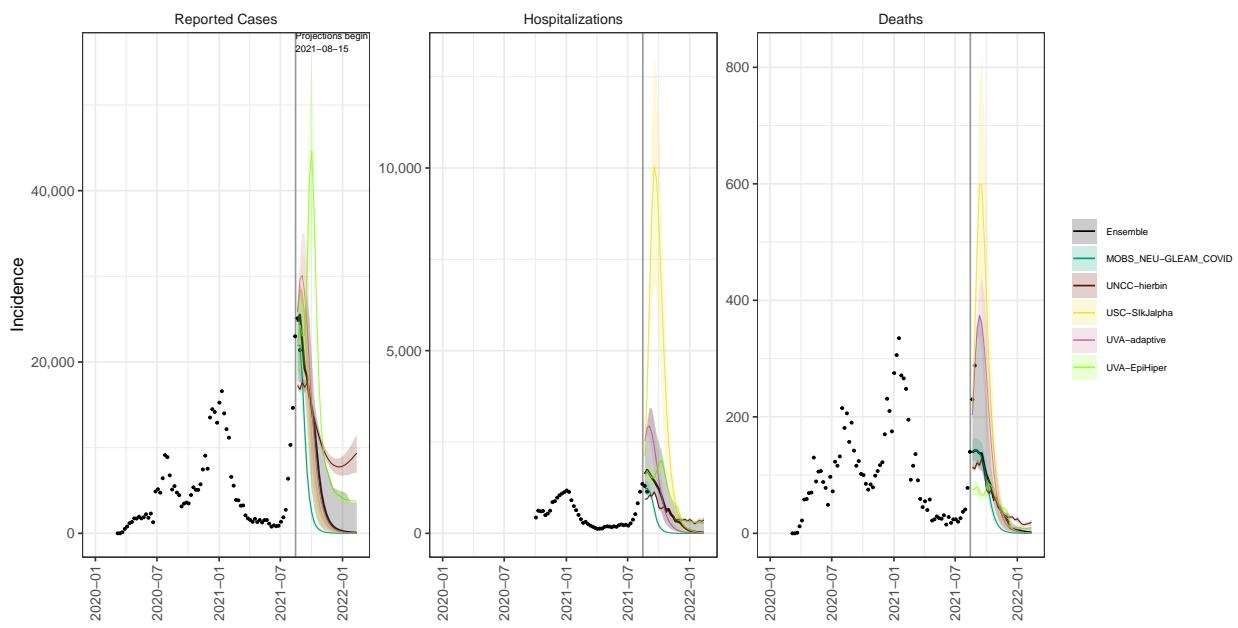
MI model variance & 50% projection intervals – Low protection, Slow waning



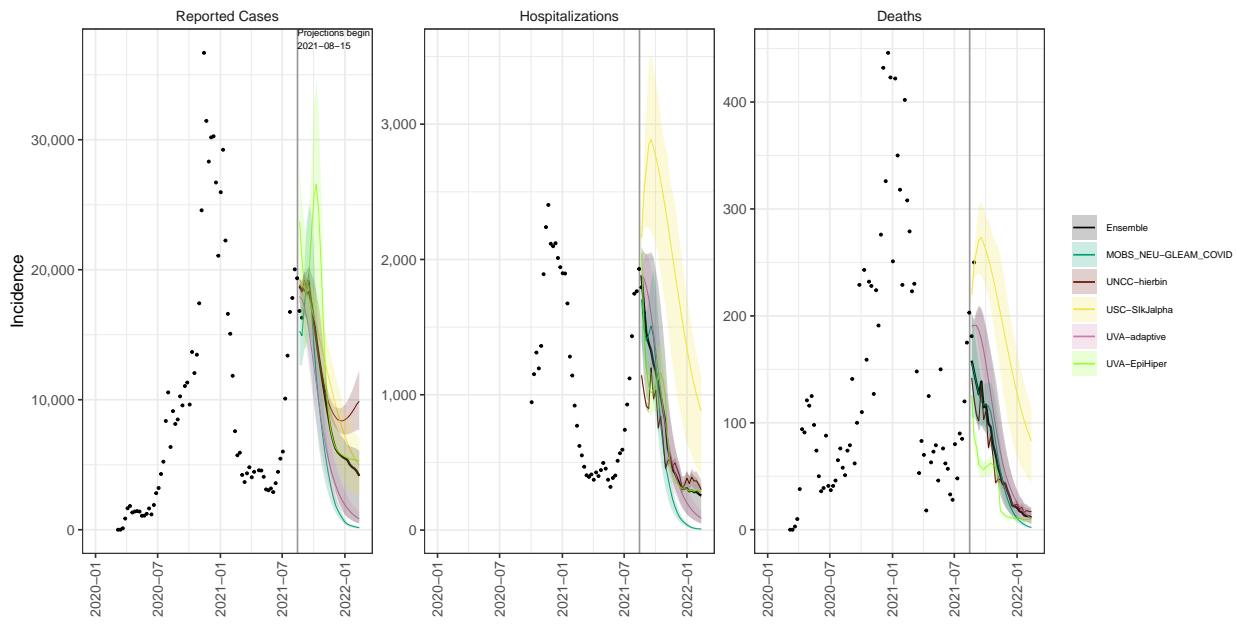
MN model variance & 50% projection intervals – Low protection, Slow waning



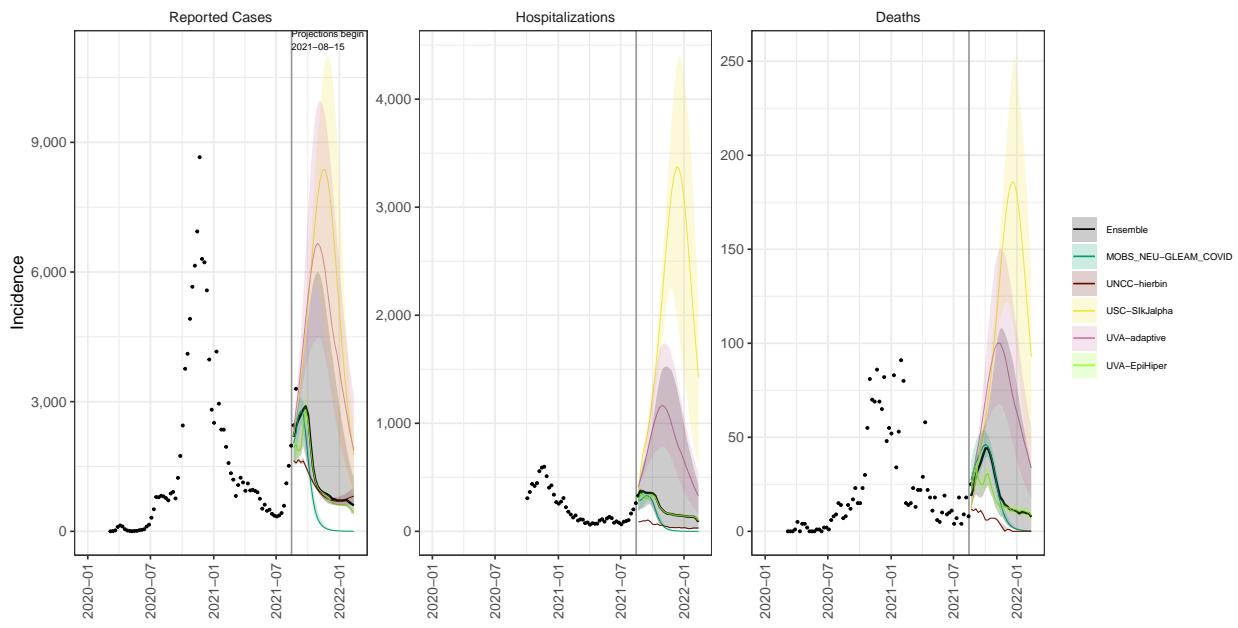
MS model variance & 50% projection intervals – Low protection, Slow waning



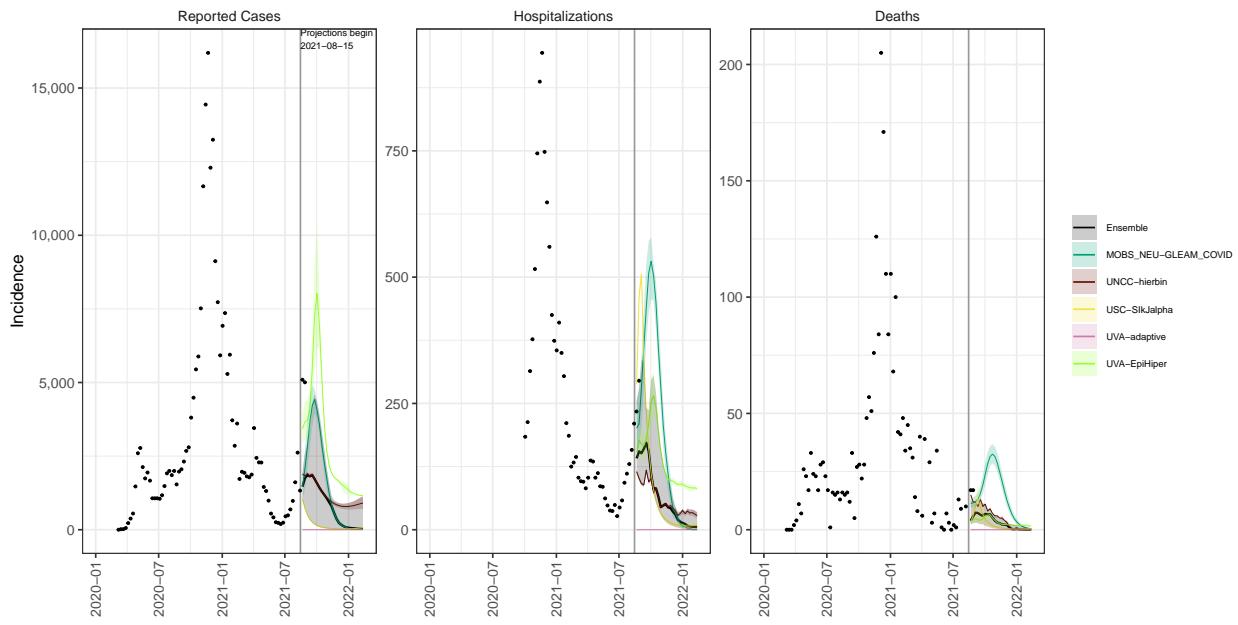
MO model variance & 50% projection intervals – Low protection, Slow waning



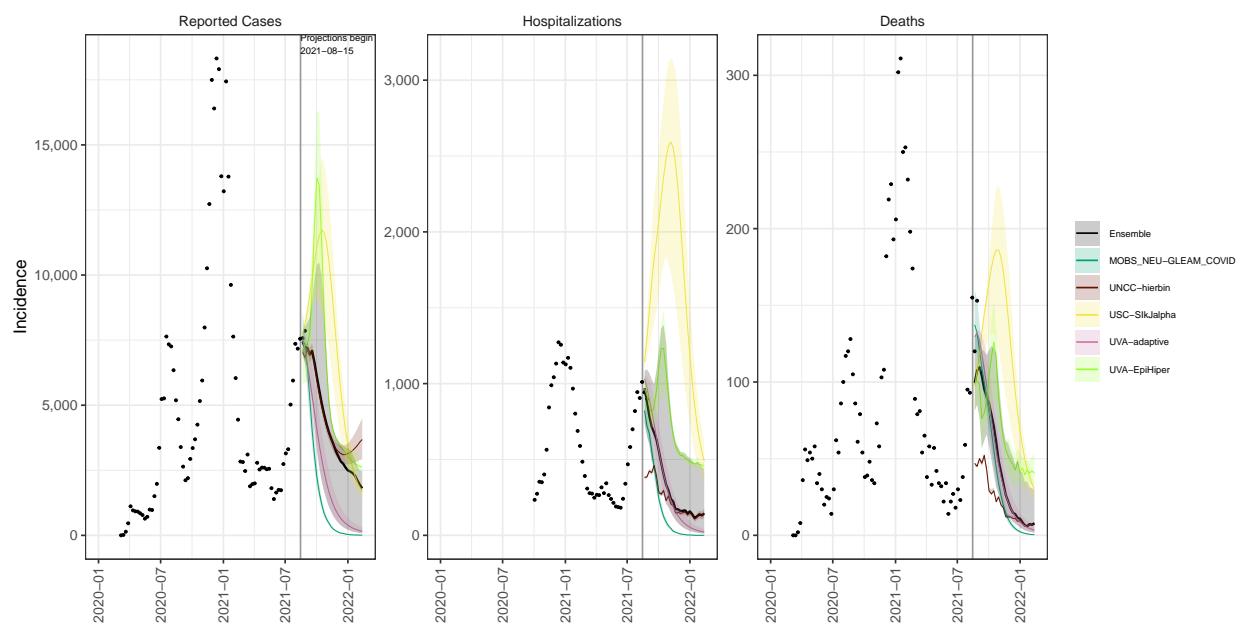
MT model variance & 50% projection intervals – Low protection, Slow waning



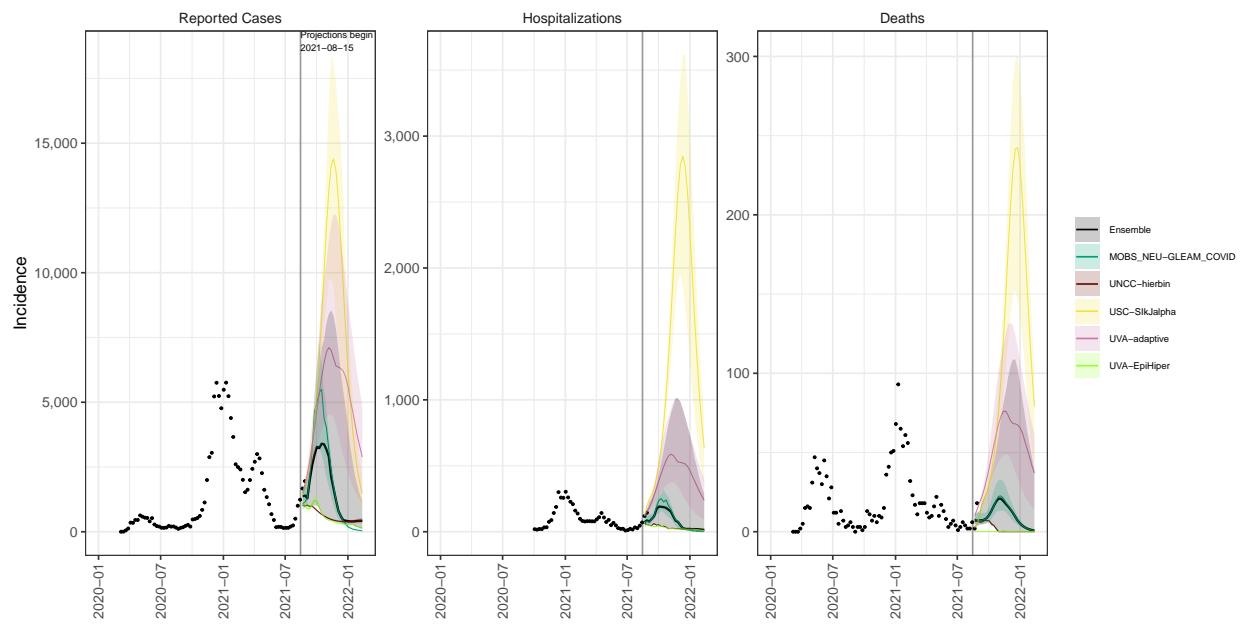
NE model variance & 50% projection intervals – Low protection, Slow waning



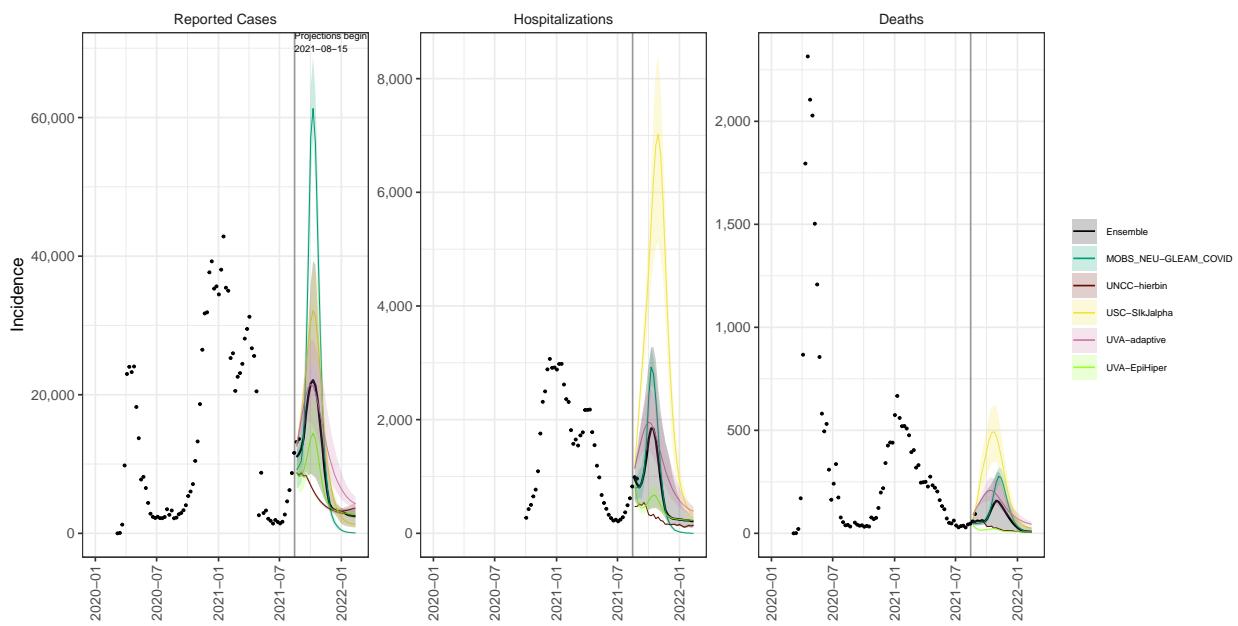
NV model variance & 50% projection intervals – Low protection, Slow waning



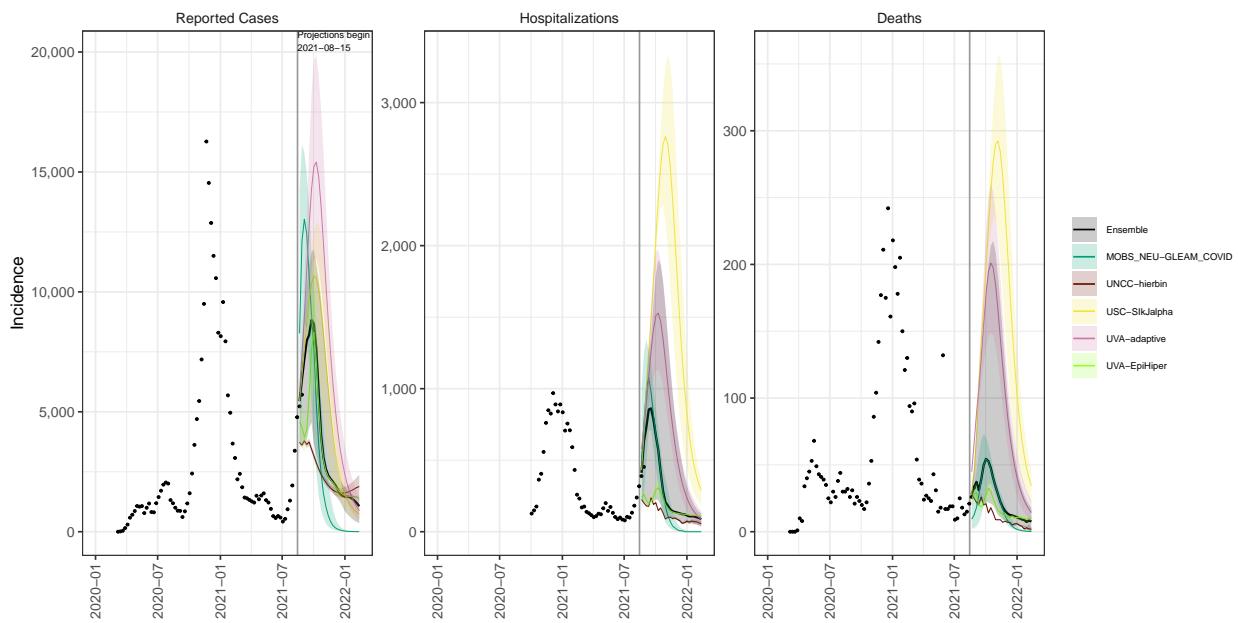
NH model variance & 50% projection intervals – Low protection, Slow waning



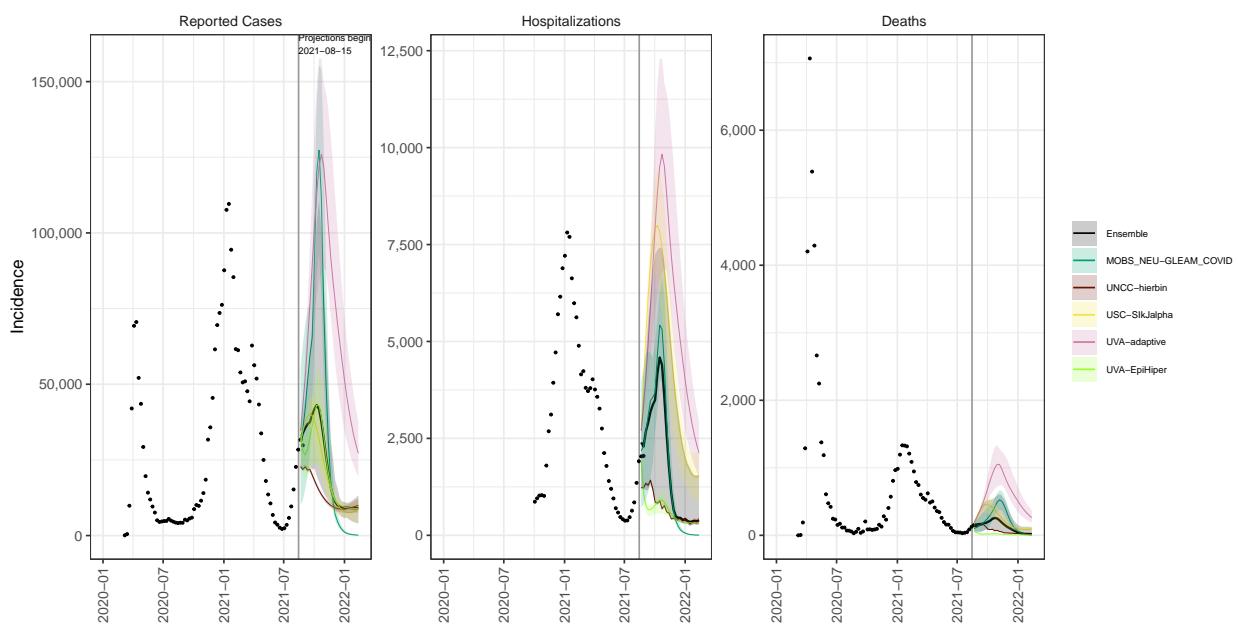
NJ model variance & 50% projection intervals – Low protection, Slow waning



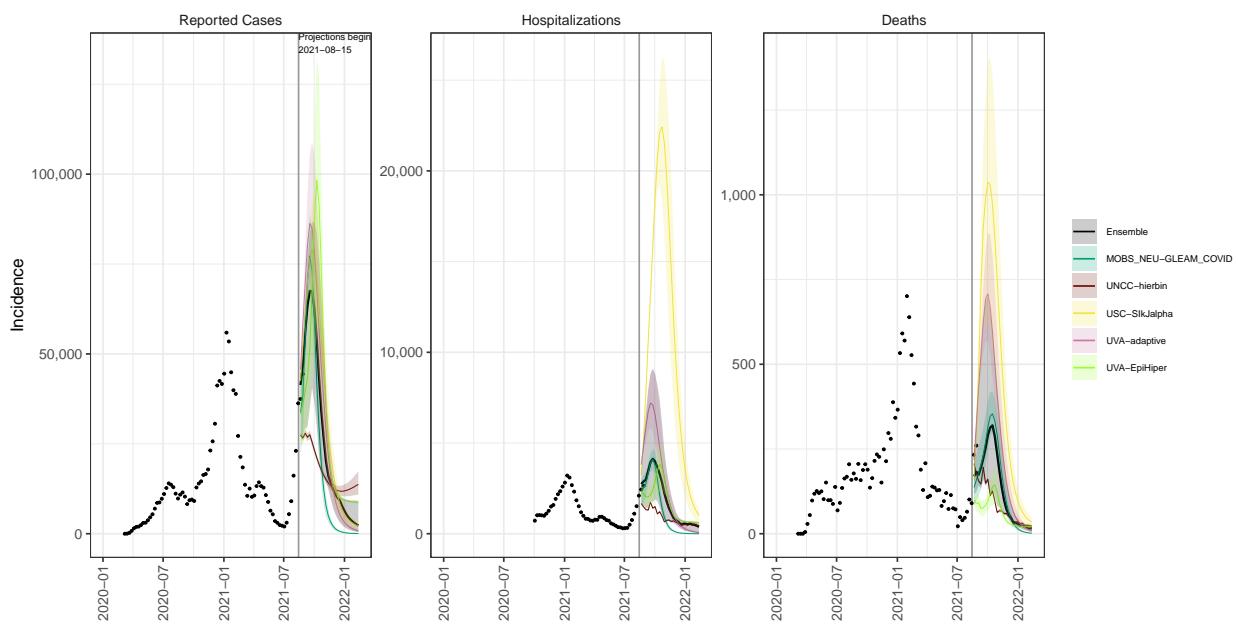
NM model variance & 50% projection intervals – Low protection, Slow waning



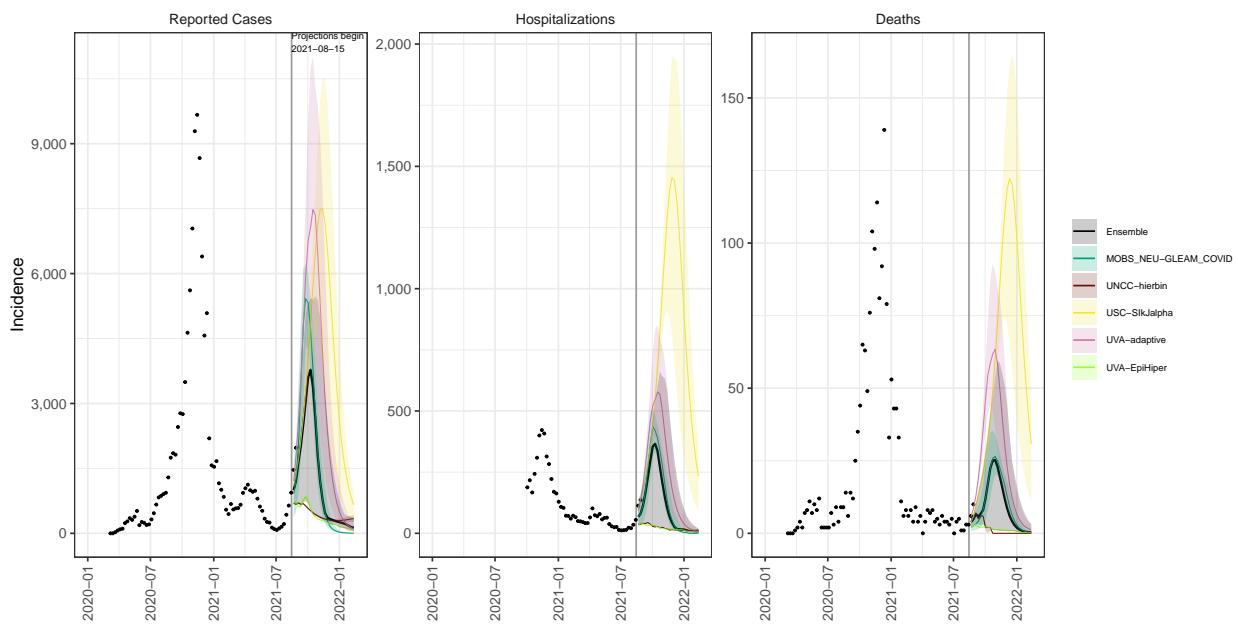
NY model variance & 50% projection intervals – Low protection, Slow waning



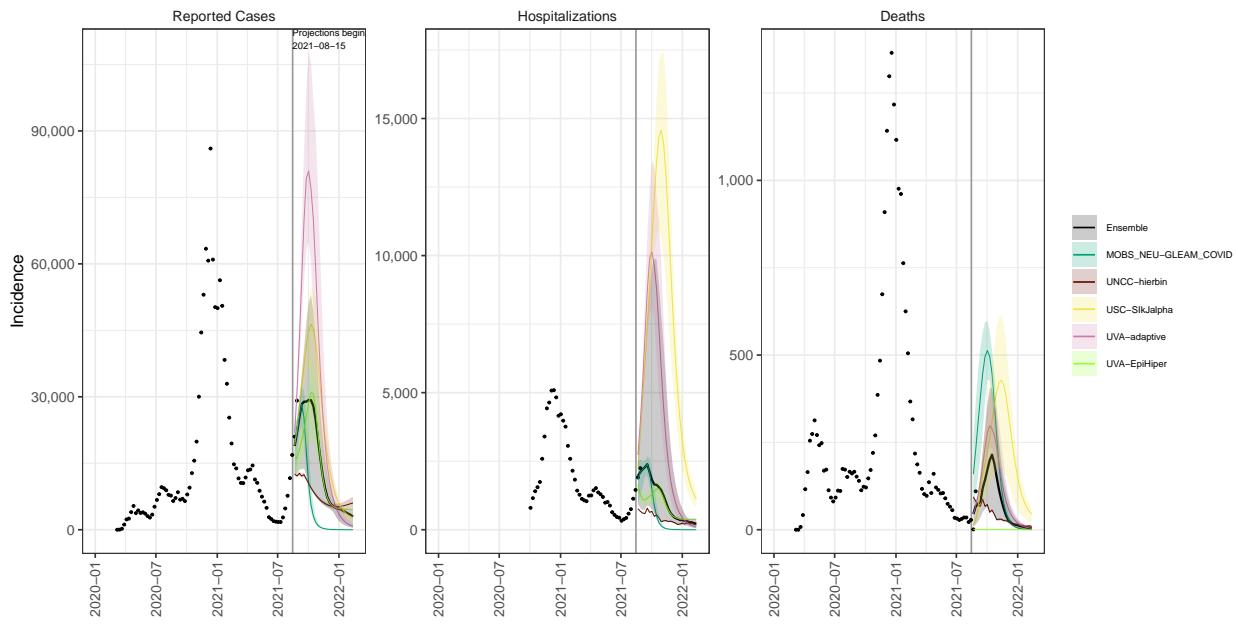
NC model variance & 50% projection intervals – Low protection, Slow waning



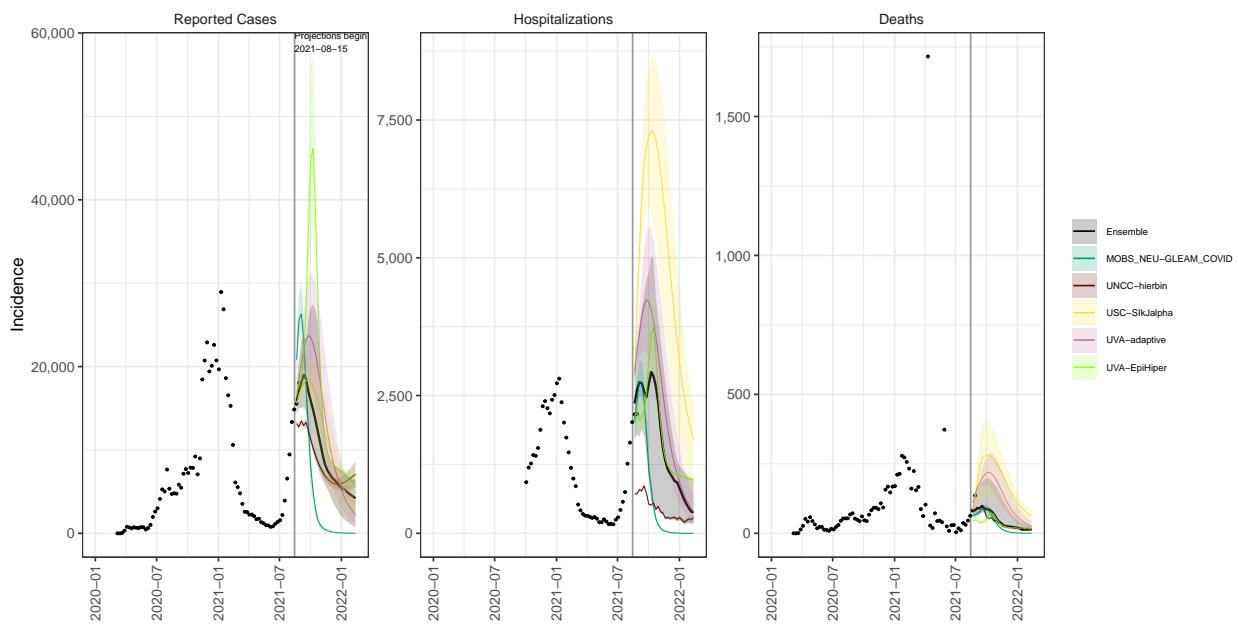
ND model variance & 50% projection intervals – Low protection, Slow waning



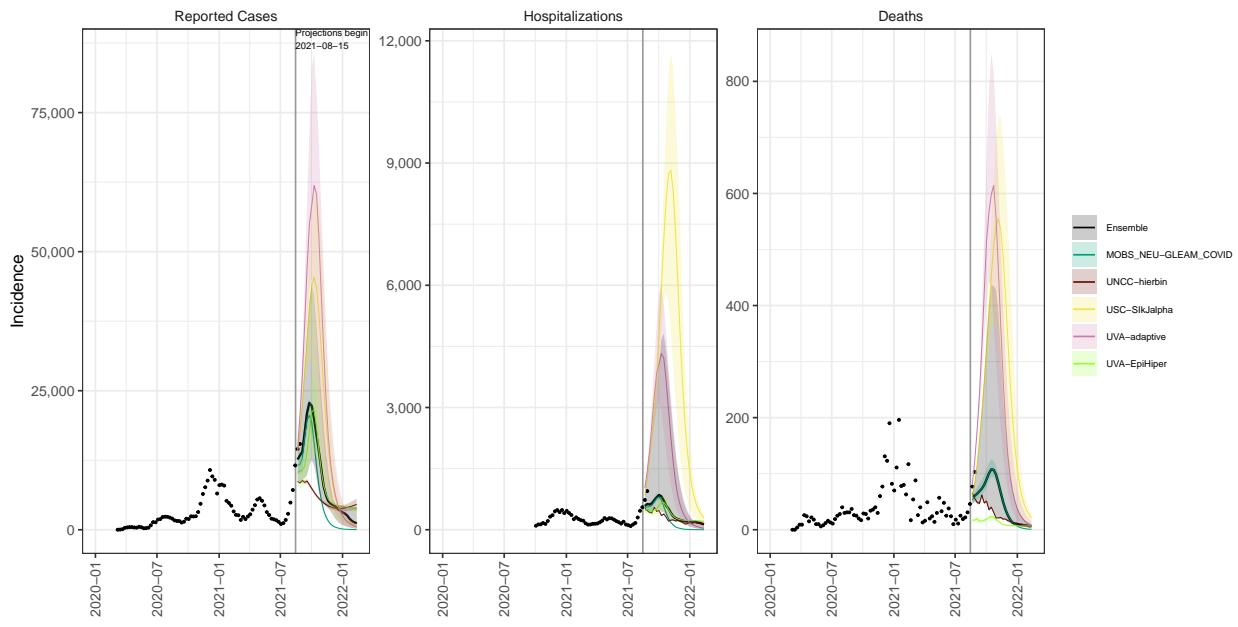
OH model variance & 50% projection intervals – Low protection, Slow waning



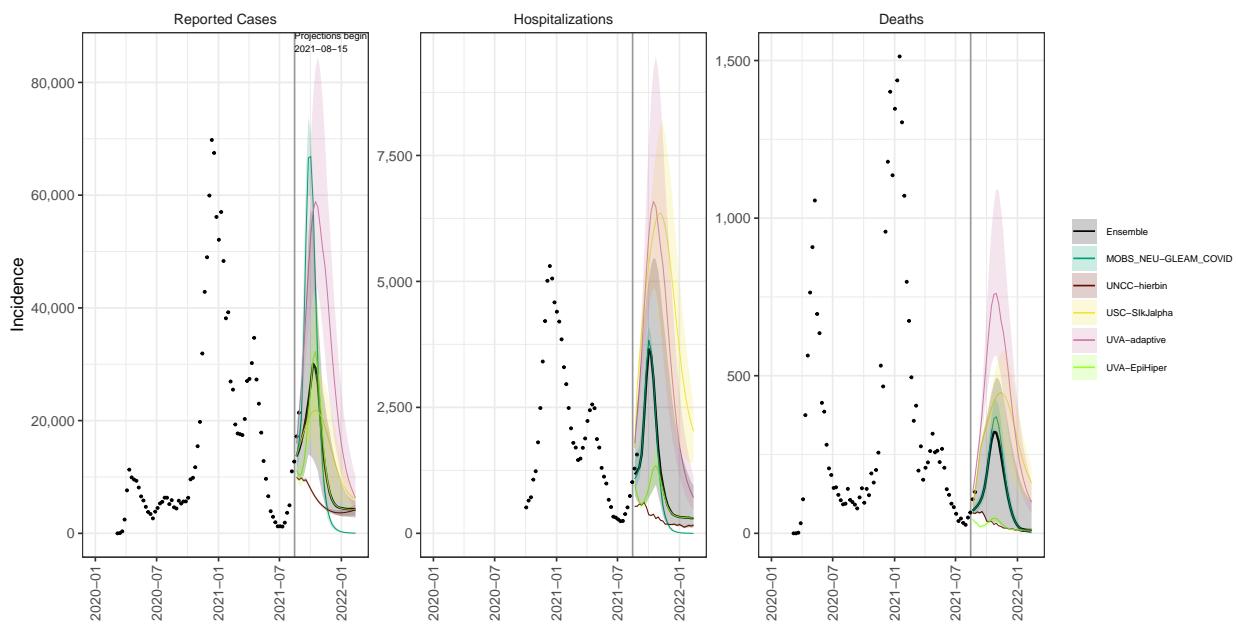
OK model variance & 50% projection intervals – Low protection, Slow waning



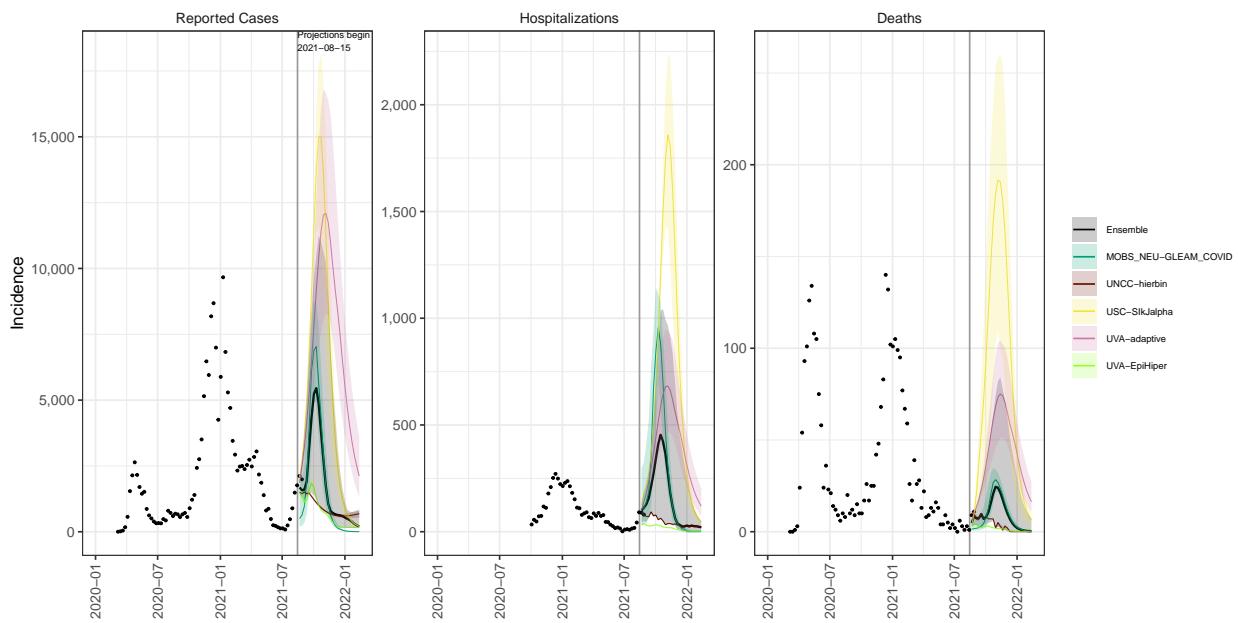
OR model variance & 50% projection intervals – Low protection, Slow waning



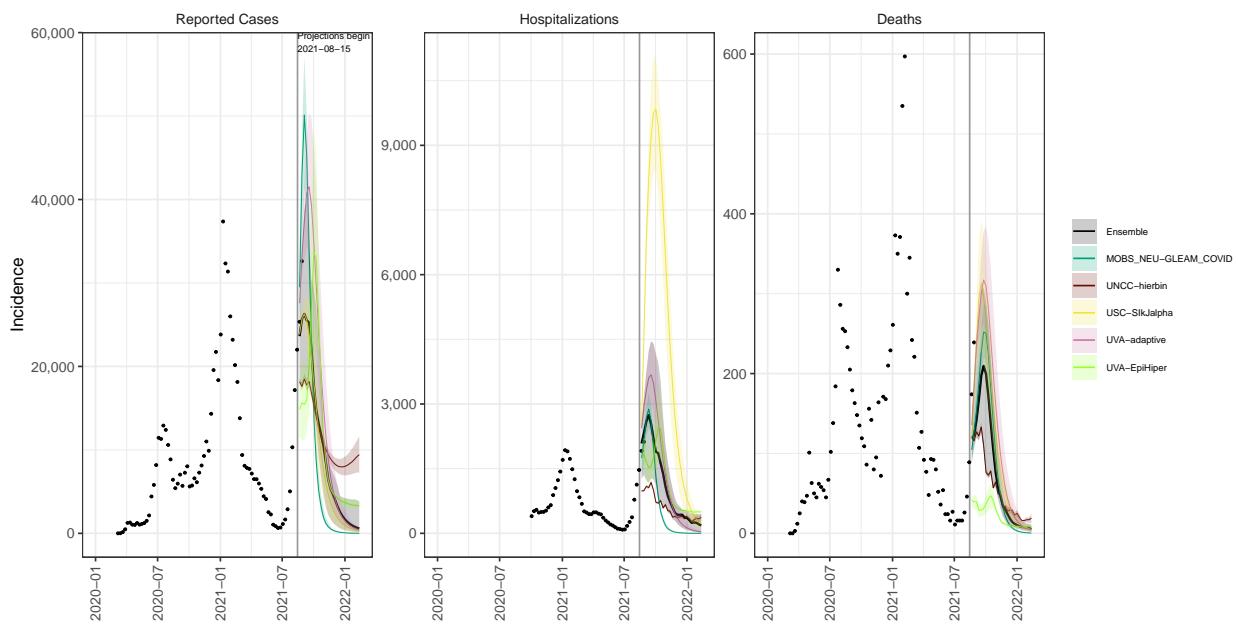
PA model variance & 50% projection intervals – Low protection, Slow waning



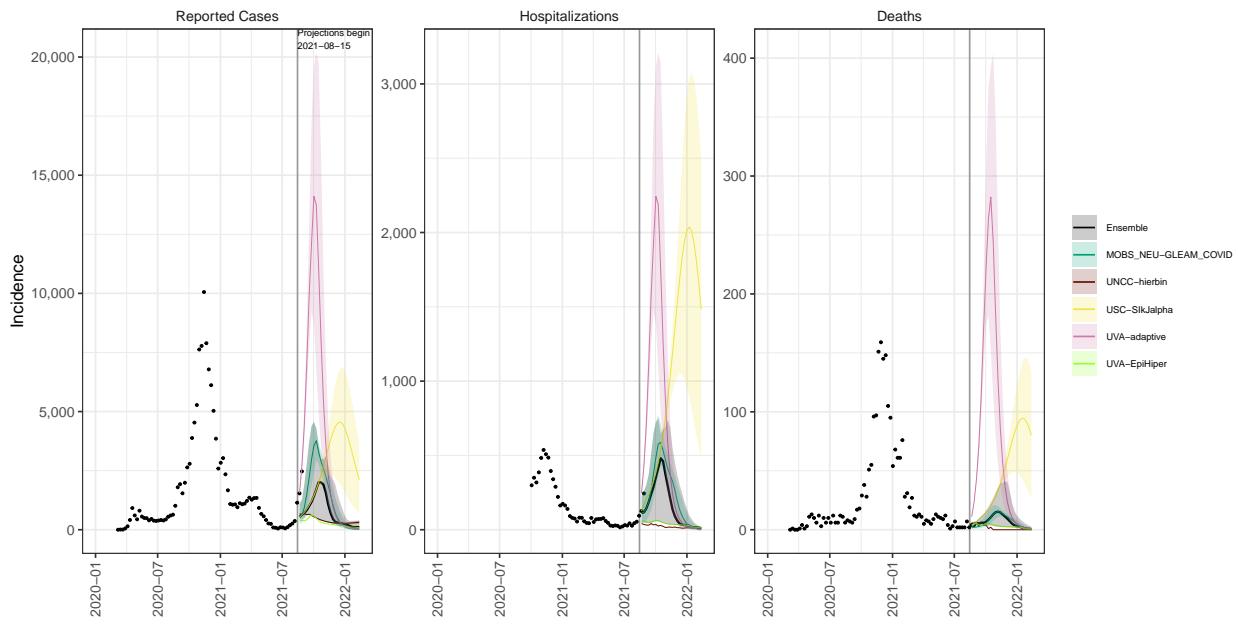
RI model variance & 50% projection intervals – Low protection, Slow waning



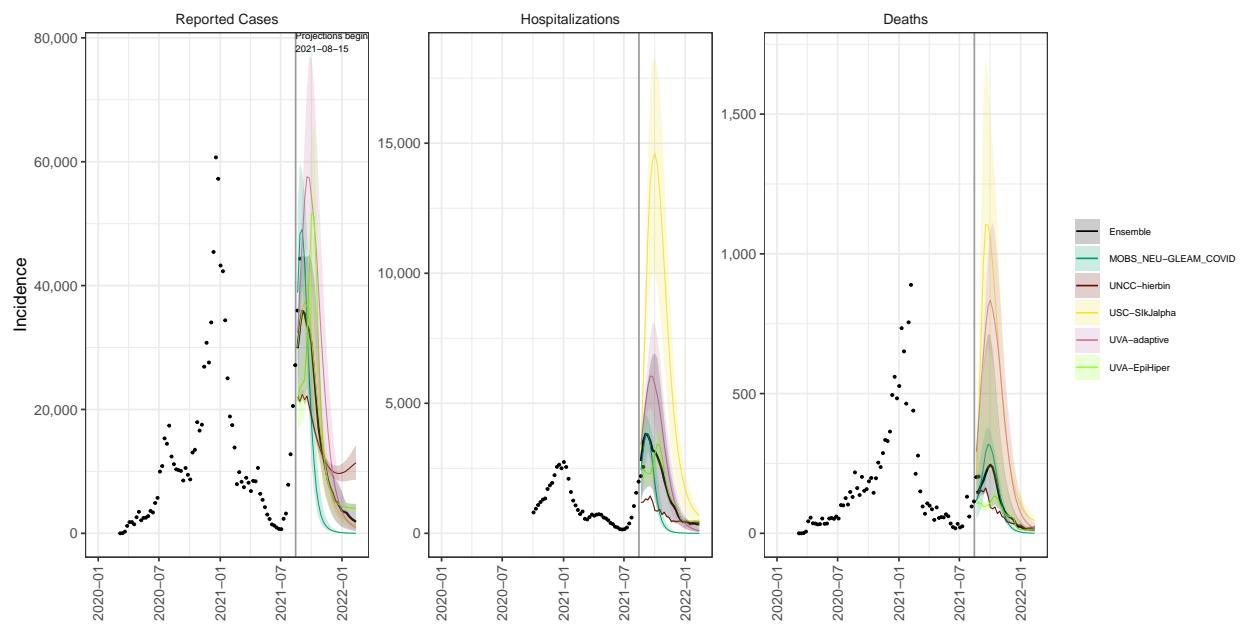
SC model variance & 50% projection intervals – Low protection, Slow waning



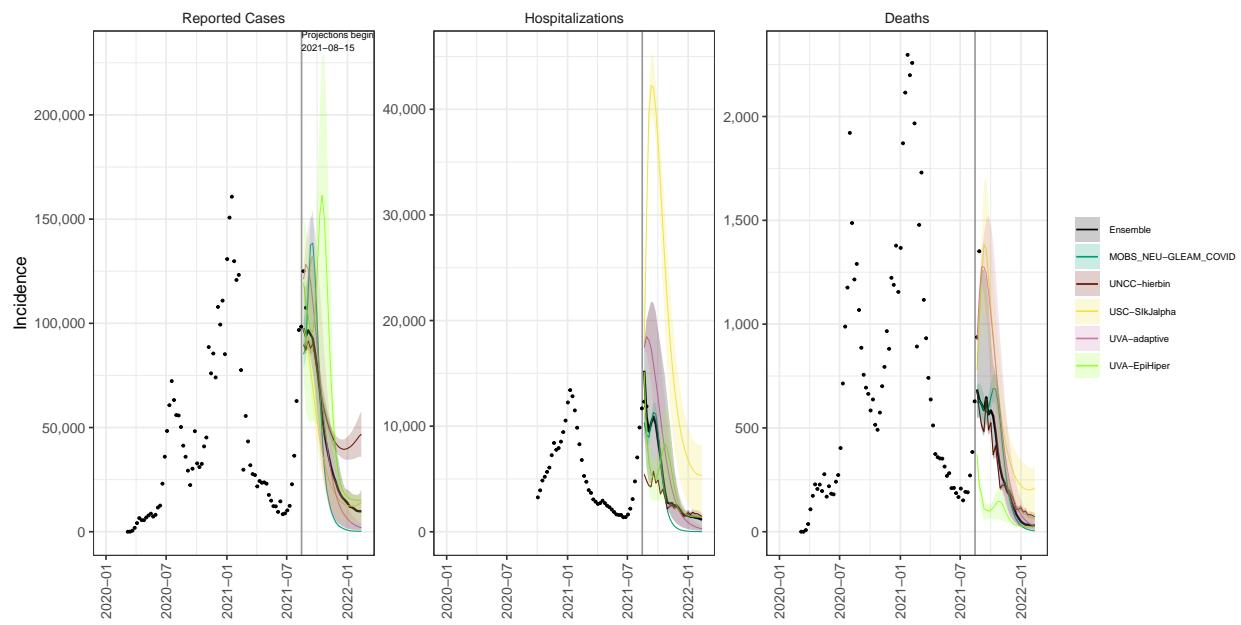
SD model variance & 50% projection intervals – Low protection, Slow waning



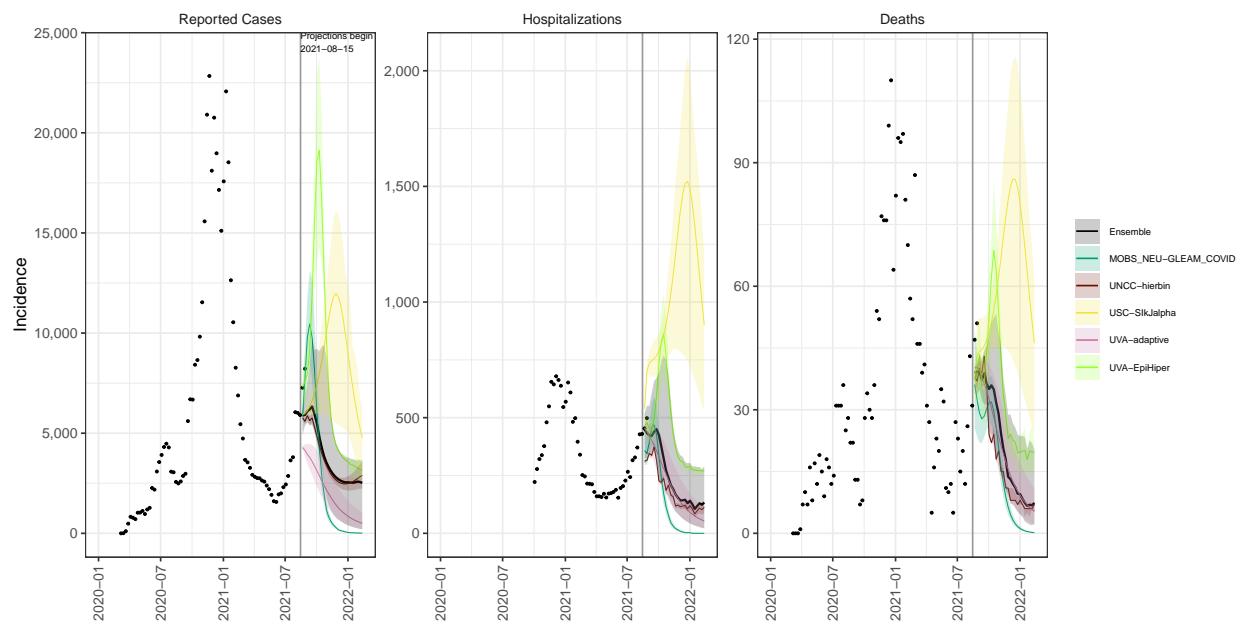
TN model variance & 50% projection intervals – Low protection, Slow waning



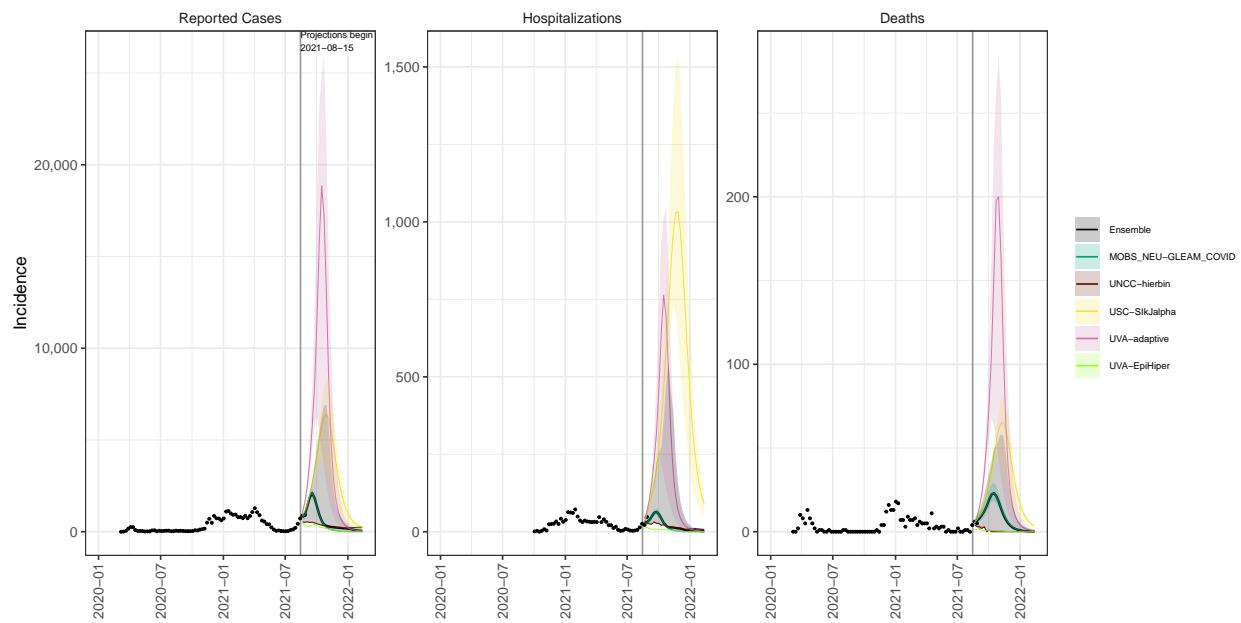
TX model variance & 50% projection intervals – Low protection, Slow waning



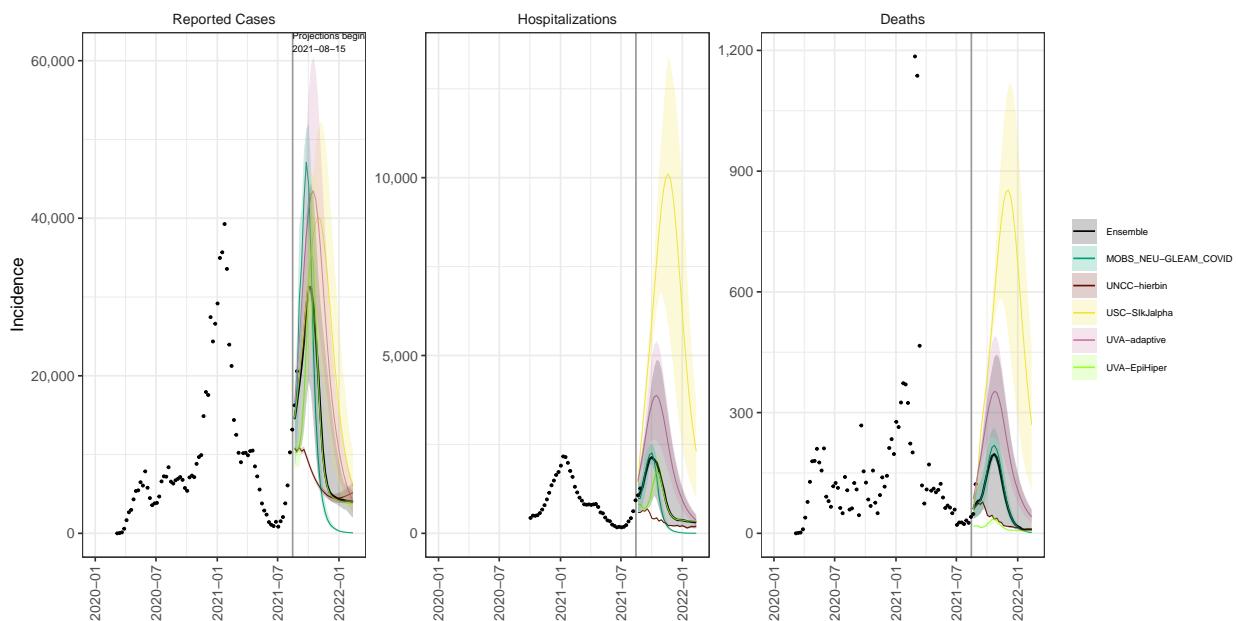
UT model variance & 50% projection intervals – Low protection, Slow waning



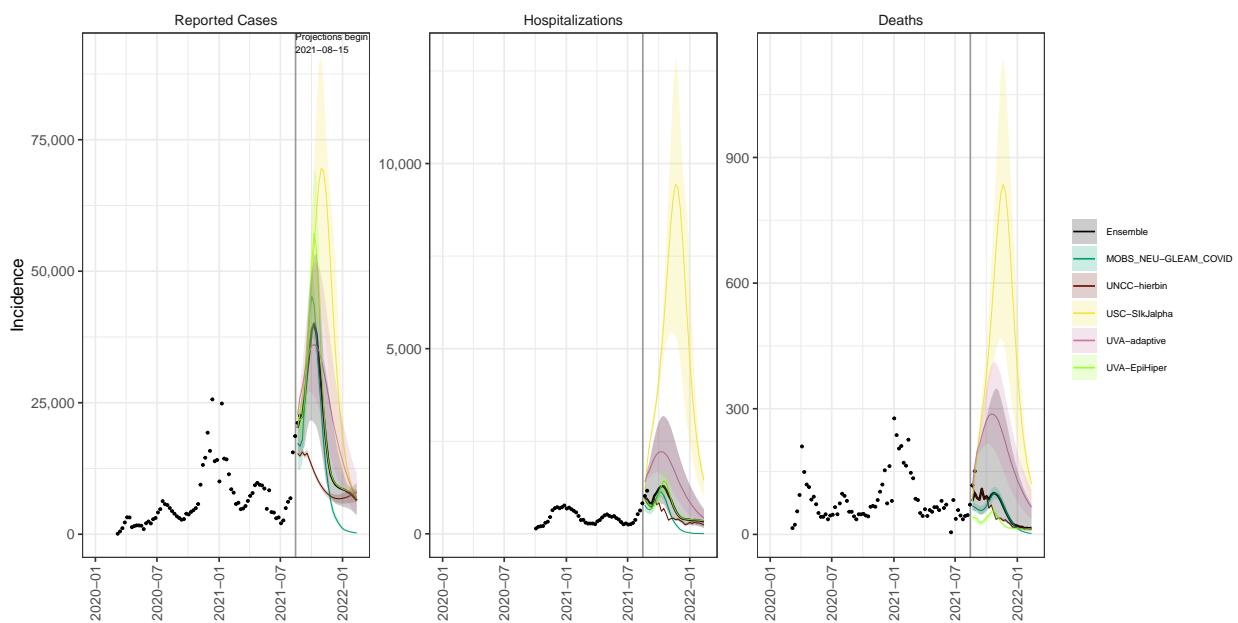
VT model variance & 50% projection intervals – Low protection, Slow waning



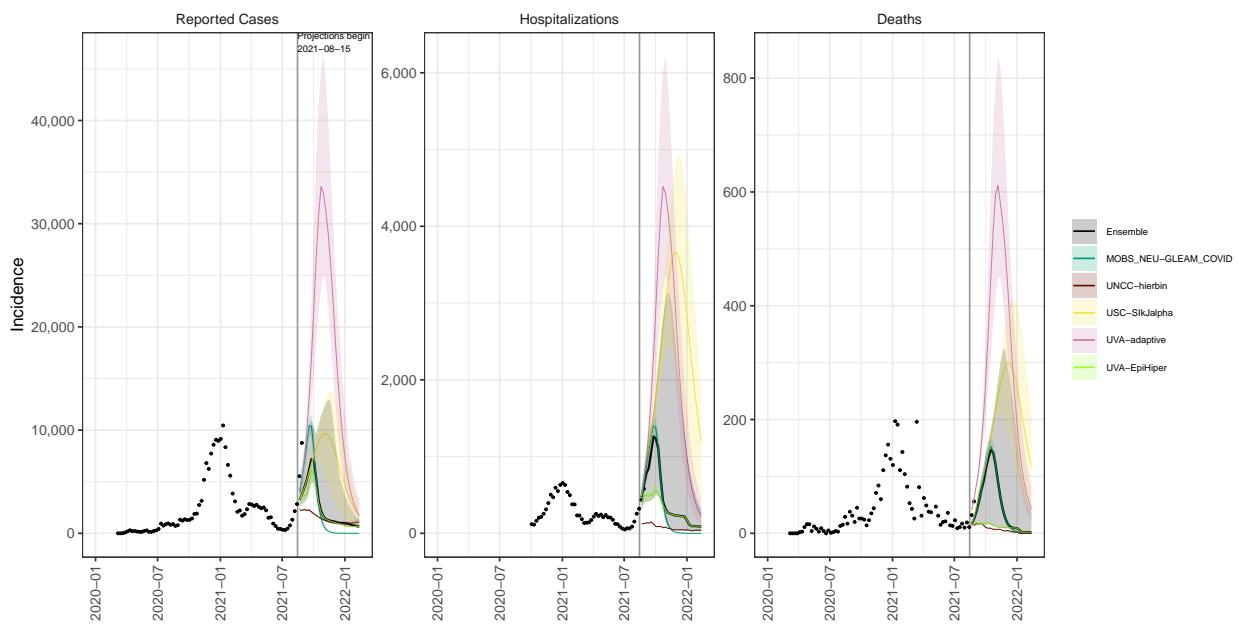
VA model variance & 50% projection intervals – Low protection, Slow waning



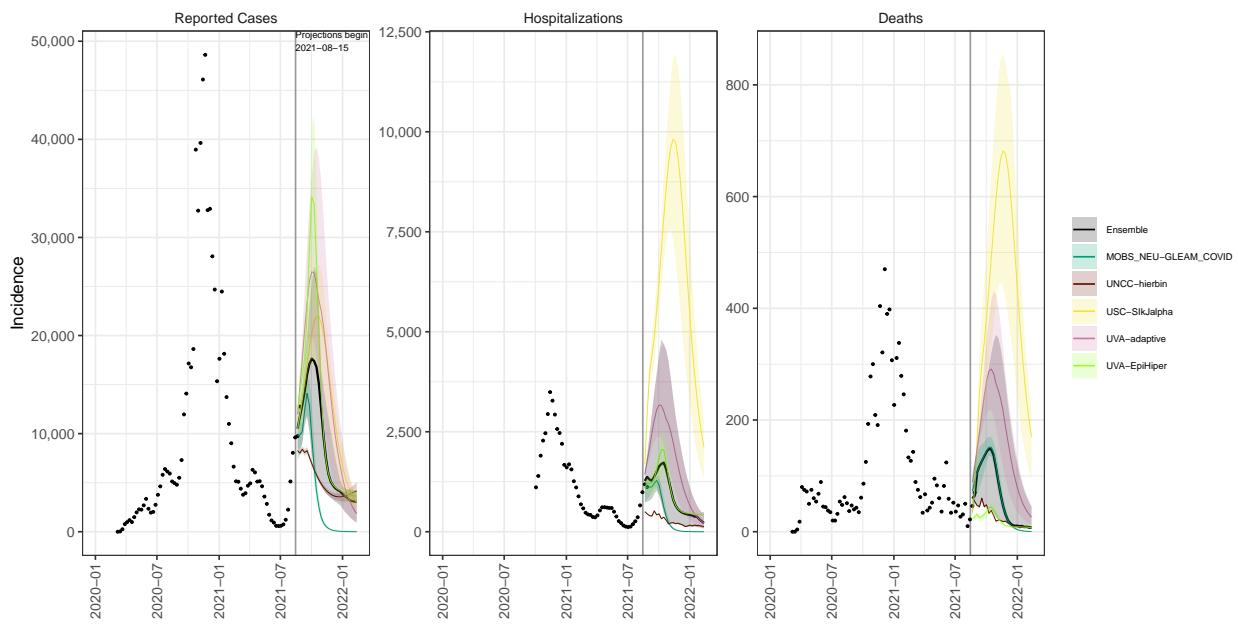
WA model variance & 50% projection intervals – Low protection, Slow waning



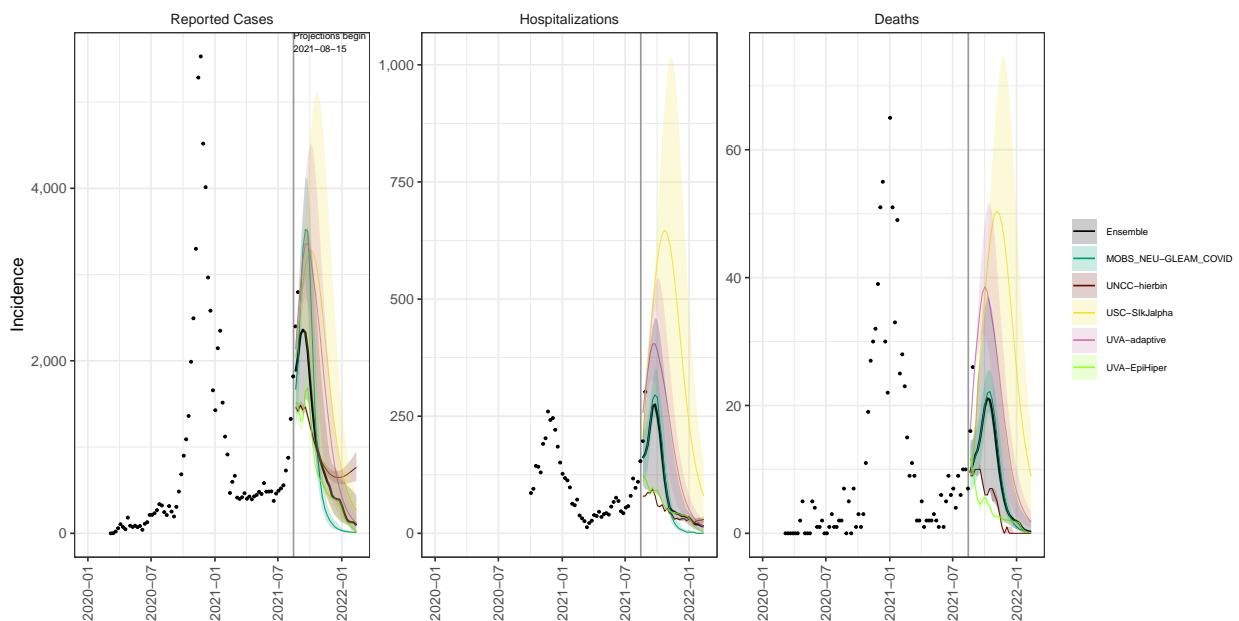
WV model variance & 50% projection intervals – Low protection, Slow waning



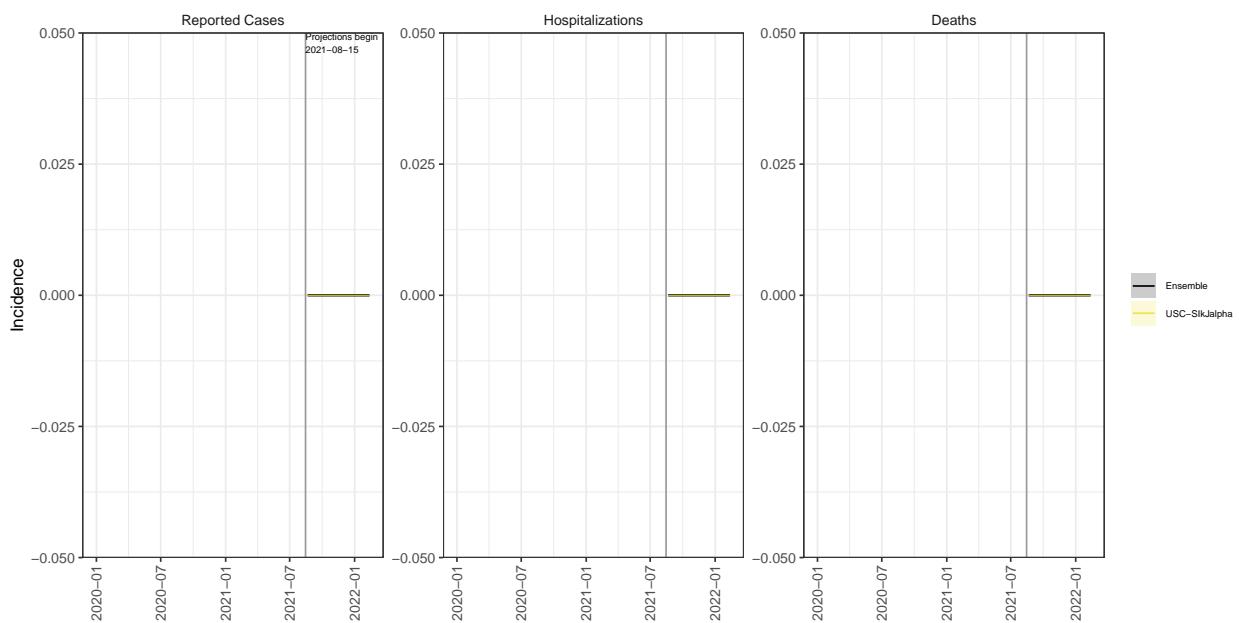
WI model variance & 50% projection intervals – Low protection, Slow waning



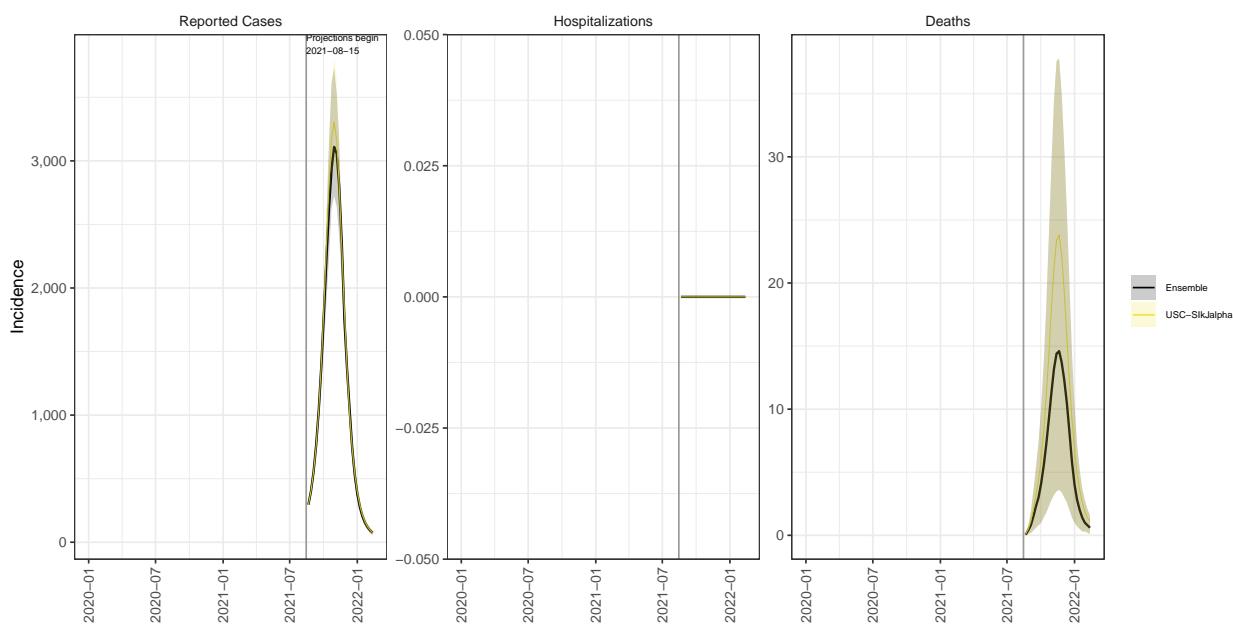
WY model variance & 50% projection intervals – Low protection, Slow waning



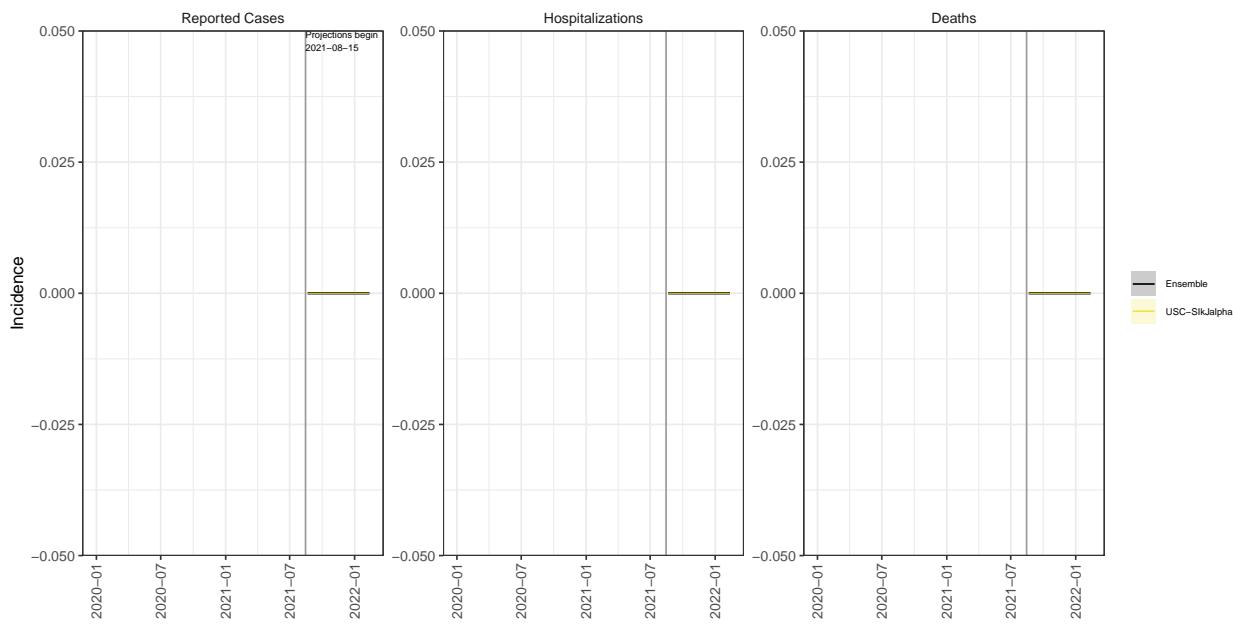
AS model variance & 50% projection intervals – Low protection, Slow waning



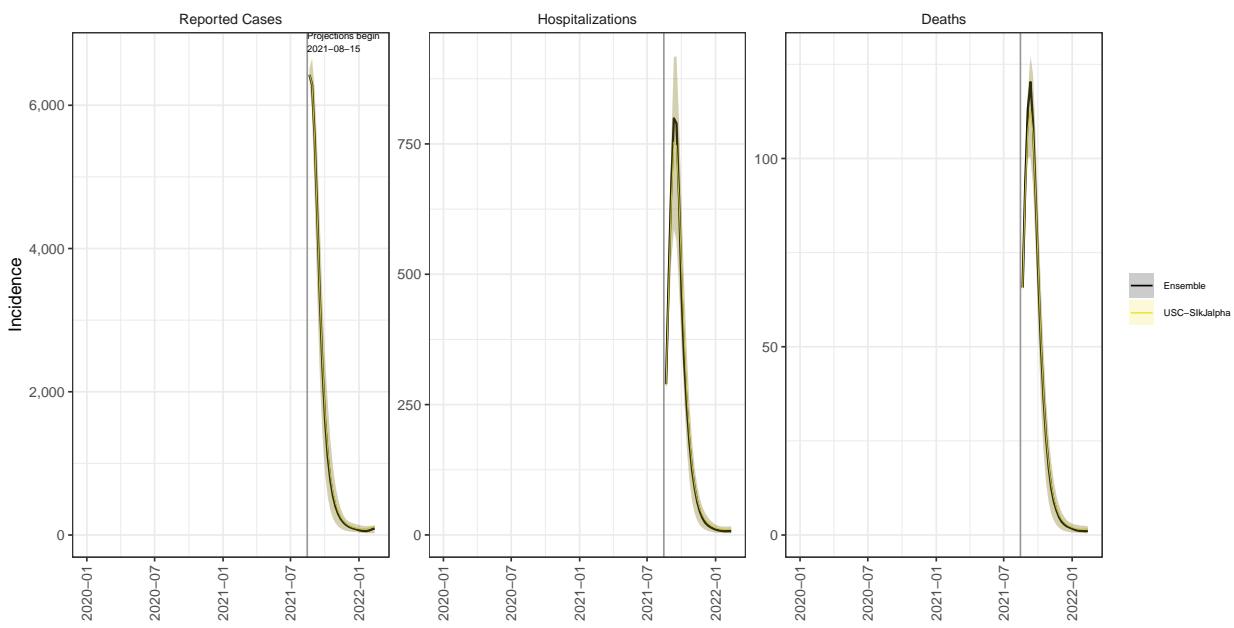
GU model variance & 50% projection intervals – Low protection, Slow waning



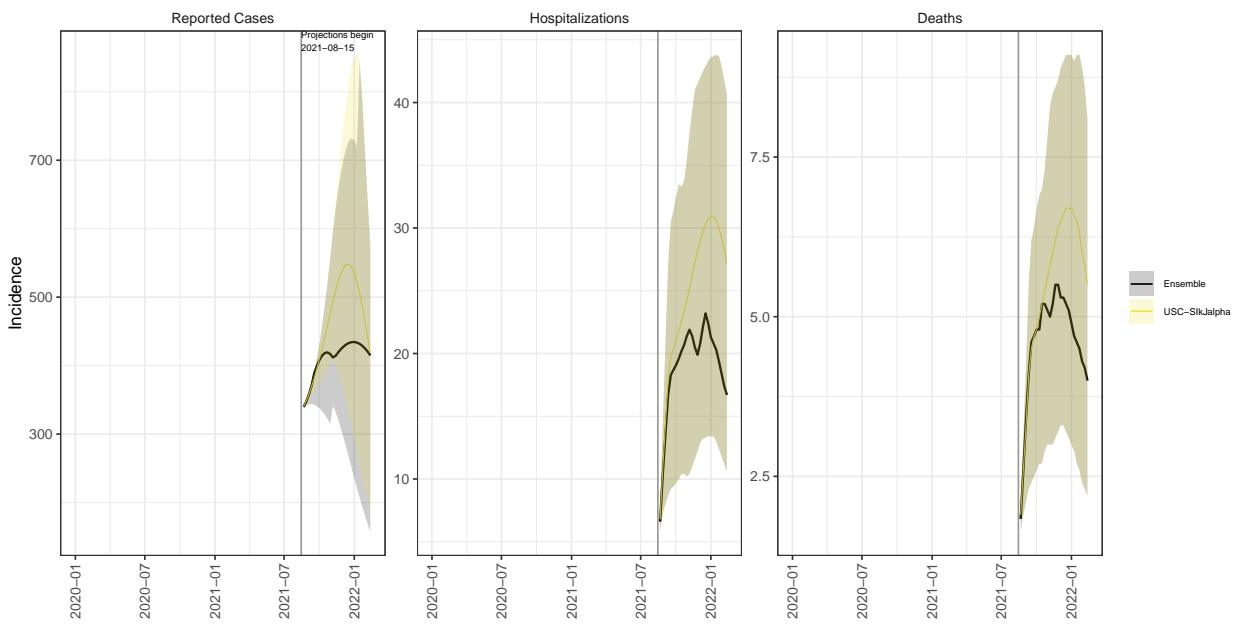
MP model variance & 50% projection intervals – Low protection, Slow waning



PR model variance & 50% projection intervals – Low protection, Slow waning

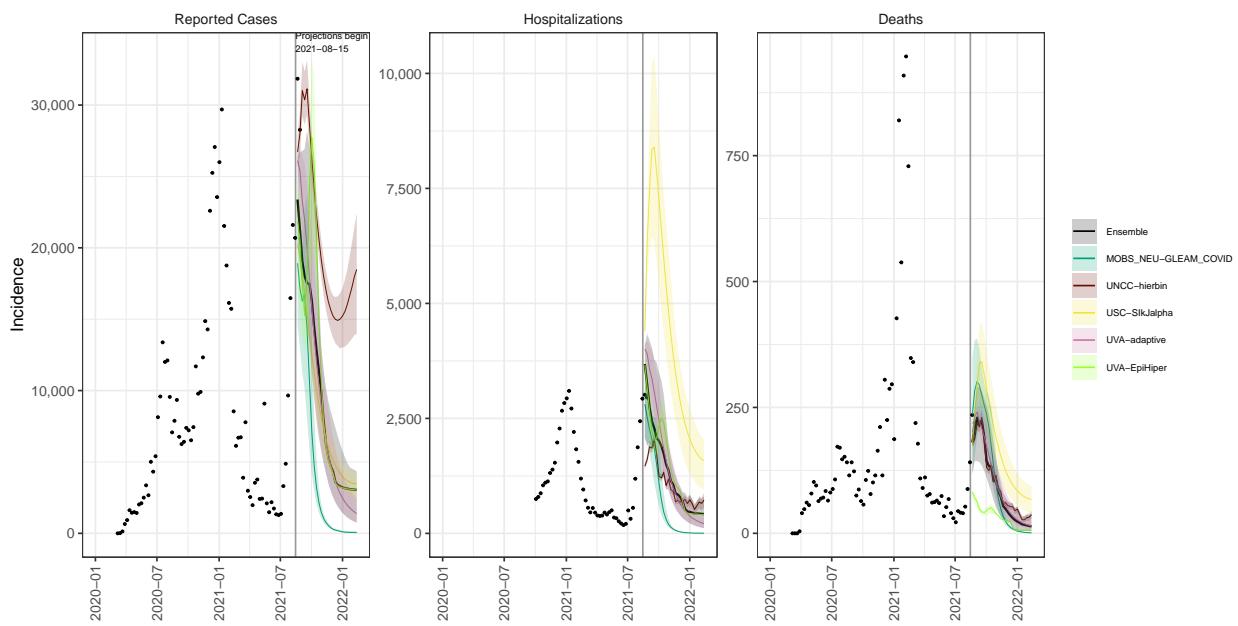


VI model variance & 50% projection intervals – Low protection, Slow waning

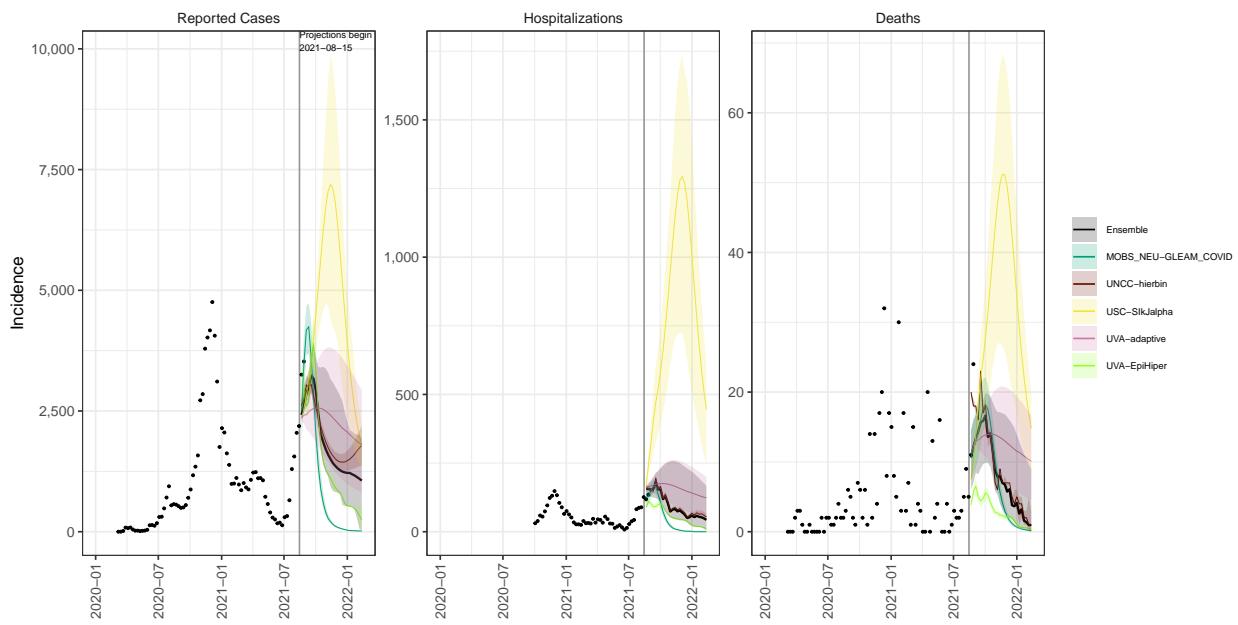


National model variation for the low protection, fast waning scenario

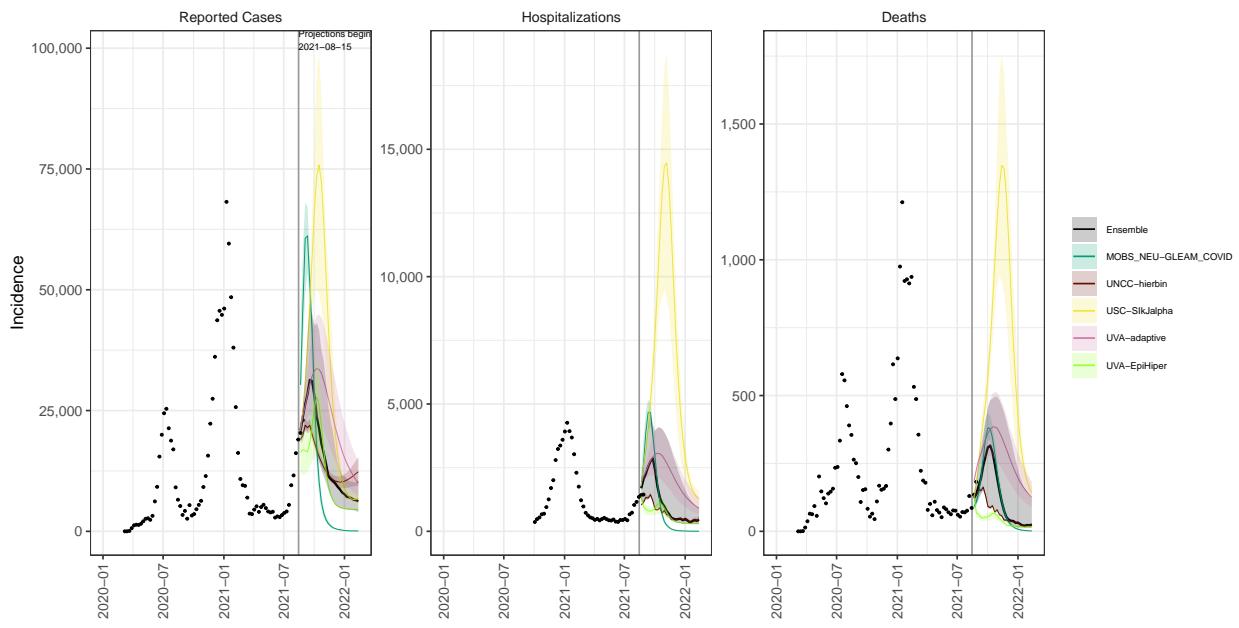
AL model variance & 50% projection intervals – Low protection, Fast waning



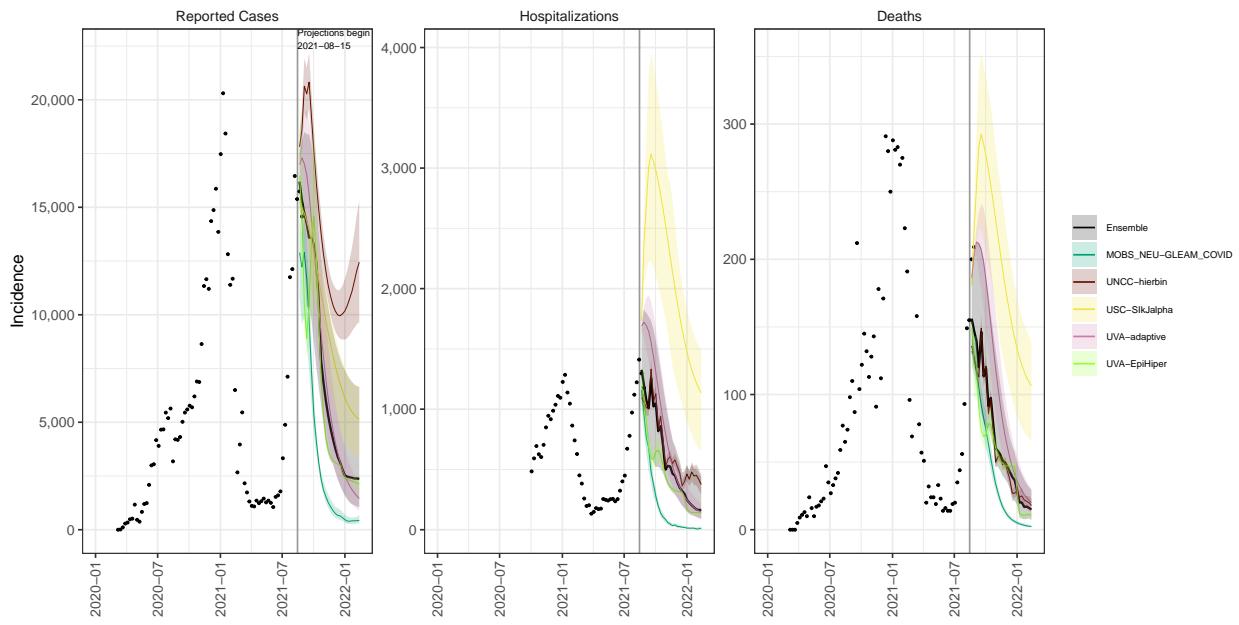
AK model variance & 50% projection intervals – Low protection, Fast waning



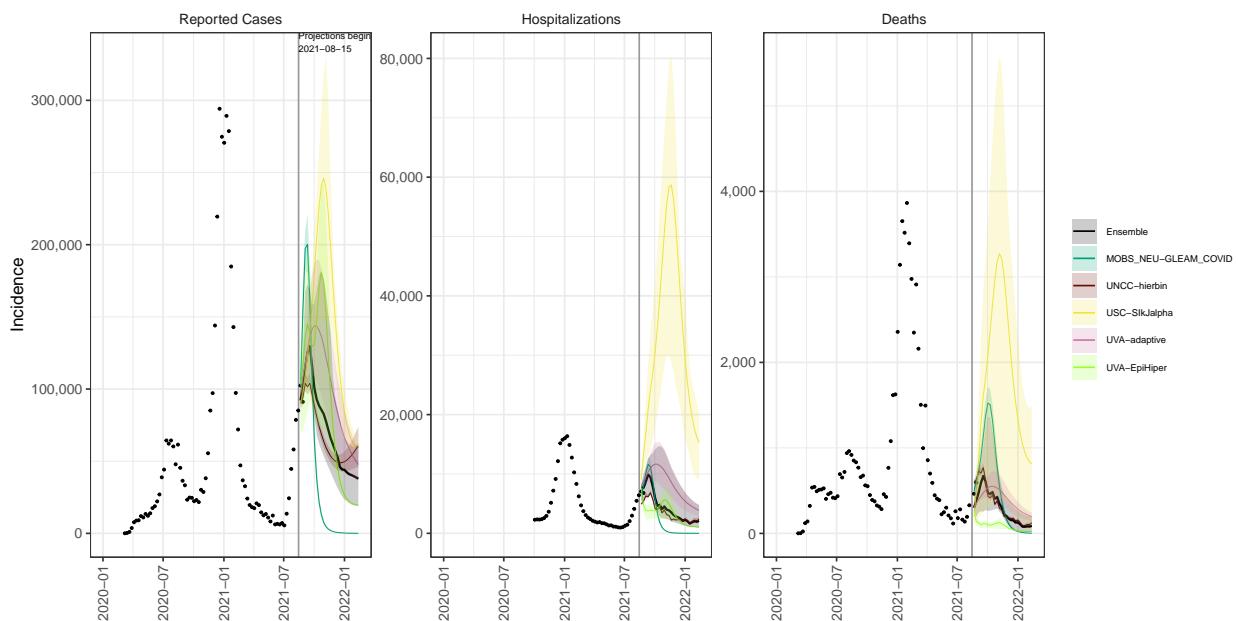
AZ model variance & 50% projection intervals – Low protection, Fast waning



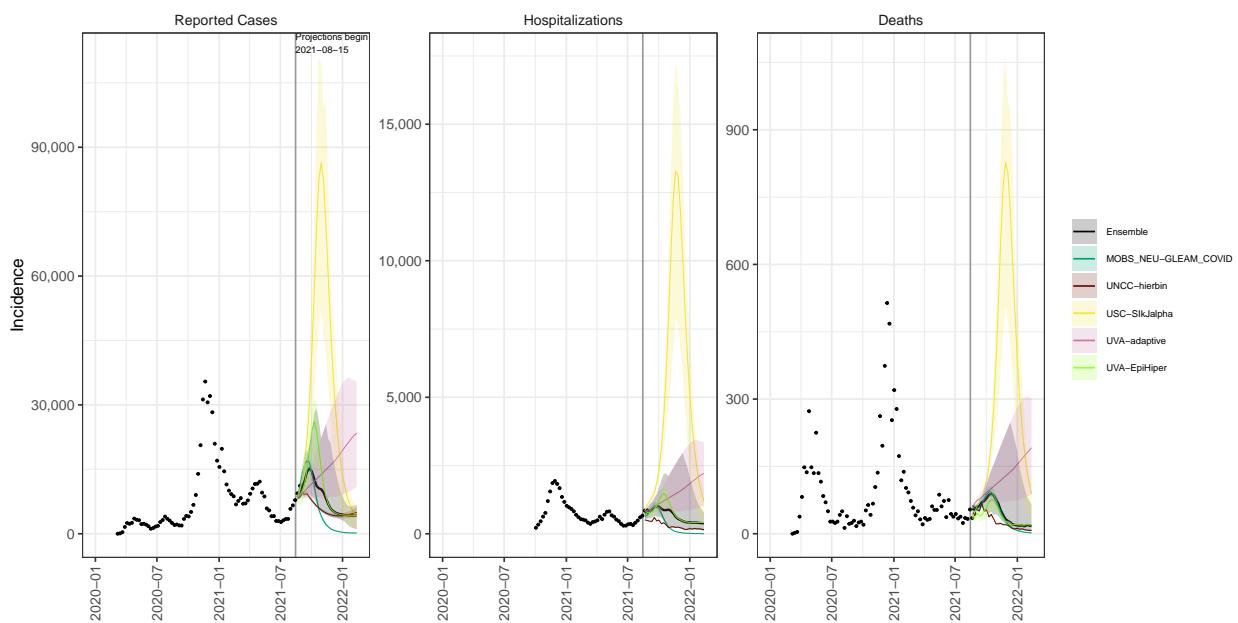
AR model variance & 50% projection intervals – Low protection, Fast waning



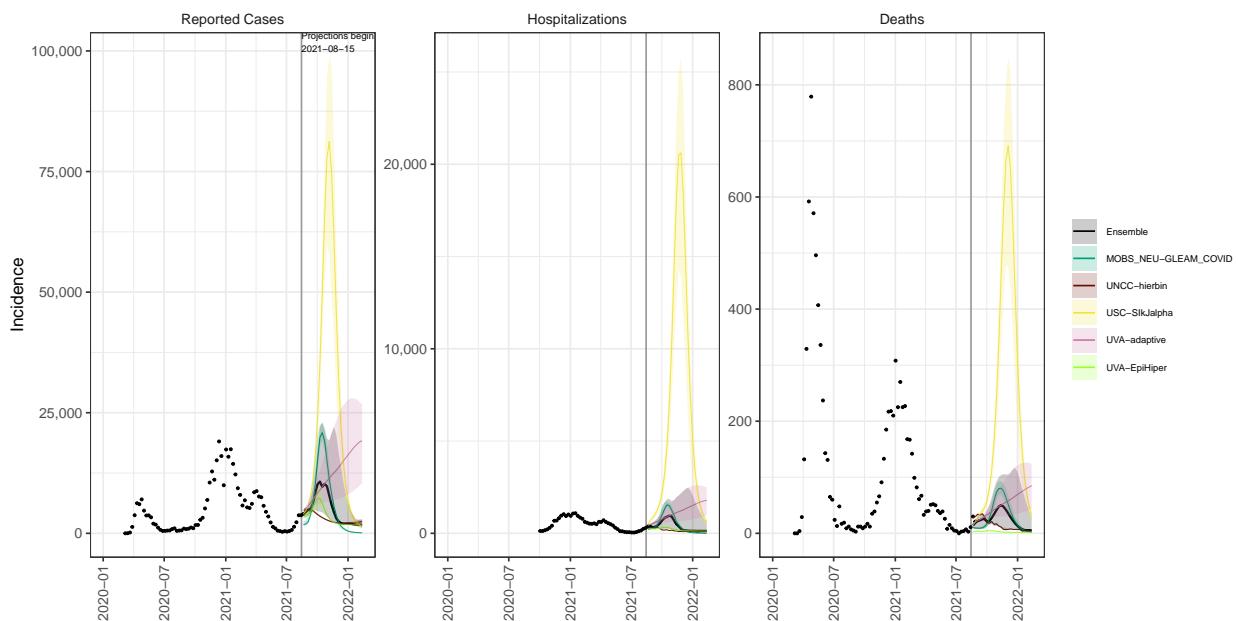
CA model variance & 50% projection intervals – Low protection, Fast waning



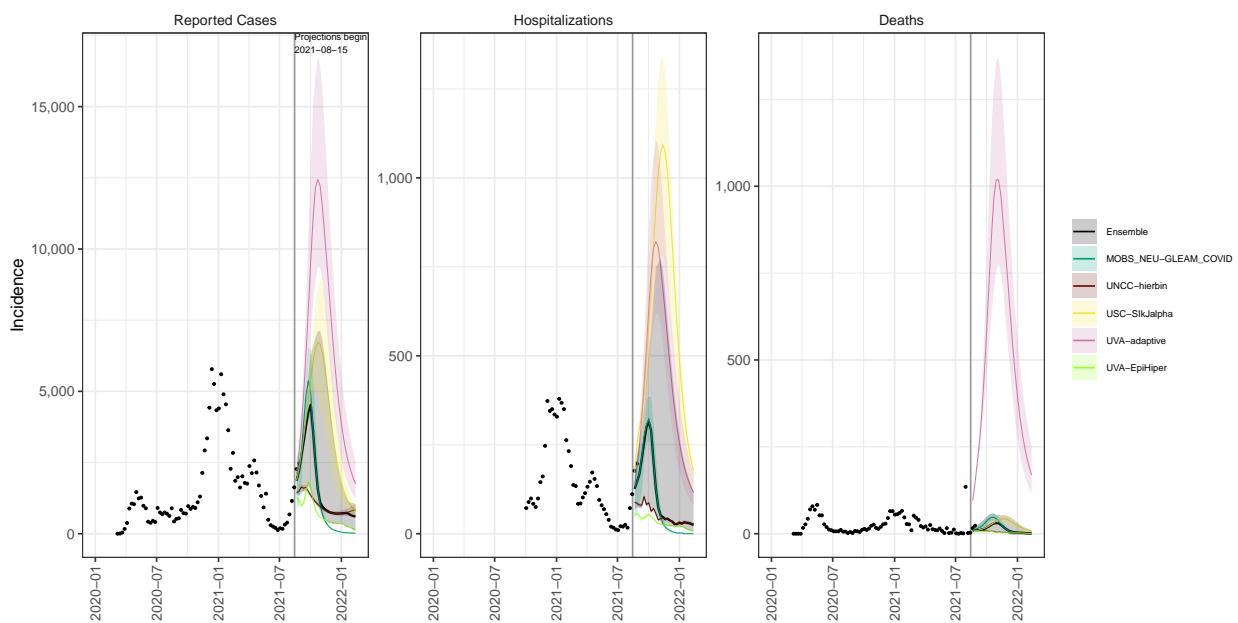
CO model variance & 50% projection intervals – Low protection, Fast waning



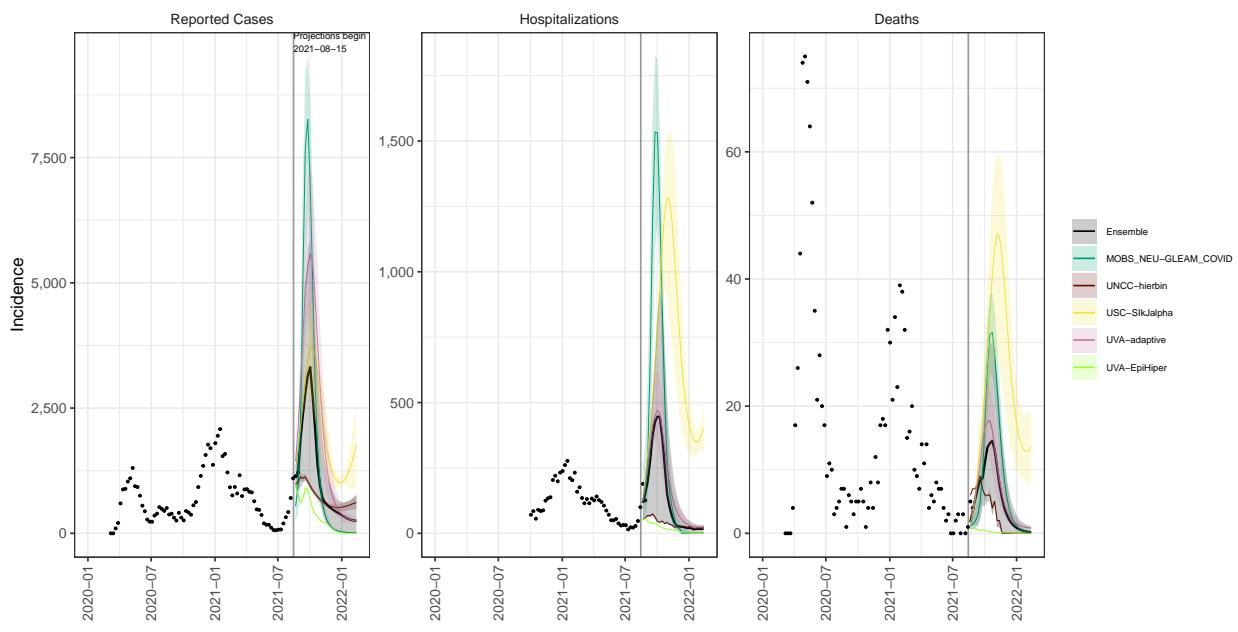
CT model variance & 50% projection intervals – Low protection, Fast waning



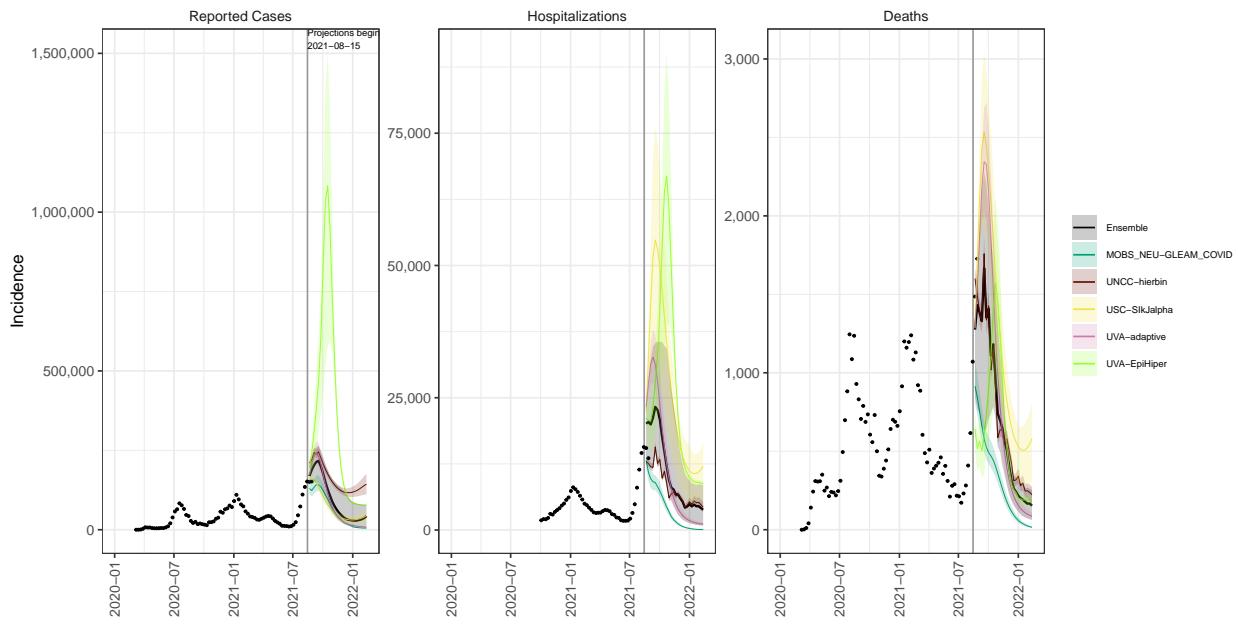
DE model variance & 50% projection intervals – Low protection, Fast waning



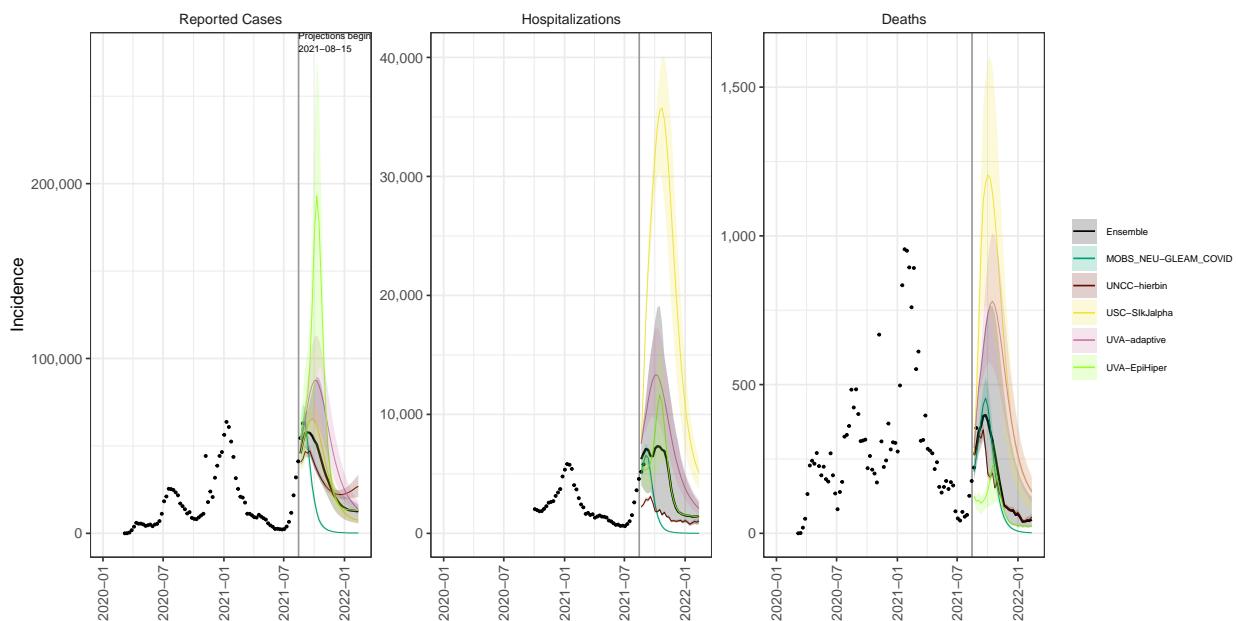
DC model variance & 50% projection intervals – Low protection, Fast waning



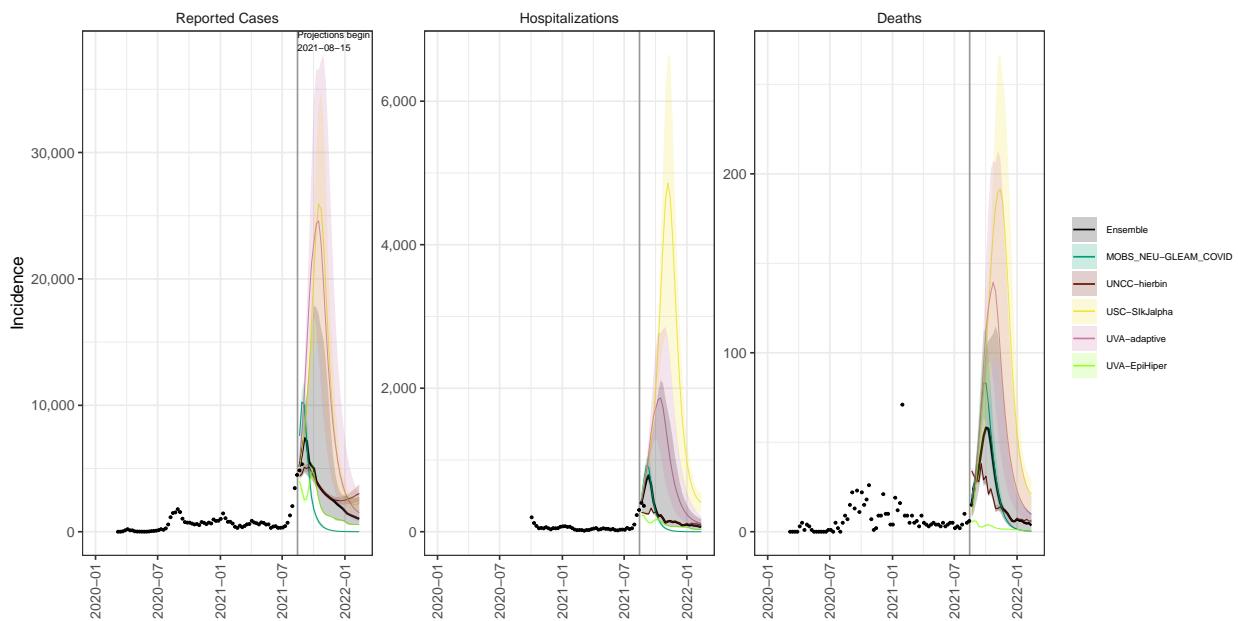
FL model variance & 50% projection intervals – Low protection, Fast waning



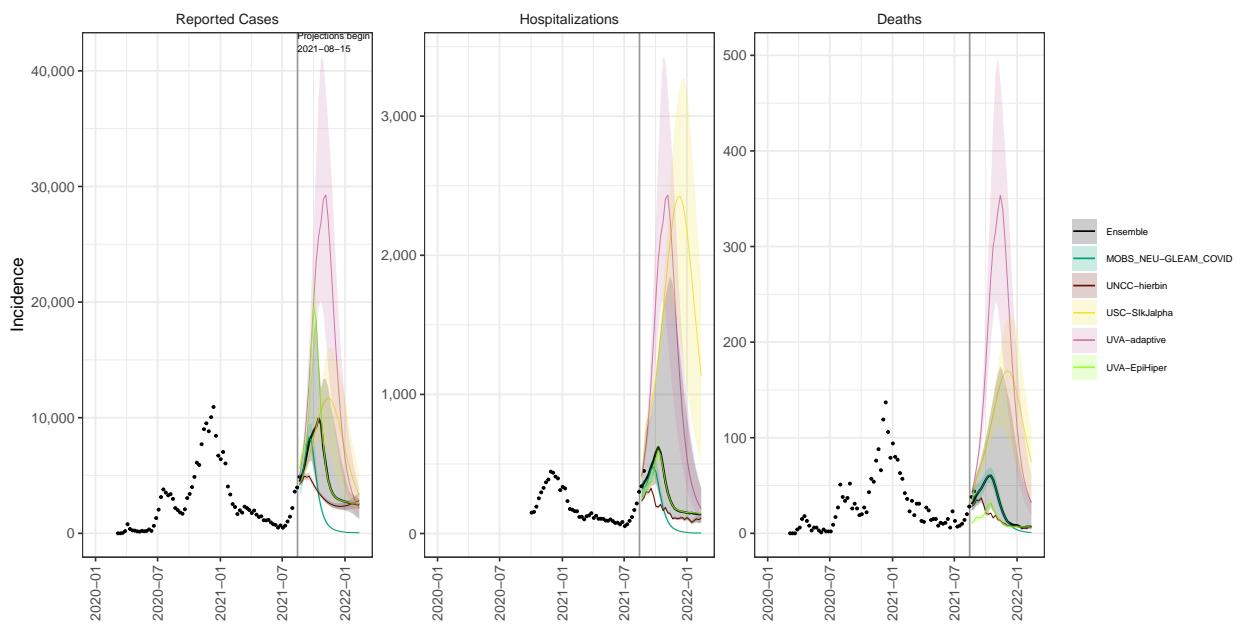
GA model variance & 50% projection intervals – Low protection, Fast waning



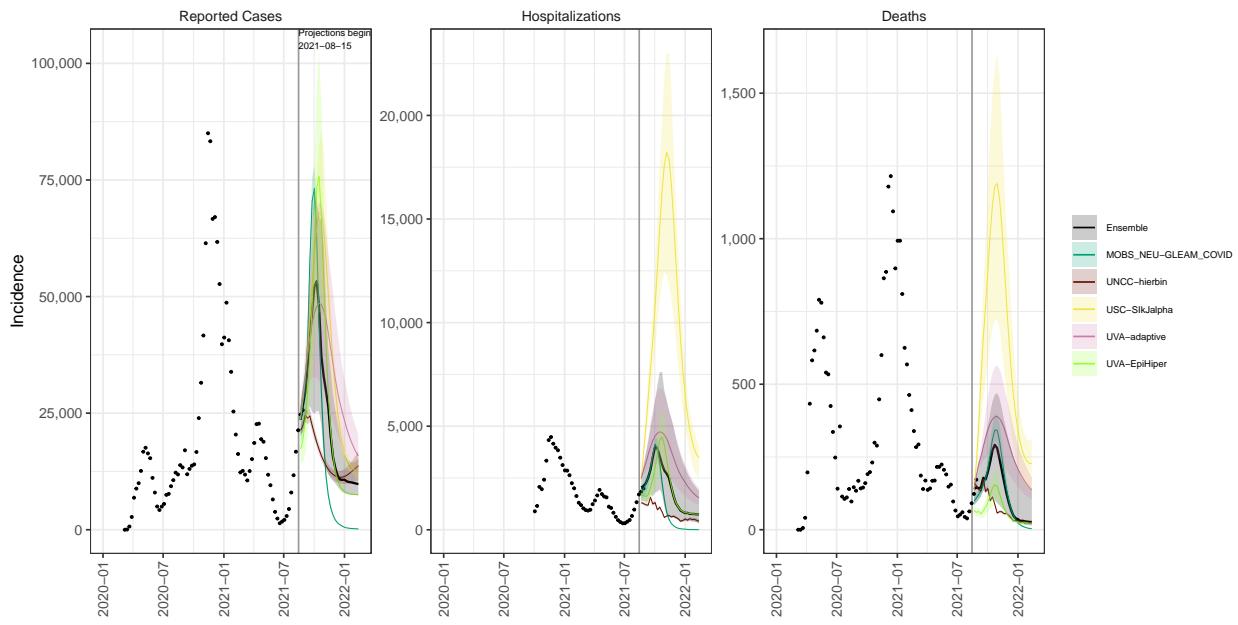
HI model variance & 50% projection intervals – Low protection, Fast waning



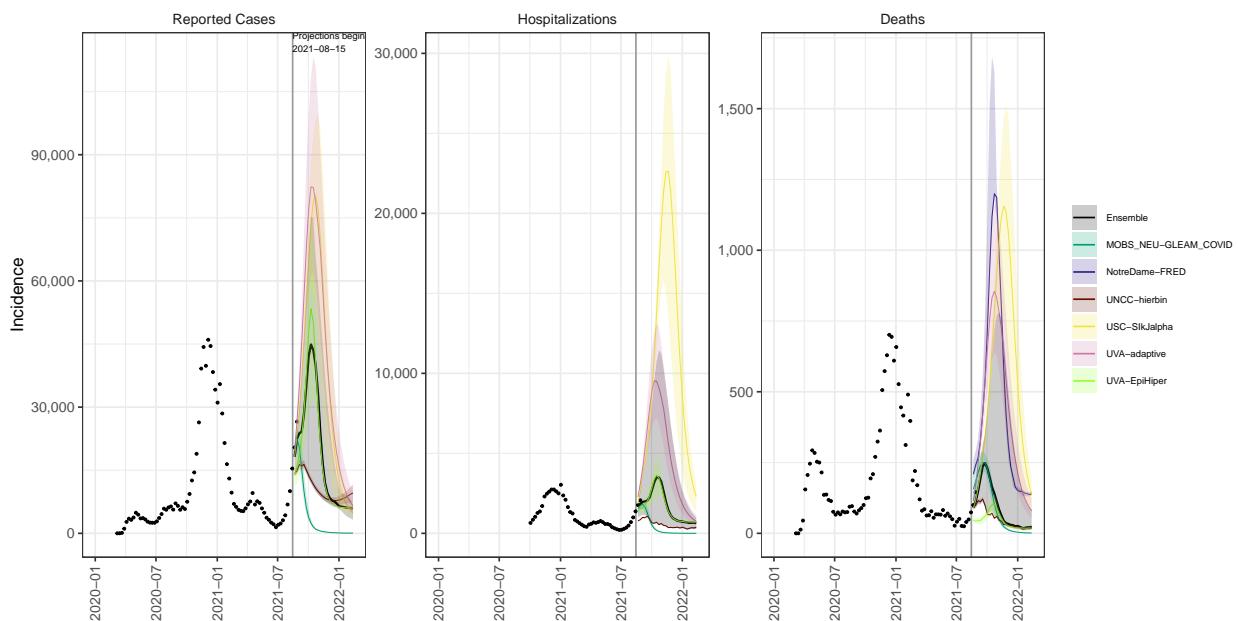
ID model variance & 50% projection intervals – Low protection, Fast waning



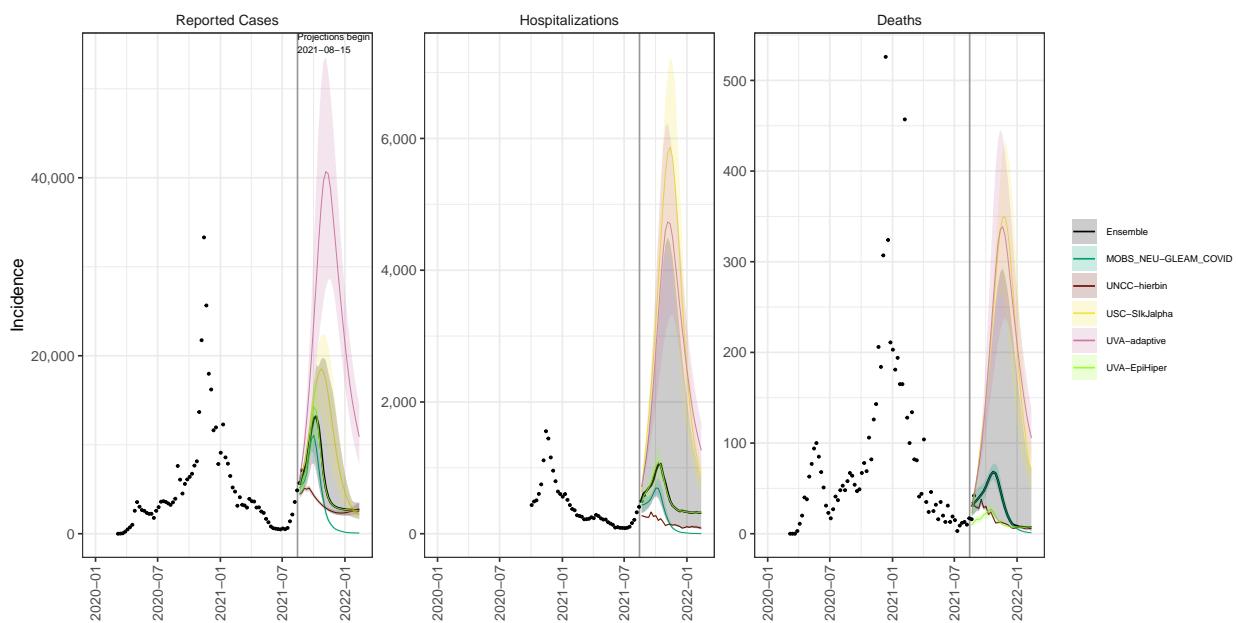
IL model variance & 50% projection intervals – Low protection, Fast waning



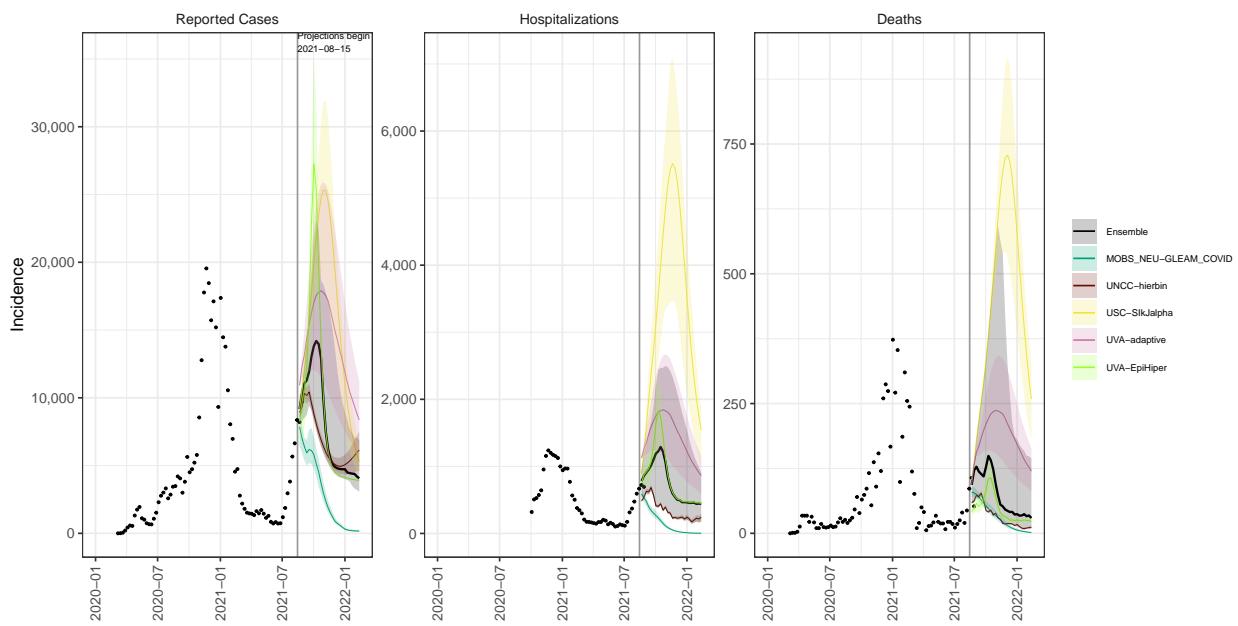
IN model variance & 50% projection intervals – Low protection, Fast waning



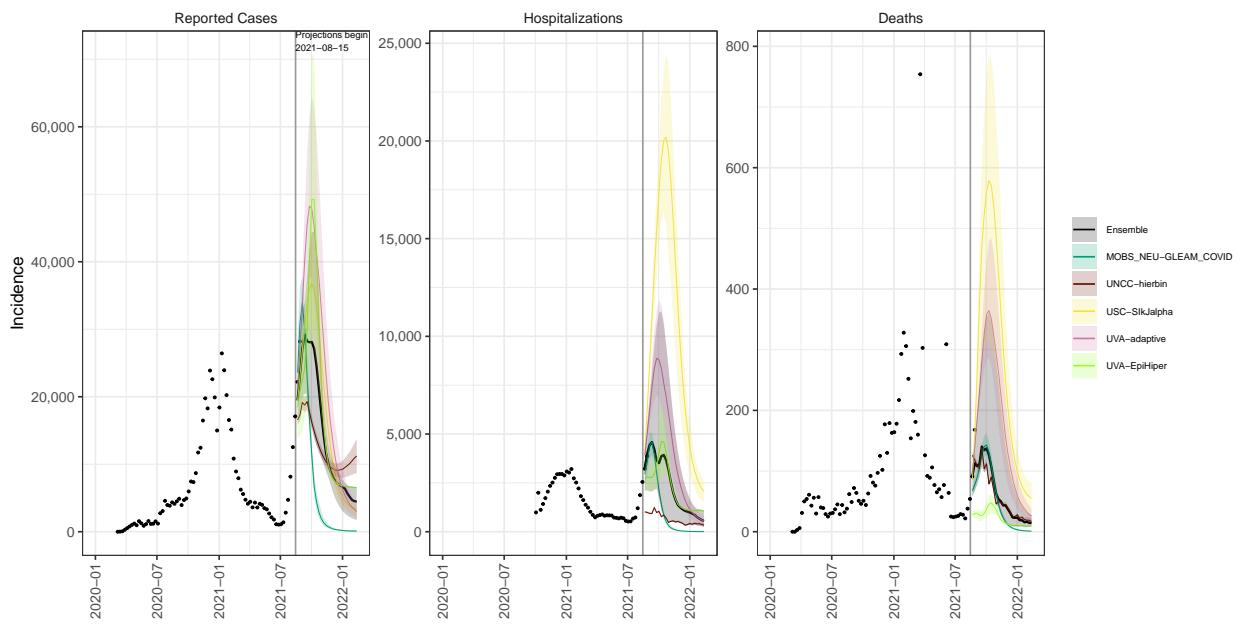
IA model variance & 50% projection intervals – Low protection, Fast waning



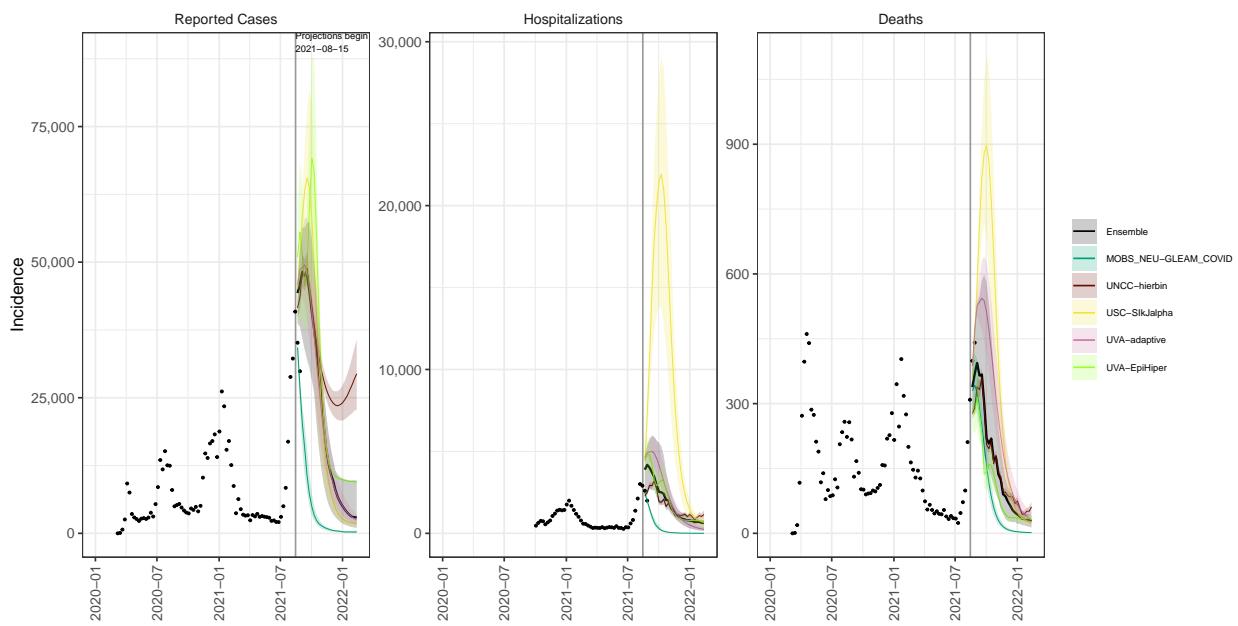
KS model variance & 50% projection intervals – Low protection, Fast waning



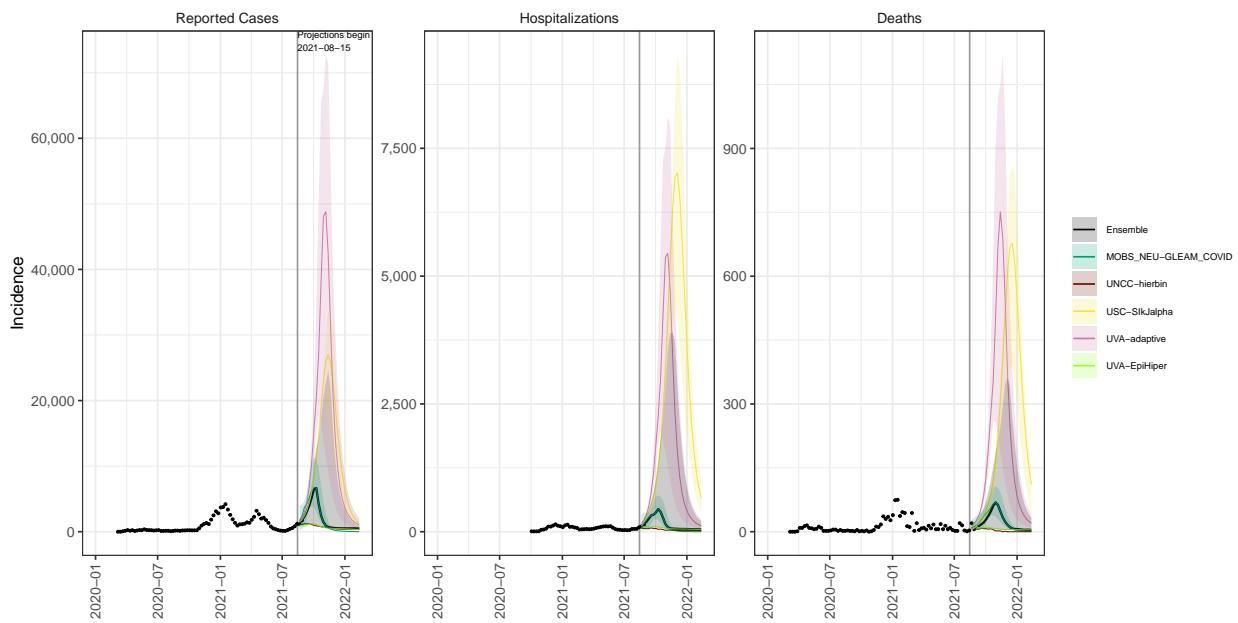
KY model variance & 50% projection intervals – Low protection, Fast waning



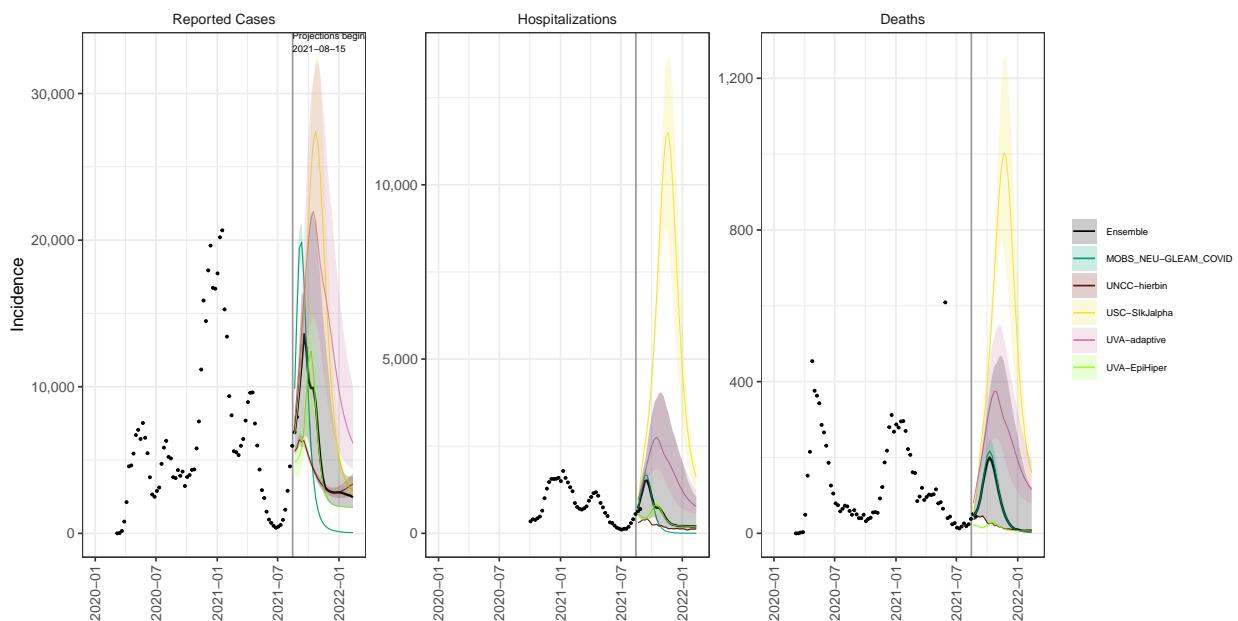
LA model variance & 50% projection intervals – Low protection, Fast waning



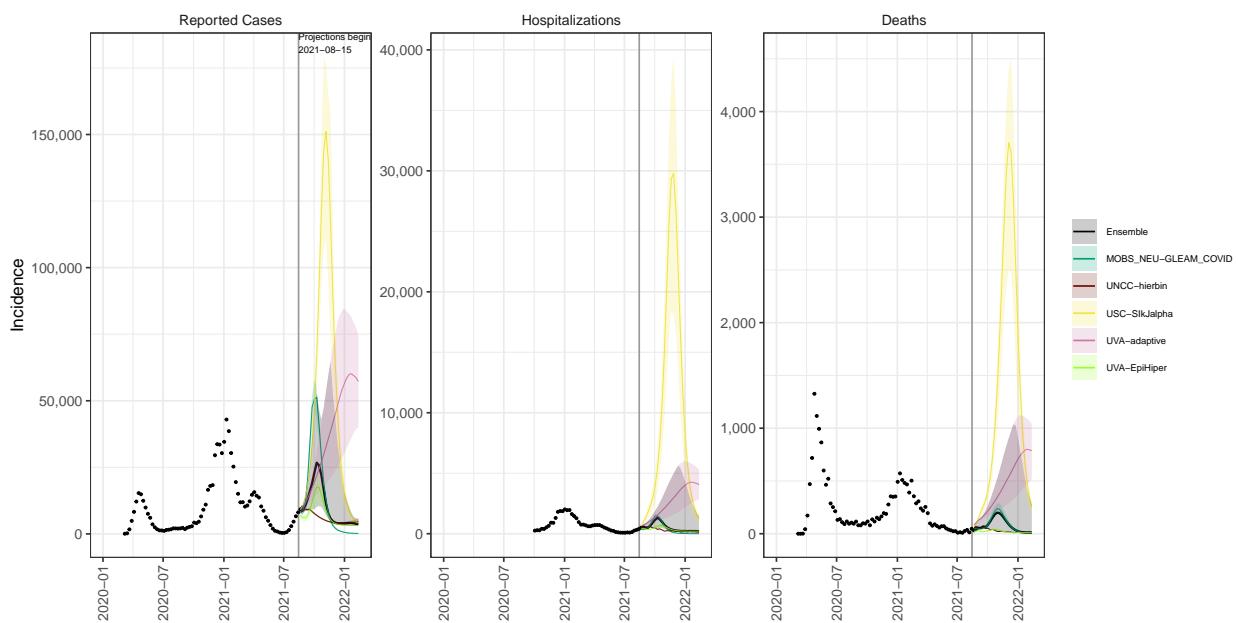
ME model variance & 50% projection intervals – Low protection, Fast waning



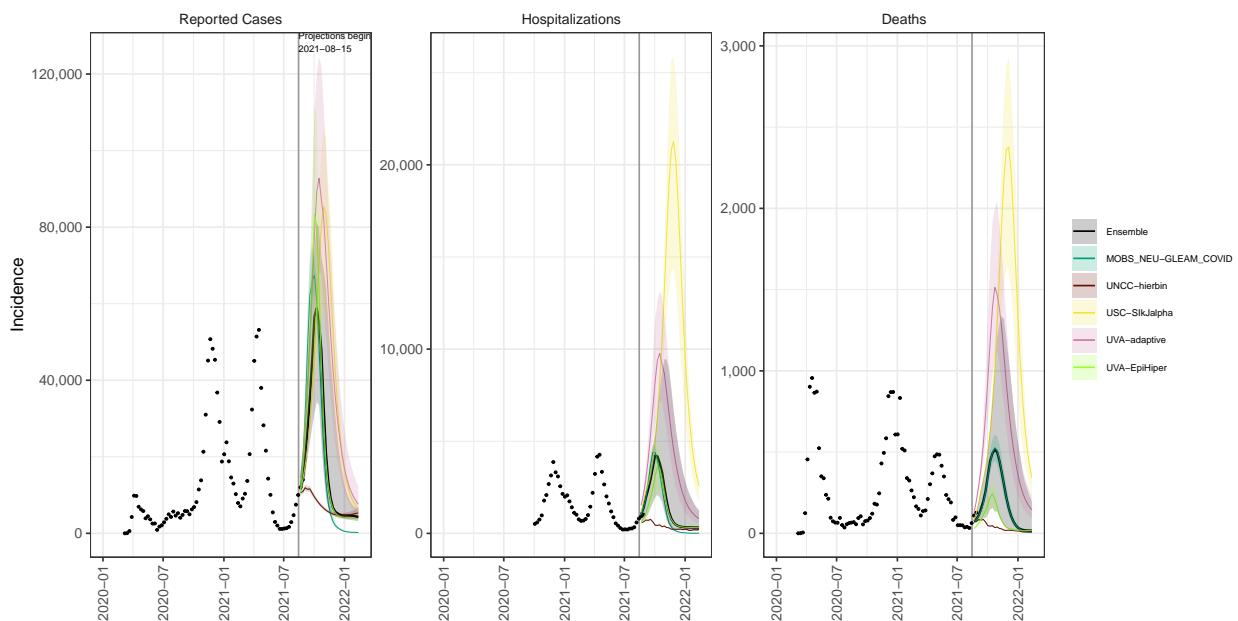
MD model variance & 50% projection intervals – Low protection, Fast waning



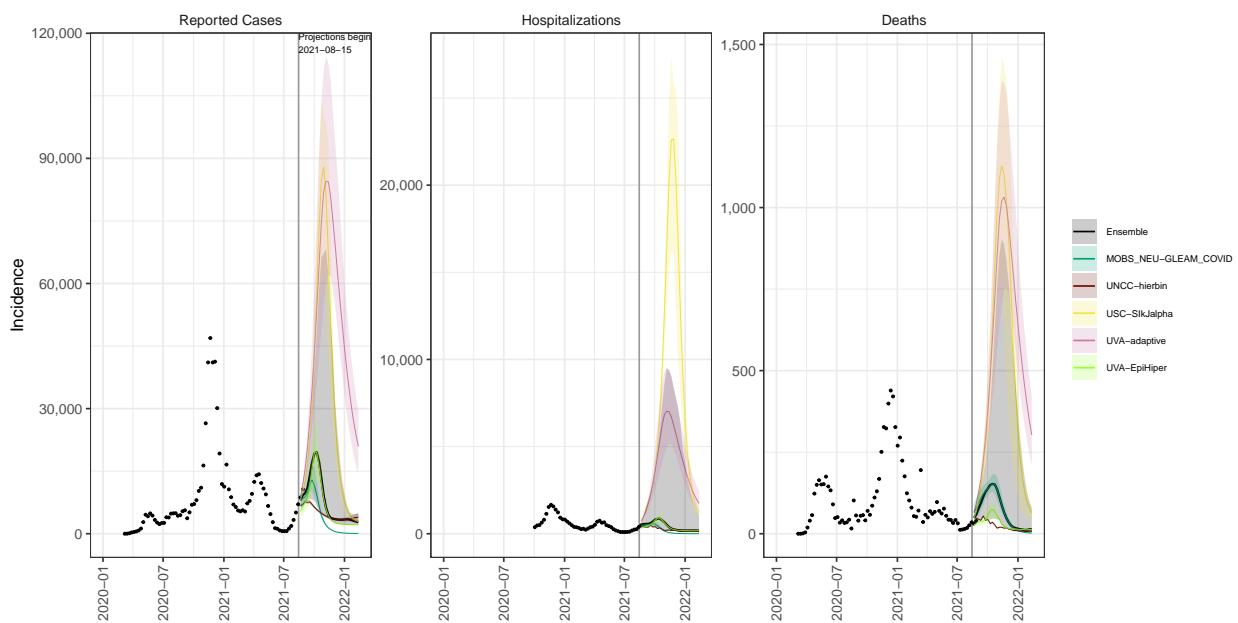
MA model variance & 50% projection intervals – Low protection, Fast waning



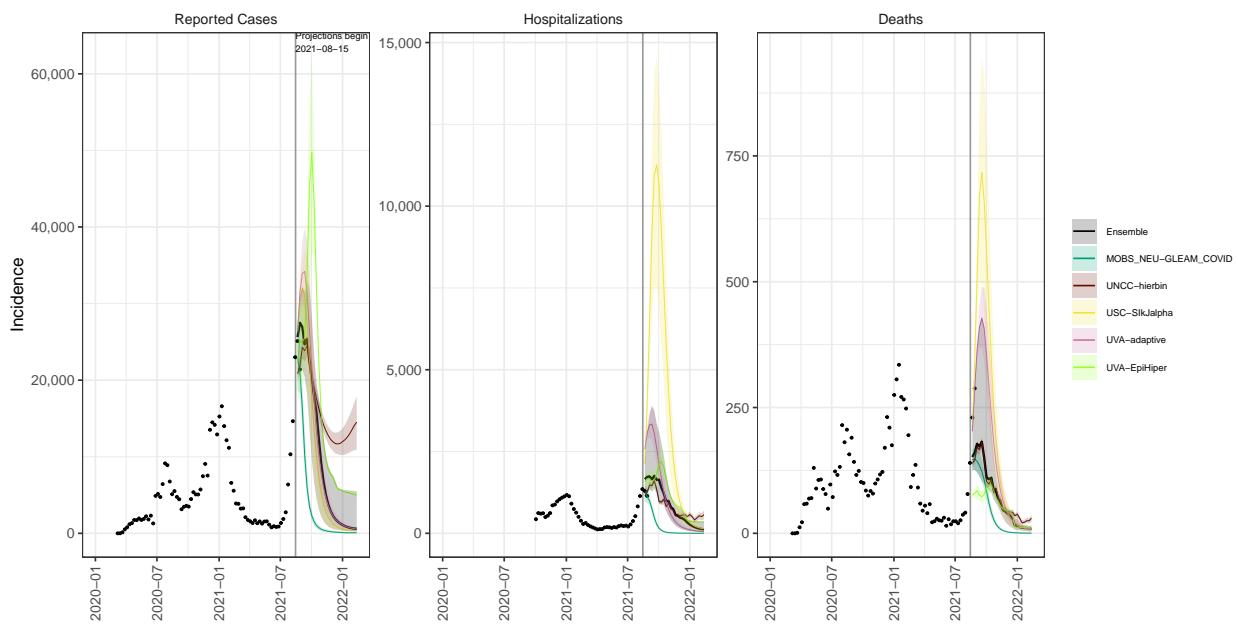
MI model variance & 50% projection intervals – Low protection, Fast waning



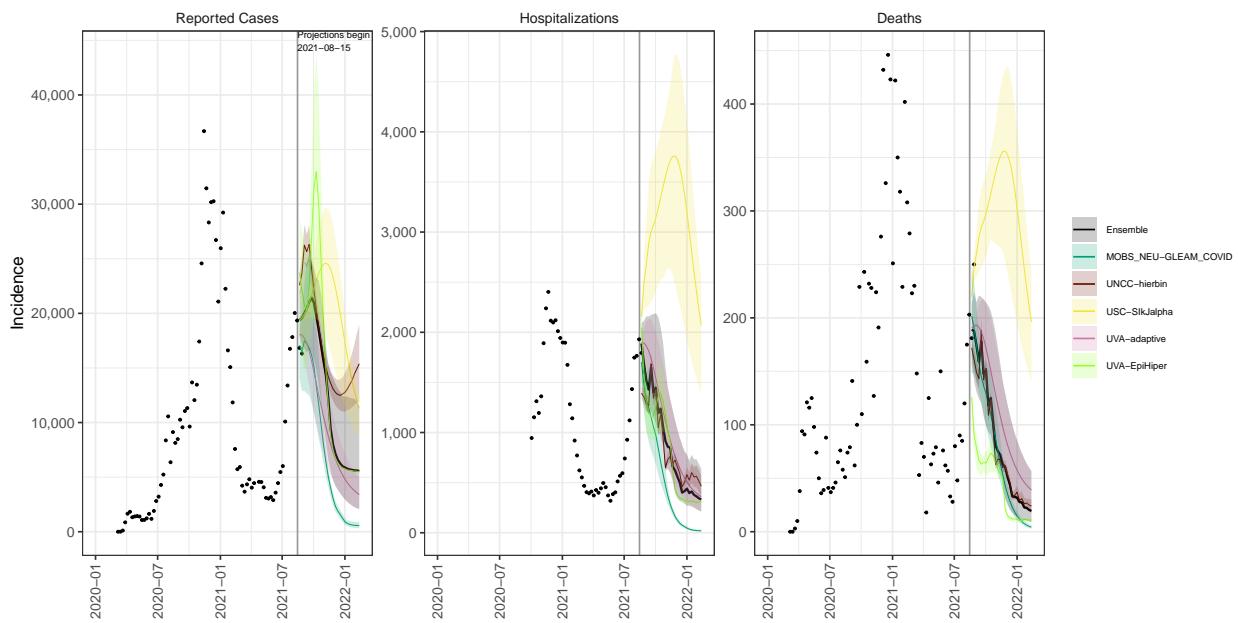
MN model variance & 50% projection intervals – Low protection, Fast waning



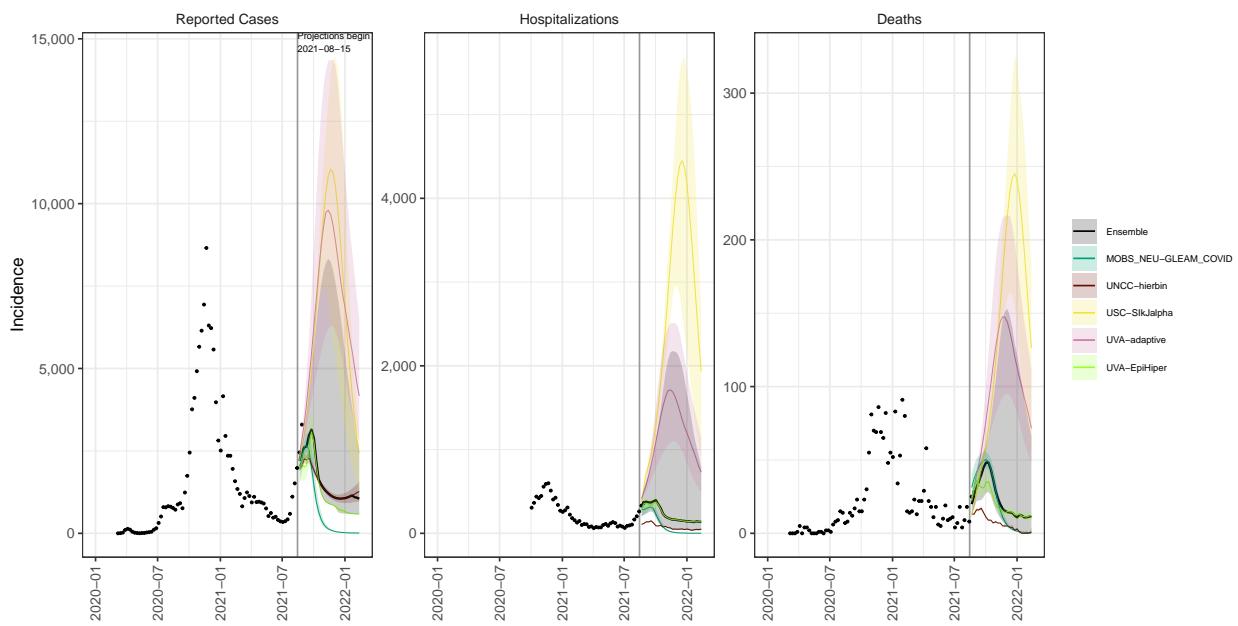
MS model variance & 50% projection intervals – Low protection, Fast waning



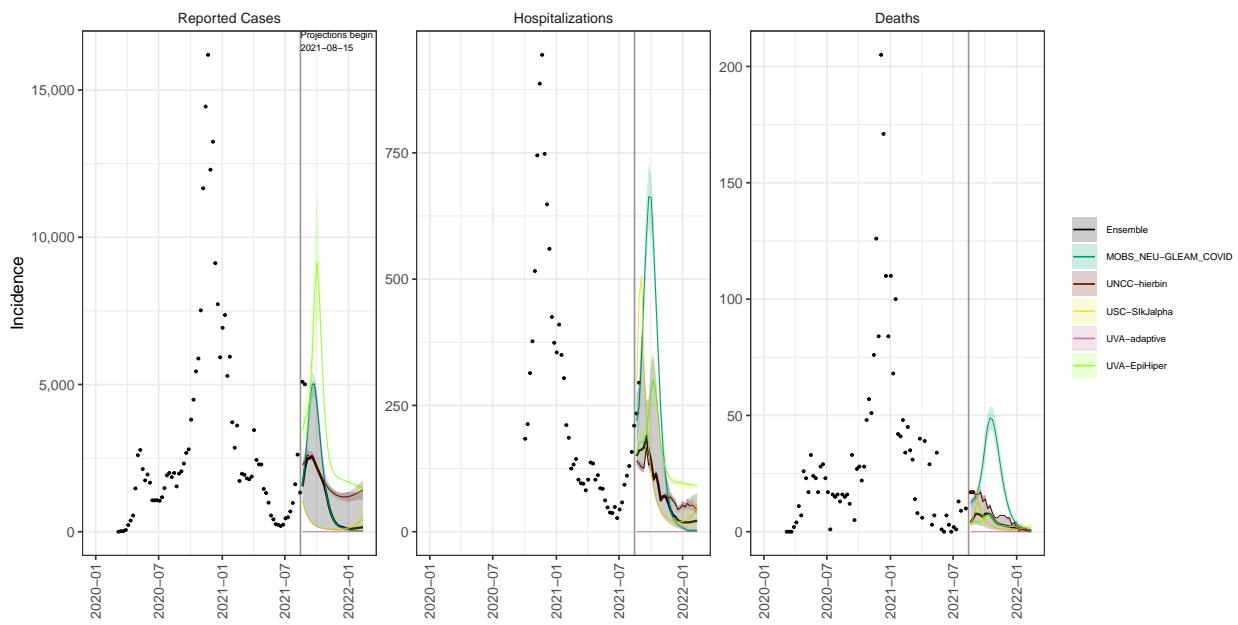
MO model variance & 50% projection intervals – Low protection, Fast waning



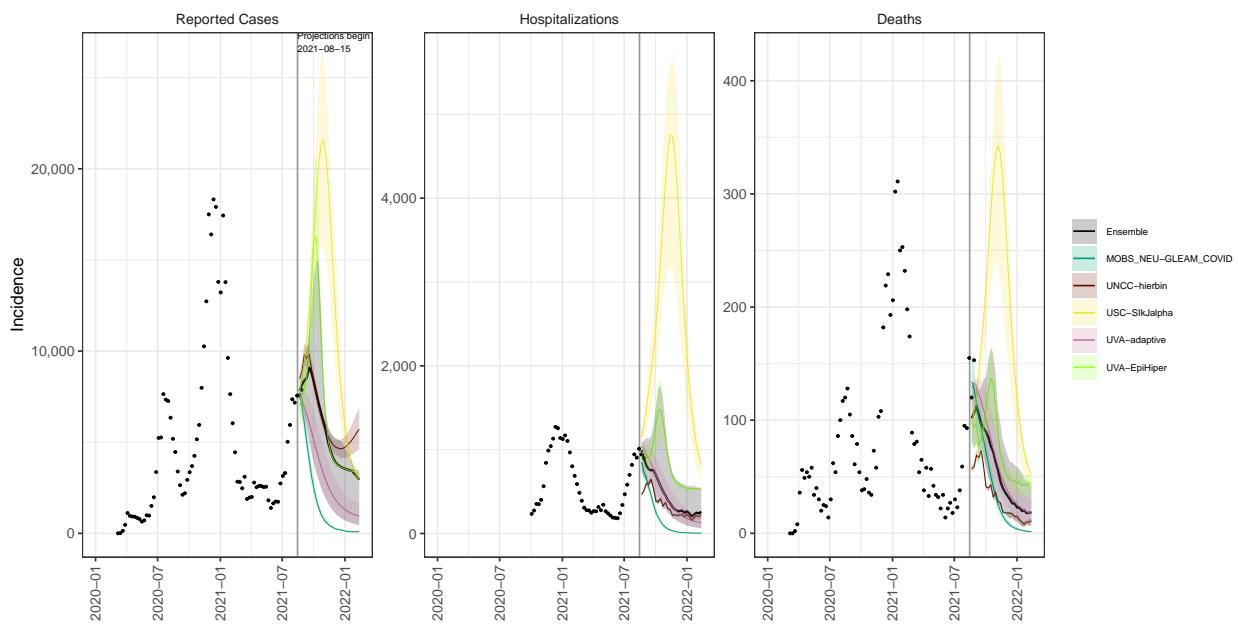
MT model variance & 50% projection intervals – Low protection, Fast waning



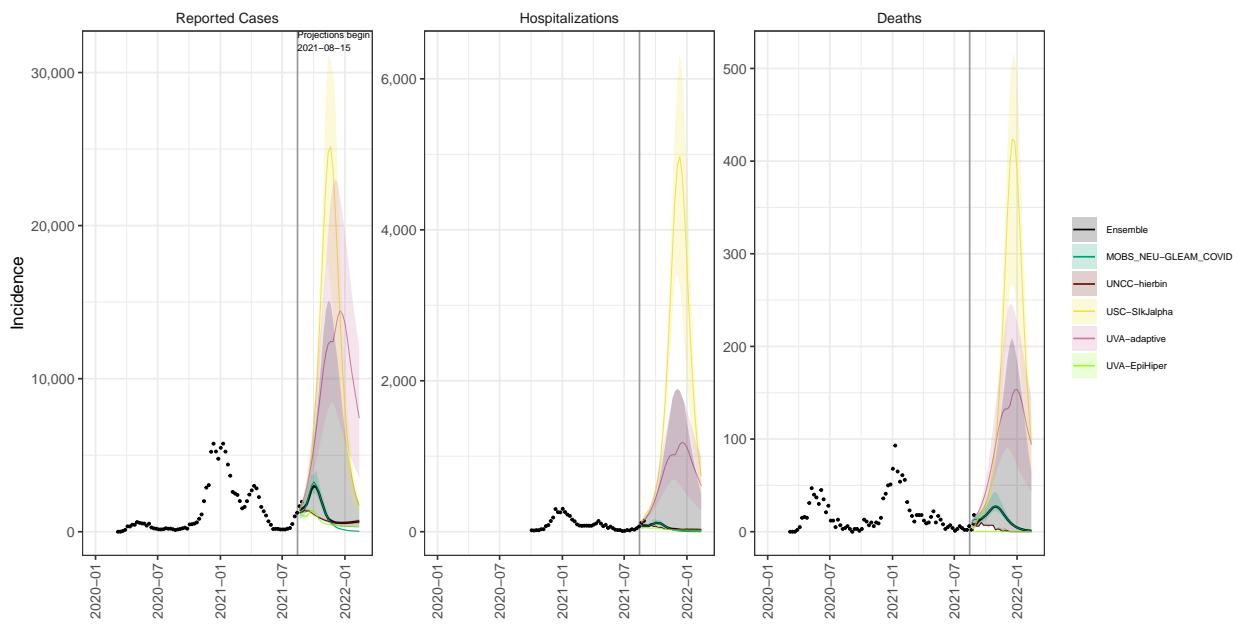
NE model variance & 50% projection intervals – Low protection, Fast waning



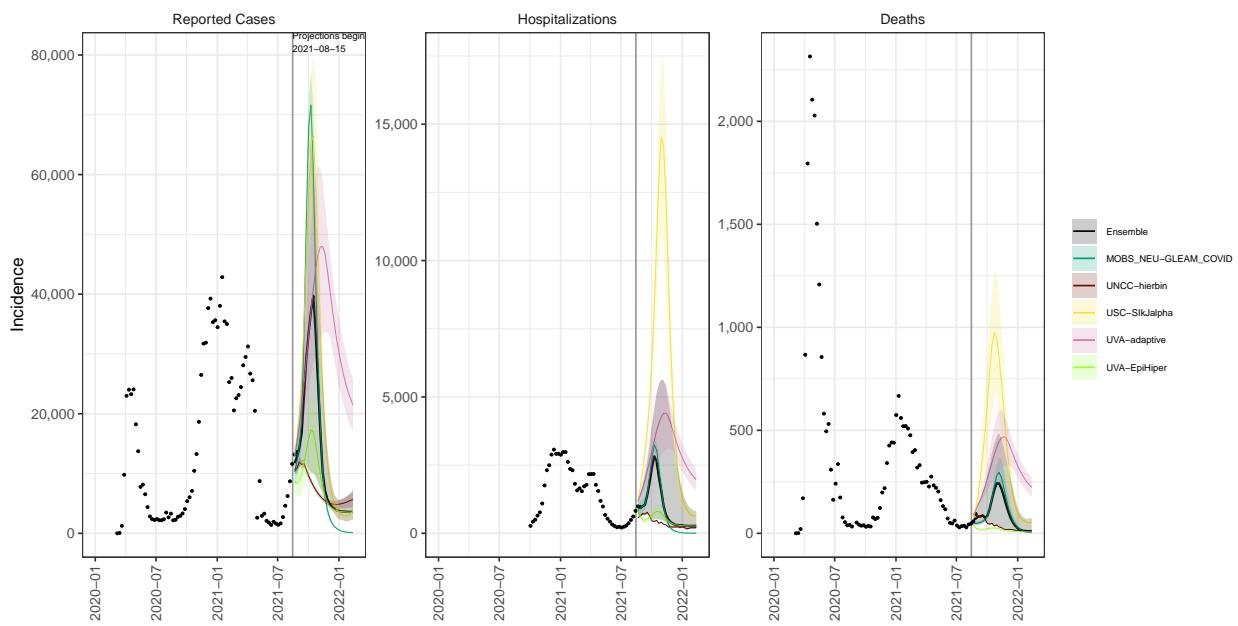
NV model variance & 50% projection intervals – Low protection, Fast waning



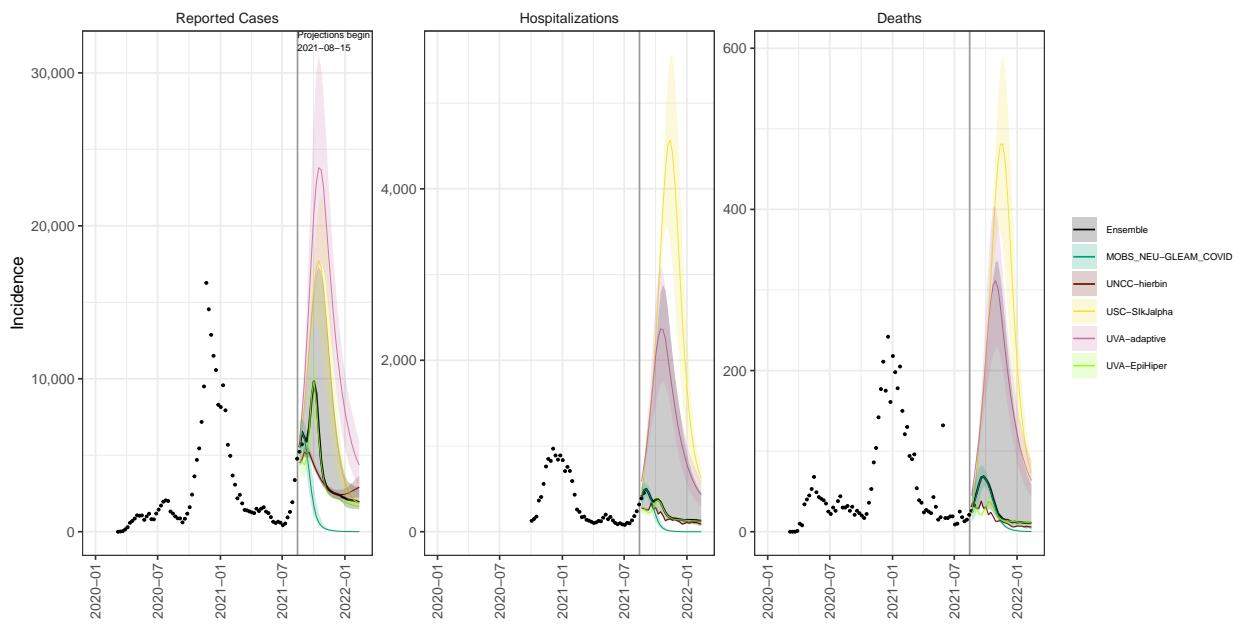
NH model variance & 50% projection intervals – Low protection, Fast waning



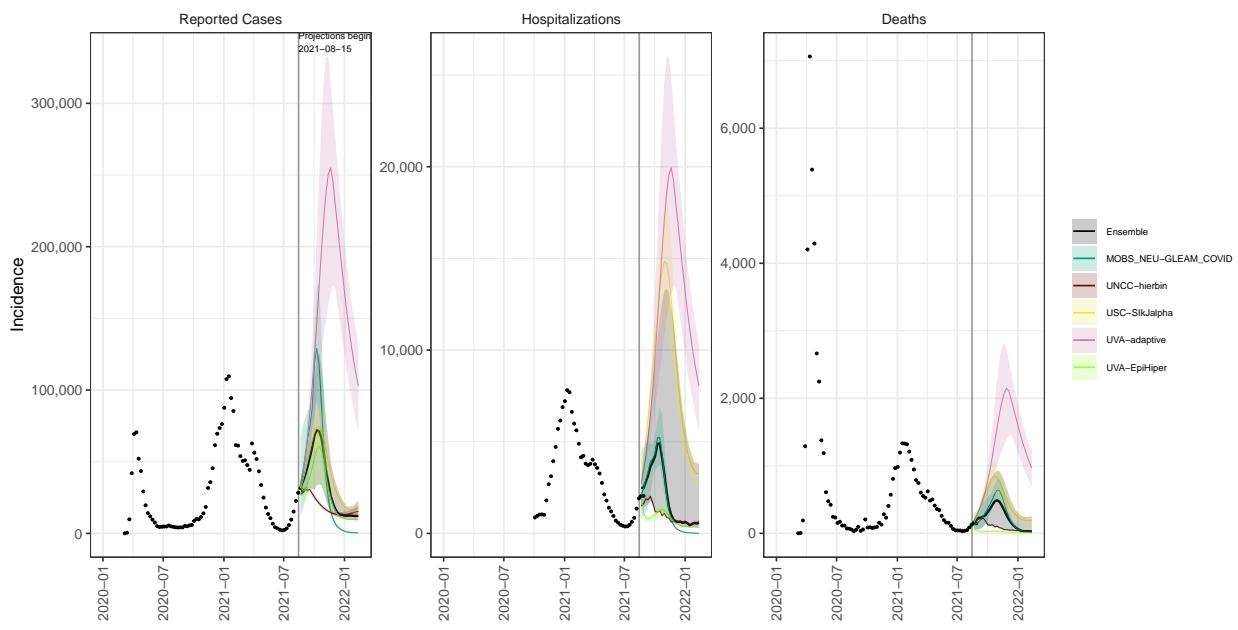
NJ model variance & 50% projection intervals – Low protection, Fast waning



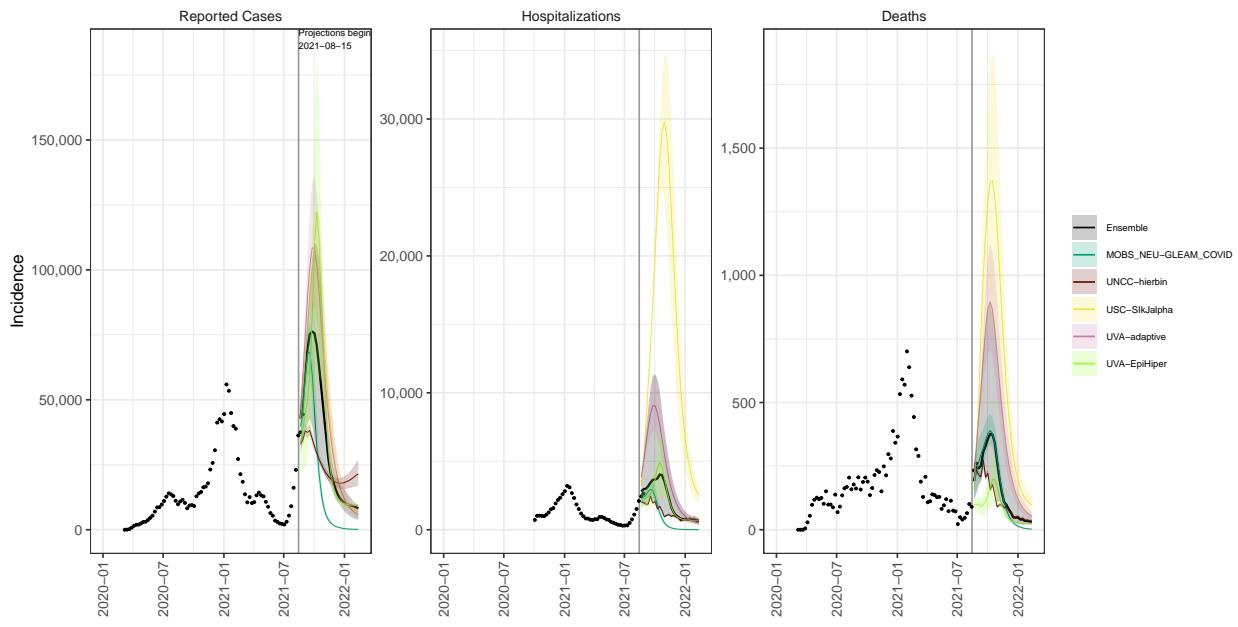
NM model variance & 50% projection intervals – Low protection, Fast waning



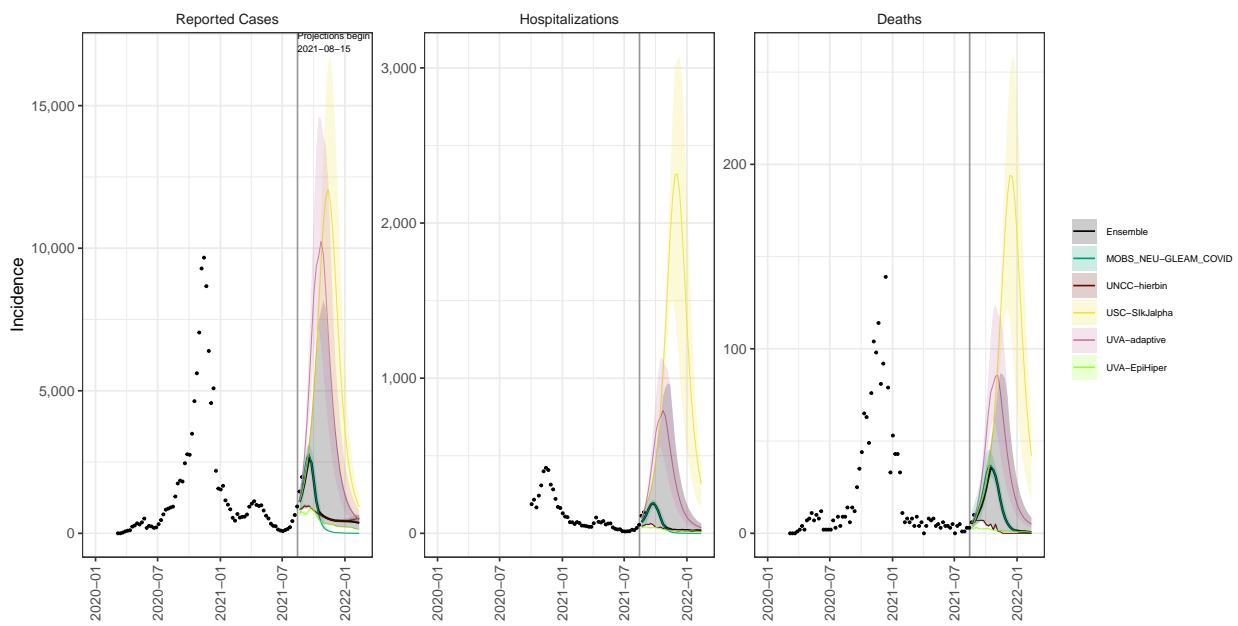
NY model variance & 50% projection intervals – Low protection, Fast waning



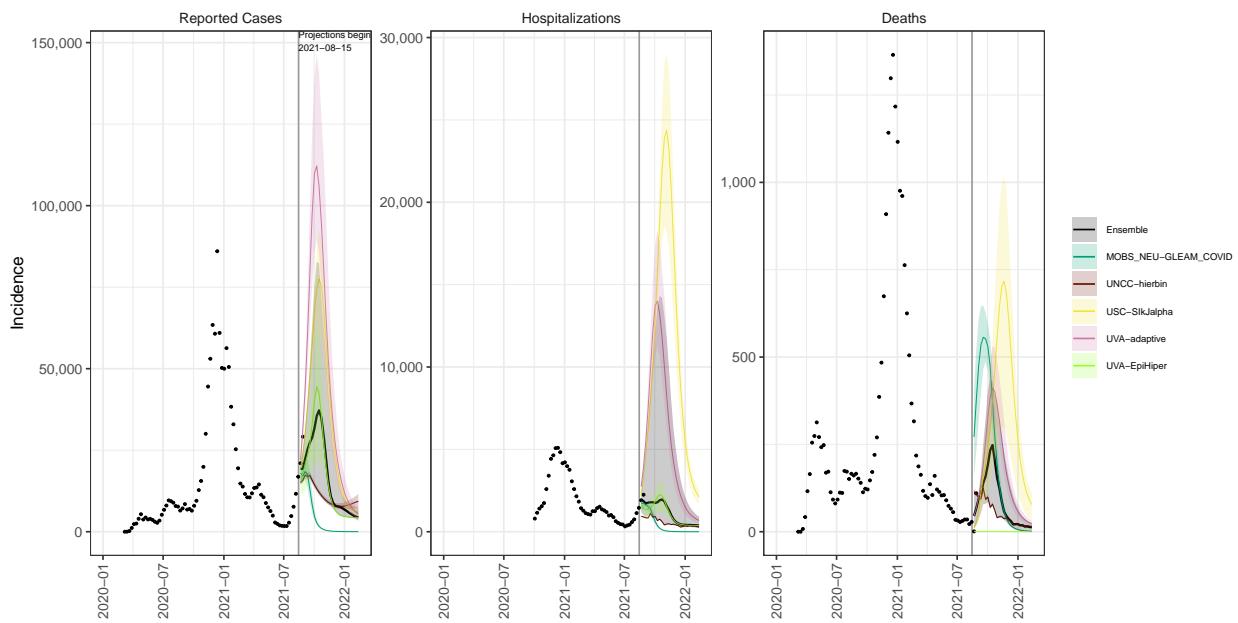
NC model variance & 50% projection intervals – Low protection, Fast waning



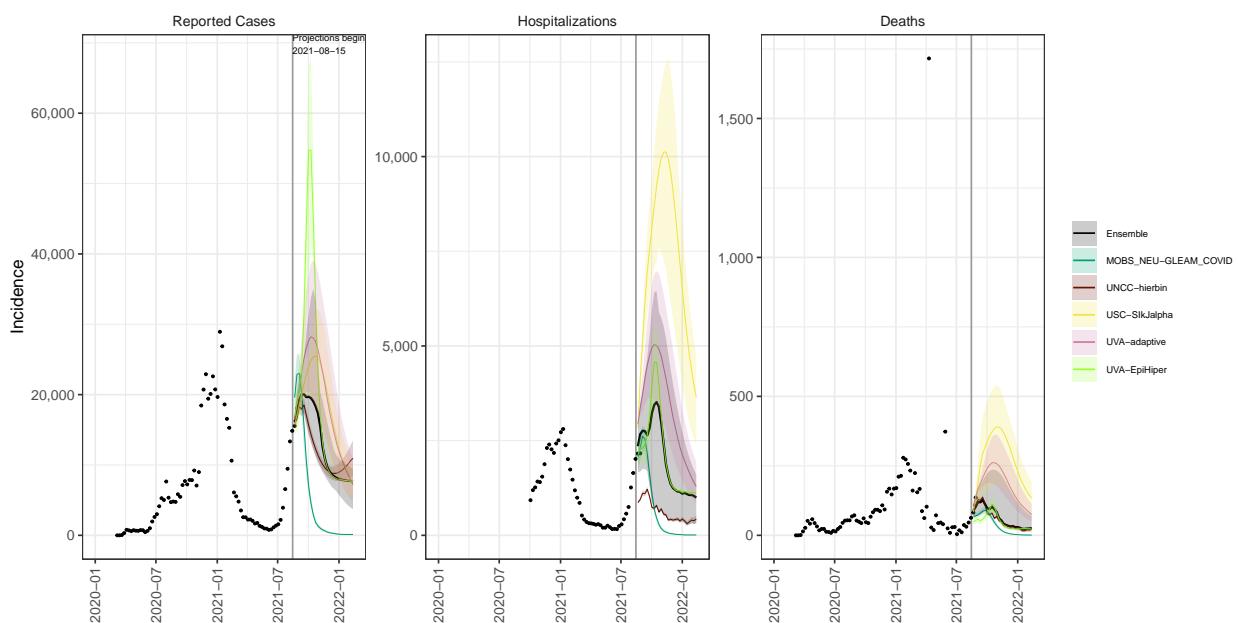
ND model variance & 50% projection intervals – Low protection, Fast waning



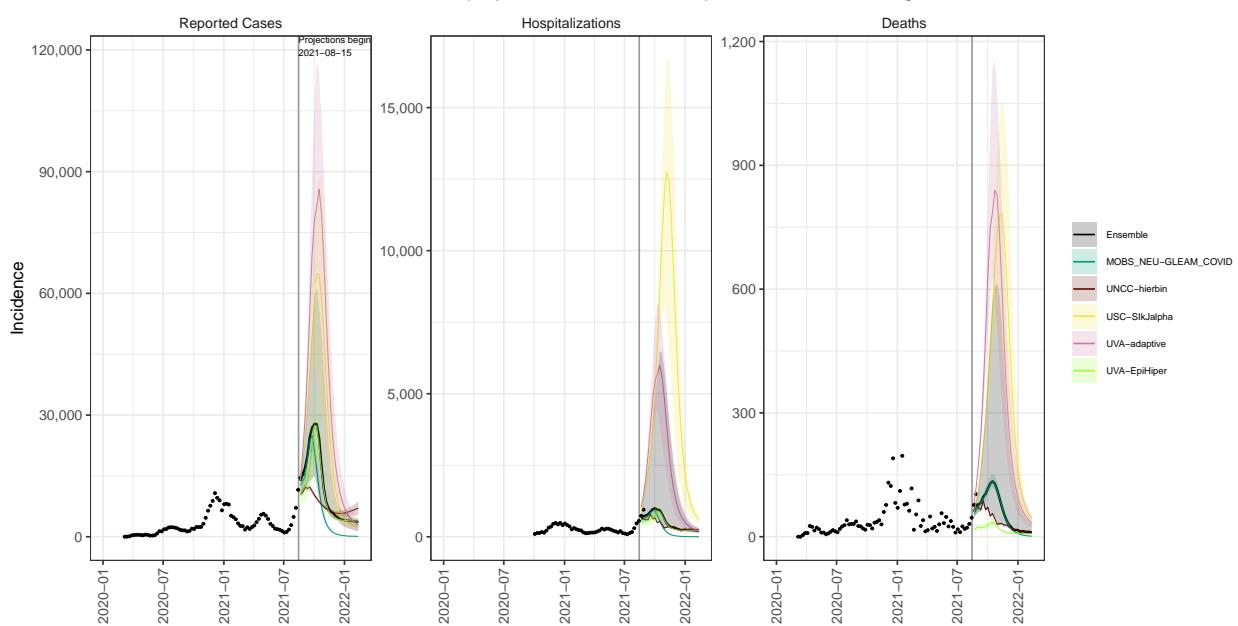
OH model variance & 50% projection intervals – Low protection, Fast waning



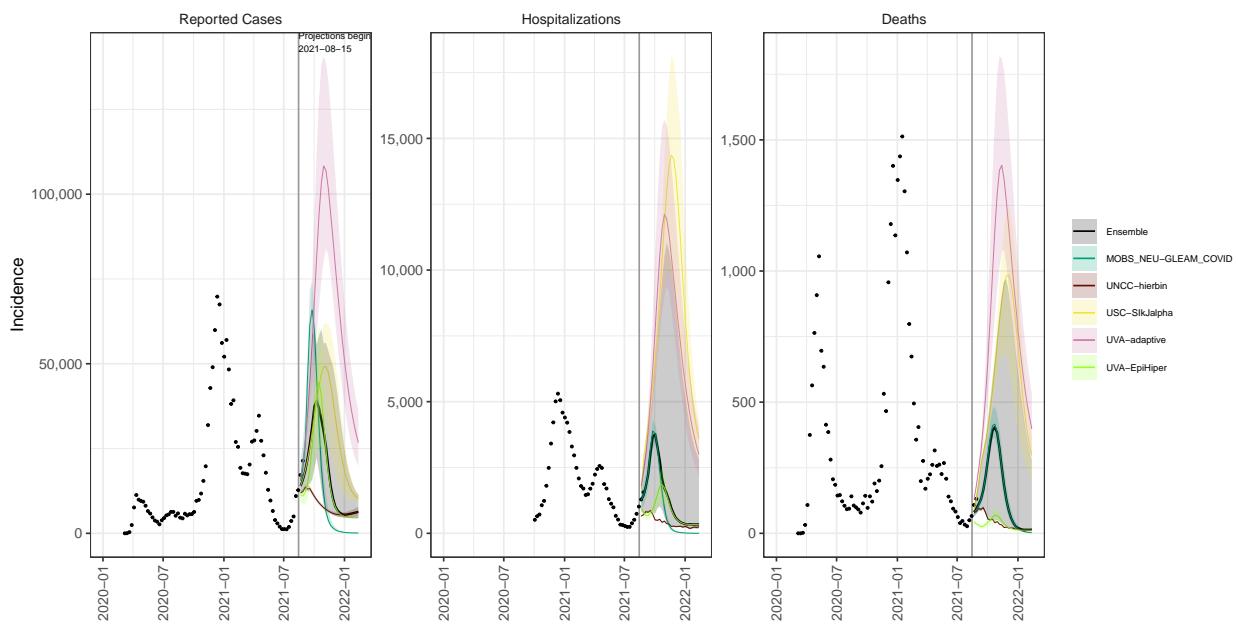
OK model variance & 50% projection intervals – Low protection, Fast waning



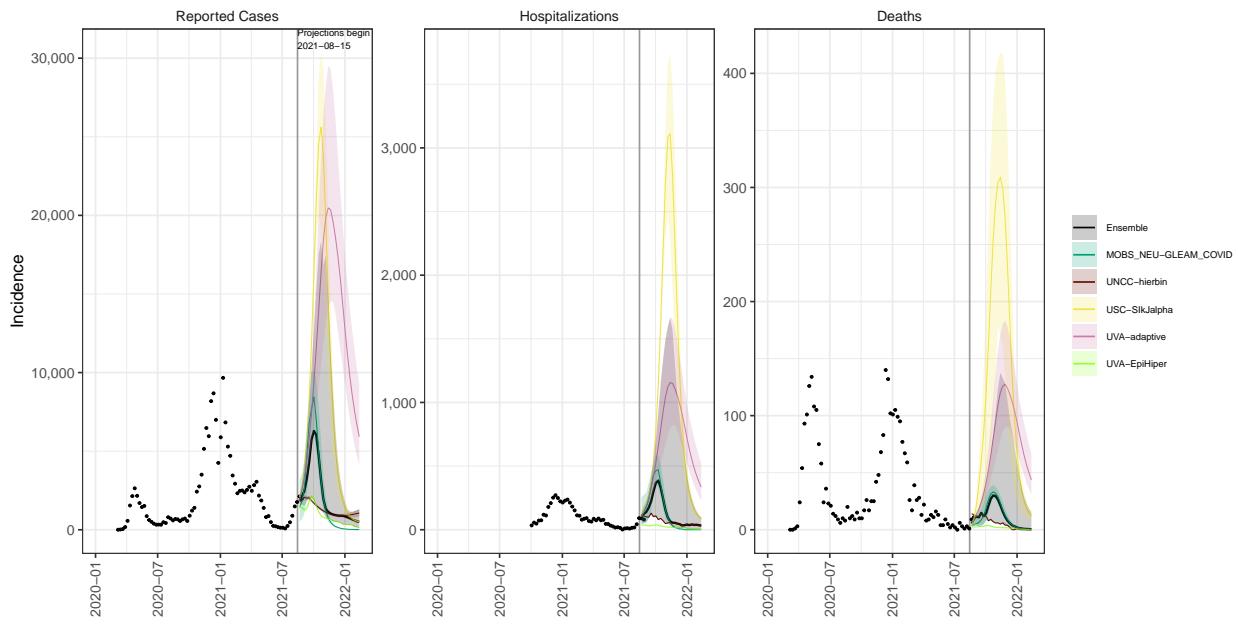
OR model variance & 50% projection intervals – Low protection, Fast waning



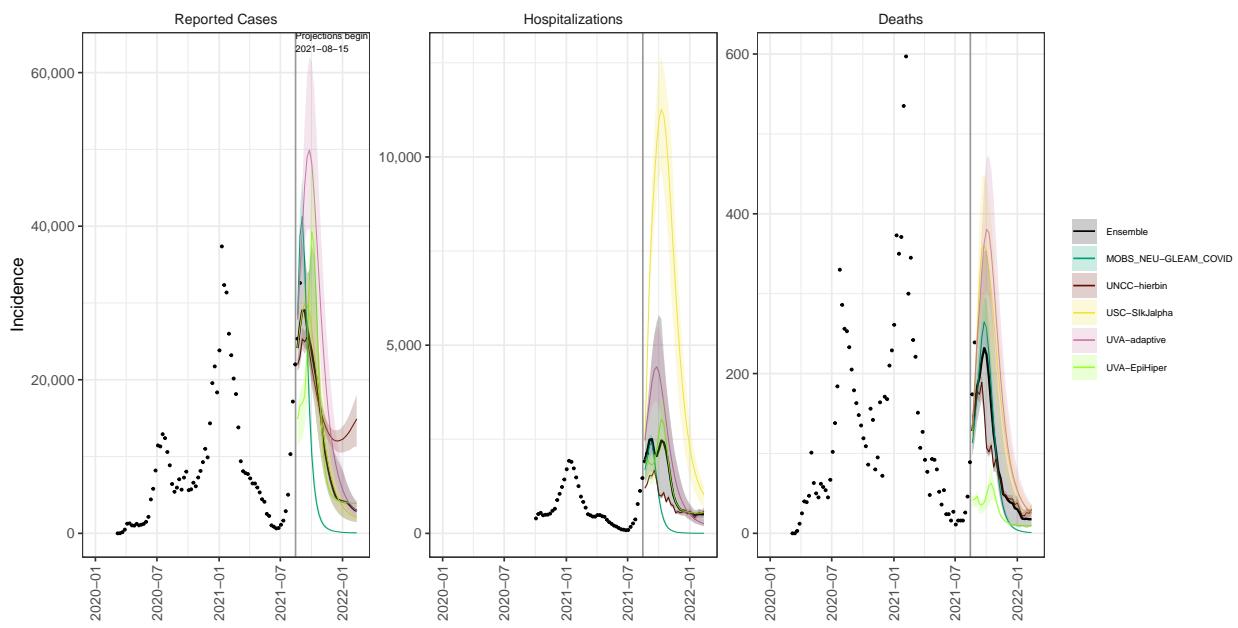
PA model variance & 50% projection intervals – Low protection, Fast waning



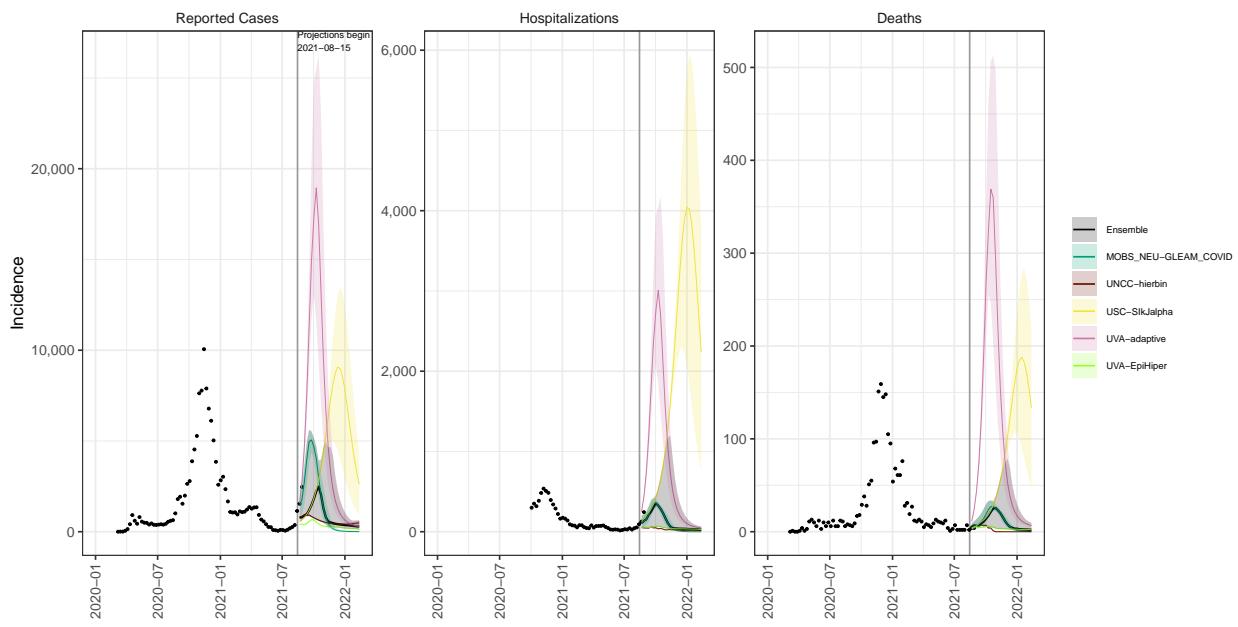
RI model variance & 50% projection intervals – Low protection, Fast waning



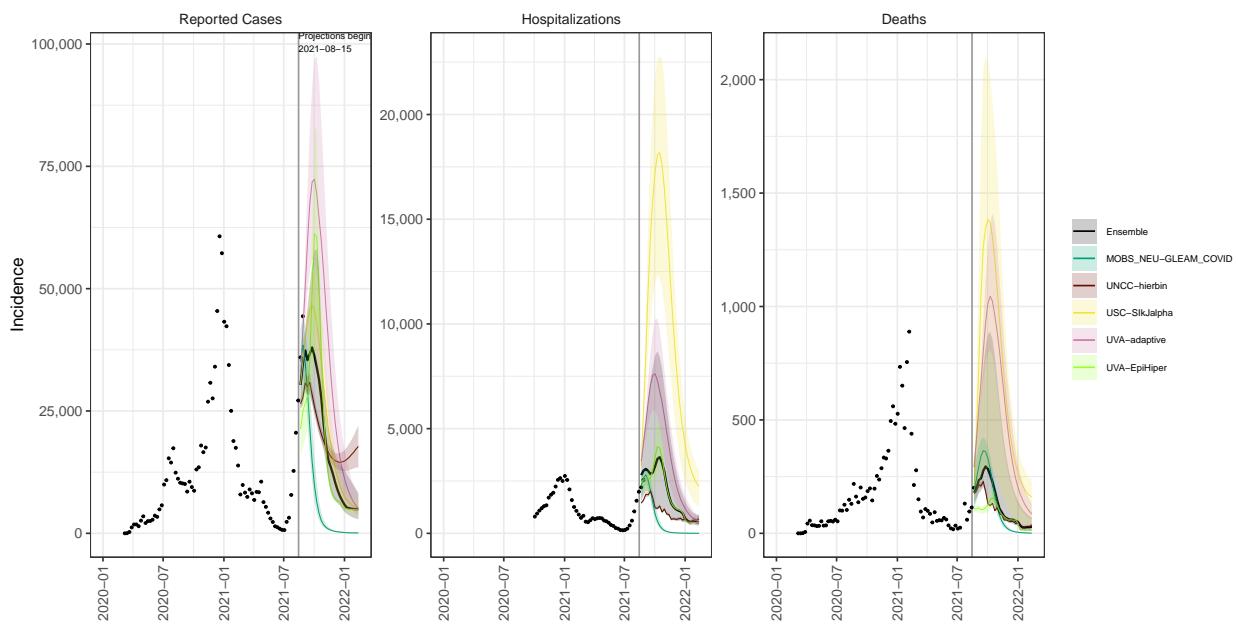
SC model variance & 50% projection intervals – Low protection, Fast waning



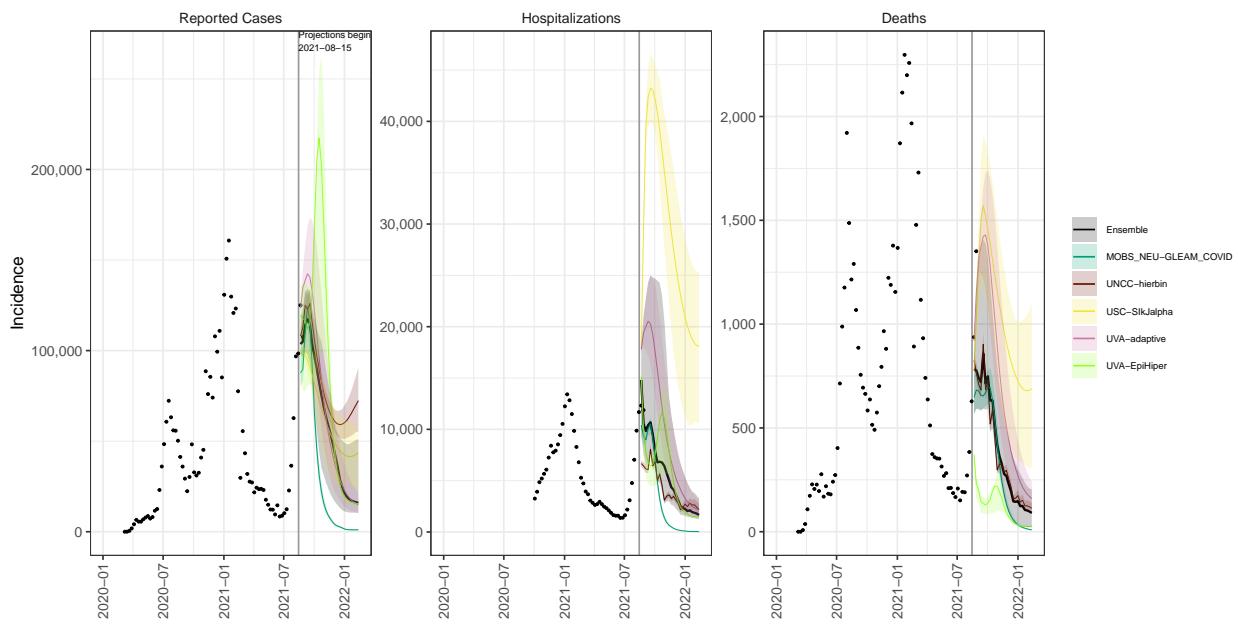
SD model variance & 50% projection intervals – Low protection, Fast waning



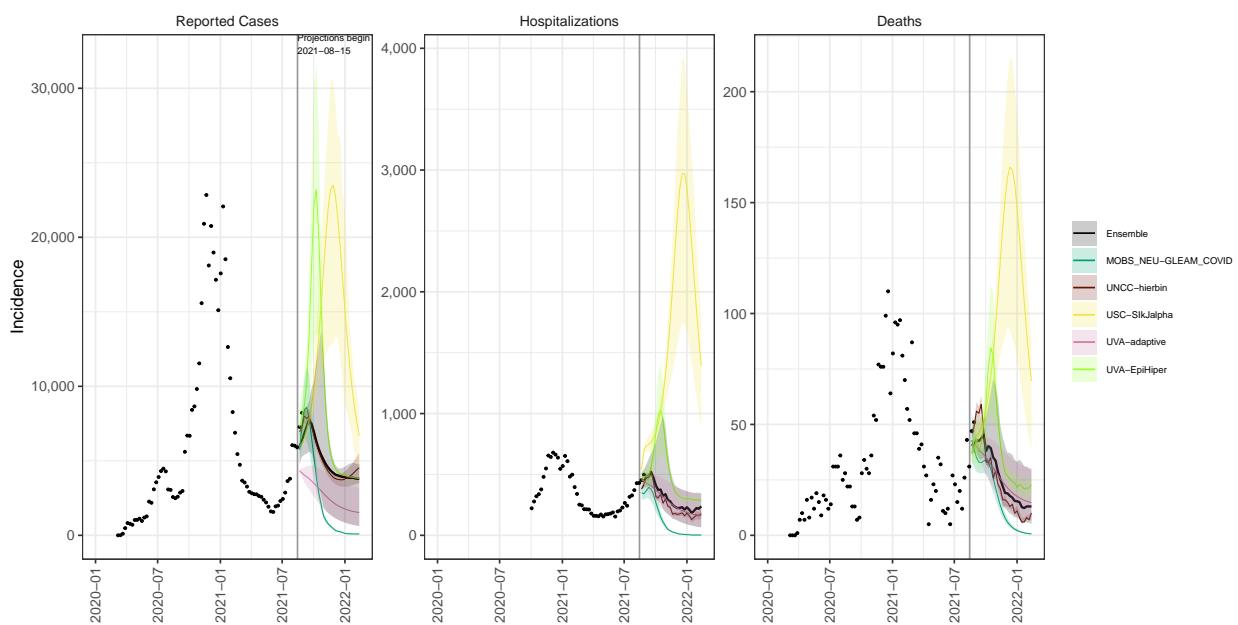
TN model variance & 50% projection intervals – Low protection, Fast waning



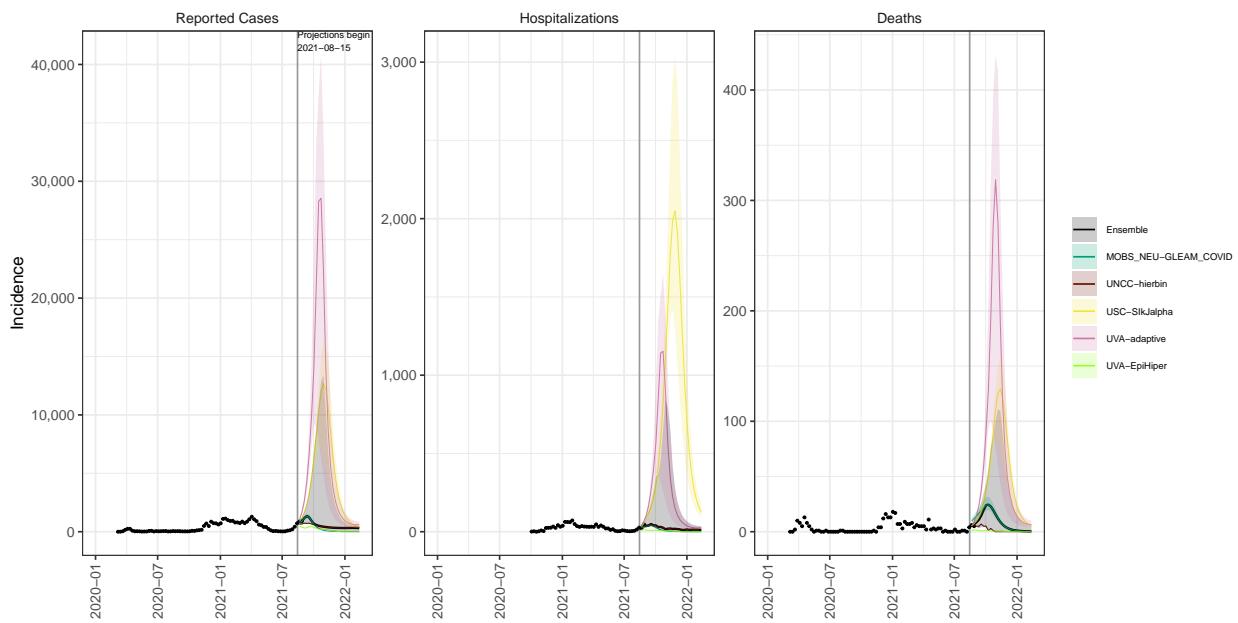
TX model variance & 50% projection intervals – Low protection, Fast waning



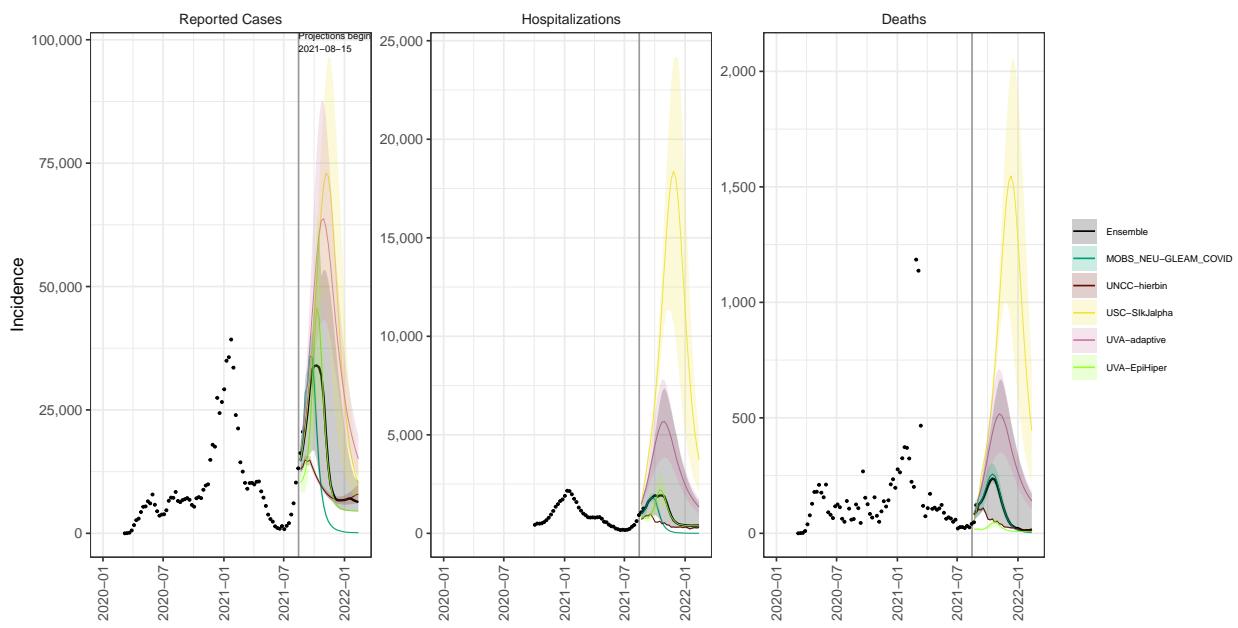
UT model variance & 50% projection intervals – Low protection, Fast waning



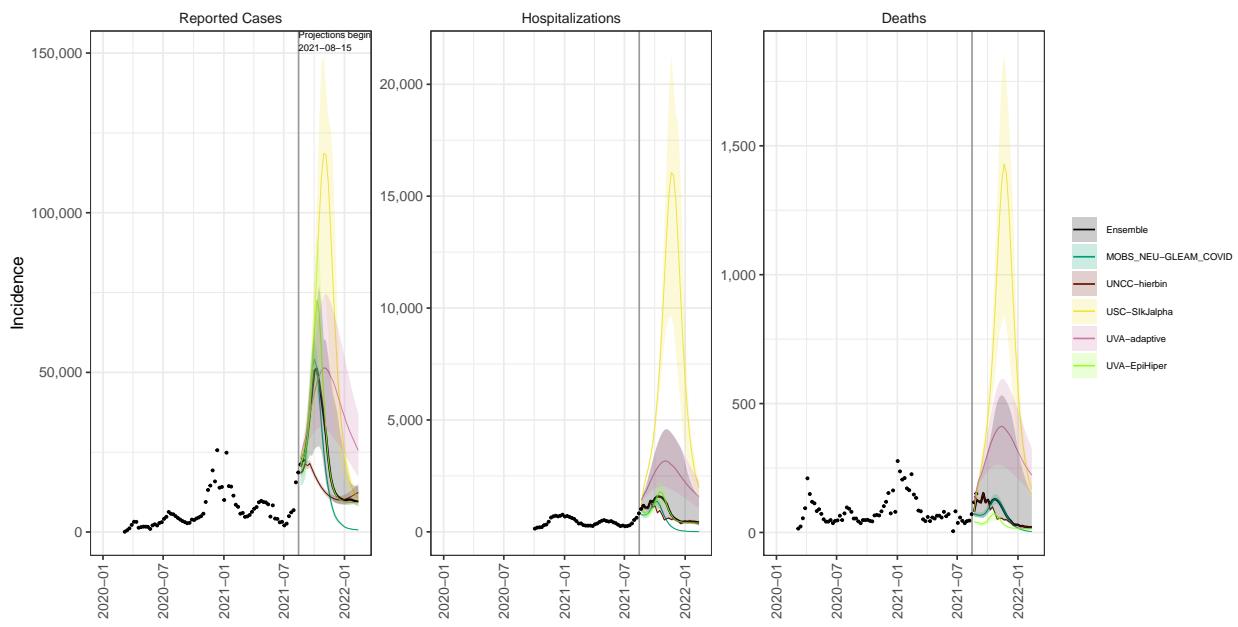
VT model variance & 50% projection intervals – Low protection, Fast waning



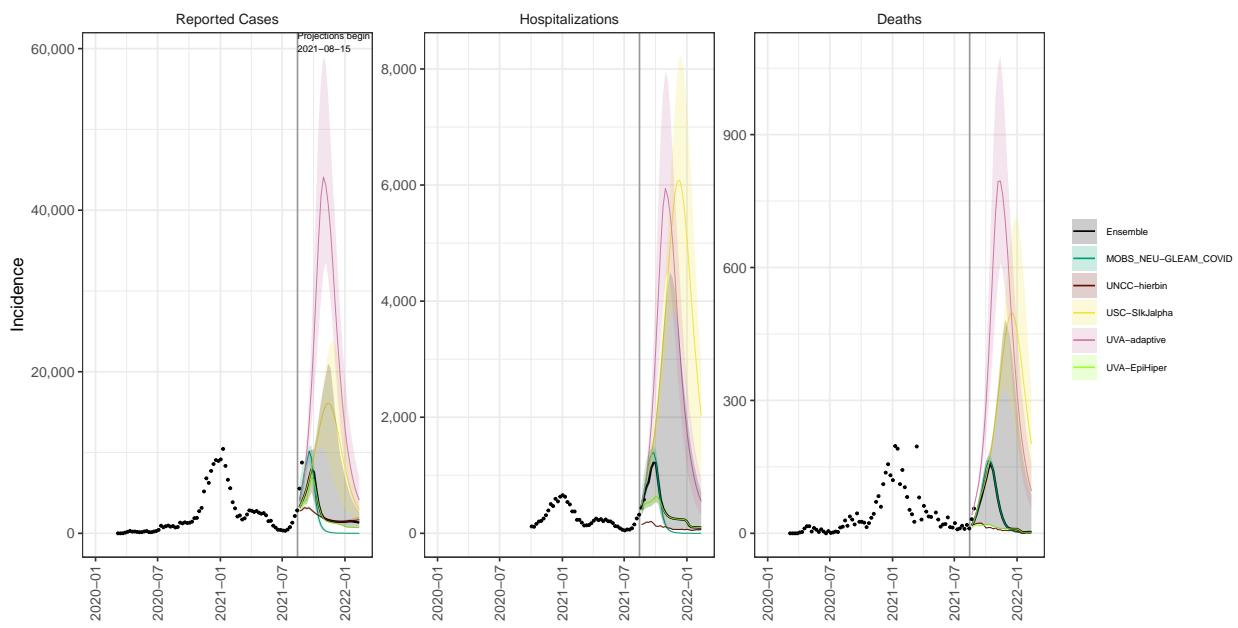
VA model variance & 50% projection intervals – Low protection, Fast waning



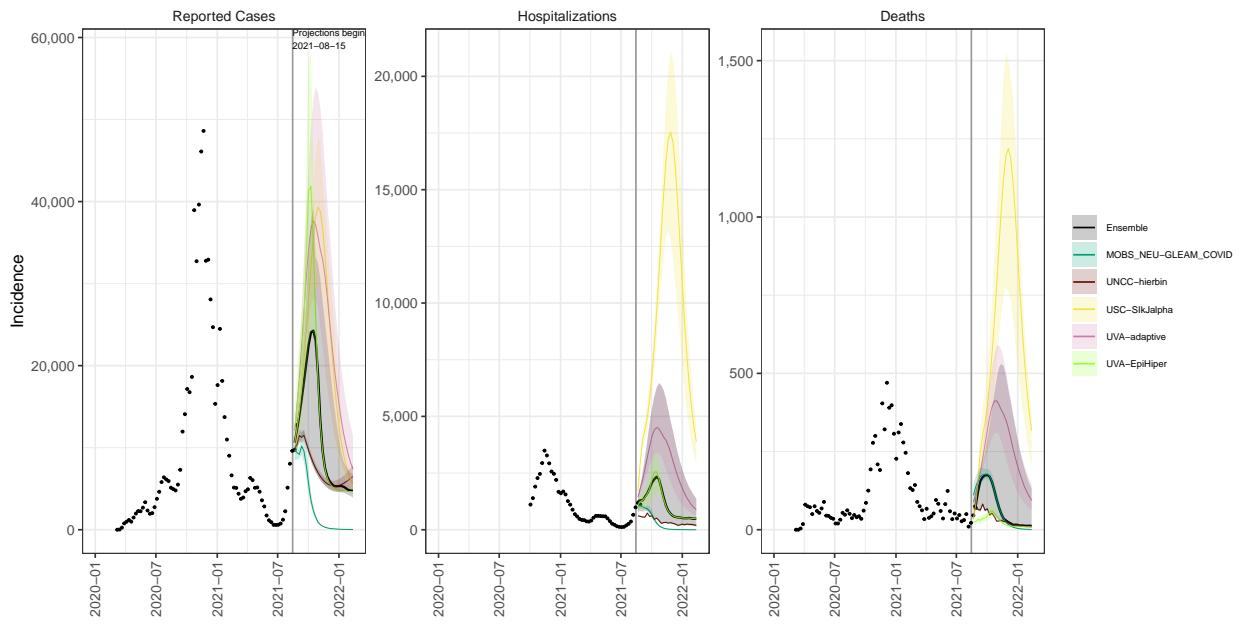
WA model variance & 50% projection intervals – Low protection, Fast waning



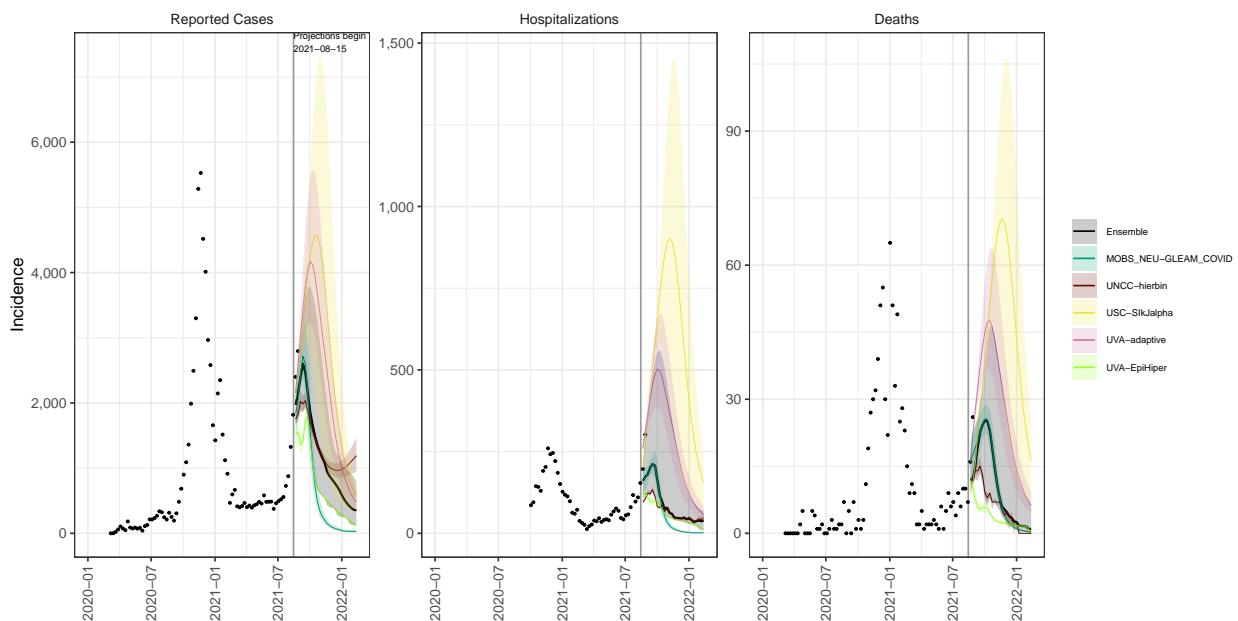
WV model variance & 50% projection intervals – Low protection, Fast waning



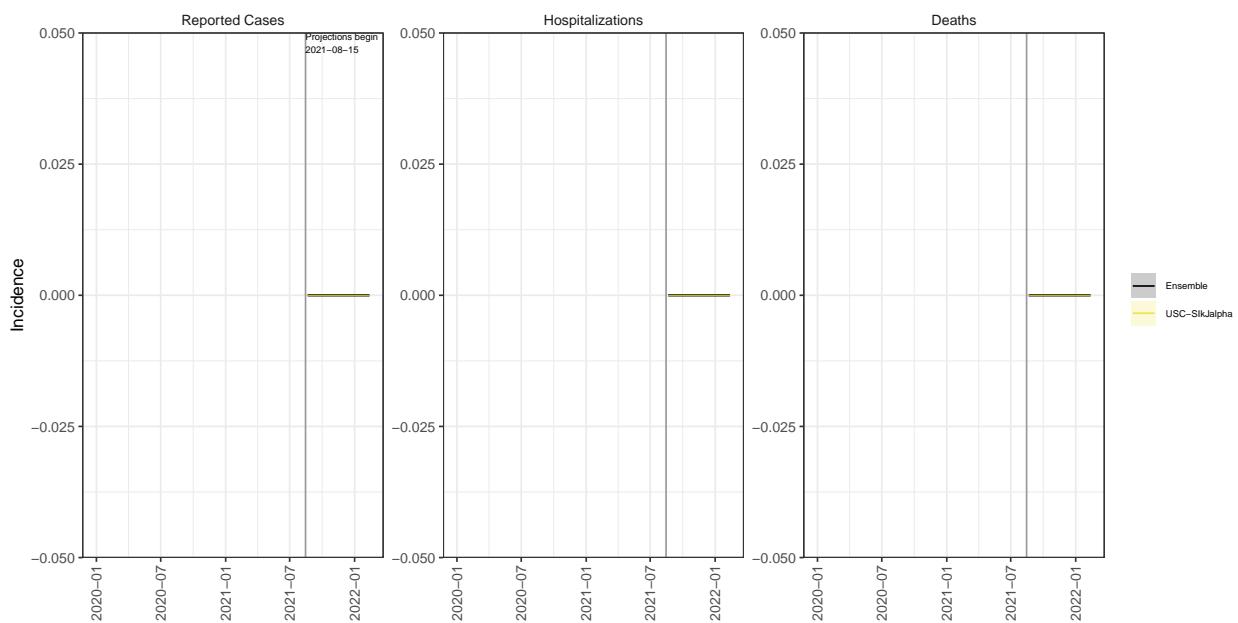
WI model variance & 50% projection intervals – Low protection, Fast waning



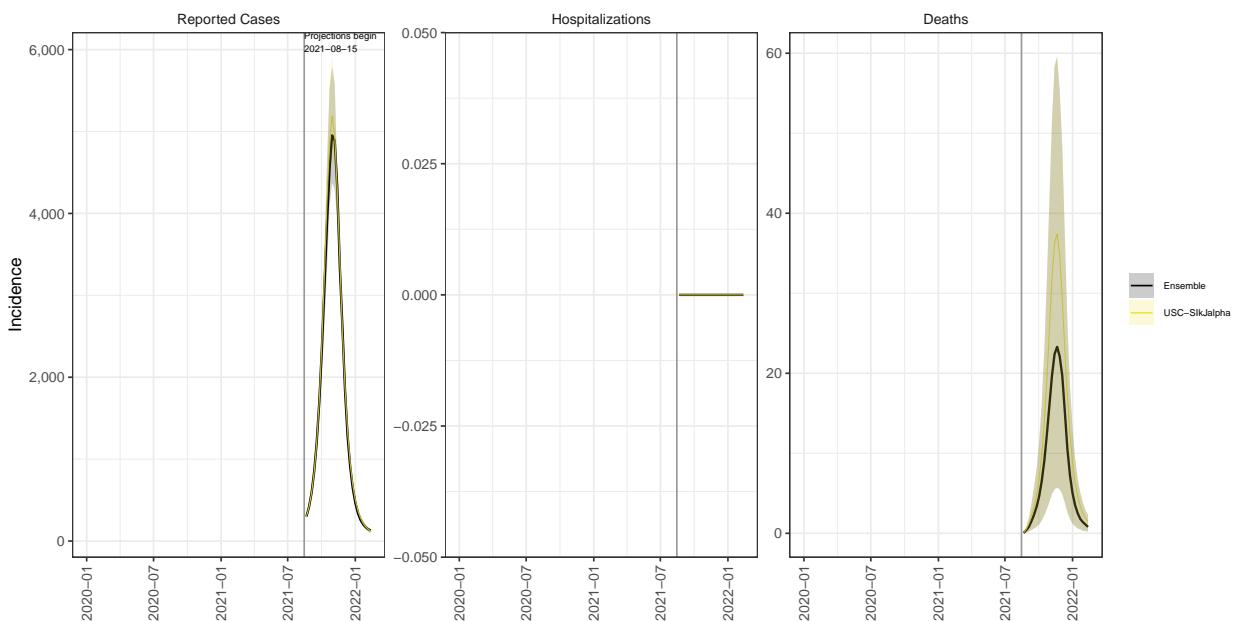
WY model variance & 50% projection intervals – Low protection, Fast waning



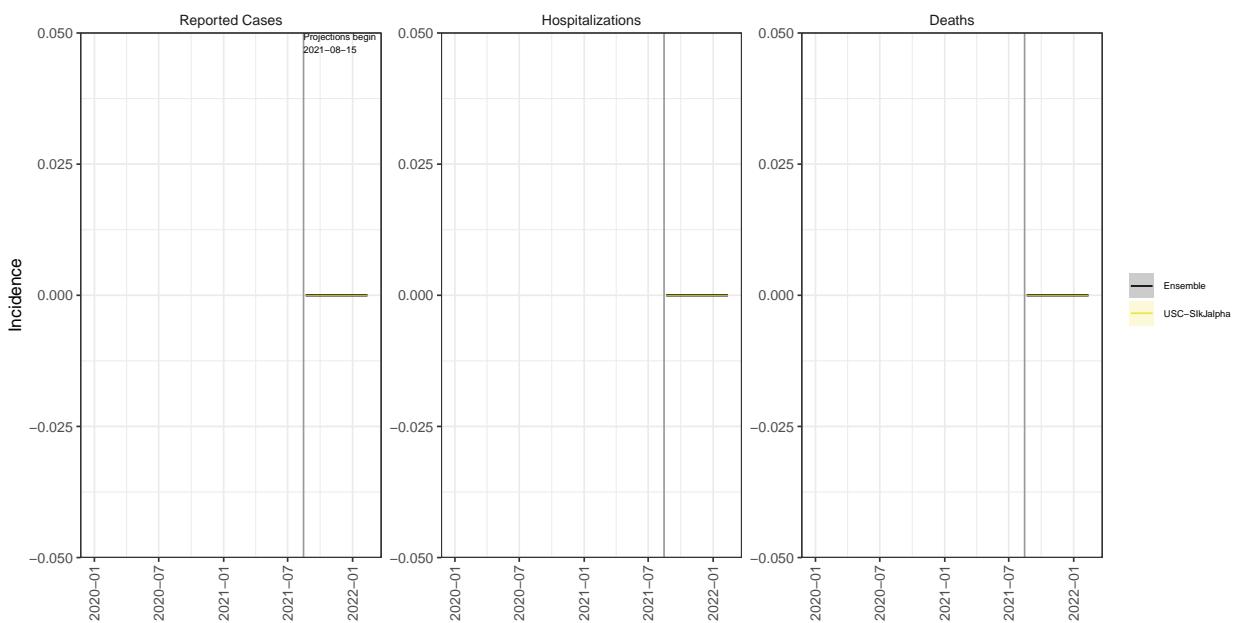
AS model variance & 50% projection intervals – Low protection, Fast waning



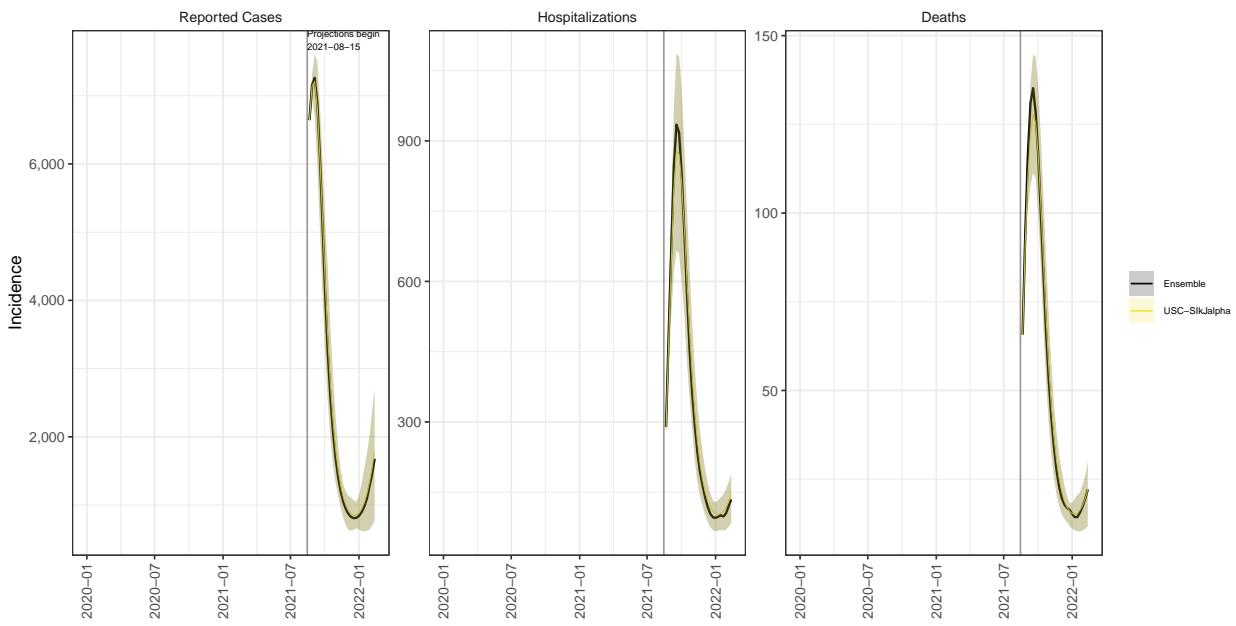
GU model variance & 50% projection intervals – Low protection, Fast waning



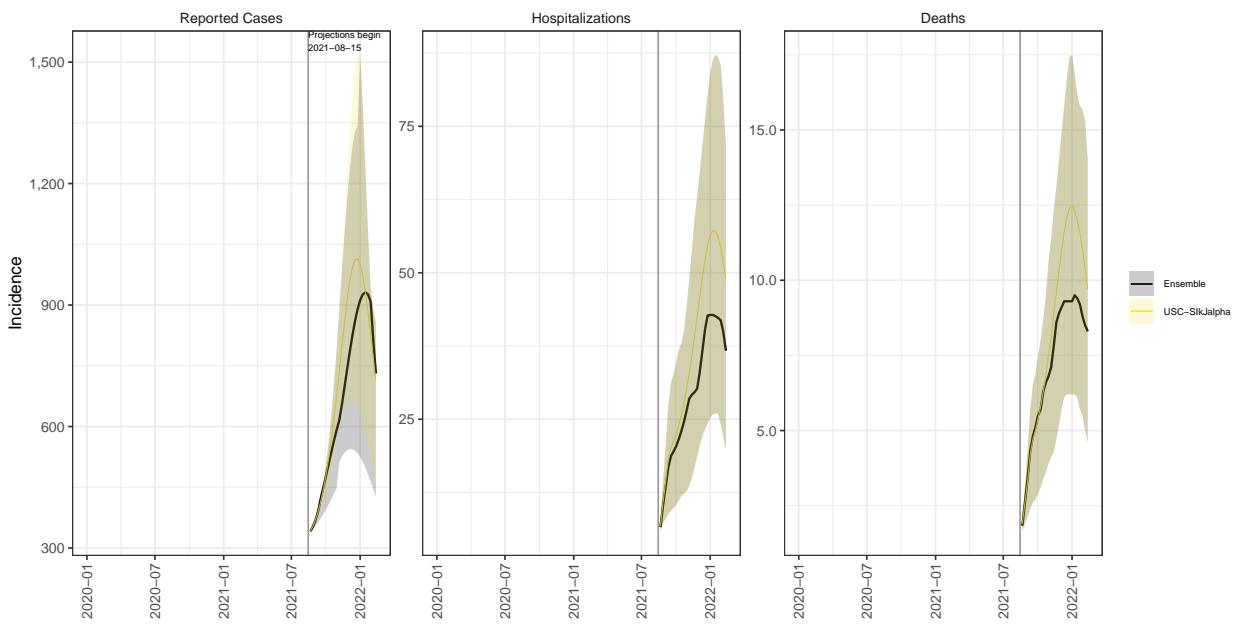
MP model variance & 50% projection intervals – Low protection, Fast waning



PR model variance & 50% projection intervals – Low protection, Fast waning



VI model variance & 50% projection intervals – Low protection, Fast waning



Teams and models

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