

# Eight-Week COVID19 Projections for New York City

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Note: Projections from 4/3/20 onwards included age-specific data and as such the model was likely better constrained and would better reflect the transmission dynamics, compared to our previous model projections. For more details on Methods, see README.pdf

Results – see tables (Projected Epidemic Outcomes and Healthcare Demands etc.) in WeeklyProjections.xlsx; see figures below.

## Some observations based on confirmed COVID19 case data up to 4/14/2020:

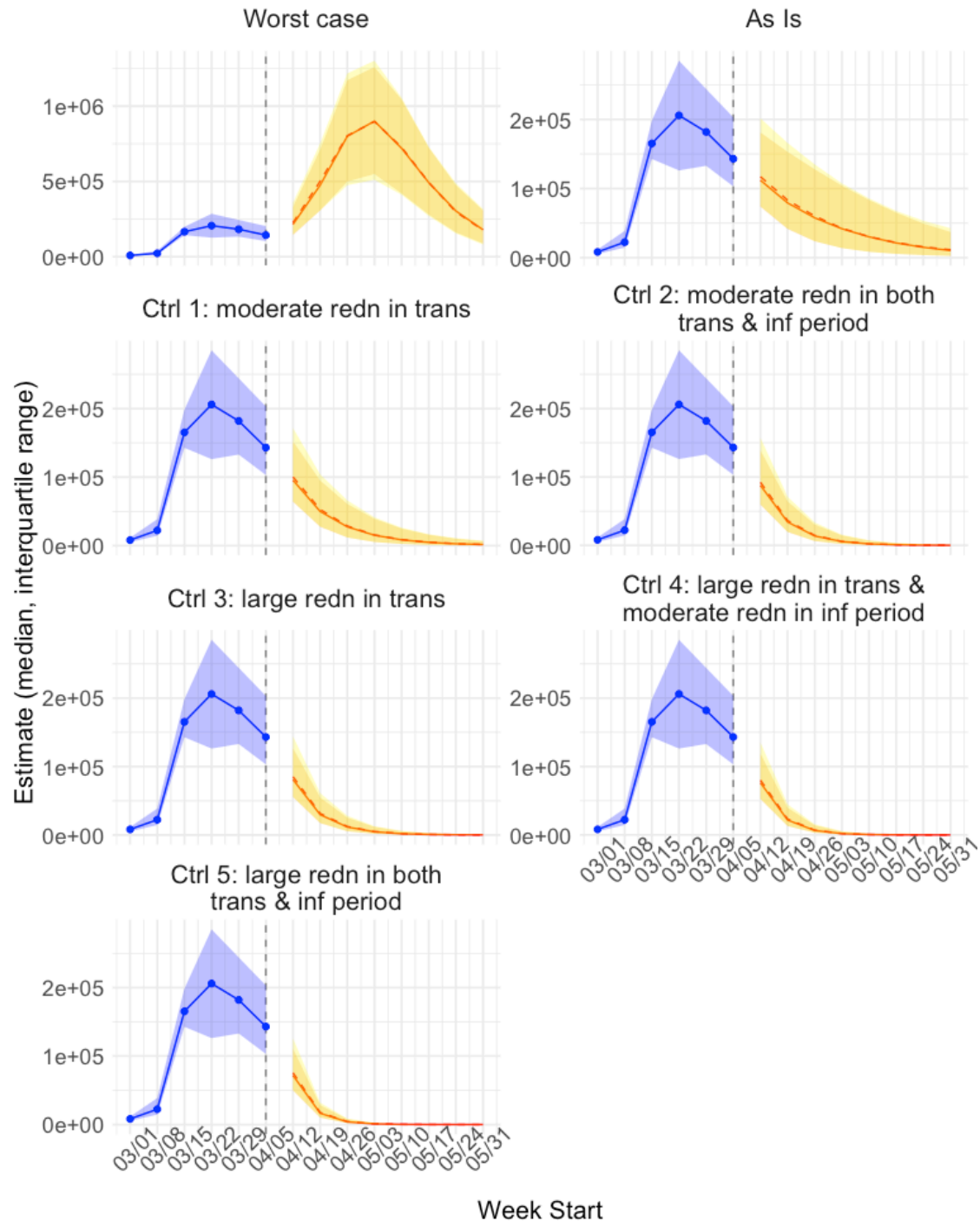
It seemed that  $R_t$ , the reproductive number, was hovering around 1 in the last couple weeks, in particular, for 25-44 year-olds, 45-64 year-olds, 65-74 year-olds. For 75+ year-olds,  $R_t$  was slightly above 1; this suggests the number of infections in this age group may continue to increase in the coming weeks should current level of transmission persist.

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Acknowledgement: We thank the NYC Department of Health and Mental Hygiene (DOHMH) for sharing of data and allowing this public posting. And we thank Columbia Mailman School of Public Health for high performance computing.

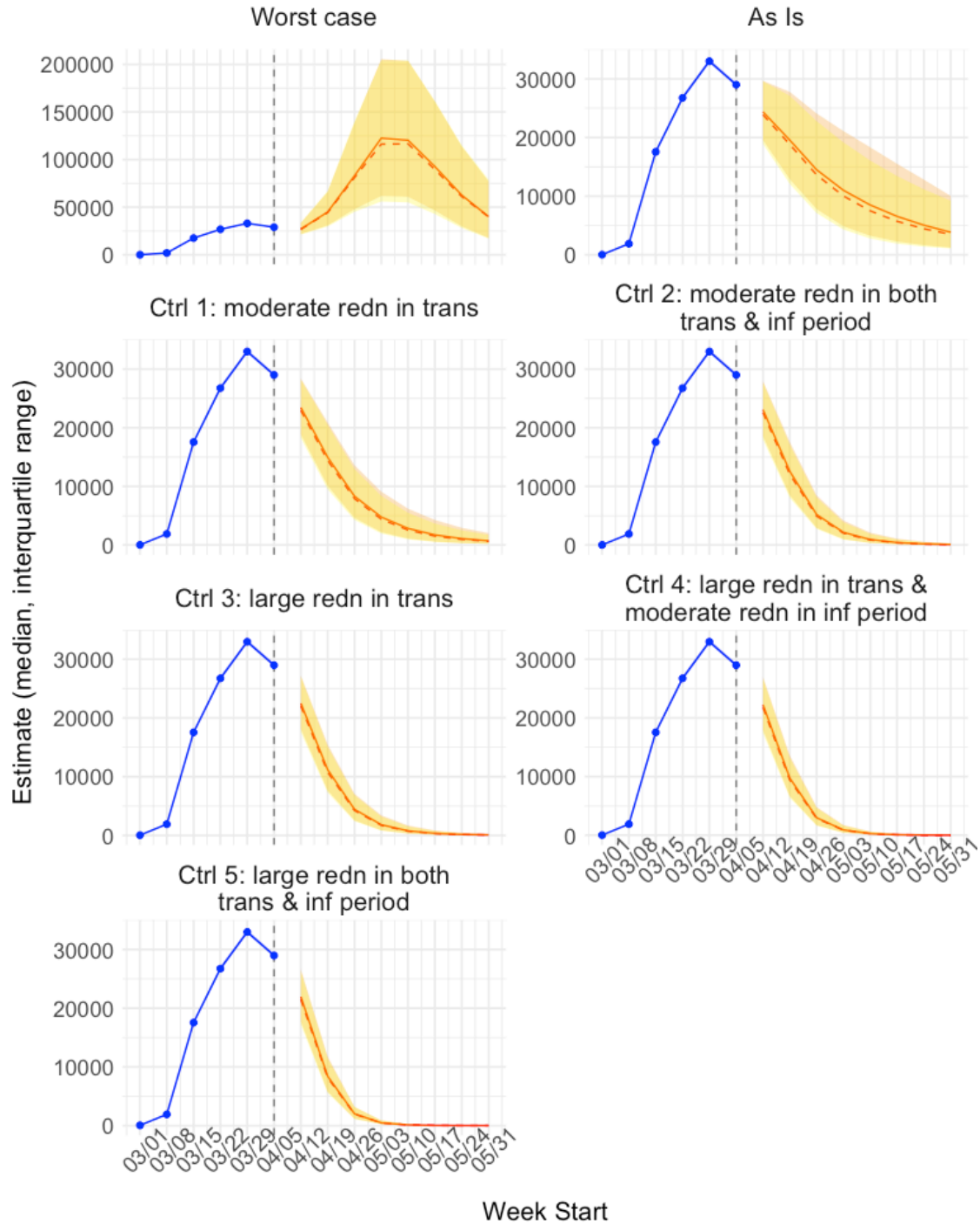
Caution: Please note that there are large uncertainties in our model projections due to unknown disease transmission dynamics (model misspecification), changing behavior and policies, delay in reporting, and under-reporting. In particular, the data our projections are based on reflect situations ~2 weeks ago due to time lags from interventions implemented to transmission events (a couple days to weeks), from infection to symptom onset (~2-6 days), from symptom onset to seeking treatment (~2-7 days), from seeking treatment to getting tested and then reported in the surveillance system (~2-7 days). In addition, how the epidemic would unfold also depend largely on behavior changes over time.

## New Infections



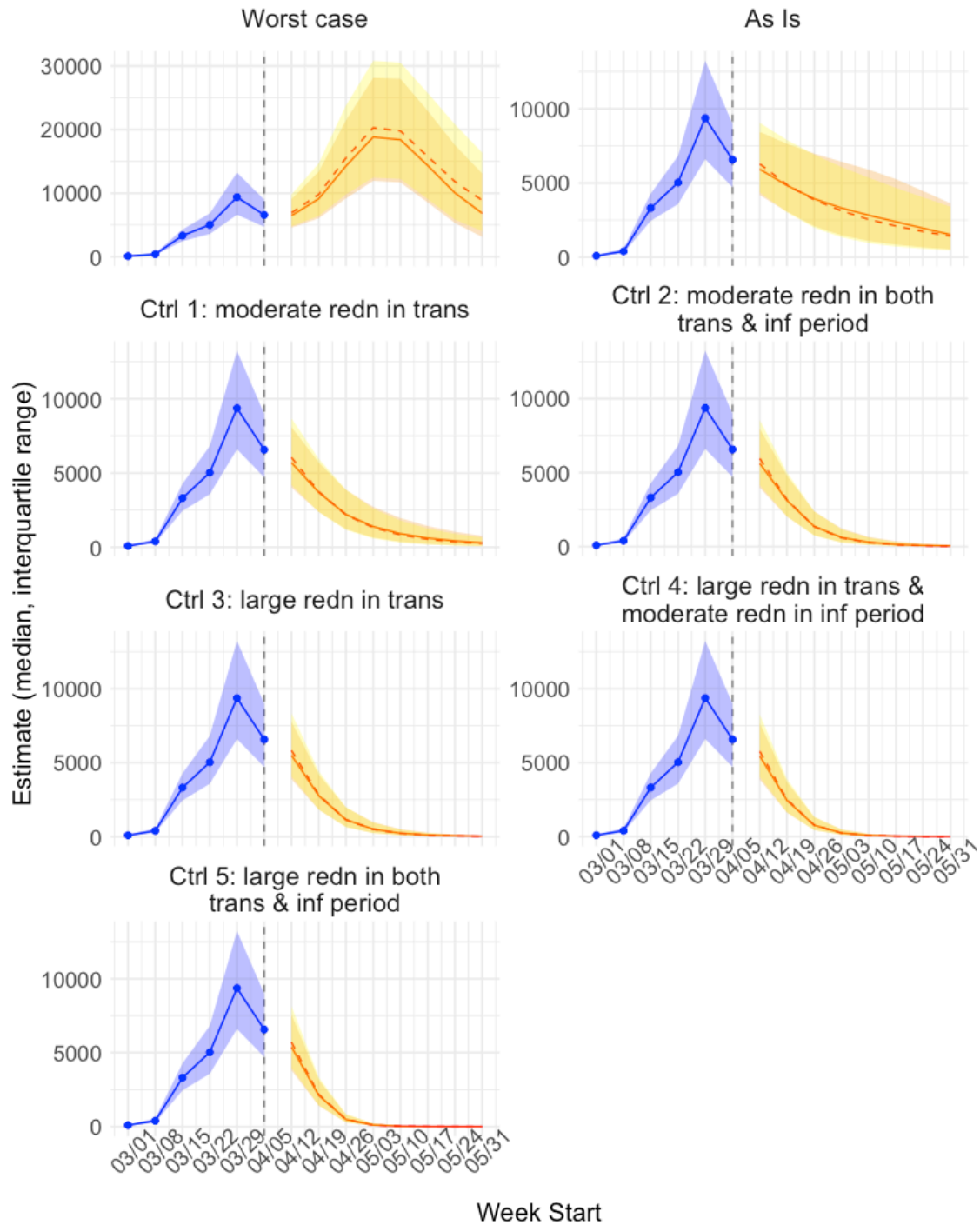
Projected number for the next 8 weeks under different control scenarios. Blue lines and points show median estimates for the model training period; red lines show projected median numbers with seasonality (solid lines) or without seasonality (dashed lines); shaded regions shown the interquartile ranges (IQR) for model estimates with seasonality (in orange) or without seasonality (in yellow). Dates are the first day (i.e. Sunday) of the week.

## New Cases



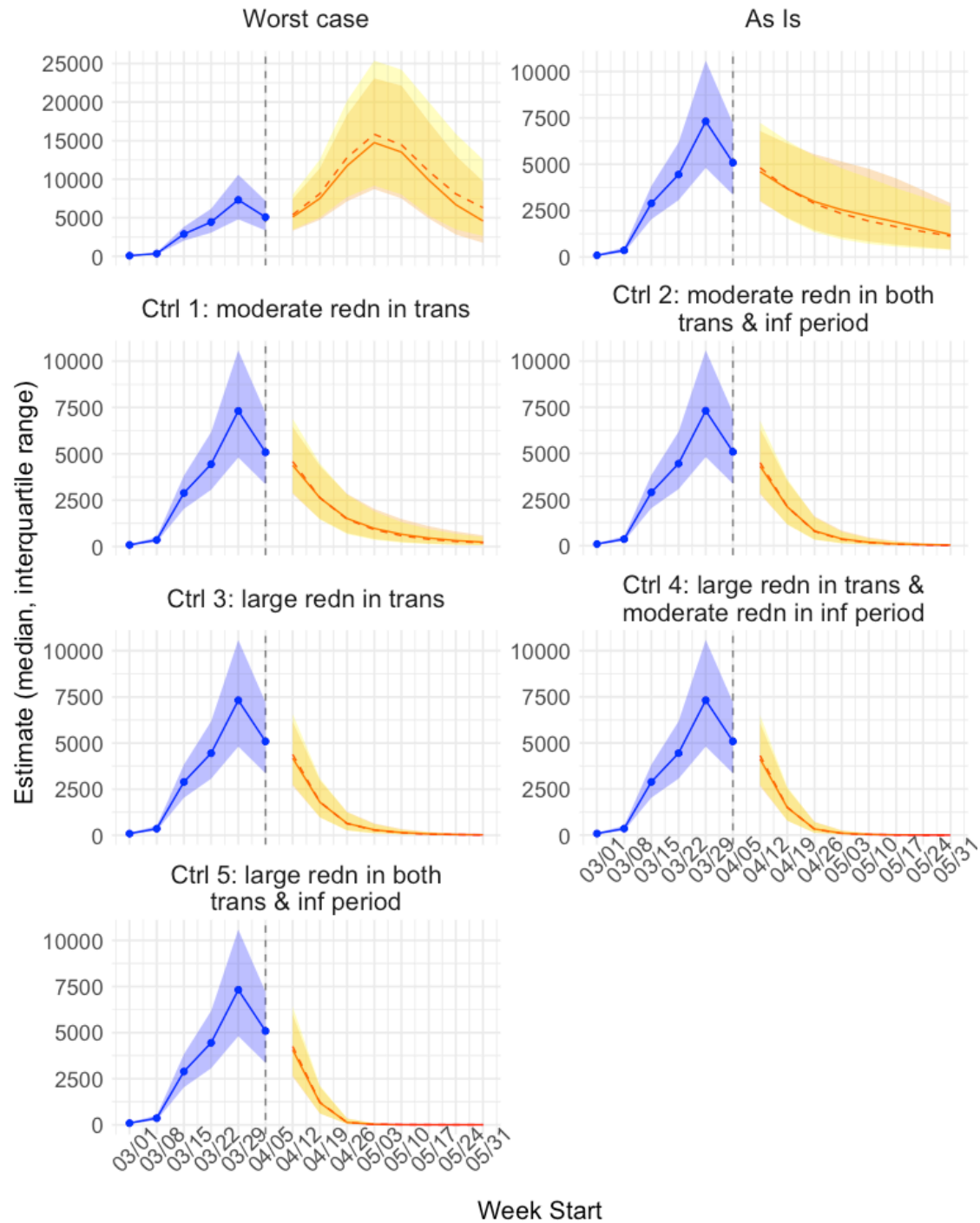
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## New Total Hospitalizations



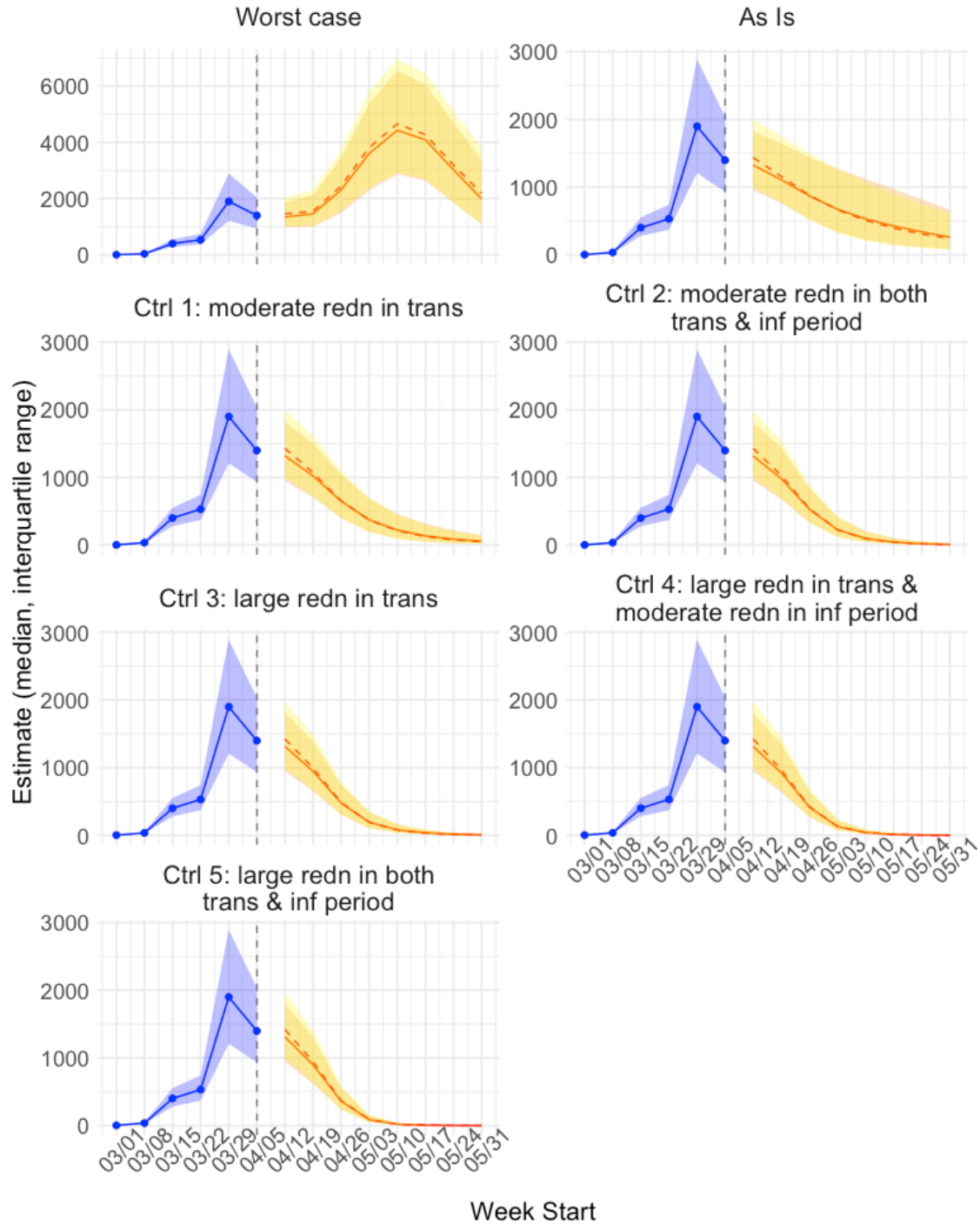
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## New Non-ICU Hospitalizations



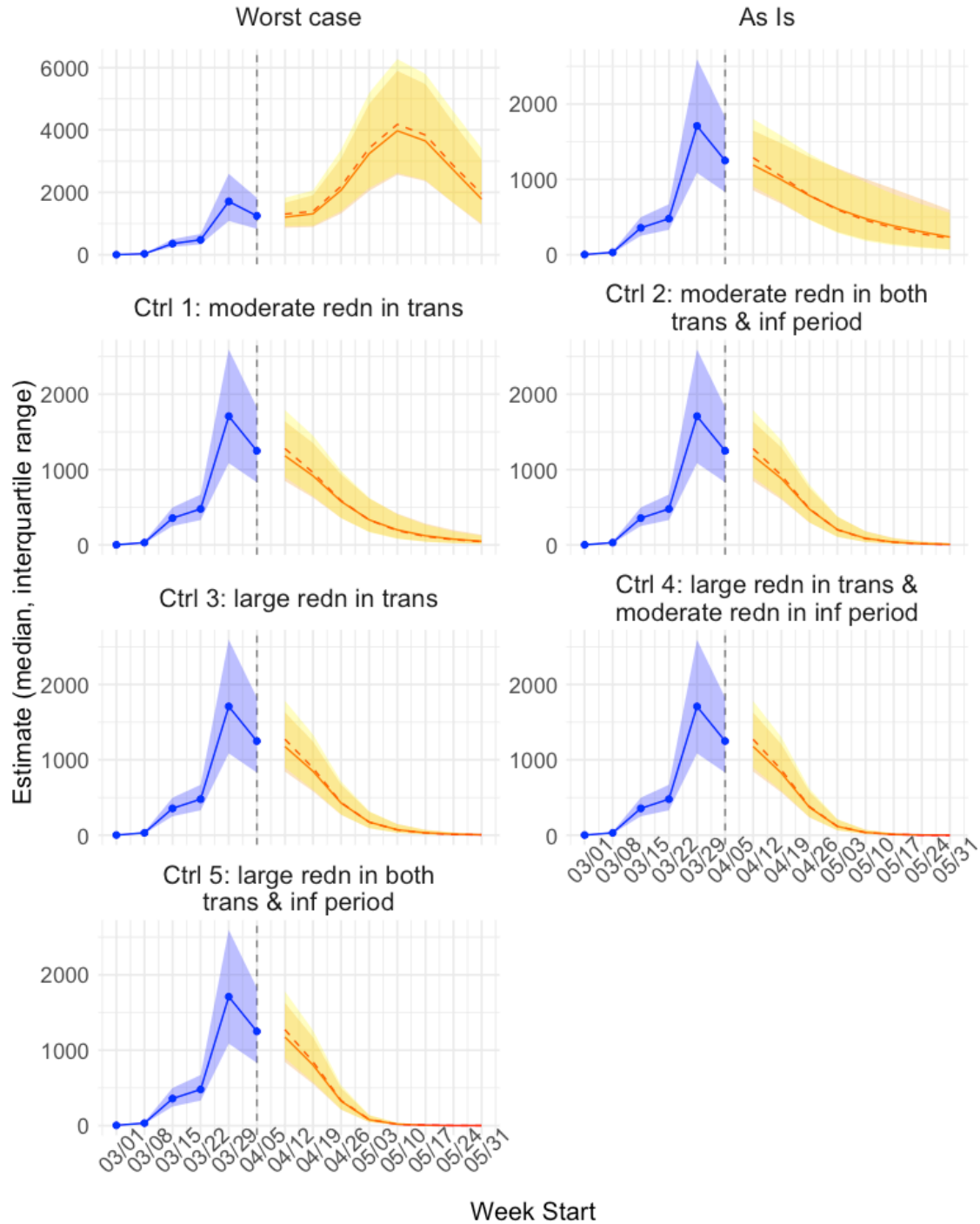
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## New ICU admissions



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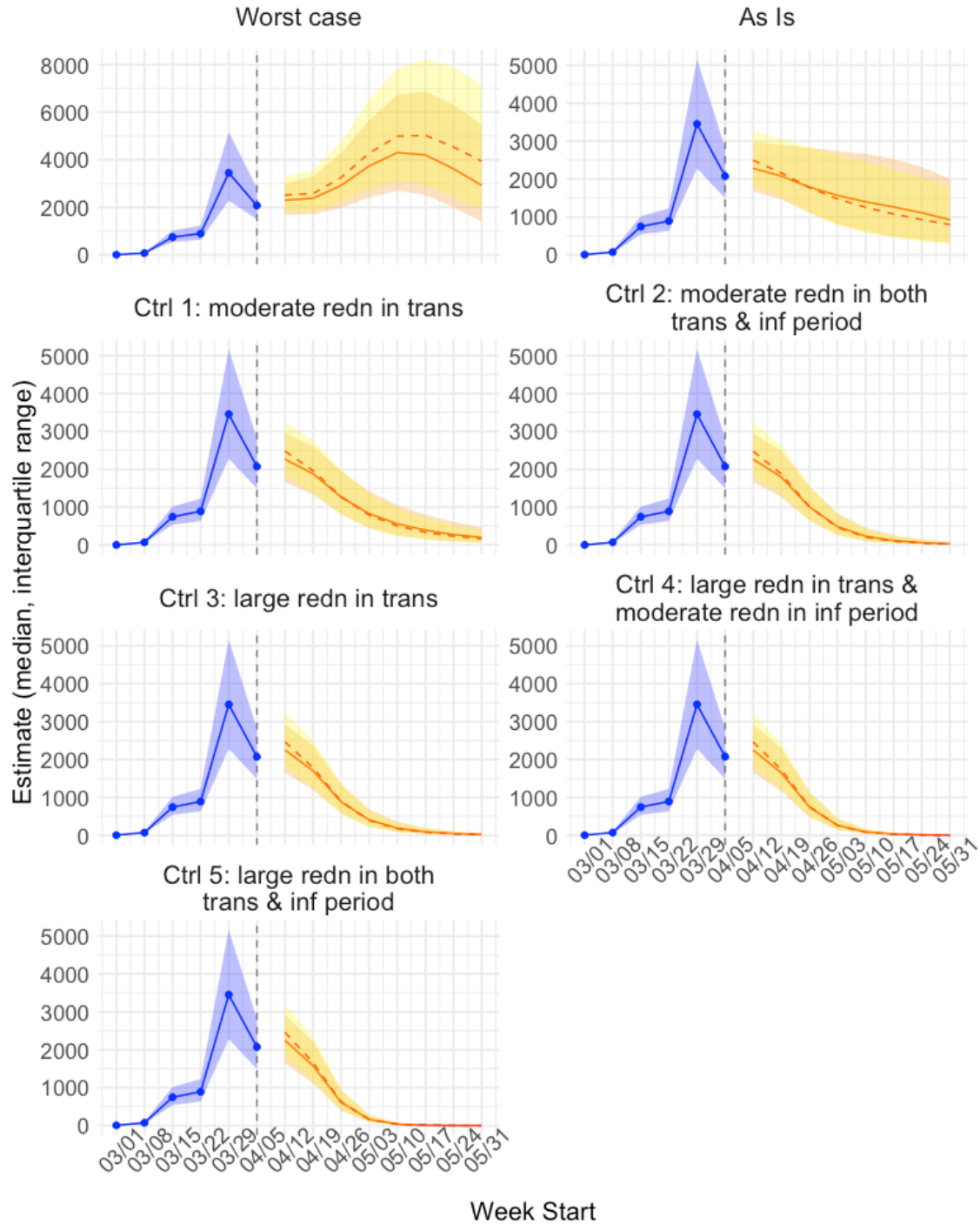
## New Intubations



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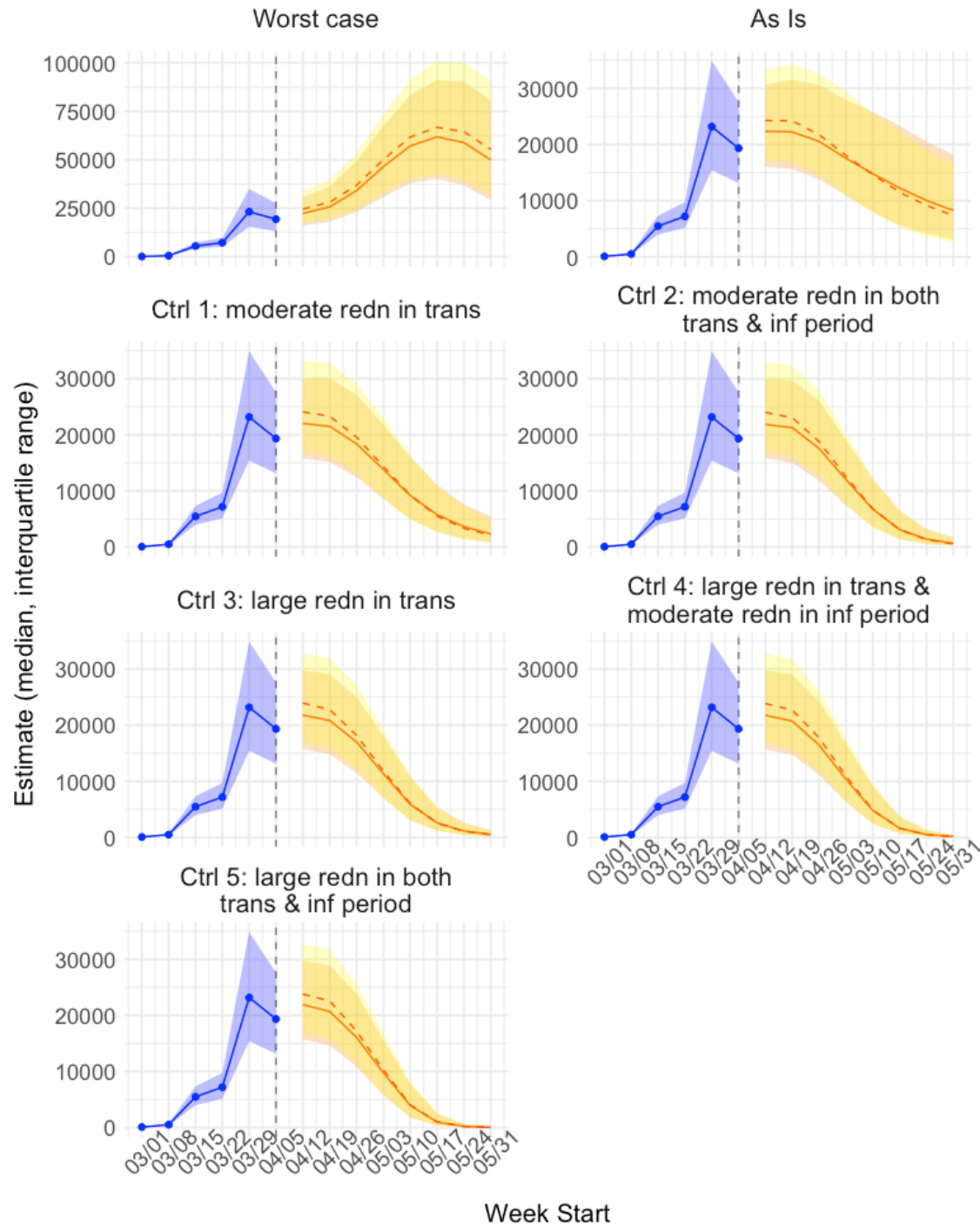
## New Deaths



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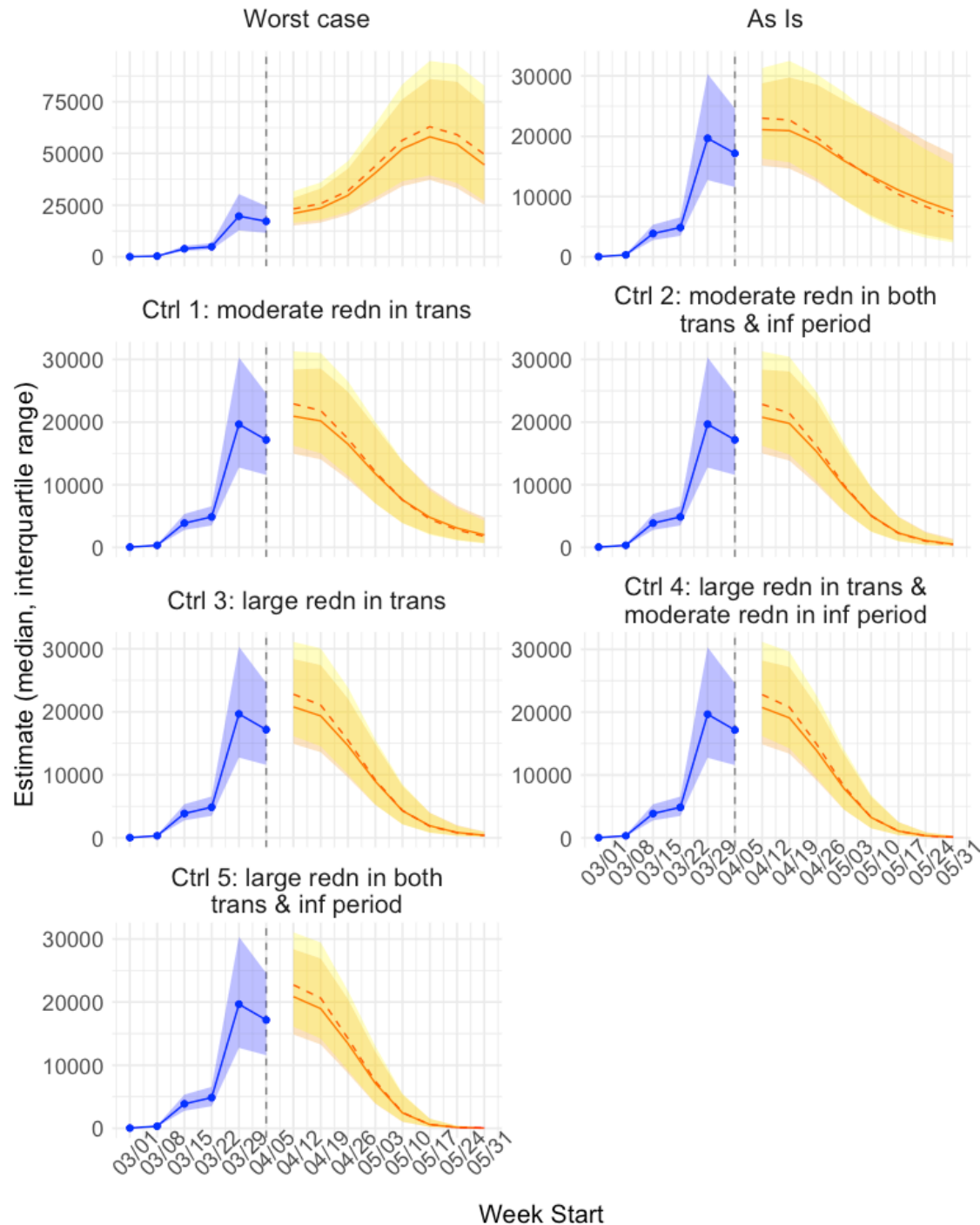


# Total Hospital Bed Needs (prevalence, max)



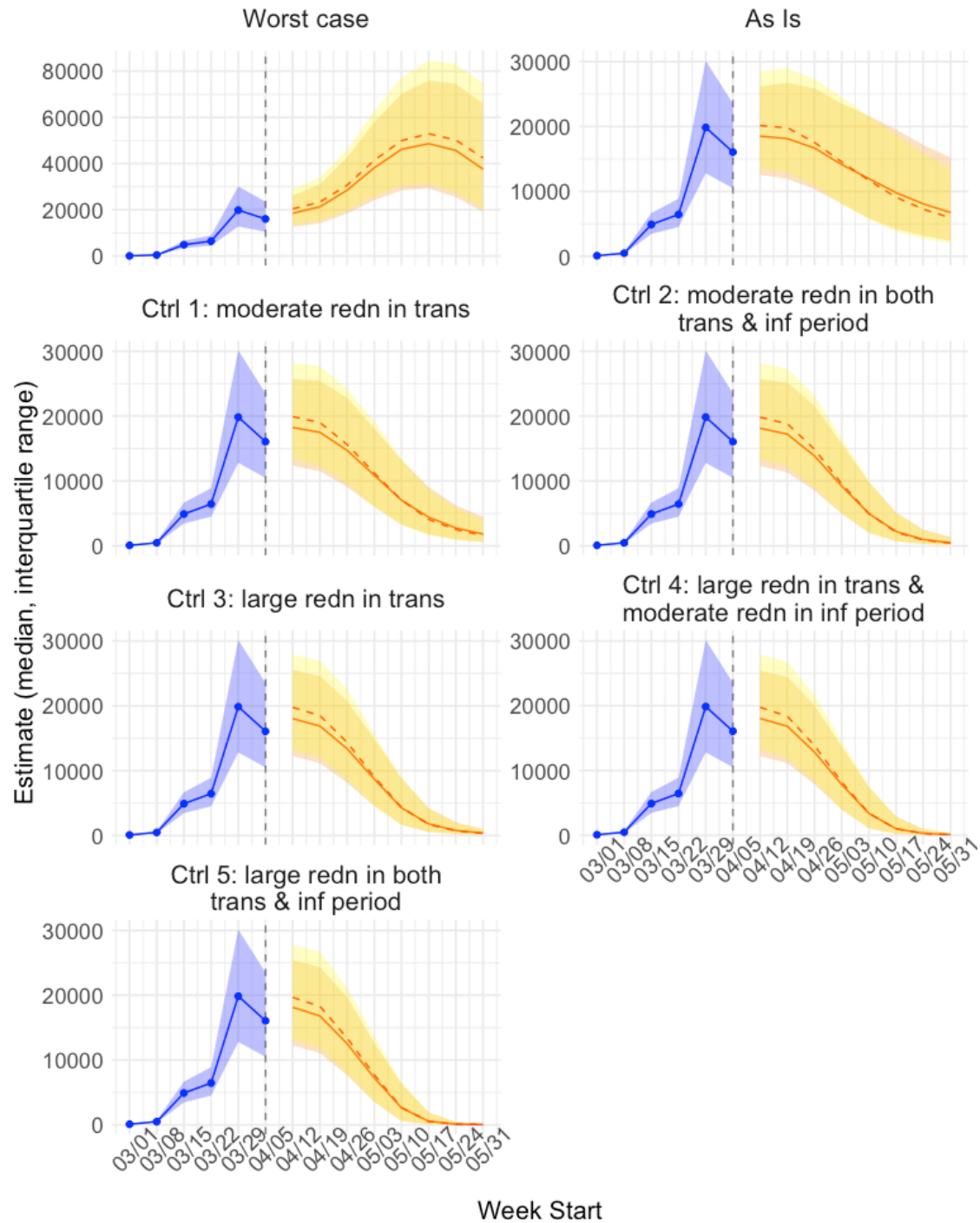
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# Total Hospital Bed Needs (prevalence, mean)



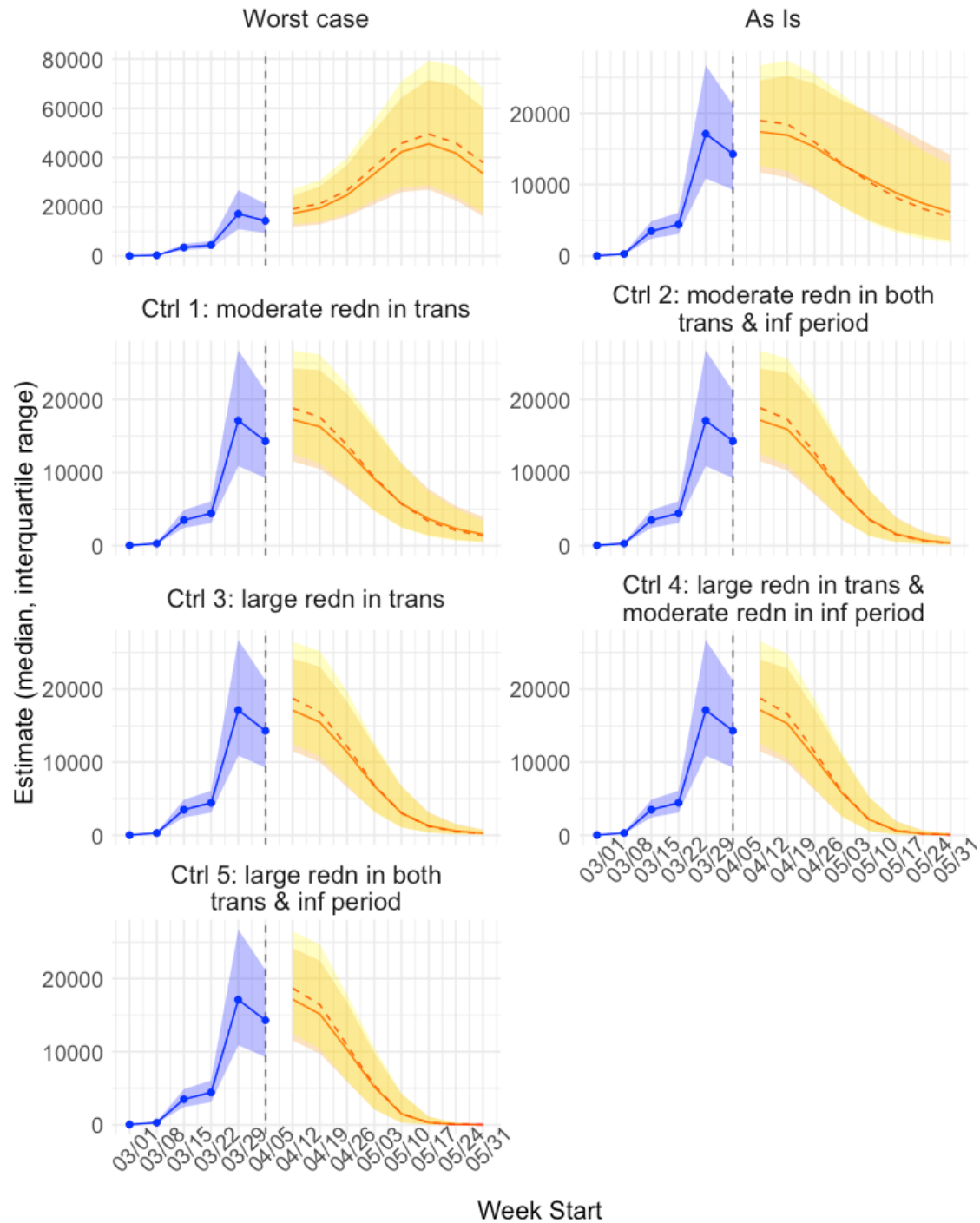
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# Non-ICU Hospital Bed Needs (prevalence, max)



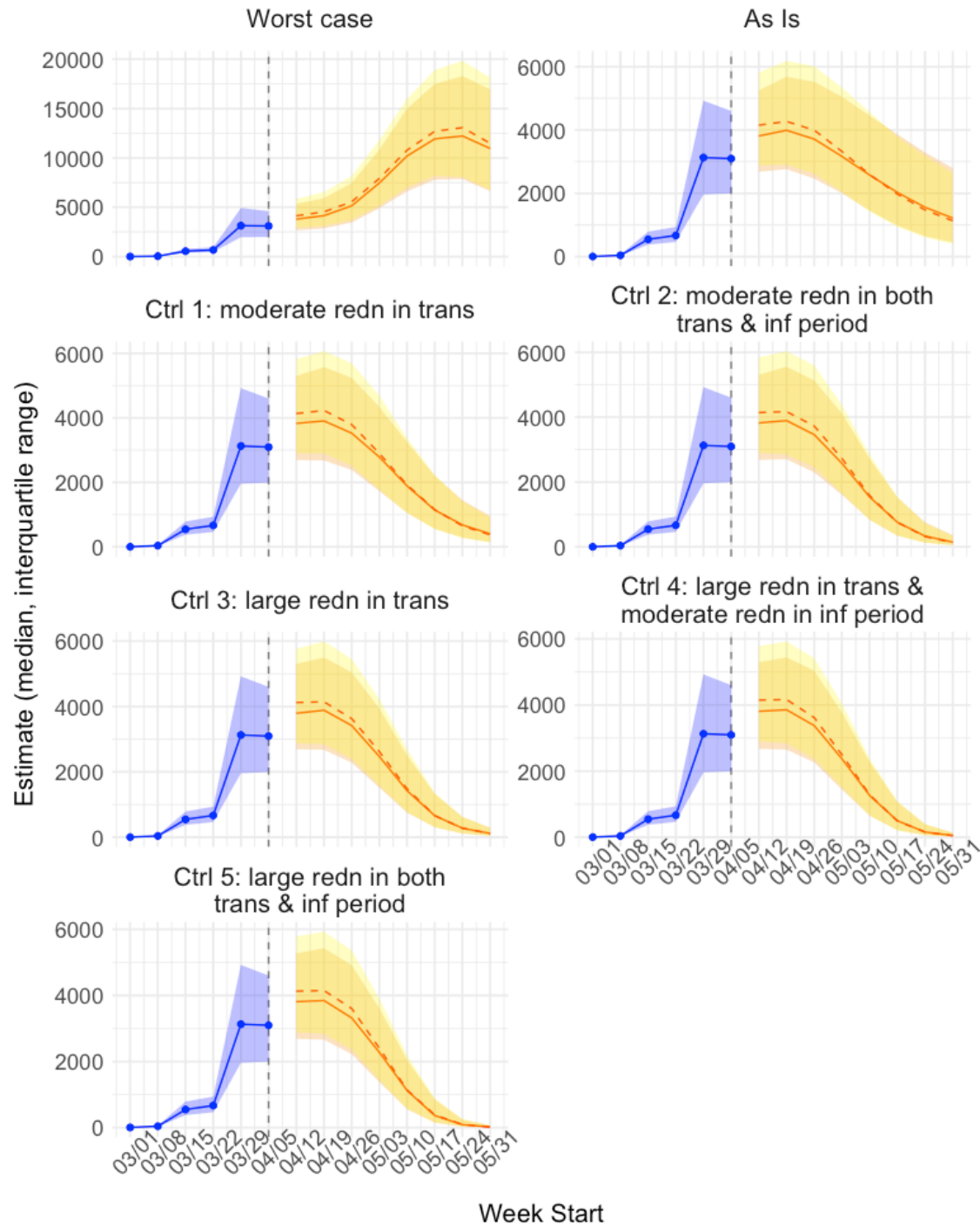
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# Non-ICU Hospital Bed Needs (prevalence, mean)



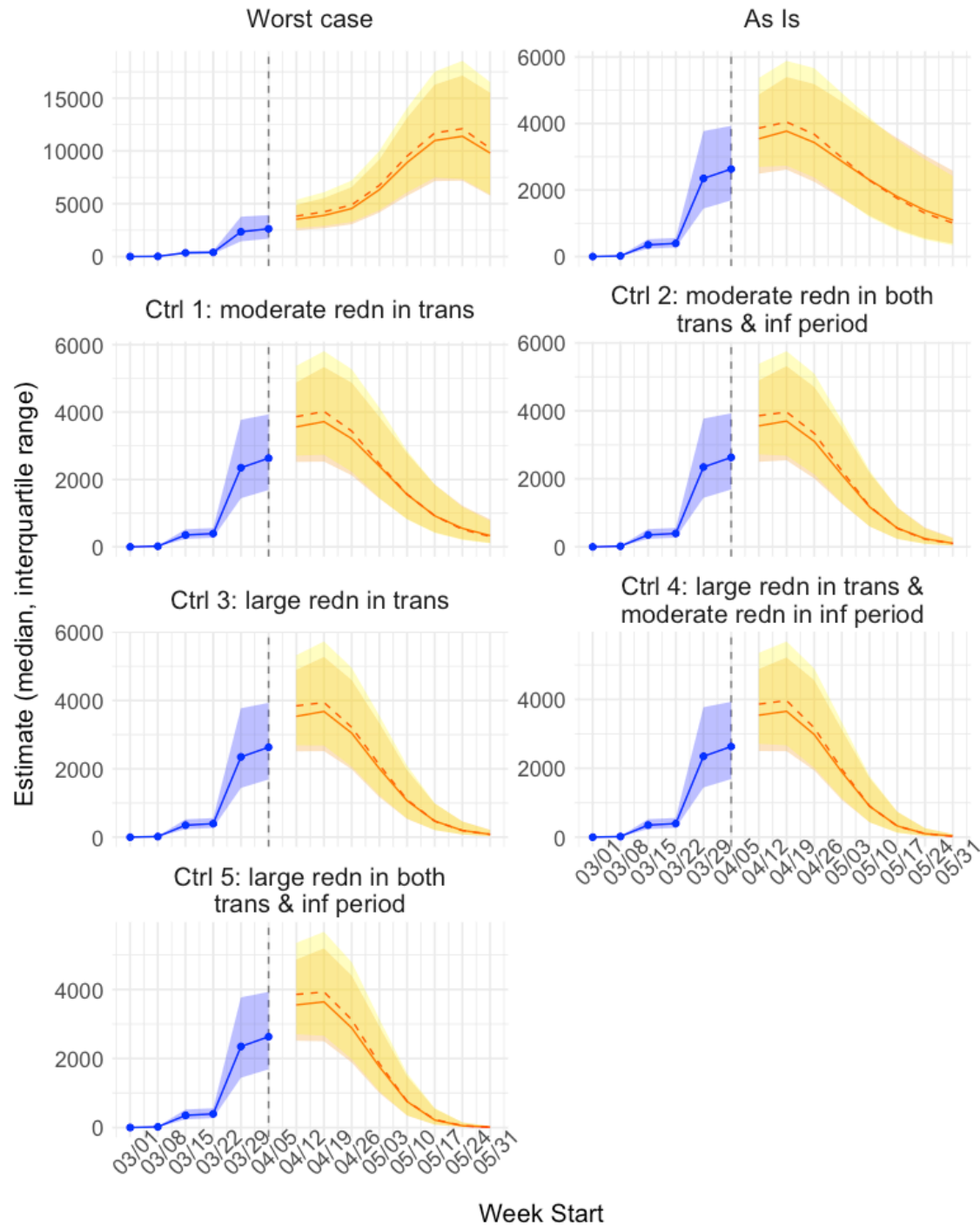
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# ICU Bed Needs (prevalence, max)



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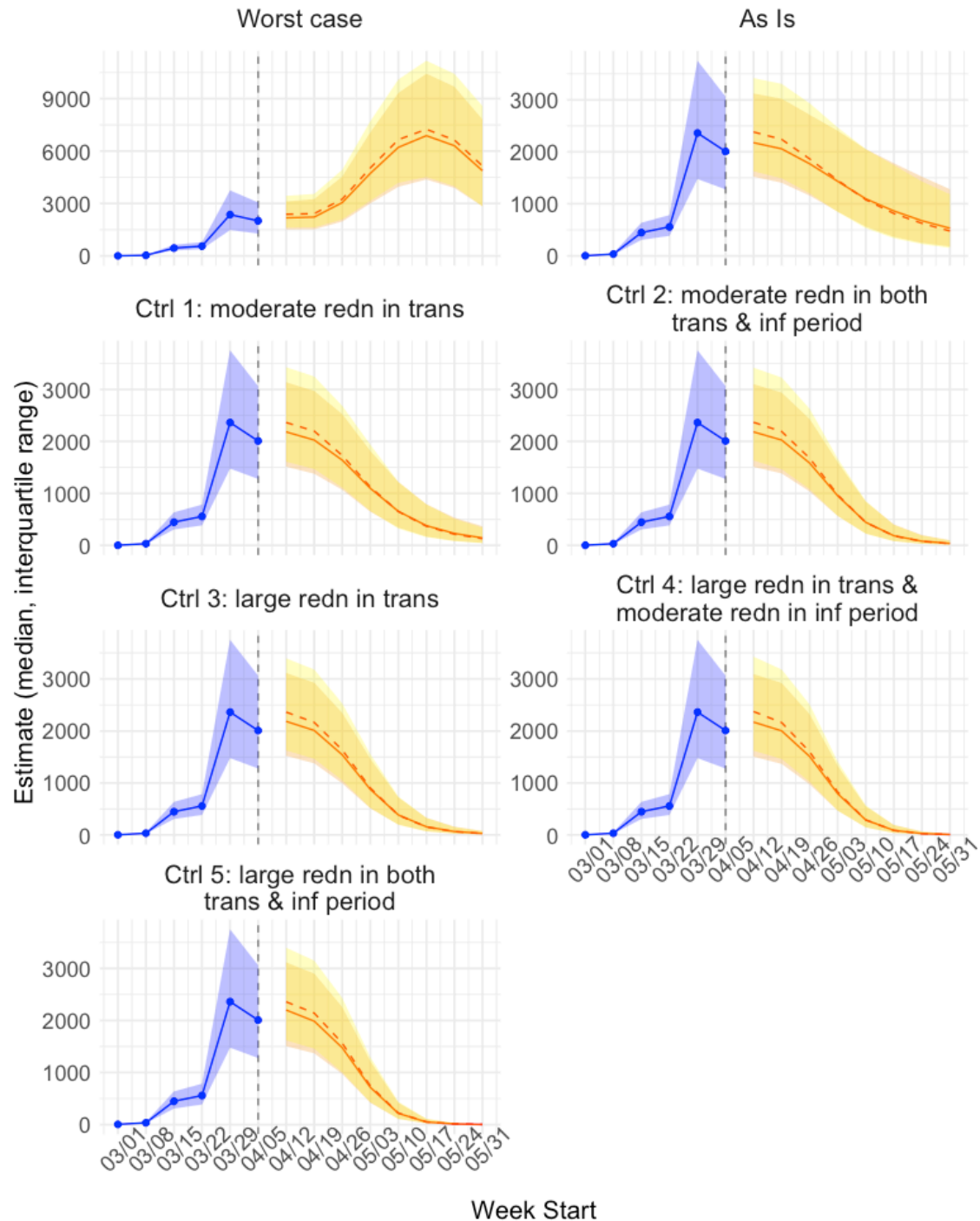
# ICU Bed Needs (prevalence, mean)



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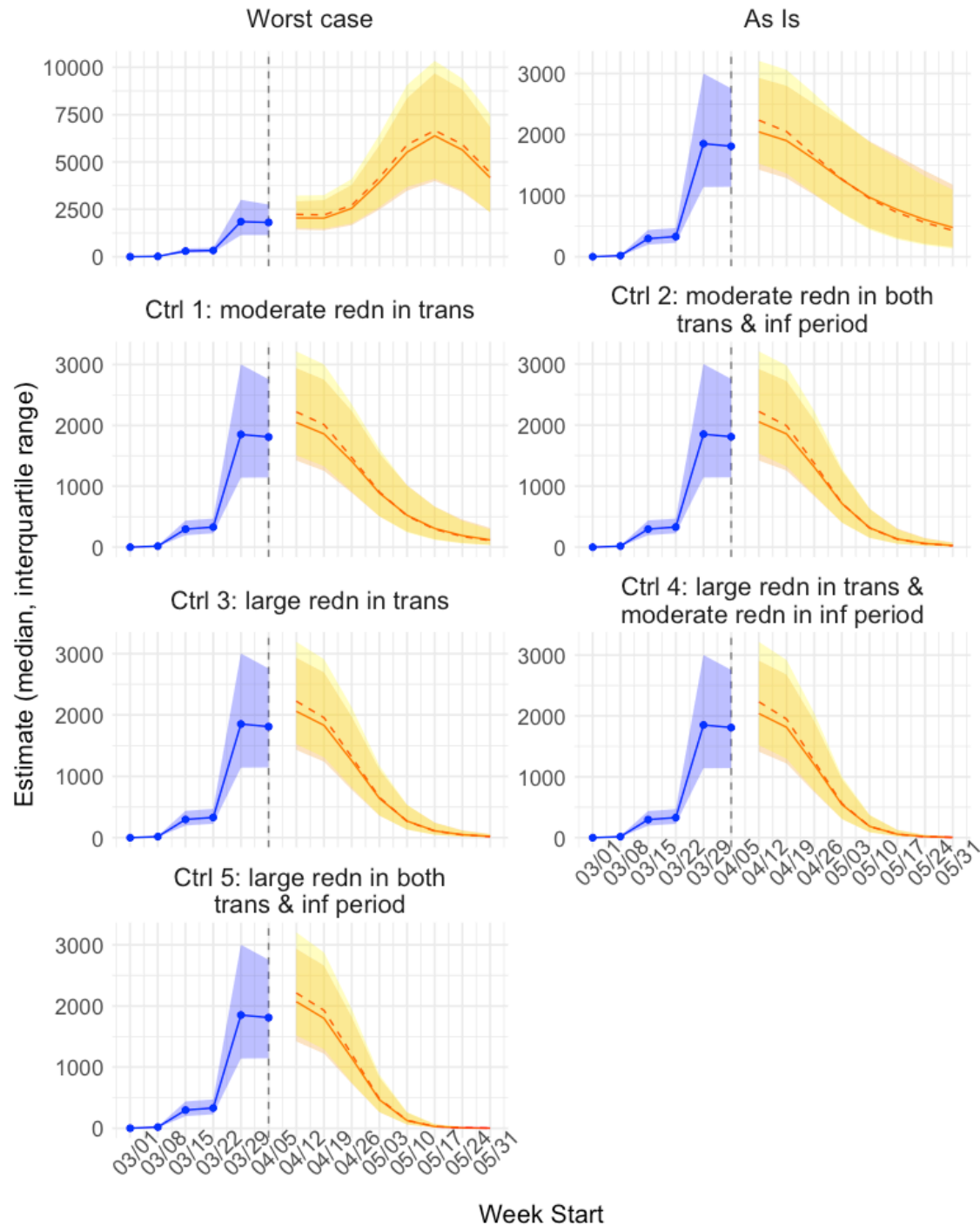
# Ventilator Needs (prevalence, max)



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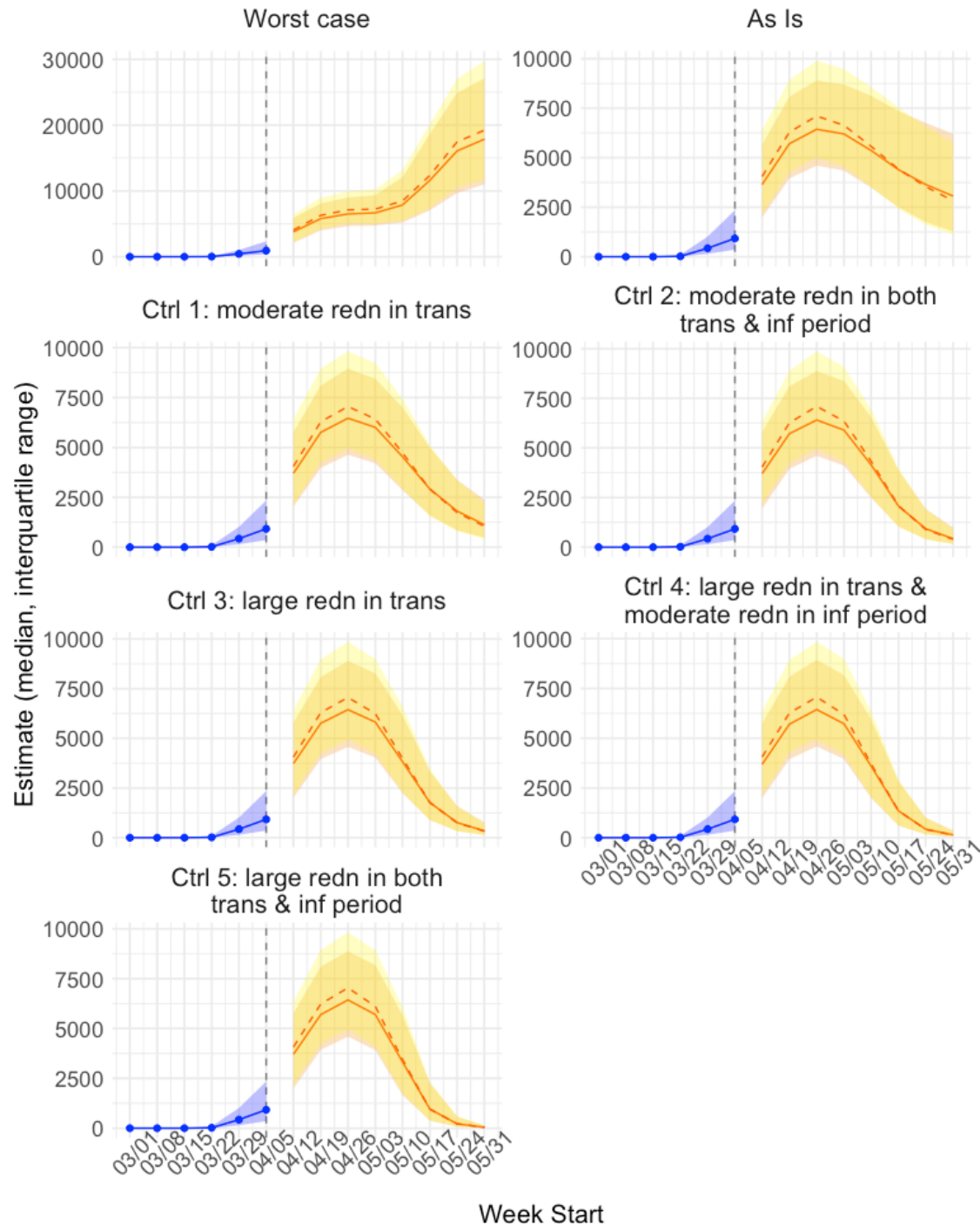


# Ventilator Needs (prevalence, mean)



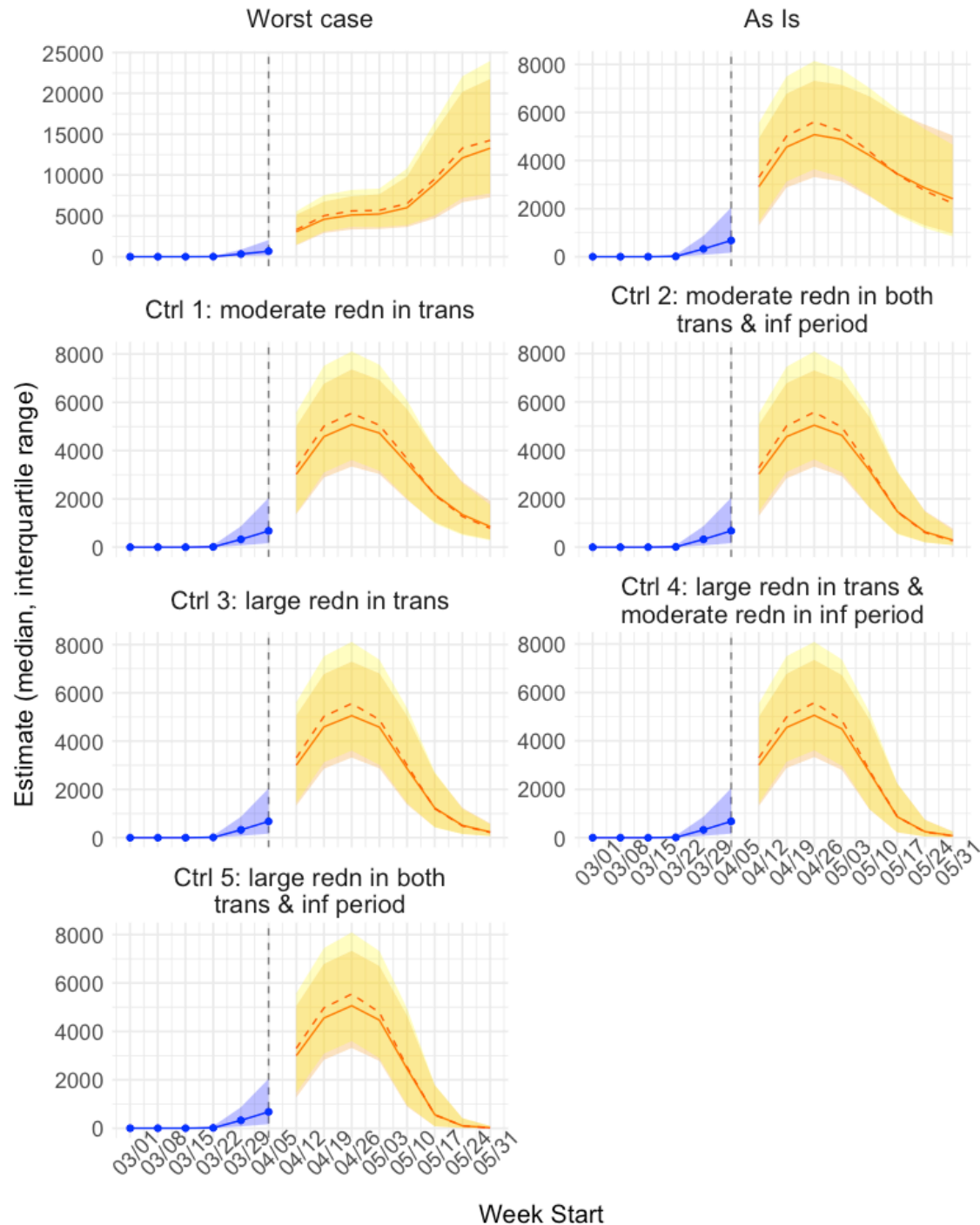
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## Total Hospitalization Discharge



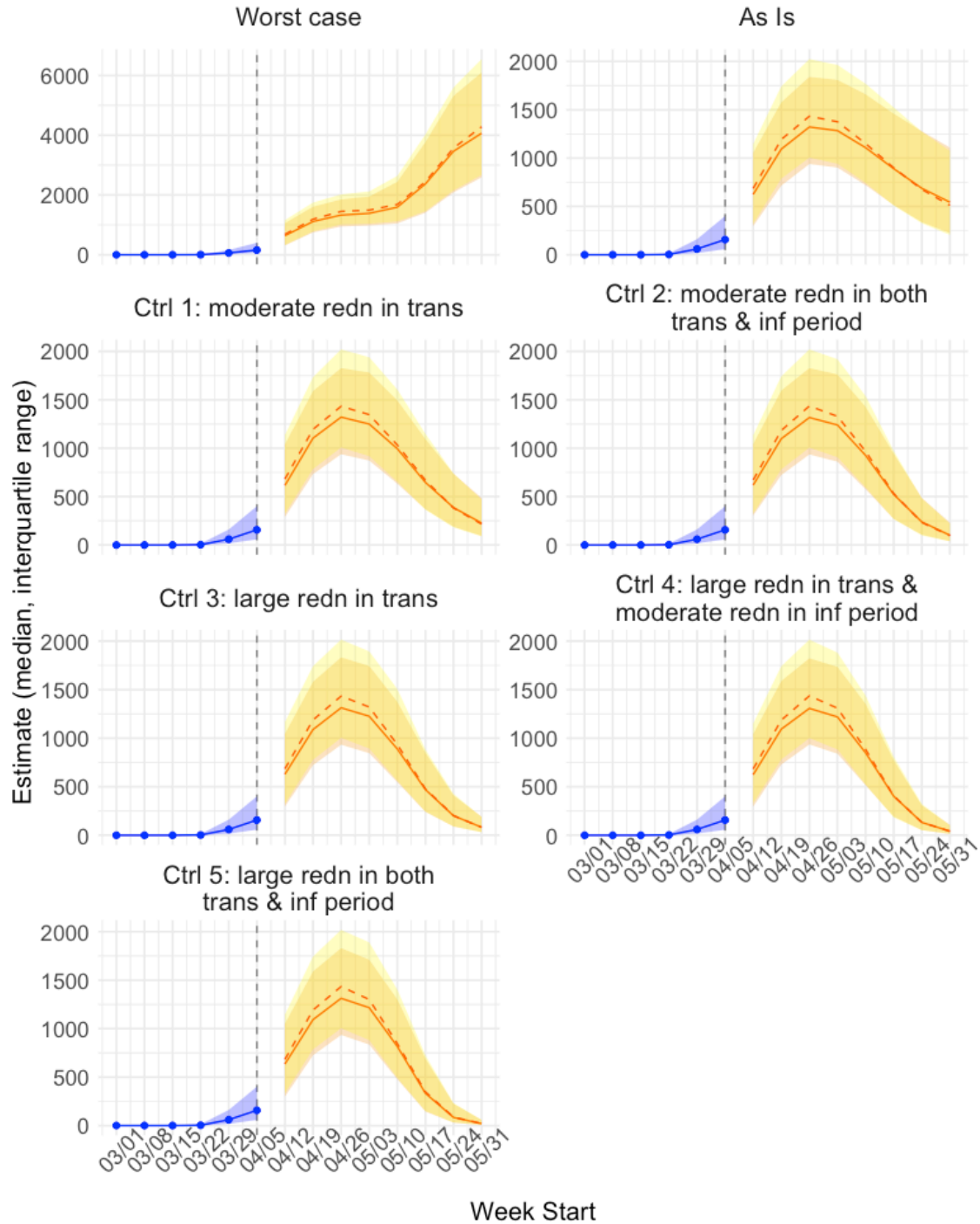
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## Non-ICU Hospitalization Discharge



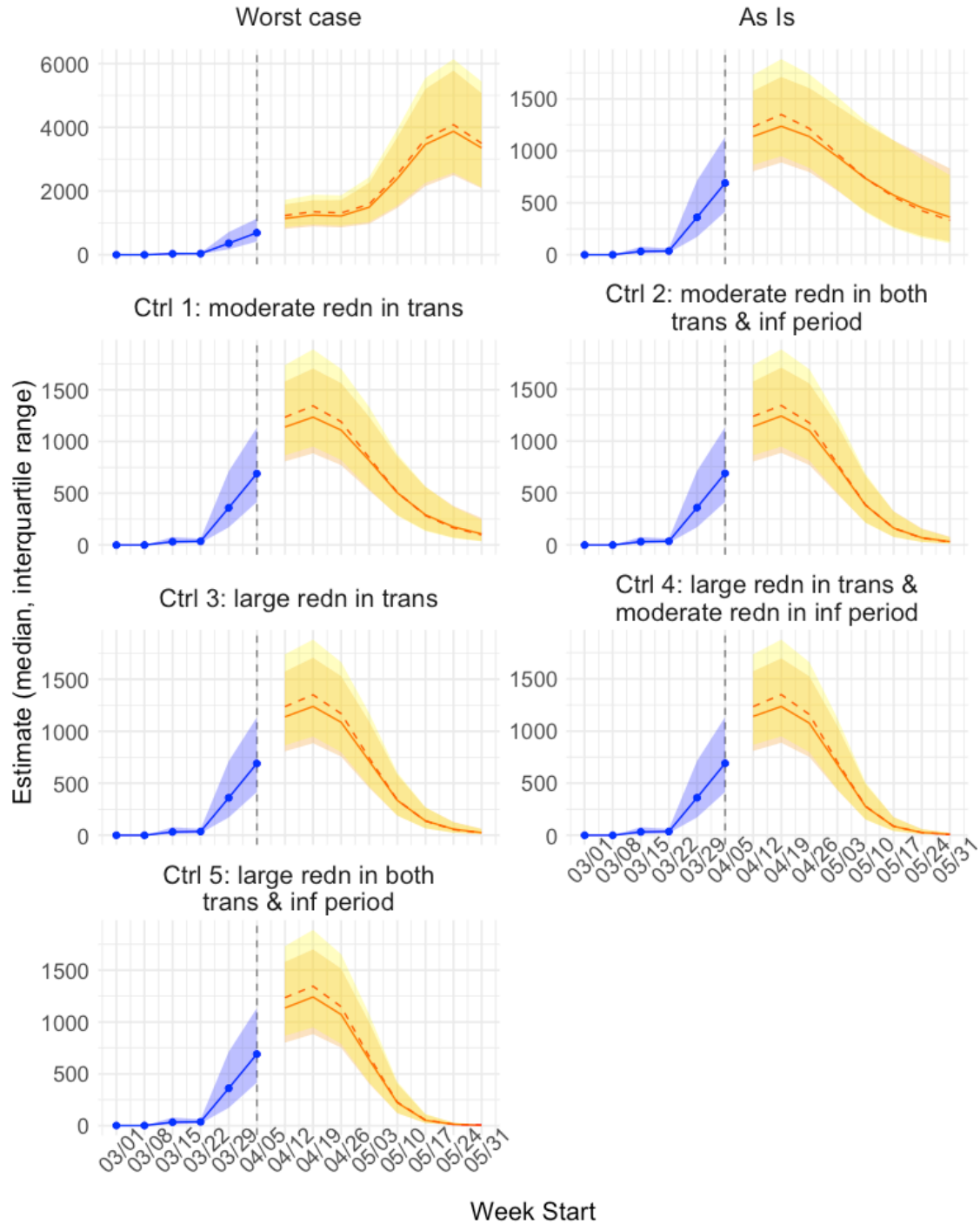
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## New ICU Discharge



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## New Extubation



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