AI-Hackathon 2021

Team #3

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AI-expert

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Data analyst

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AI-expert

Objective

1. Before pandemic

In case of a pandemic, which types of countries are more at risk?

2. During pandemic

Do we really save lives by staying at home?

1.

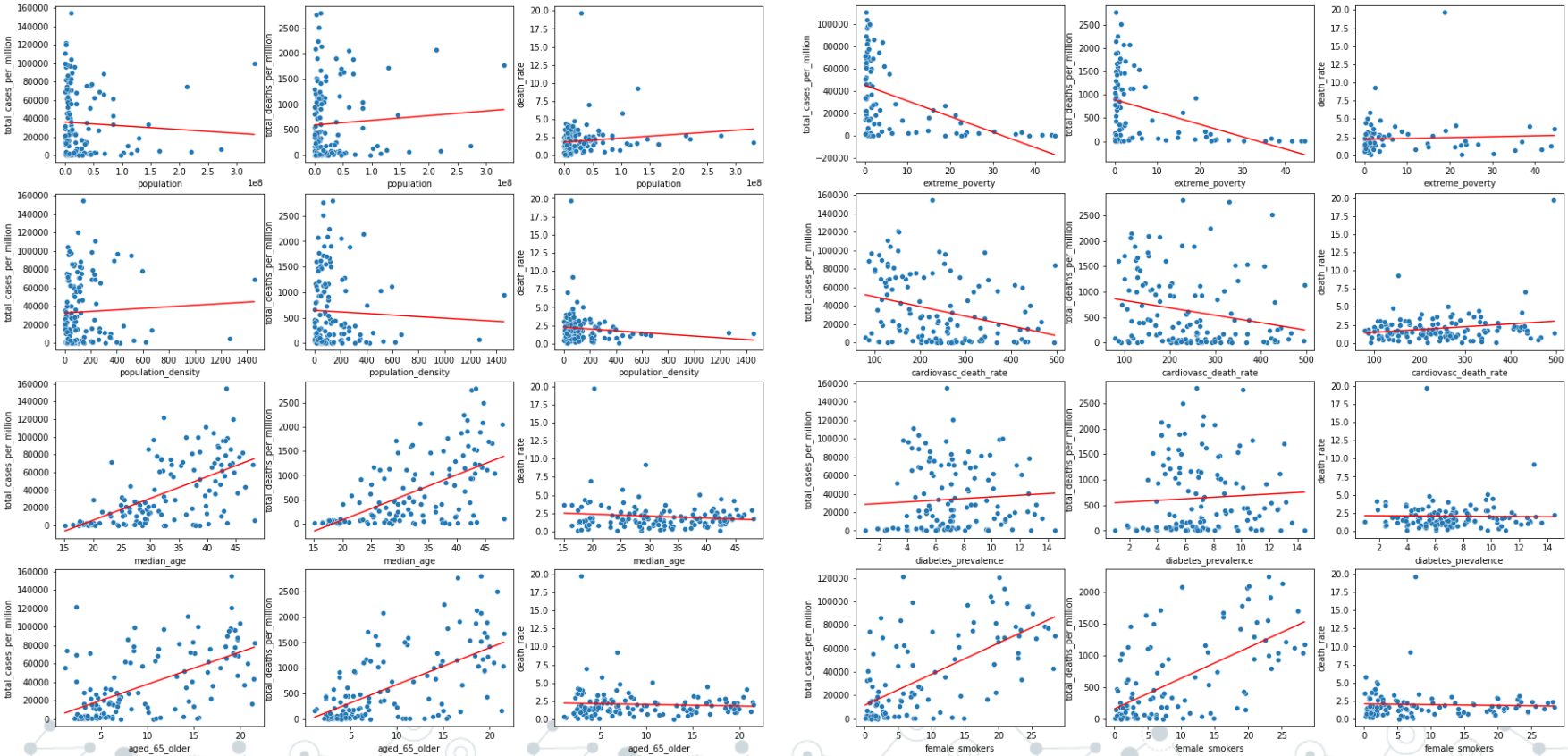
Countries analysis

A statistical study on OWID dataset

Features

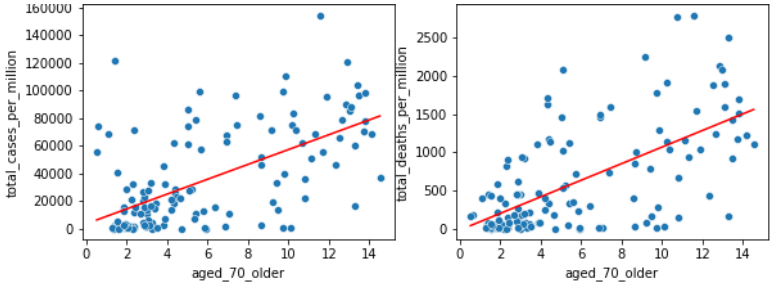
- Population
- Average age
- Smoker
- Income
- Life expectancy
- Hospital beds
- Handwashing facilities
- etc.

Features' plot

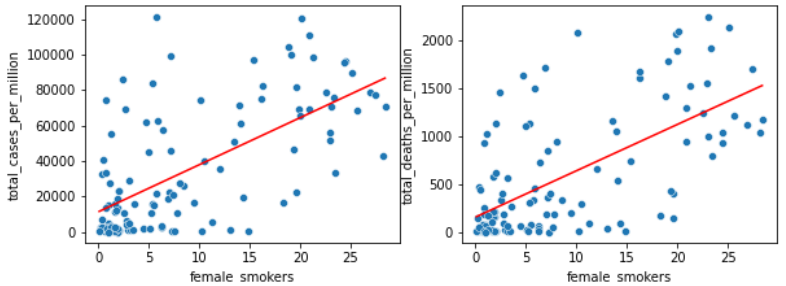


Remarkable results

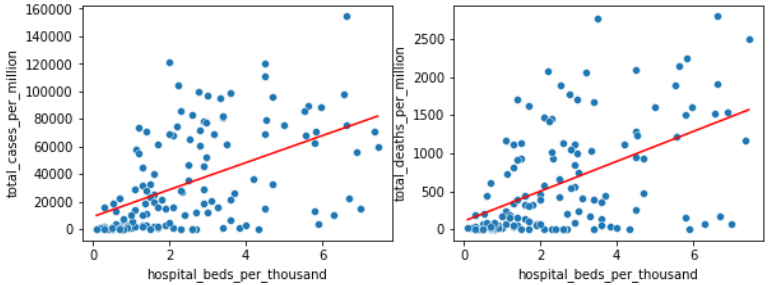
Predictable

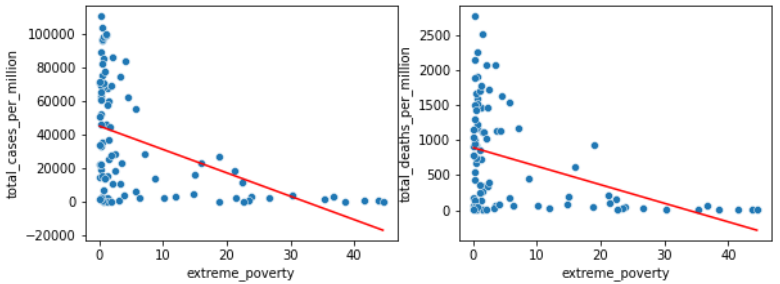


Interesting



Strange





Hypotheses

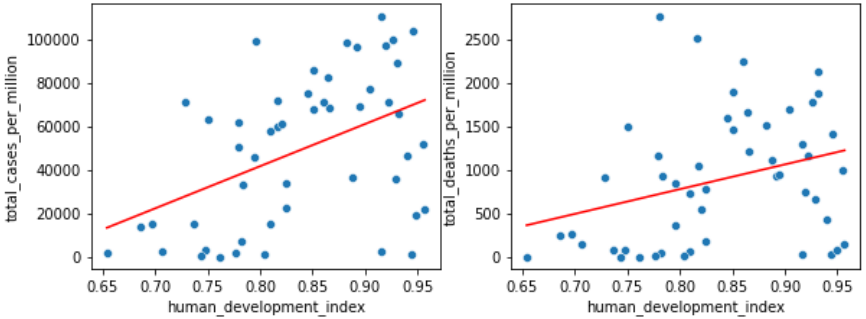
Inaccurate reports

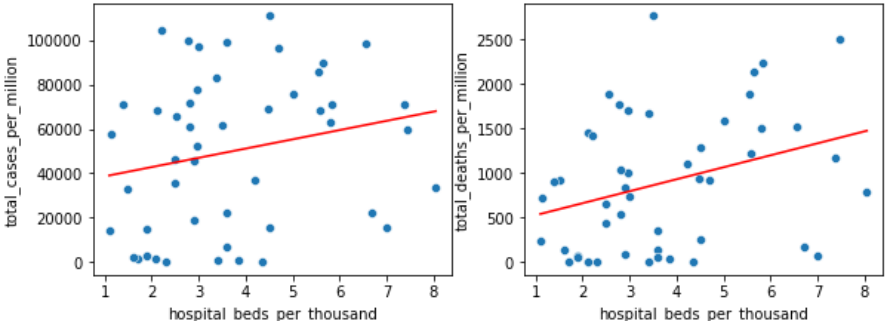
The reported number of cases in low-income countries are not much accurate

Hidden features

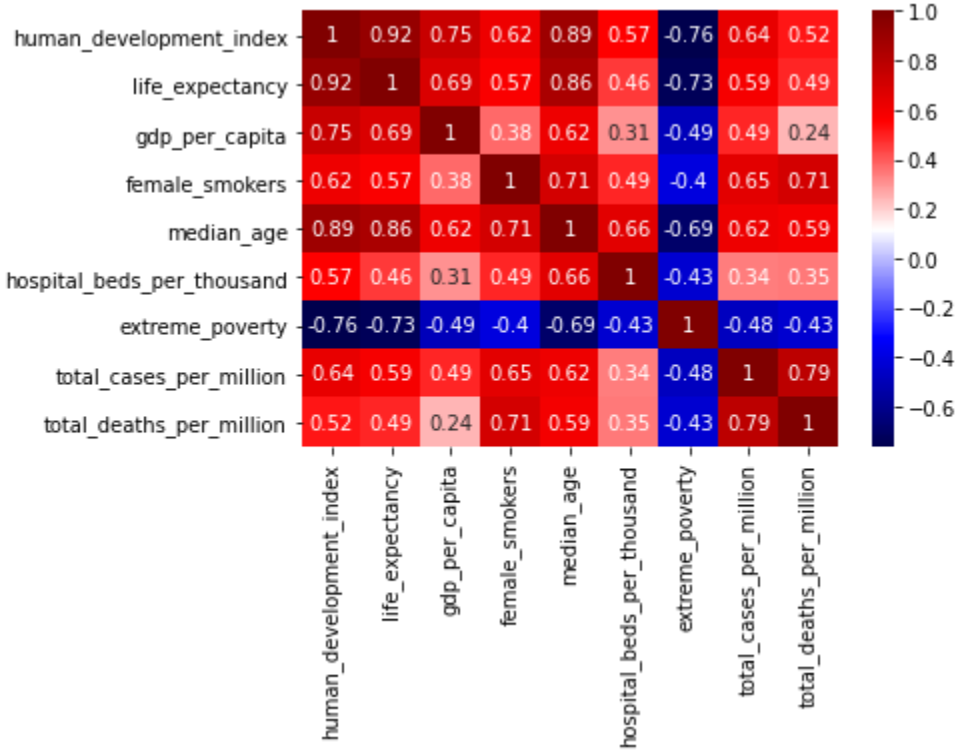
Some other features are playing the main role but we see only their impact through these strange features.

Plots for top high-income countries

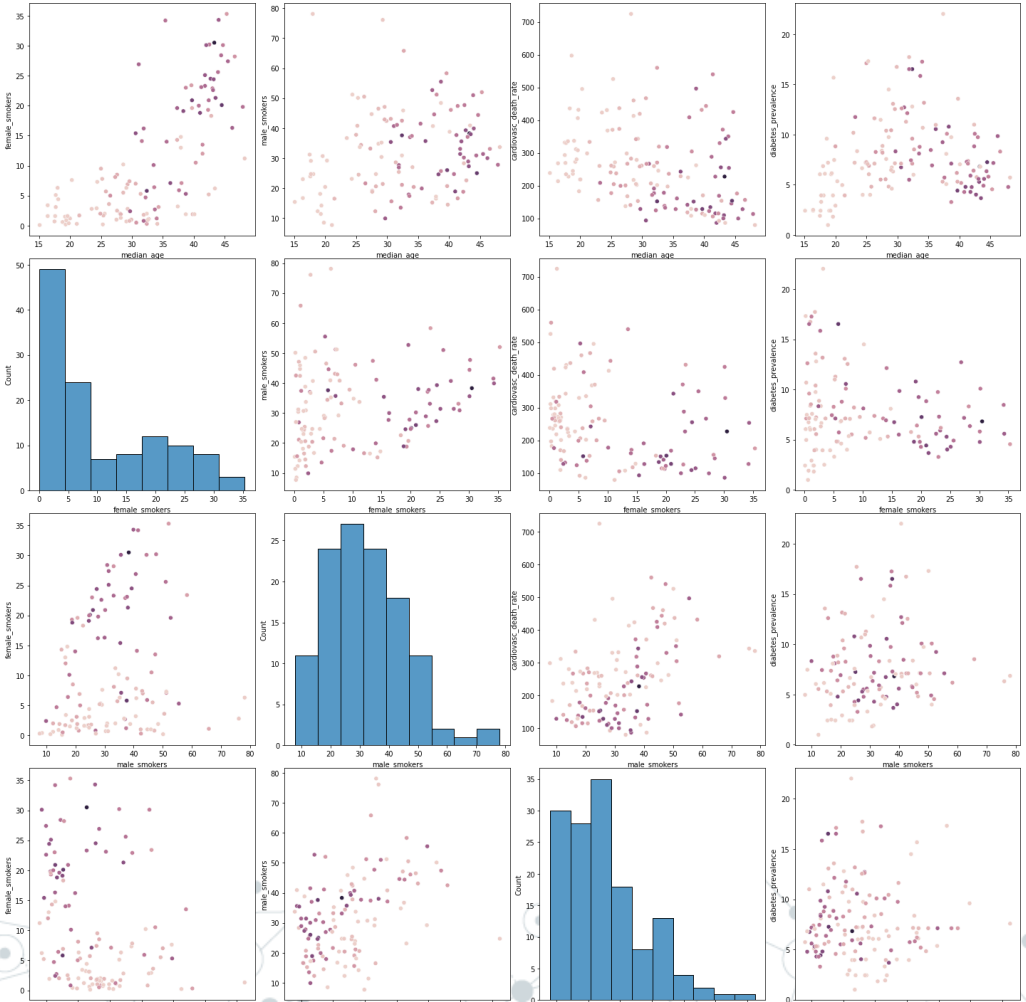




Correlation matrix



Correlation matrix



In case of a pandemic, which types of countries are more at risk?

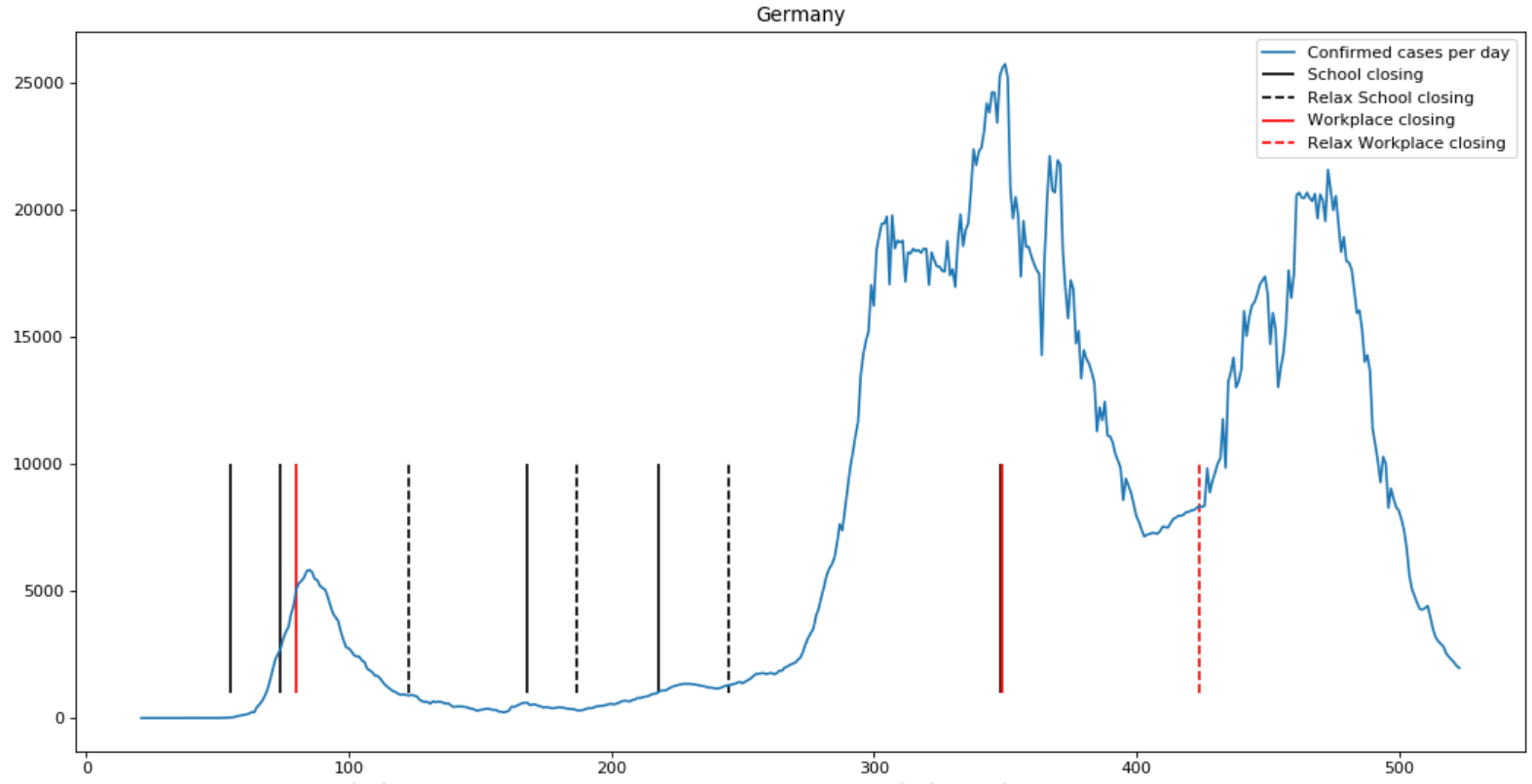
Aged societies

2.

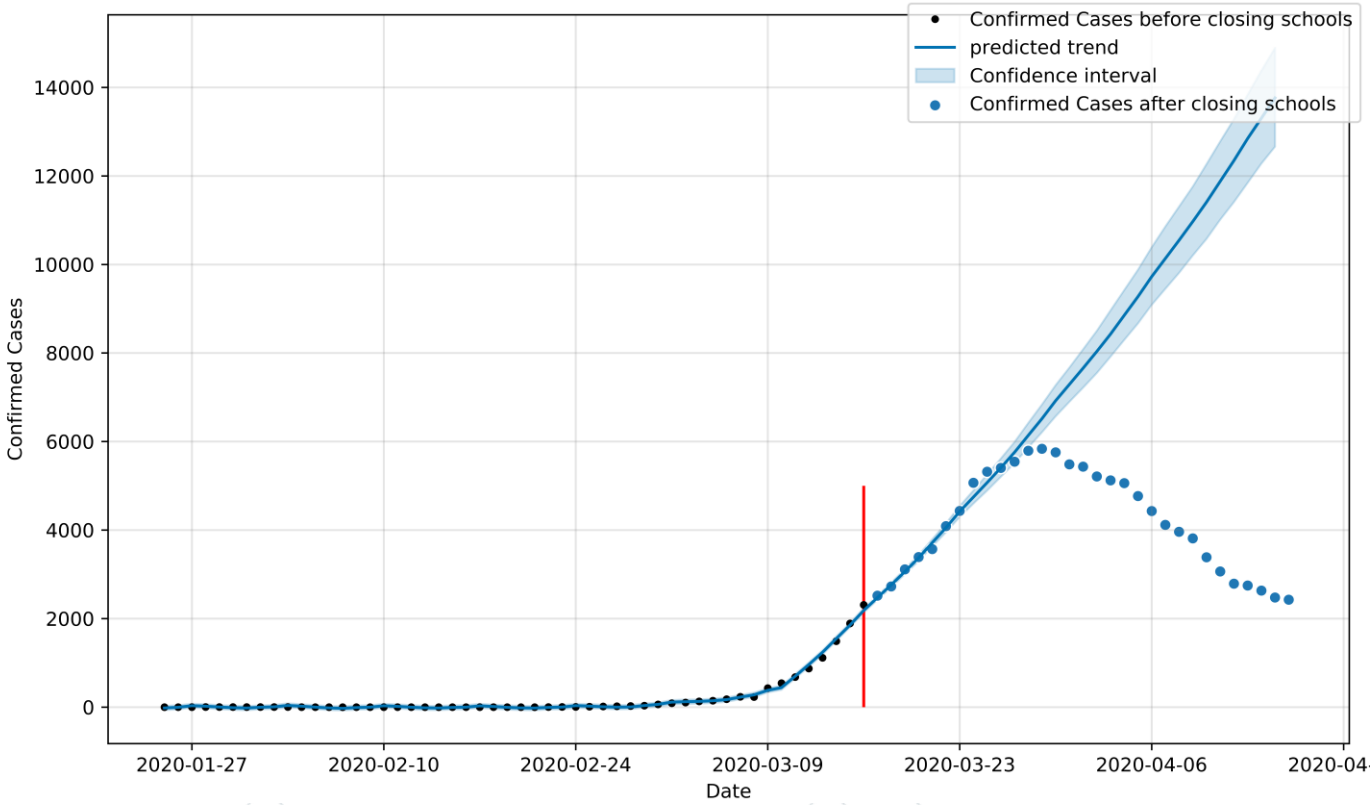
Policies analysis

A time-series analysis on OxCGRT dataset

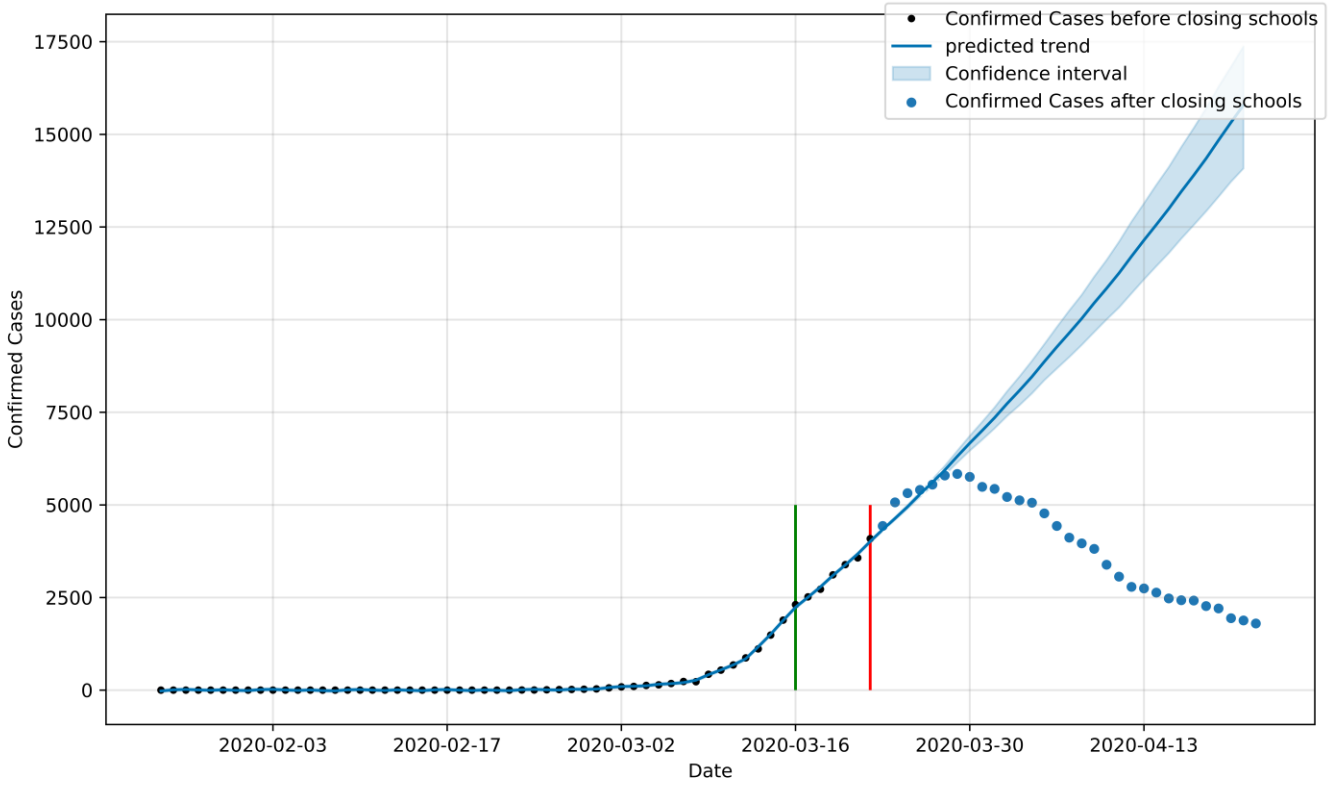
Confirmed cases during time (Germany)



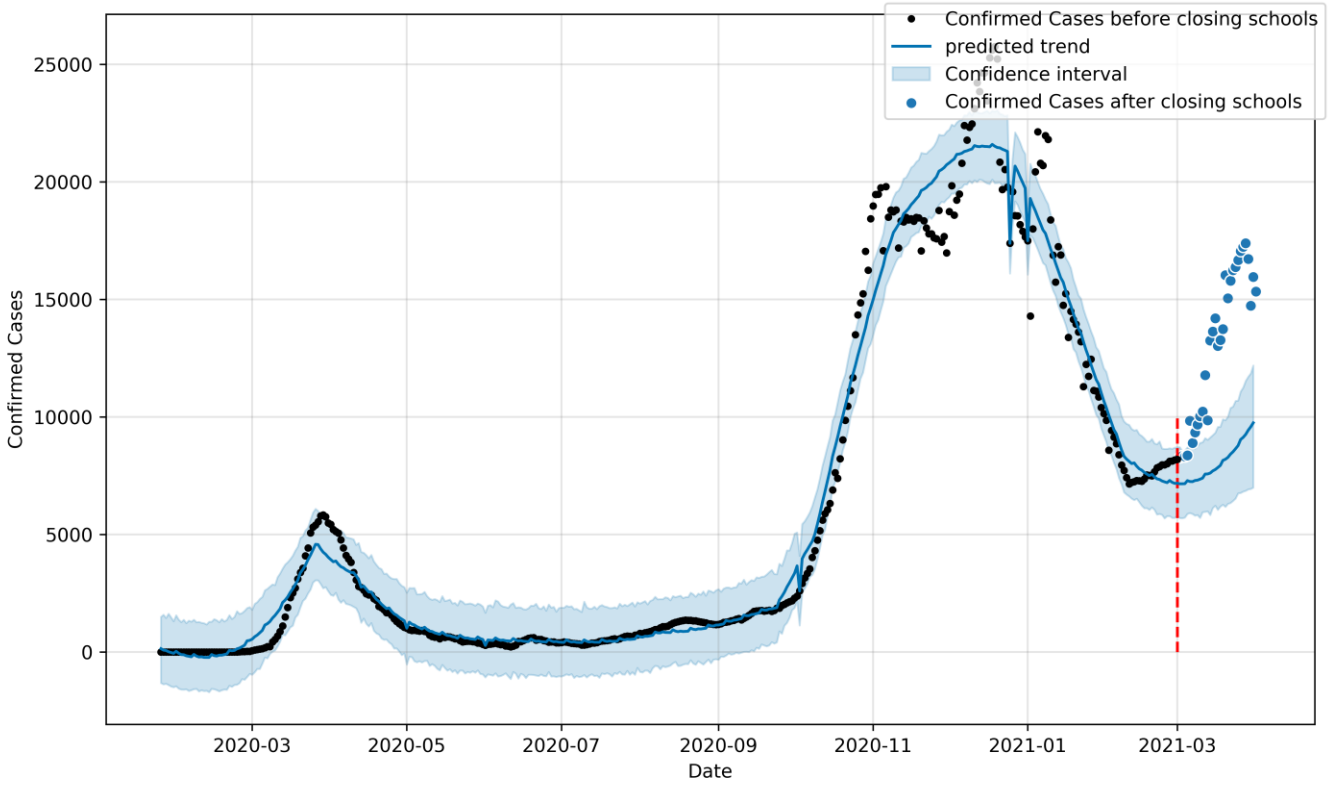
Model predictive analysis (Germany)



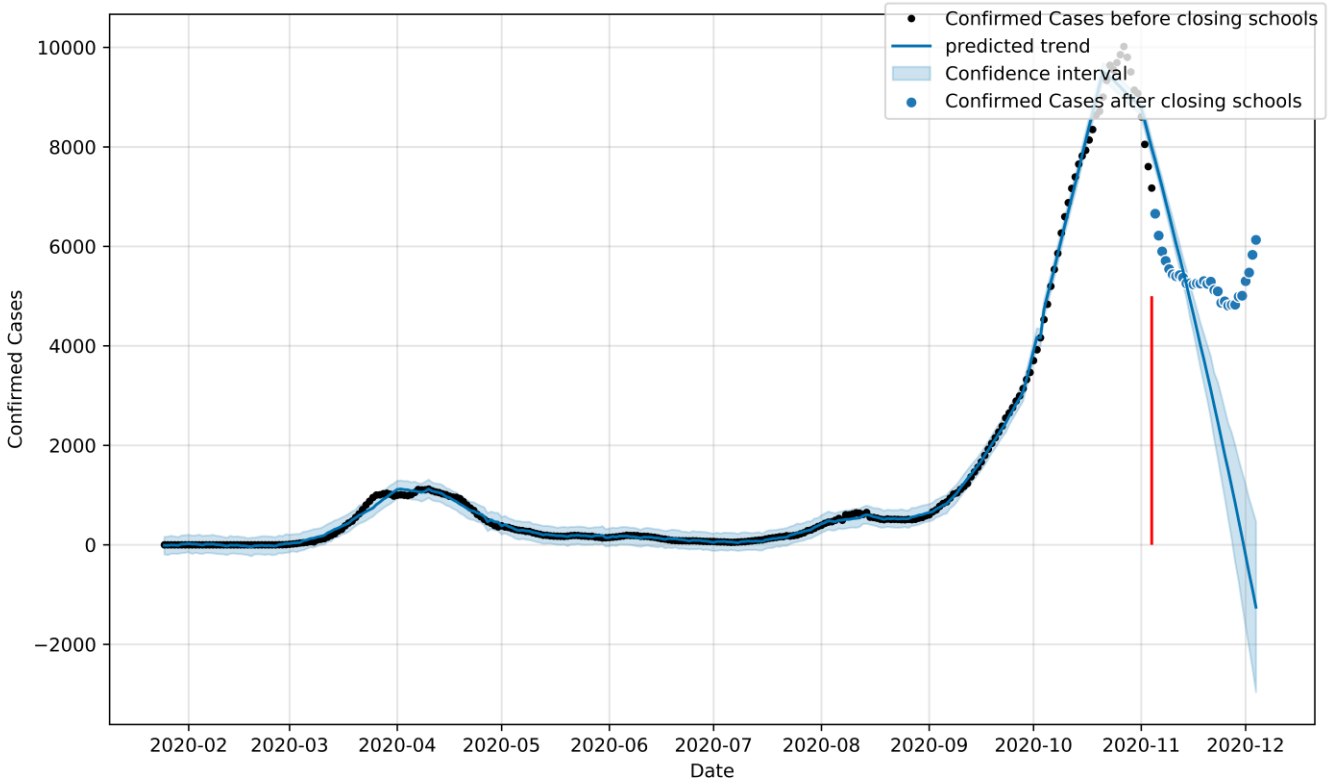
Model predictive analysis (Germany)



Model predictive analysis (Germany)

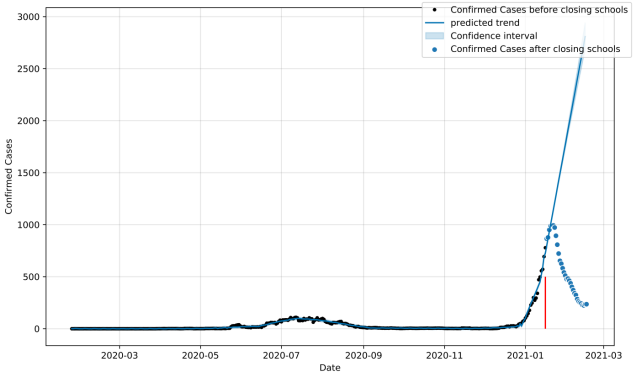


Model predictive analysis (Netherlands)

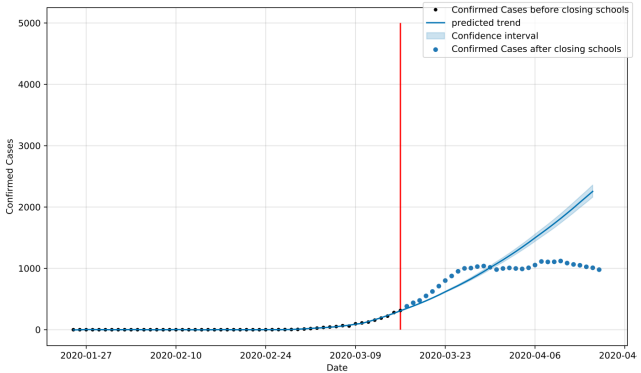


Model predictive analysis

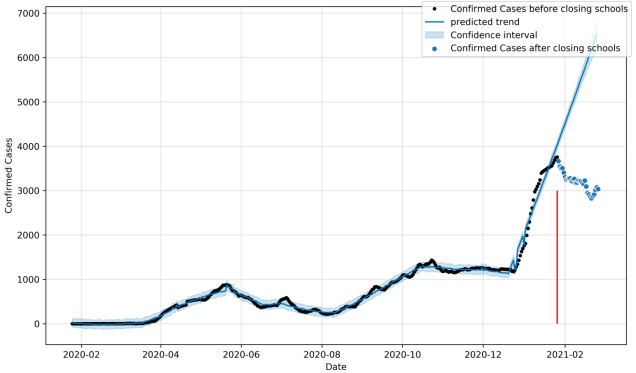
Malawi



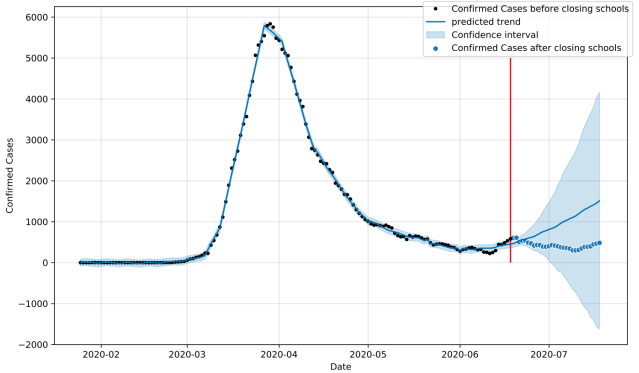
Netherlands



UAE



Germany



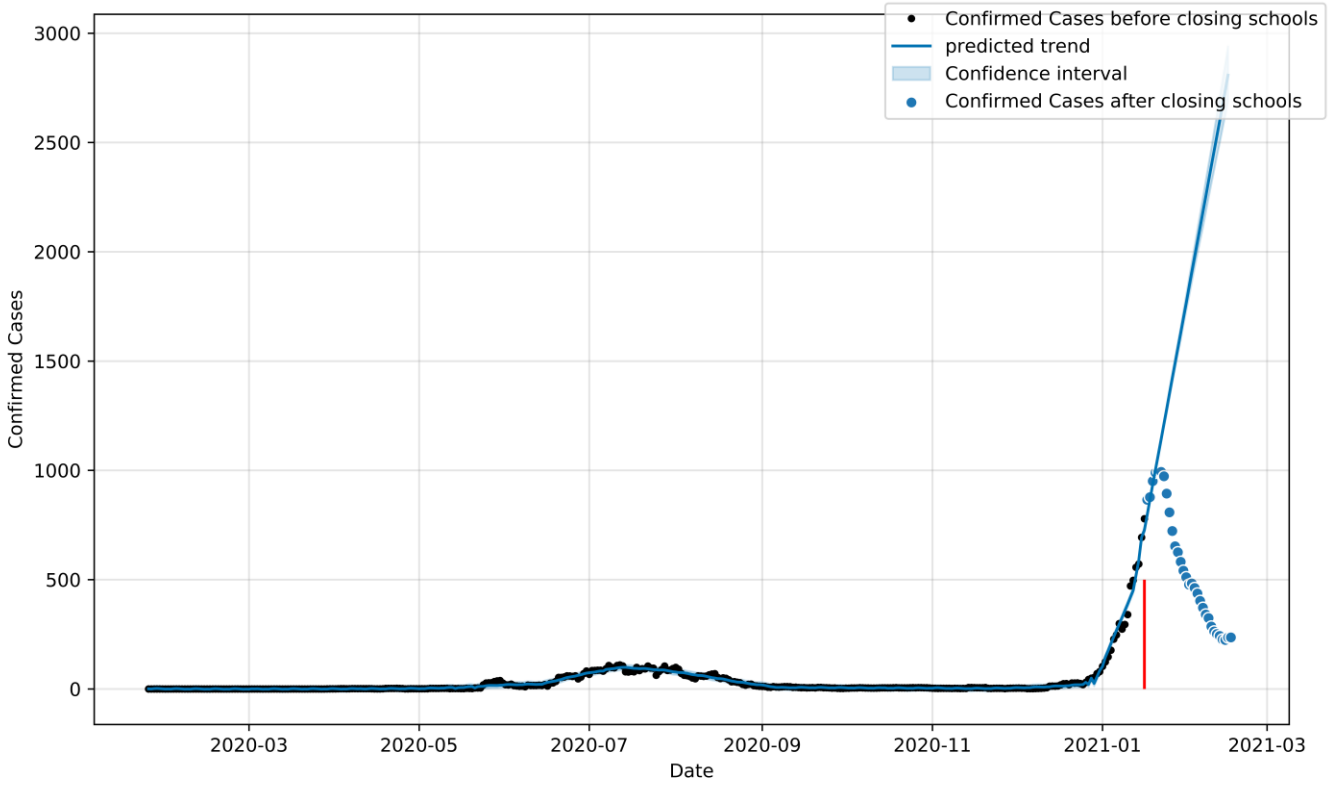
Do we really save lives by staying at home?

Yes! We are heroes who save many lives by staying at home

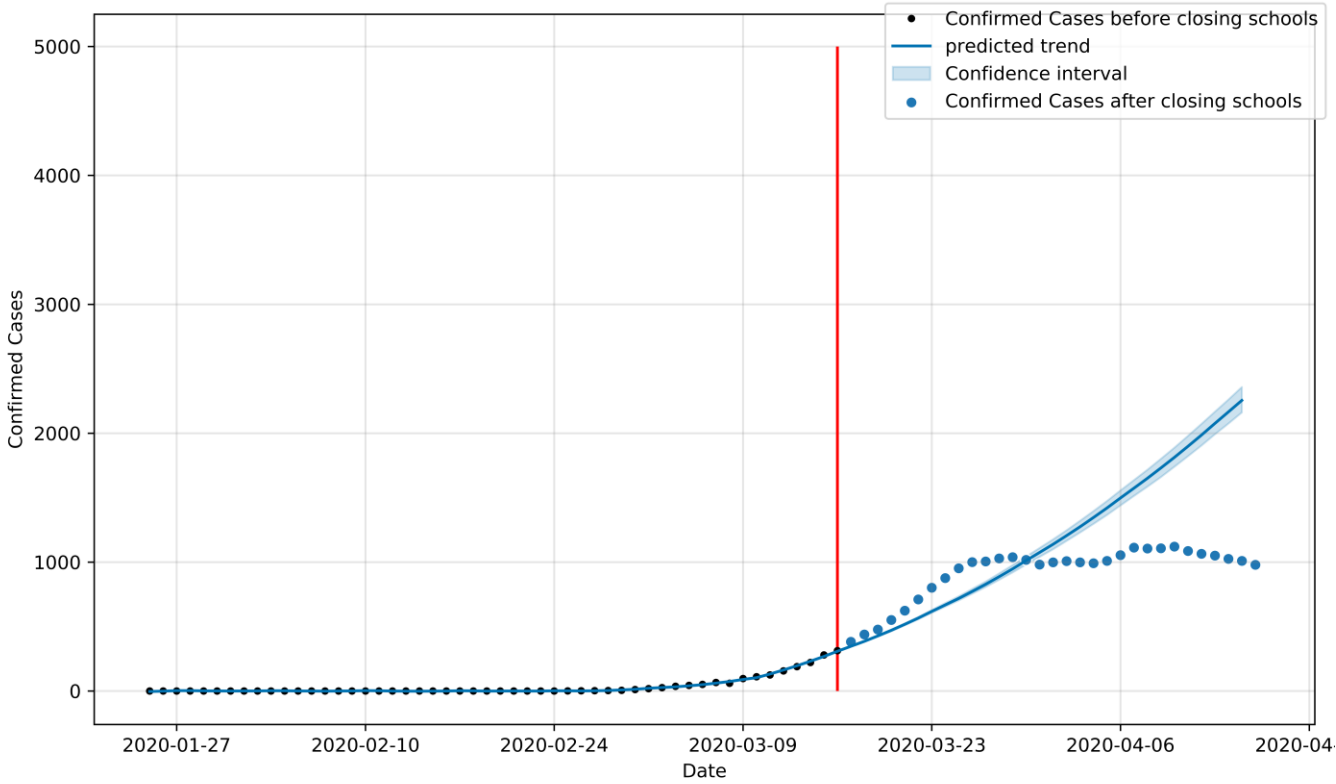
Thanks!

Any questions?

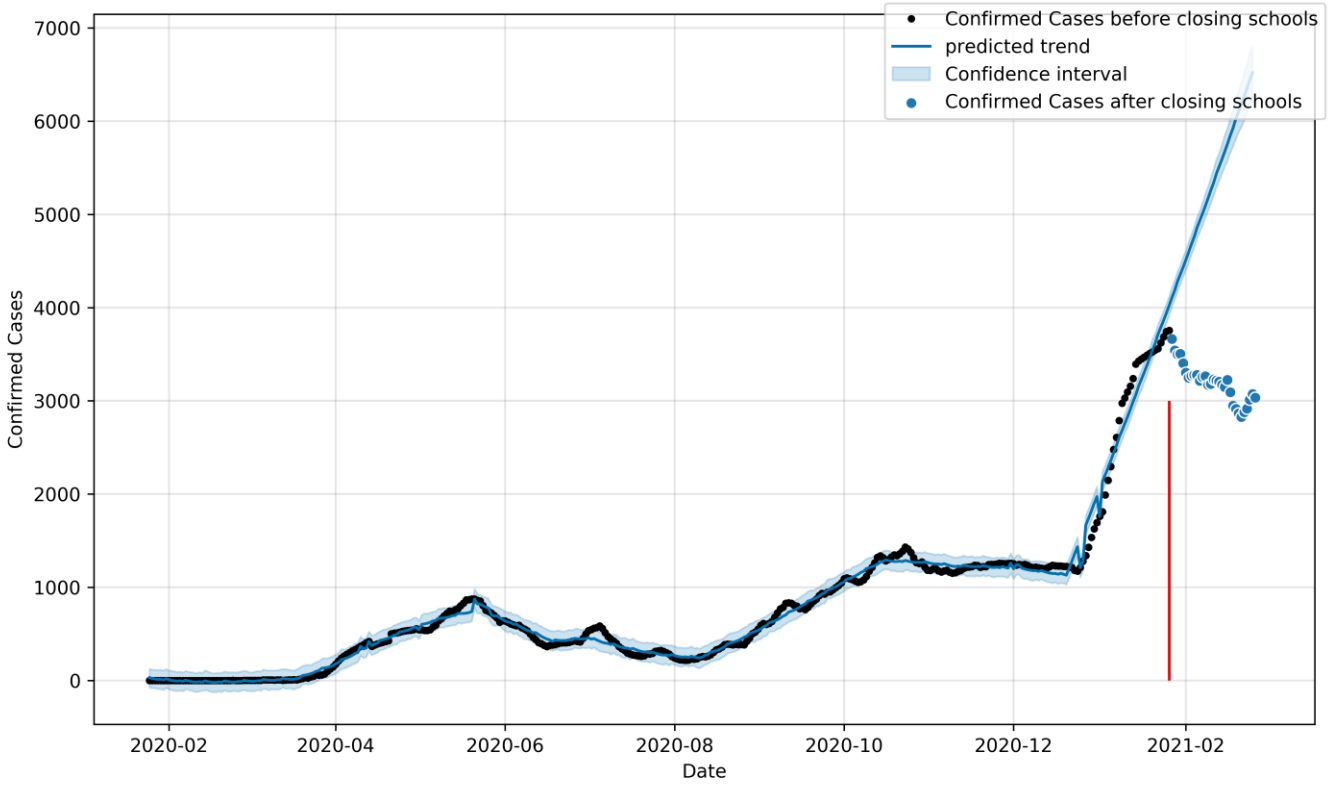
Model predictive analysis (Malawi)



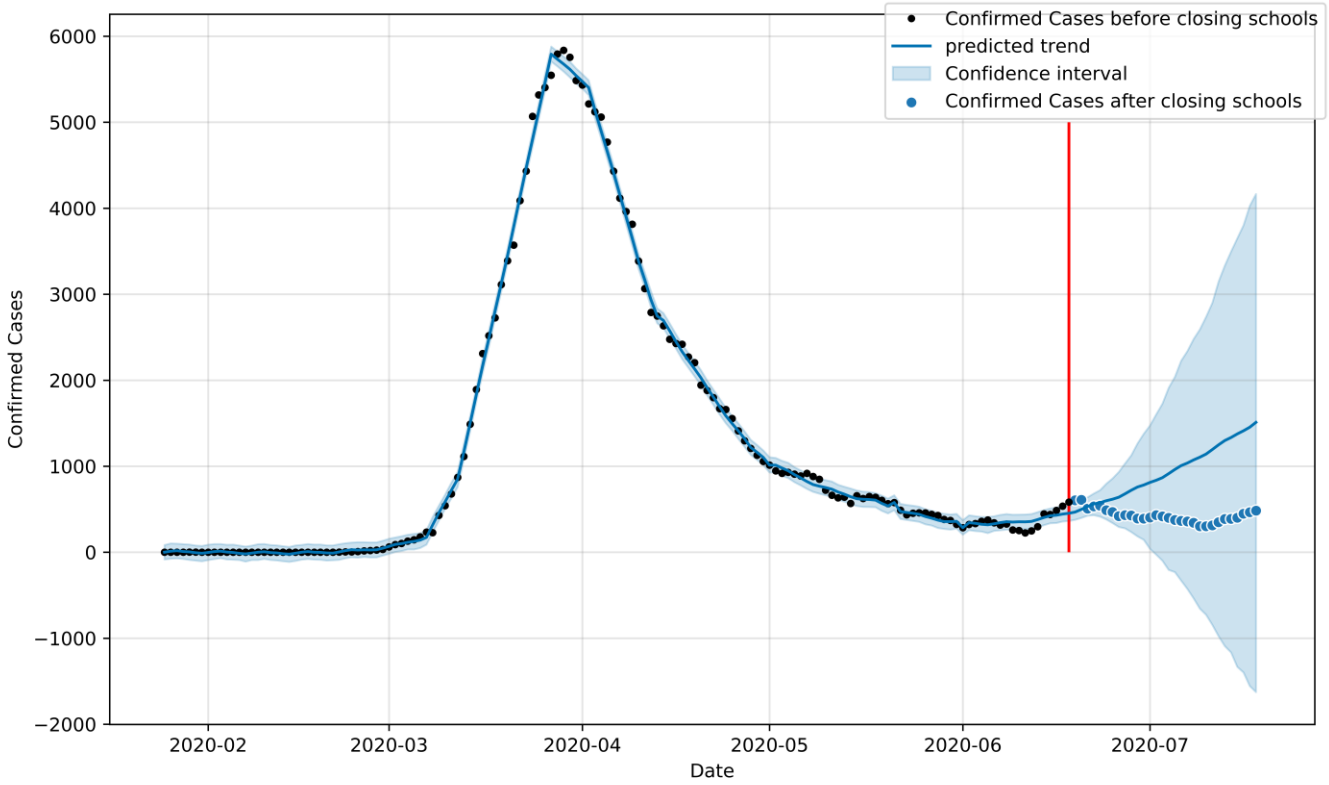
Model predictive analysis (Netherlands)



Model predictive analysis (UAE)



Model predictive analysis (Germany)



Why Prophet?

- An interrupted time series analysis of the lockdown policies in India: a national-level analysis of COVID-19 incidence, Thayer et al., Journal of health policy and planning, 2020
  “Prophet prediction result on the number of COVID-19 cases is superior to ARIMA models”

- Prophet was originally introduced to track daily, weekly, and yearly trends, in presence of changing points and special events

- Explainable parameter and easier to tune than ARIMA

- Fast, easy to implement, and use