Ex-post Evaluation of COVID-19 Mortality Forecast Models

Work in Progress

PRESENTER:
Ricarda Duerst

Ask me!

BACKGROUND

Models forecasting the mortality burden of COVID-19 are used to inform public-health decisions that have strong societal and economic impact (e.g. lockdowns). → Necessity to systematically validate and compare models' performances!

RESEARCH QUESTIONS

Which of the selected models performs best in multiple settings defined by…?

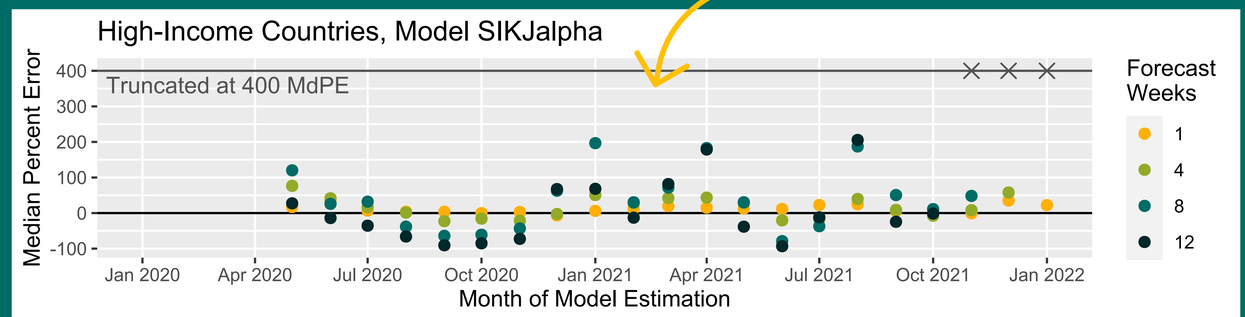
a) The phase of the pandemic
b) The forecast length
c) The world region

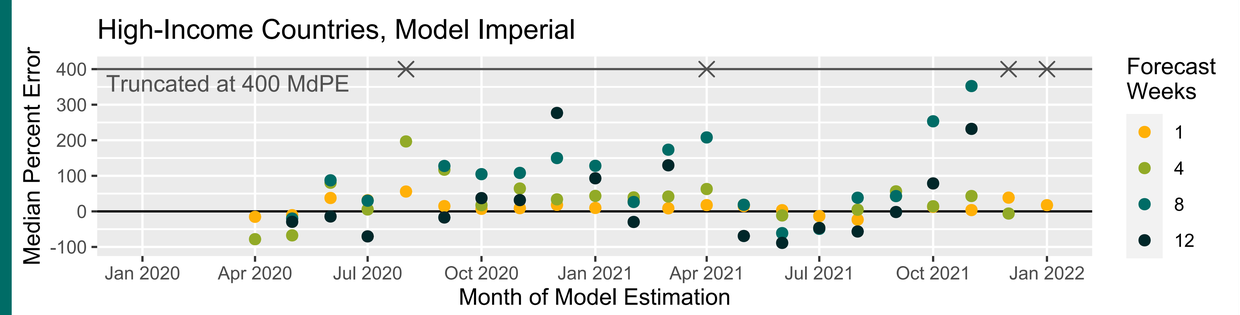
METHODS

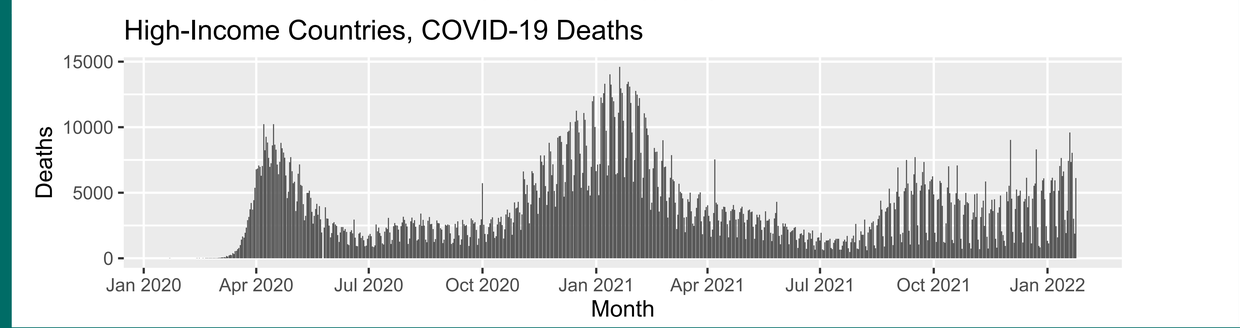
1. Selected **4** popular COVID-19 models based on global scope and comparability: *Delphi*, *Imperial*, *IHME*, *SIKJalpha*
2. Downloaded date-versioned forecasts of daily deaths due to COVID-19 (Feb '20 – Mar '21)
3. Sourced data on reported deaths from Johns Hopkins University
4. Validation analysis using weekly errors
   a) by month of model estimation, forecast length, world region
   b) in different settings, trying to forecast peaks in daily deaths and other phases of the pandemic (strong increases / decreases, between waves, plateaus)

The **COVID-19 forecast** models *SIKJalpha* and *Imperial* work best to forecast **peaks** in daily **deaths**.

What's this?







What's next?

Scan to download this poster

RESULTS

- Forecast inaccuracy increases with forecast length
- Mainly underestimation of reported deaths due to COVID-19
- Phase of the pandemic affects forecast performance
- Forecasts of magnitude of peaks in daily deaths are most inaccurate
- Forecasts most accurate for high-income countries

Why those?

MODELS

- *Delphi* – COVID Analytics Team, Operations Research Center, Massachusetts Institute of Technology
- *Imperial* – MRC Centre for Global Infectious Disease Analysis, Imperial College London
- *IHME* – COVID-19 Forecasting Team, Institute for Health Metrics and Evaluation, University of Washington
- *SIKJalpha* – Srivastava, A., Xu, T. & Prasanna, V., University of Southern California

AUTHORS:
Ricarda Duerst [1,2]
Jonas Schöley [1]
Christina Bohk-Ewald [1]

1 Max Planck Institute for Demographic Research, Rostock, Germany

2 University of Helsinki, Finland

MAX PLANCK INSTITUTE FOR DEMOGRAPHIC RESEARCH

MAX PLANCK GESELLSCHAFT