

06 May 2020

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# COVID-19 Projections

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Didier Darcet

# COVID-19 Deaths' Projection Method

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At the beginning, epidemic processes are exponential by nature, in other words, the number of cases of infection or death accelerates.

Making projections therefore requires to capture the derivative of the acceleration, named 'the jolt' by mathematicians. In the following projections, we fit the accelerating or fading nature of the jolt, and project its dynamics over the subsequent four weeks.

The jolt is fitted with an exponential function over, respectively, the previous 5, 6, 7, 8 and 9 days. Large numbers are truncated to facilitate the reading of the charts.

Fitting over various windows provides an information on the most recent dynamics of the COVID-19 diffusion. The thicker dotted red line is the shortest trend, i.e. calculated over the previous five days.

During the early days of an epidemic, projections can be extremely volatile, and it is therefore recommended not to draw black-and-white conclusions from a daily report, but to follow the evolution over many days.

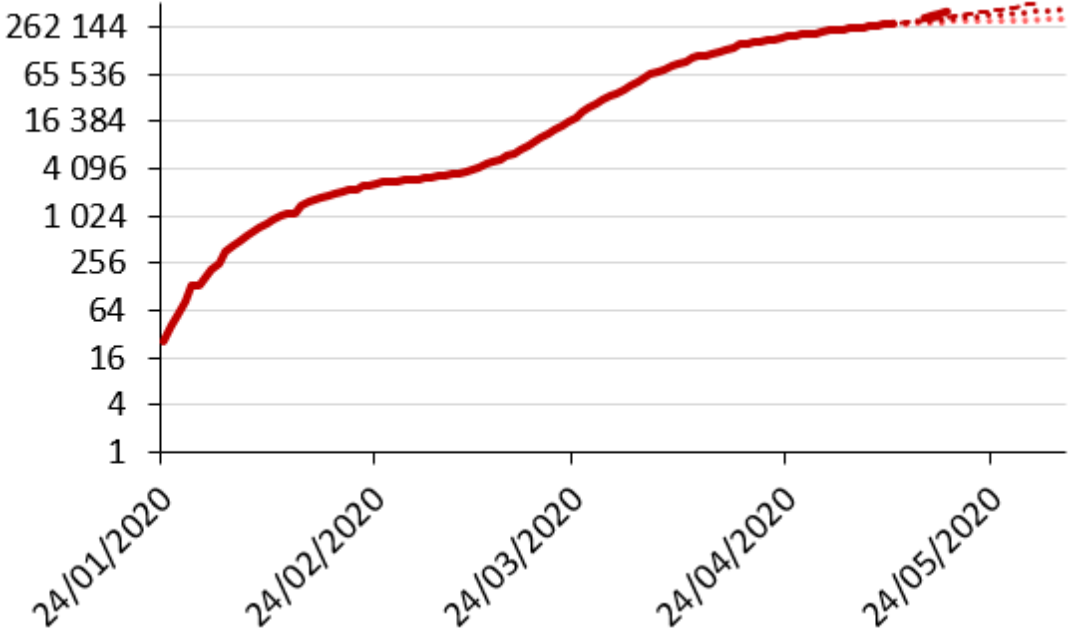
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# DEATHS - PROJECTIONS

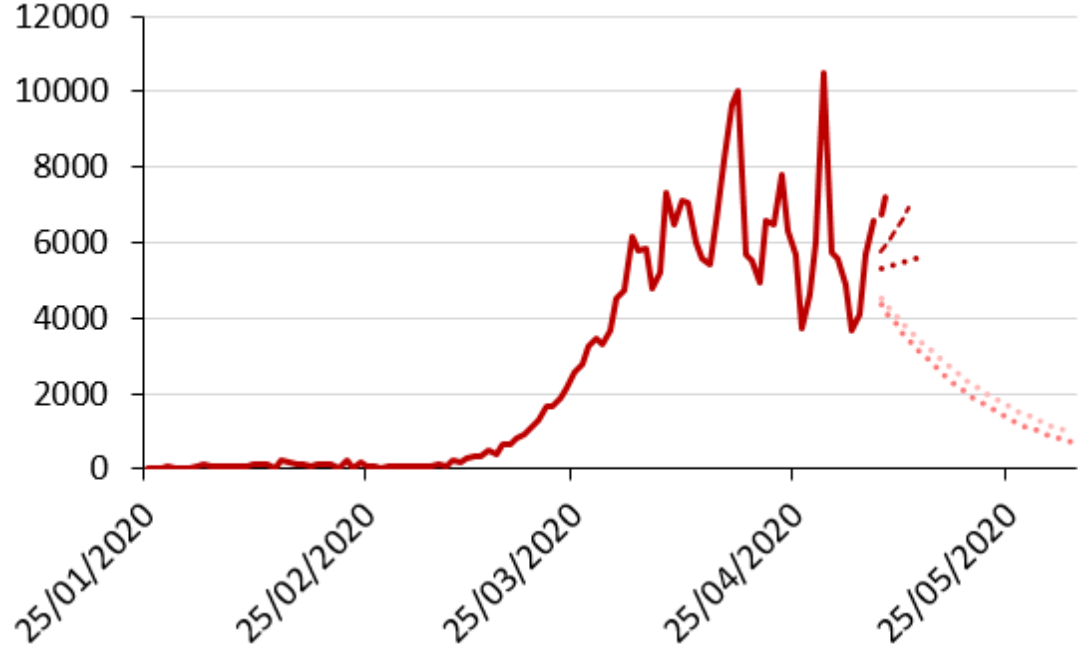
# World

CONFIRMED 9 days' fit 8 days' fit 7 days' fit 6 days' fit

### Cumulated



### Daily



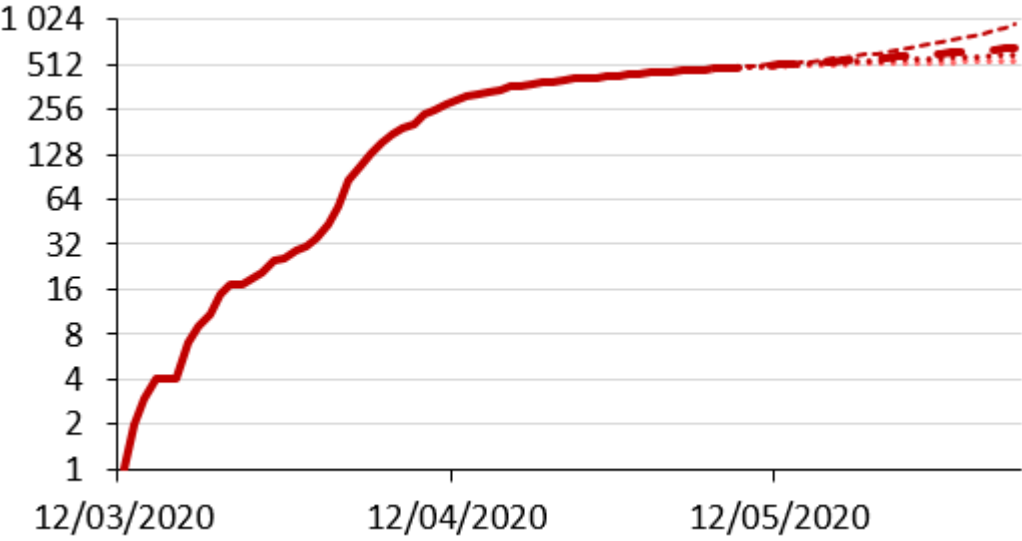
The apparent second peak is due to a statistical bias on the 29/04 when the UK changed its reporting method

Data: The Johns Hopkins University, Politolog.com

# Algeria

CONFIRMED 9 days'fit 8 days'fit 7 days'fit 6 days'fit 5 days'fit

### Cumulated



### Daily

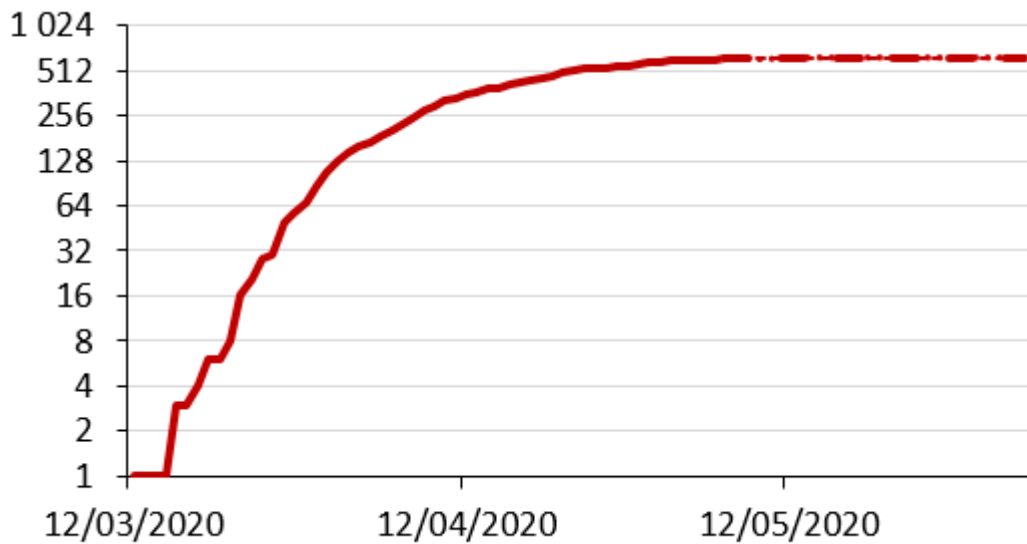


Data: The Johns Hopkins University, Politolog.com

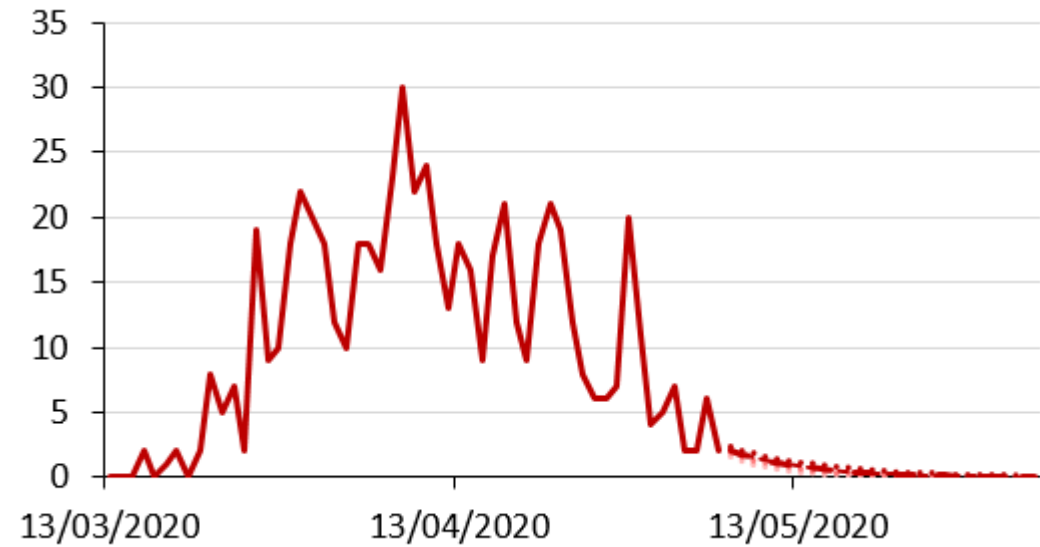
# Austria

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated



## Daily

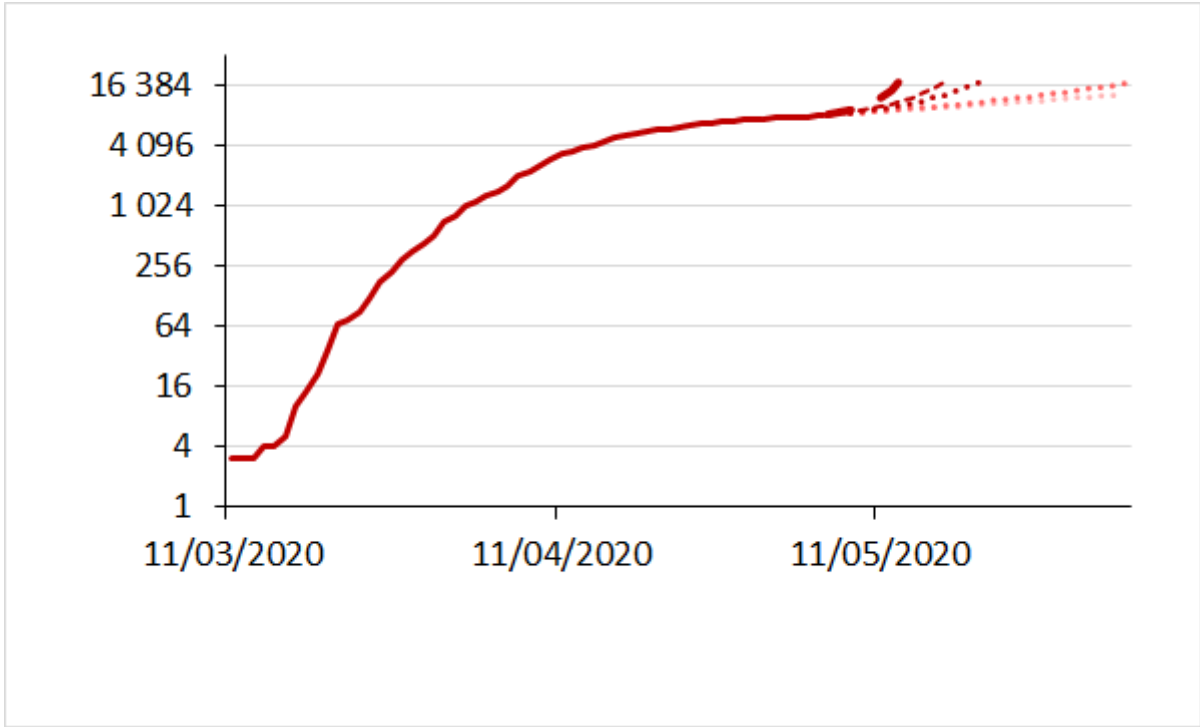


Data: The Johns Hopkins University, Politolog.com

# Belgium

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated

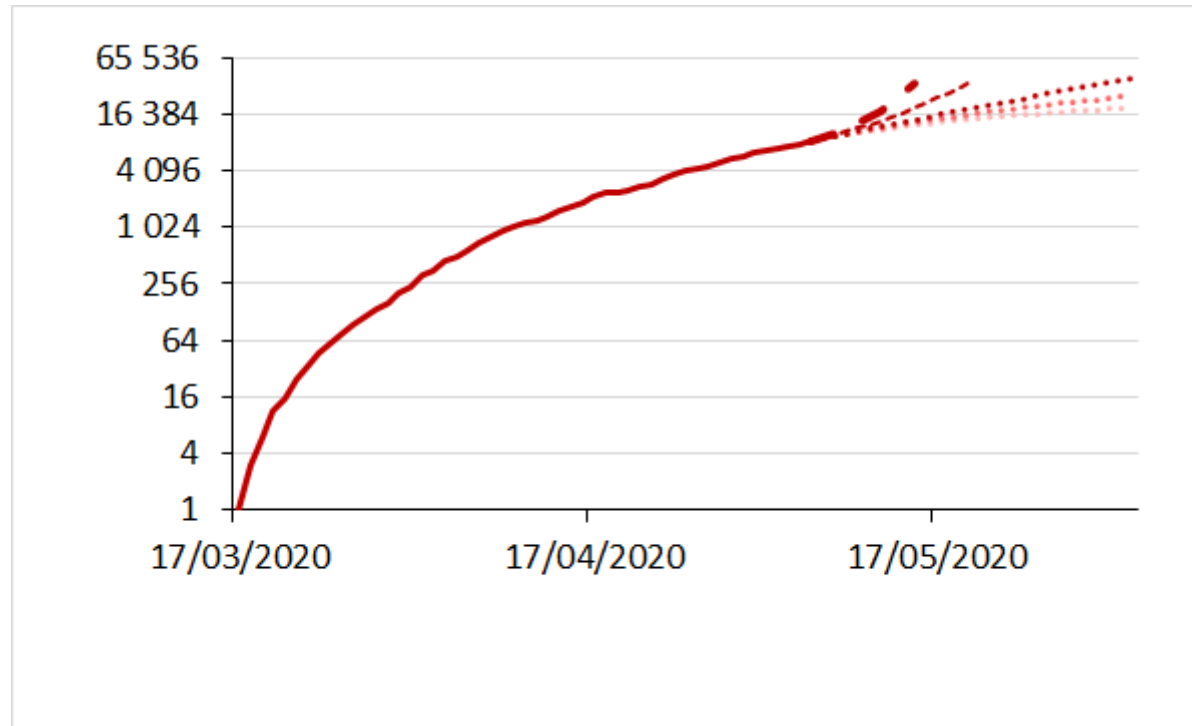


Data: The Johns Hopkins University, Politolog.com

# Brazil

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



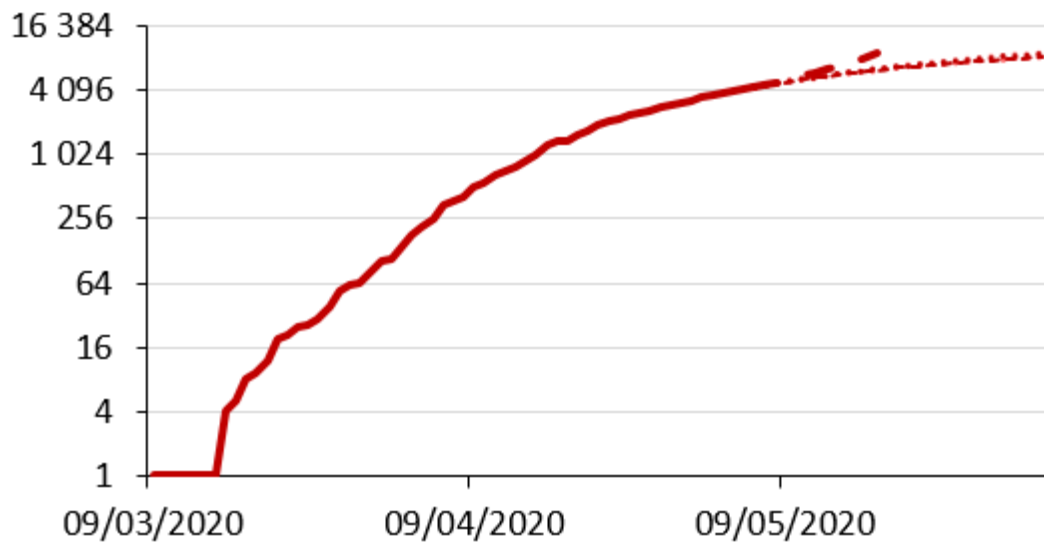
Data: The Johns Hopkins University, Politolog.com



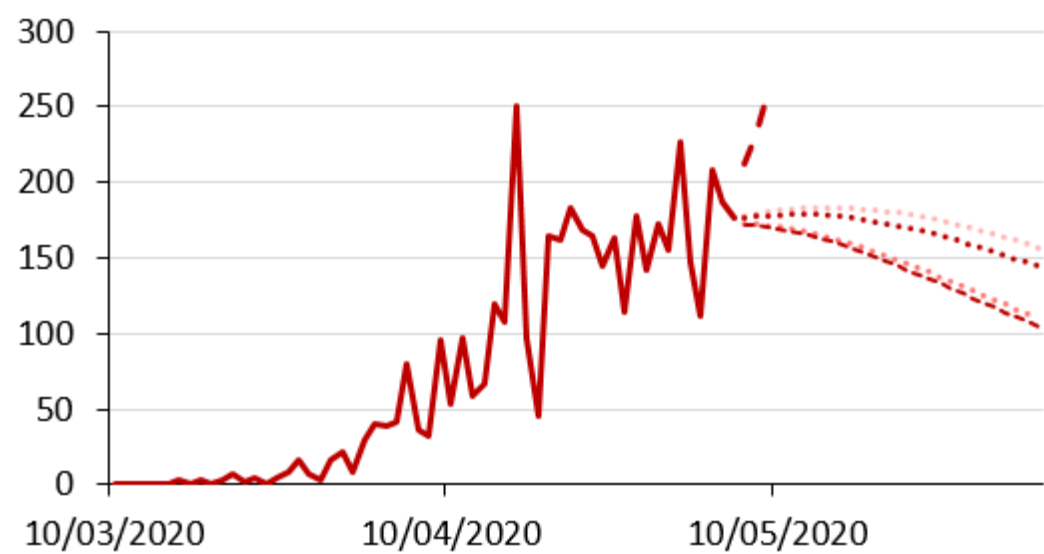
# Canada

CONFIRMED 9 days'fit 8 days'fit 7 days'fit 6 days'fit 5 days'fit

## Cumulated



## Daily

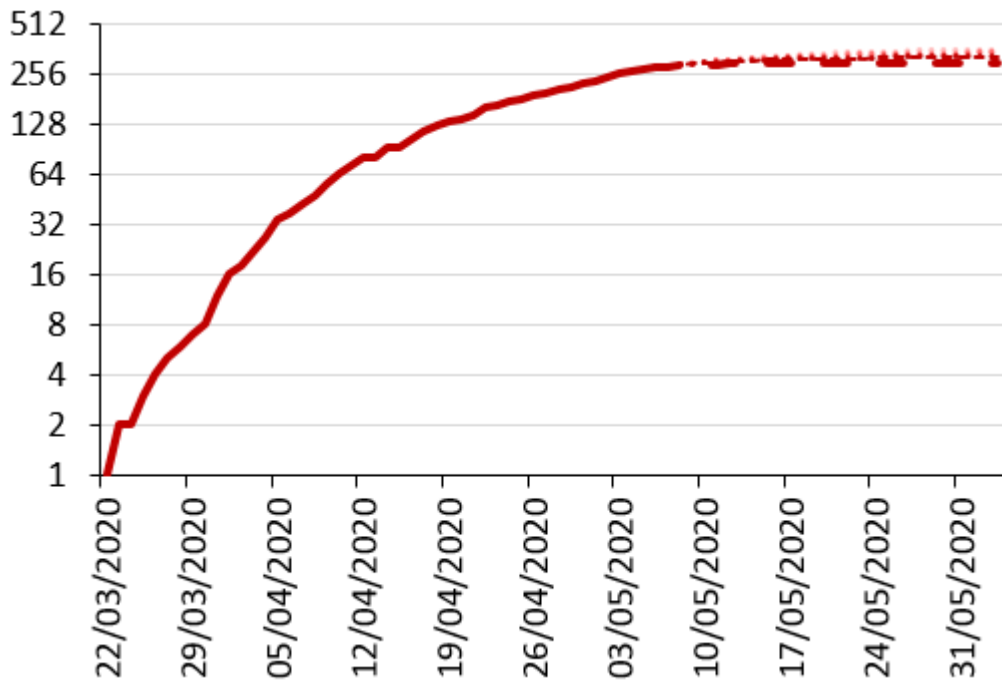


Data: The Johns Hopkins University, Politolog.com

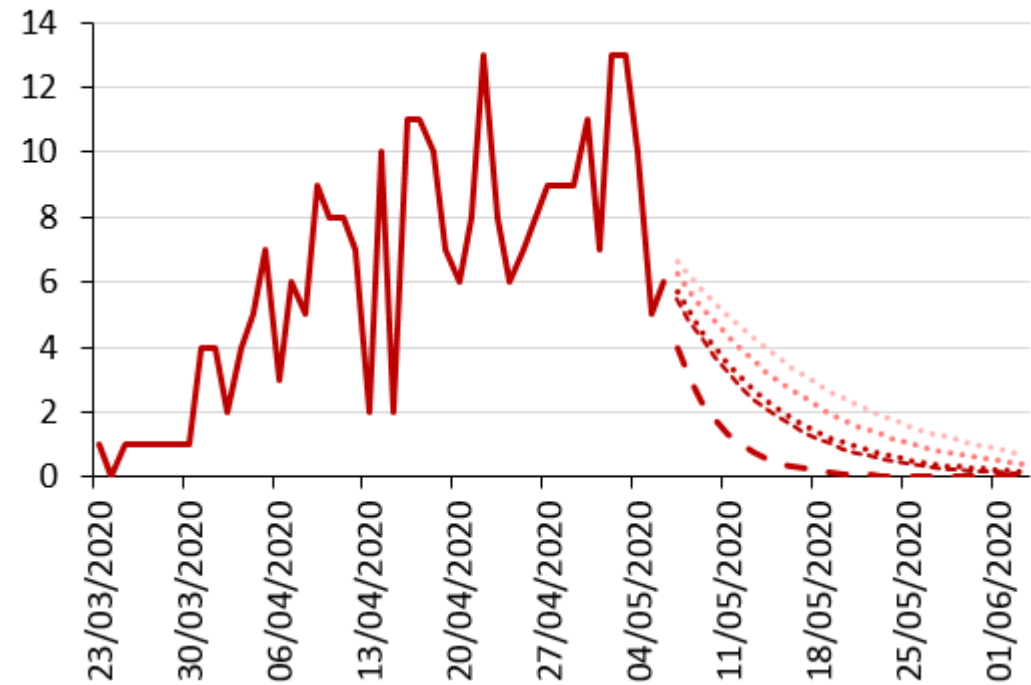
# Chile

— CONFIRMED    ..... 9 days' fit    ..... 8 days' fit    ..... 7 days' fit    - - - - 6 days' fit    - - - - 5 days' fit

### Cumulated



### Daily

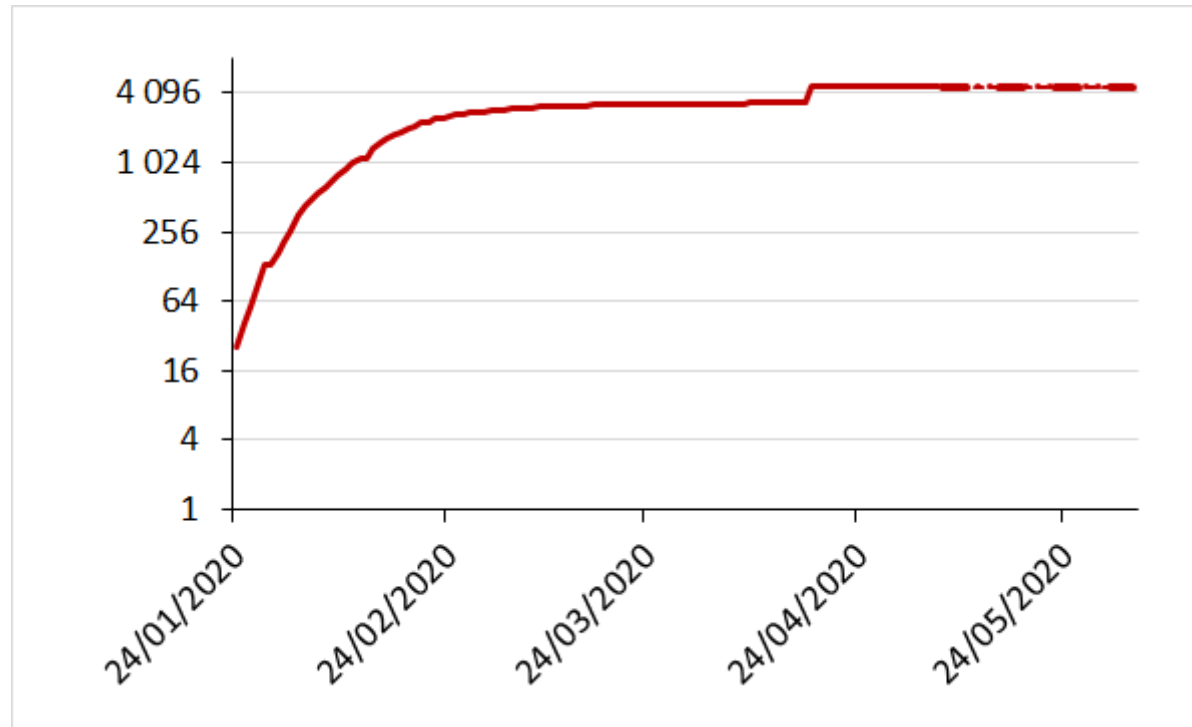


Data: The Johns Hopkins University, Politolog.com

# China

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Cumulated

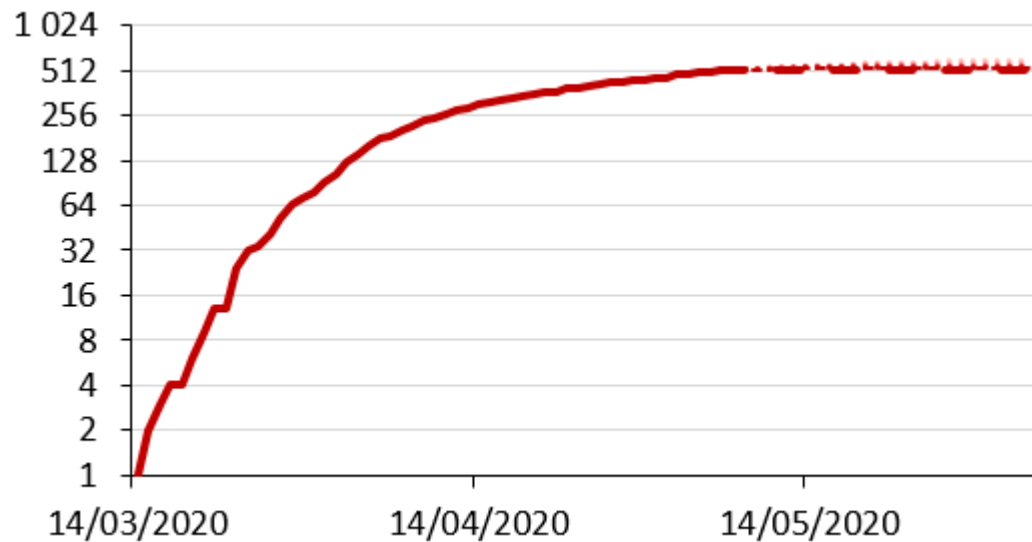


Data: The Johns Hopkins University, Politolog.com

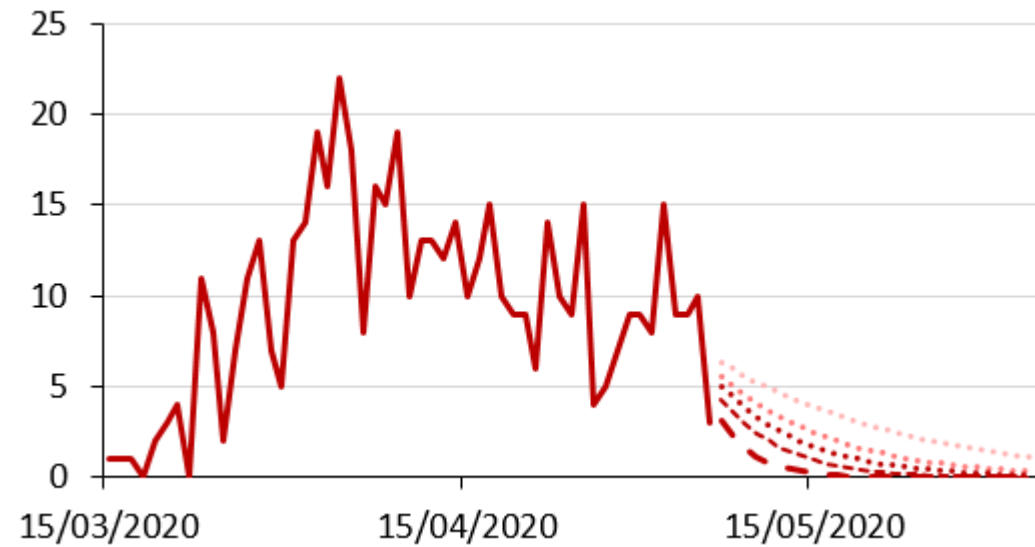
# Denmark

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

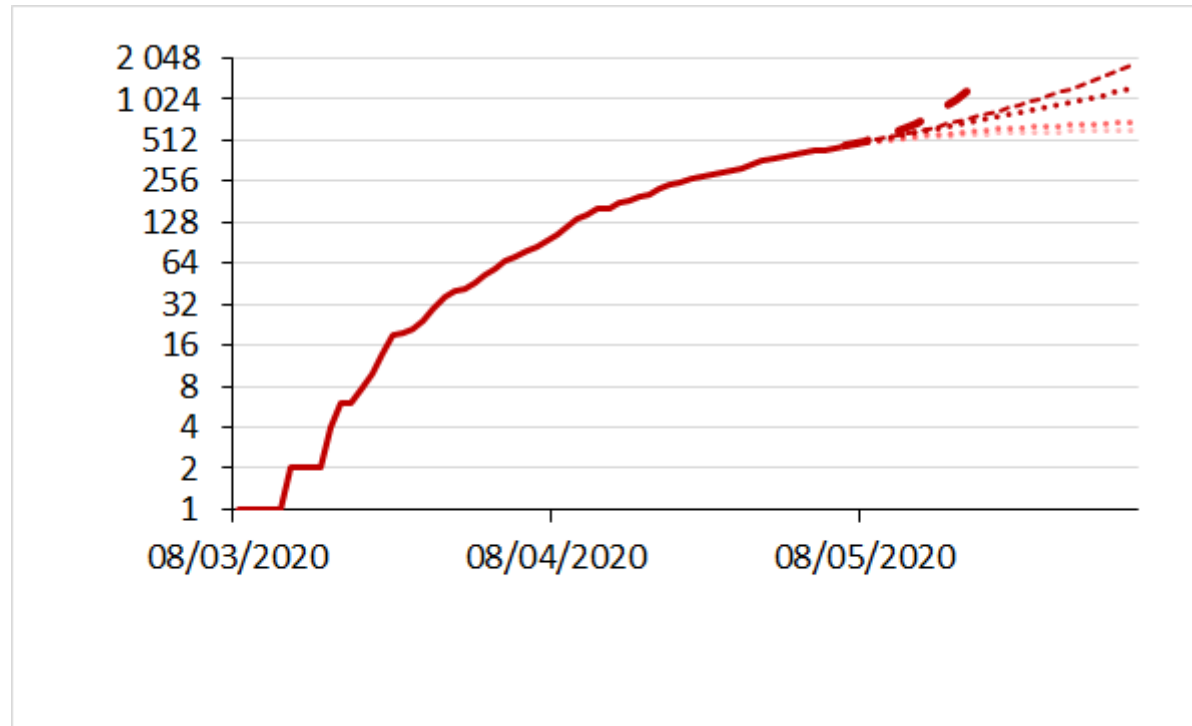


Data: The Johns Hopkins University, Politolog.com

# Egypt

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated

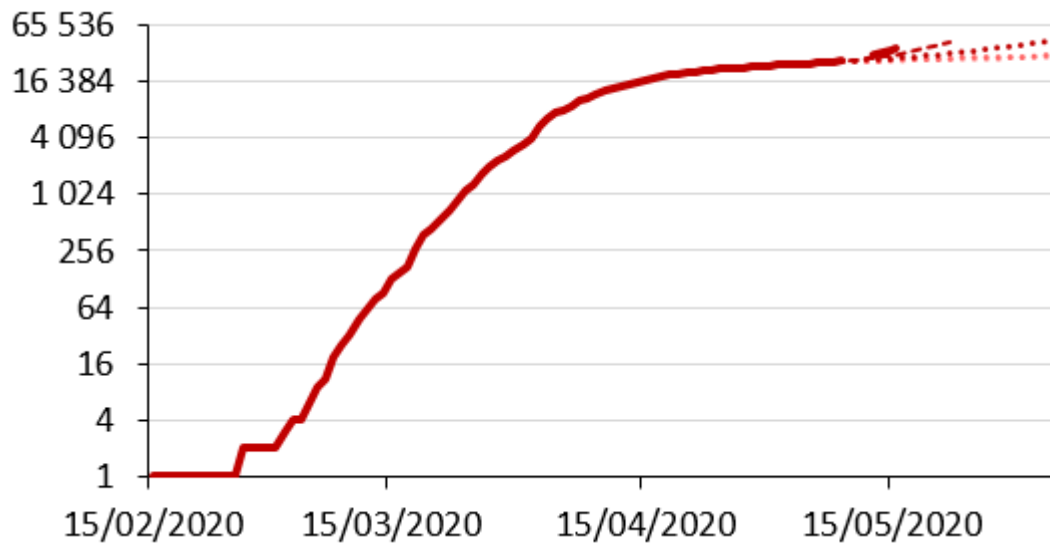


Data: The Johns Hopkins University, Politolog.com

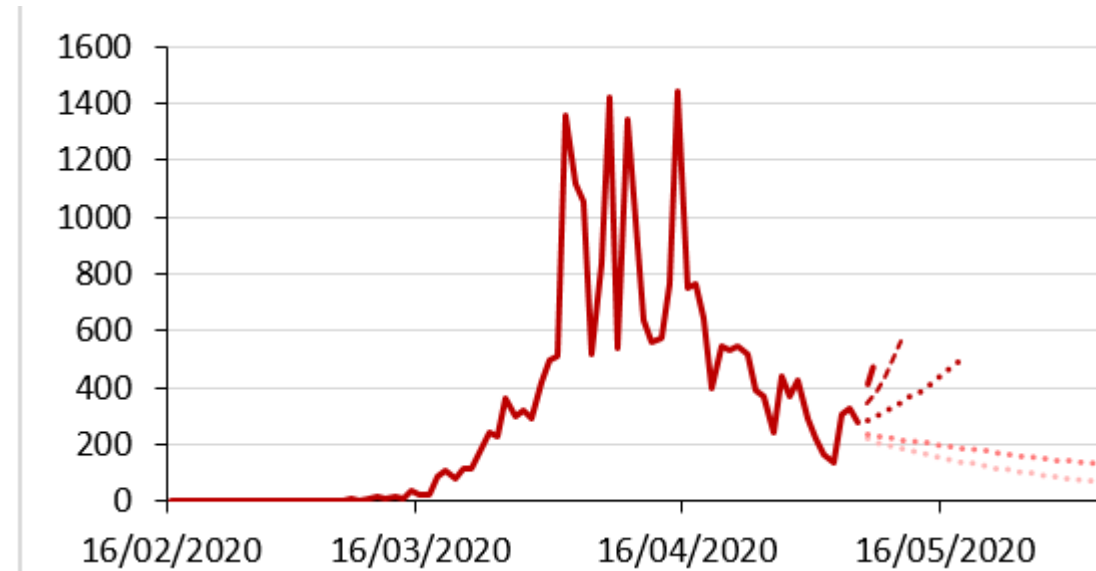
# France

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

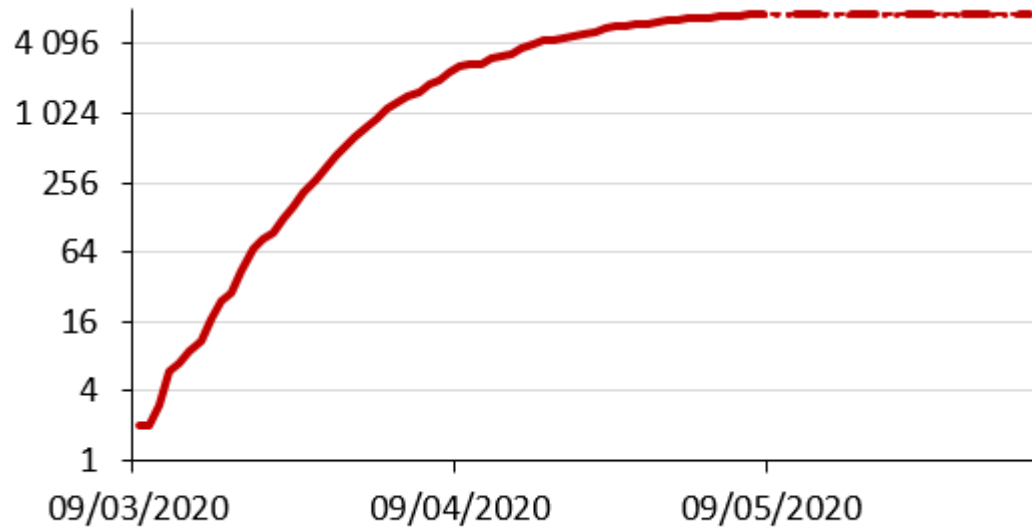


Data: The Johns Hopkins University, Politolog.com

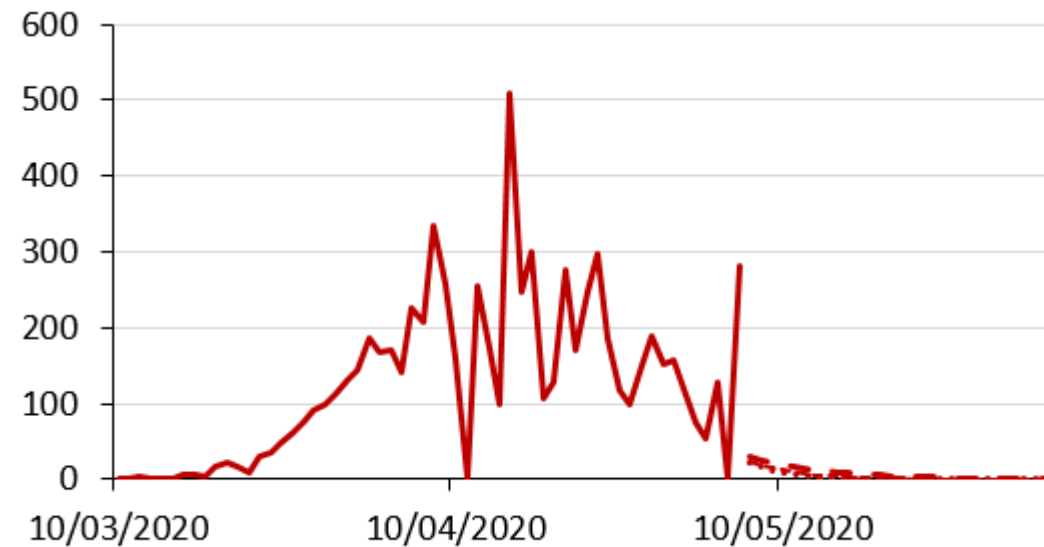
# Germany

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

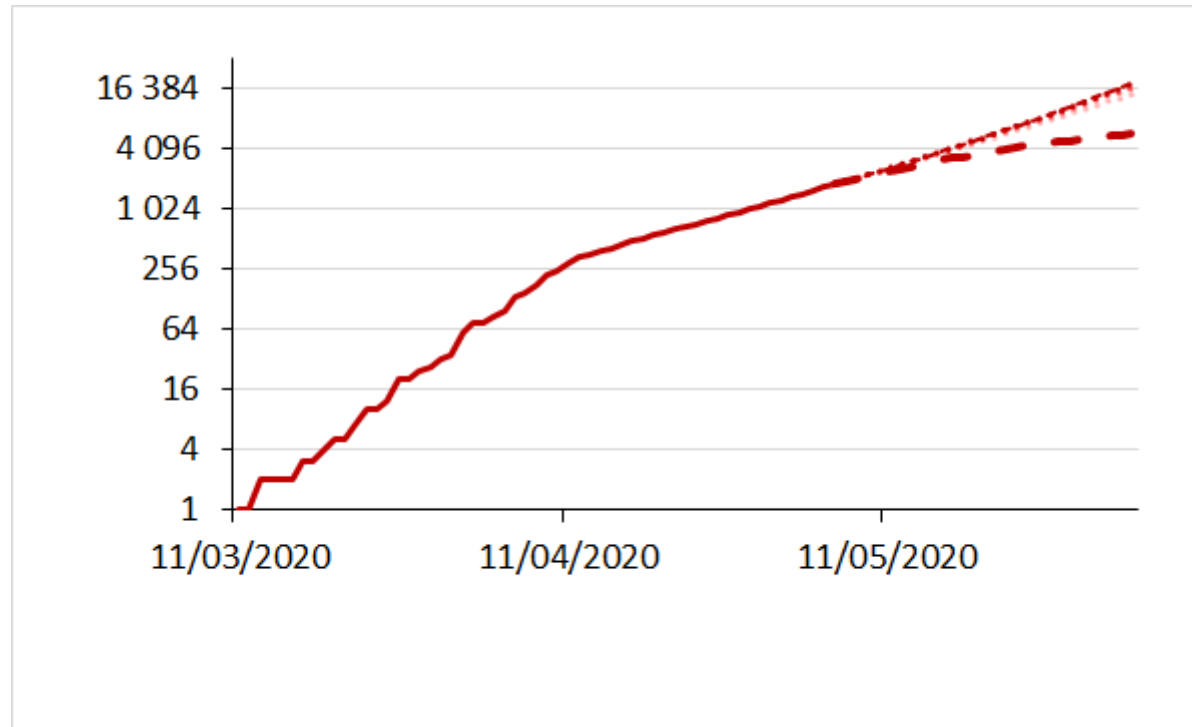


Data: The Johns Hopkins University, Politolog.com

# India

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated



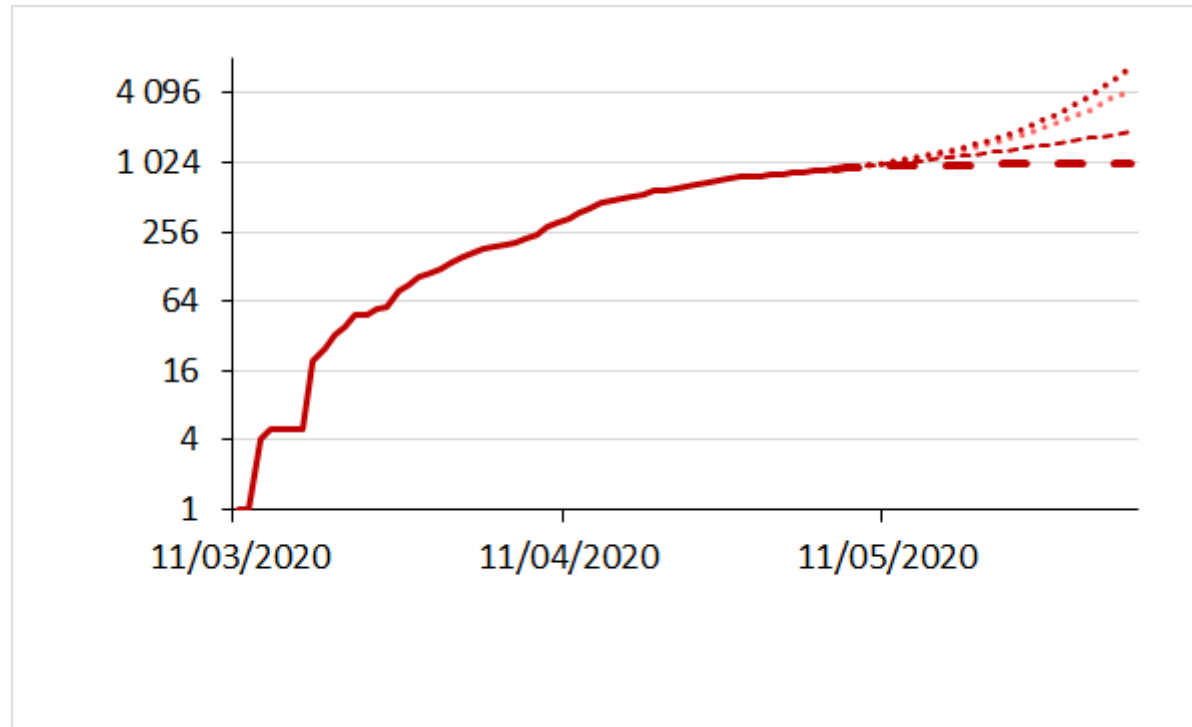
Data: The Johns Hopkins University, Politolog.com



# Indonesia

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated

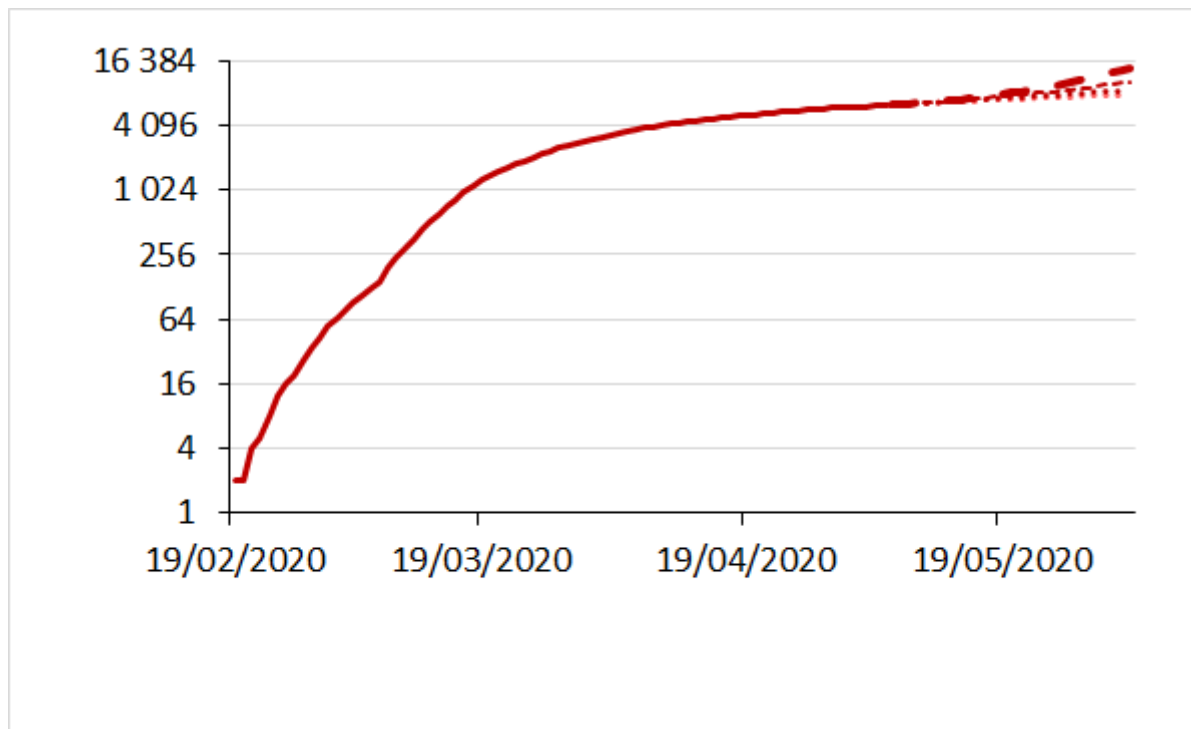


Data: The Johns Hopkins University, Politolog.com

# Iran

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated

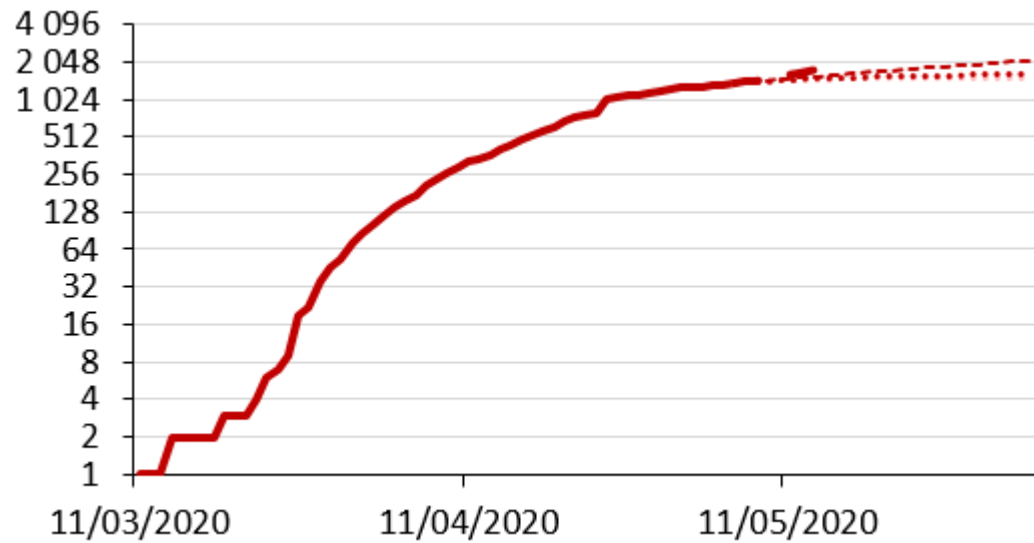


Data: The Johns Hopkins University, Politolog.com

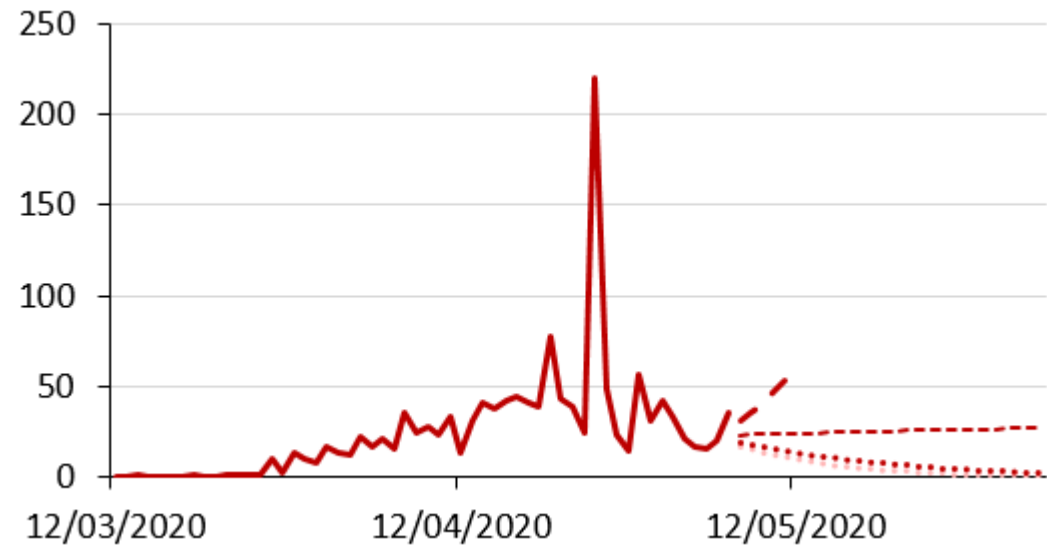
# Ireland

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

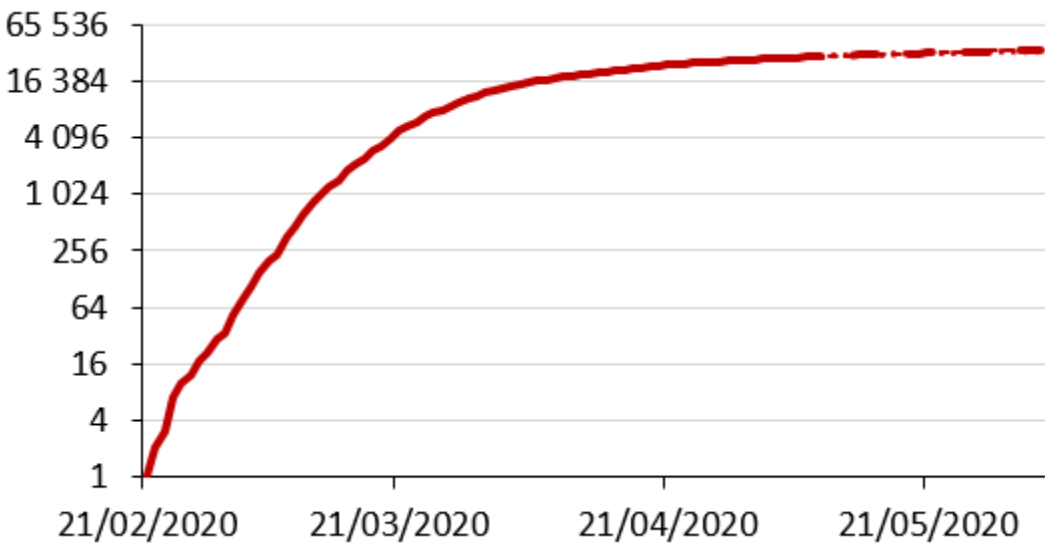


Data: The Johns Hopkins University, Politolog.com

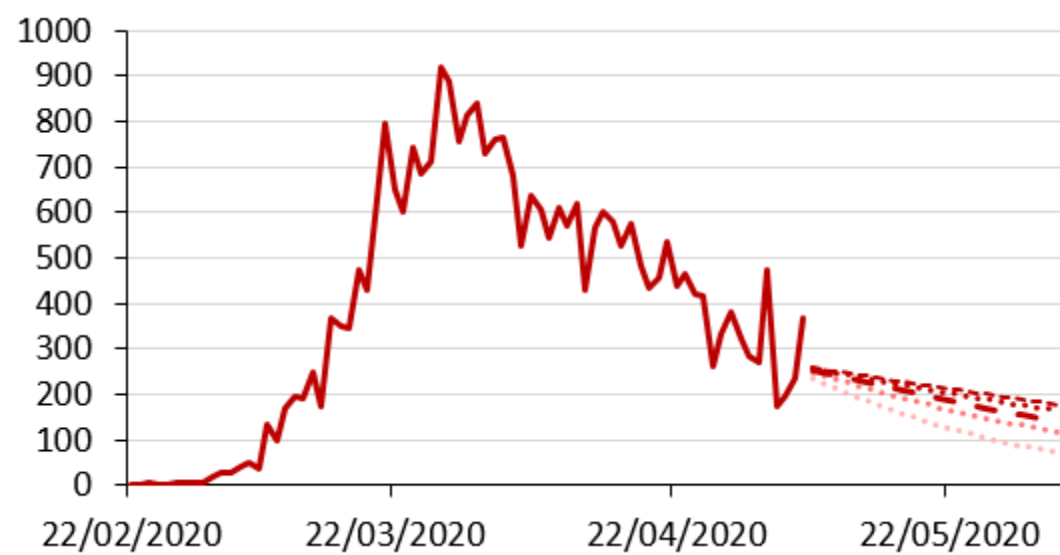
# Italy

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated



## Daily

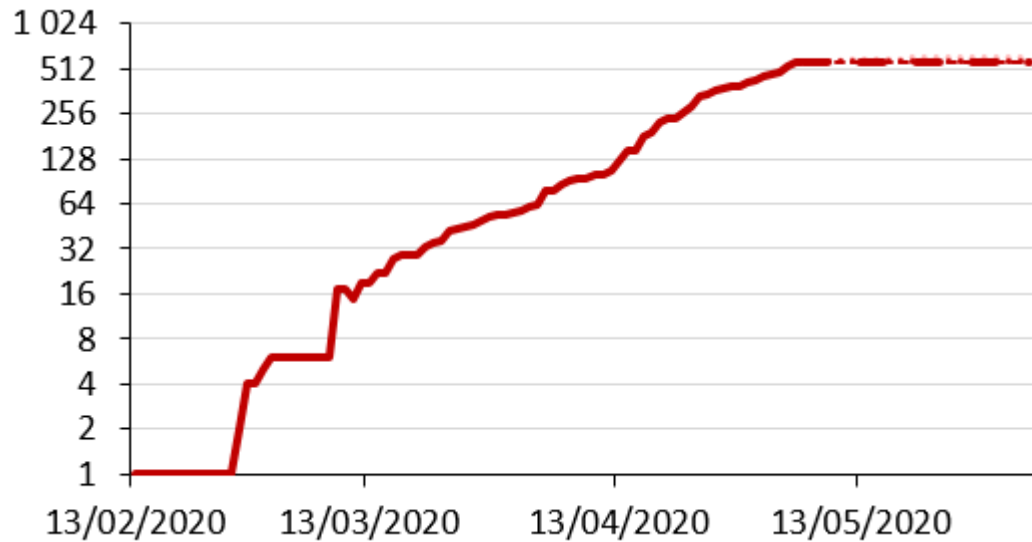


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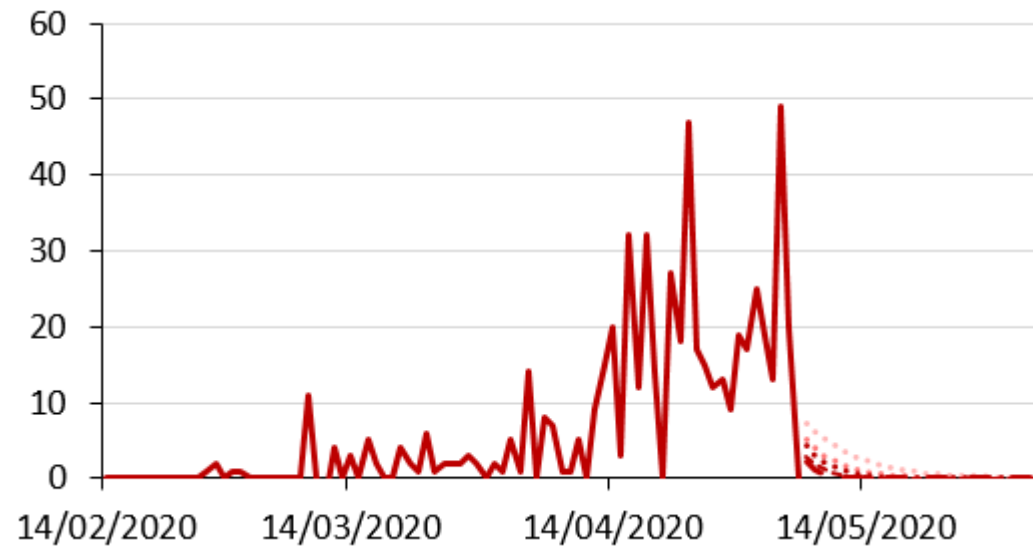
# Japan

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

## Cumulated



## Daily

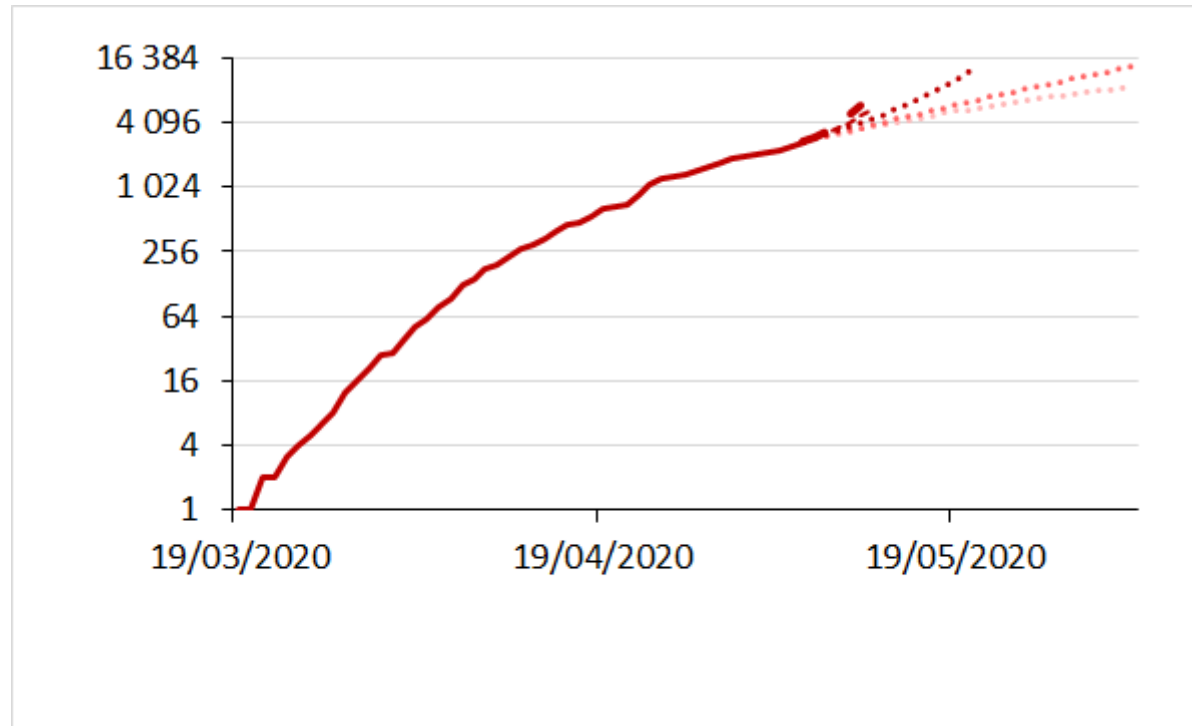


Data: The Johns Hopkins University, Politolog.com

# Mexico

— CONFIRMED    ..... 9 days' fit    ..... 8 days' fit    ..... 7 days' fit    - - - 6 days' fit    - - - 5 days' fit

## Cumulated

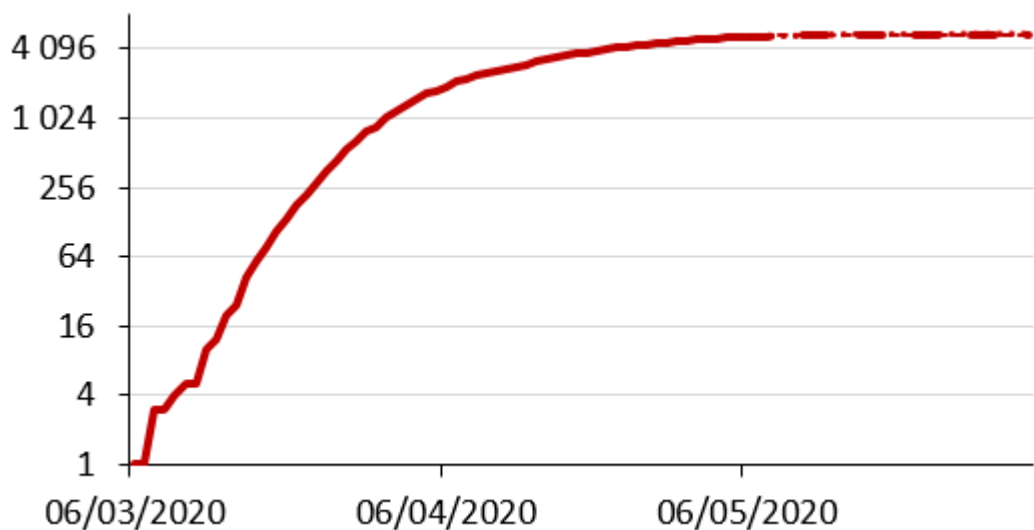


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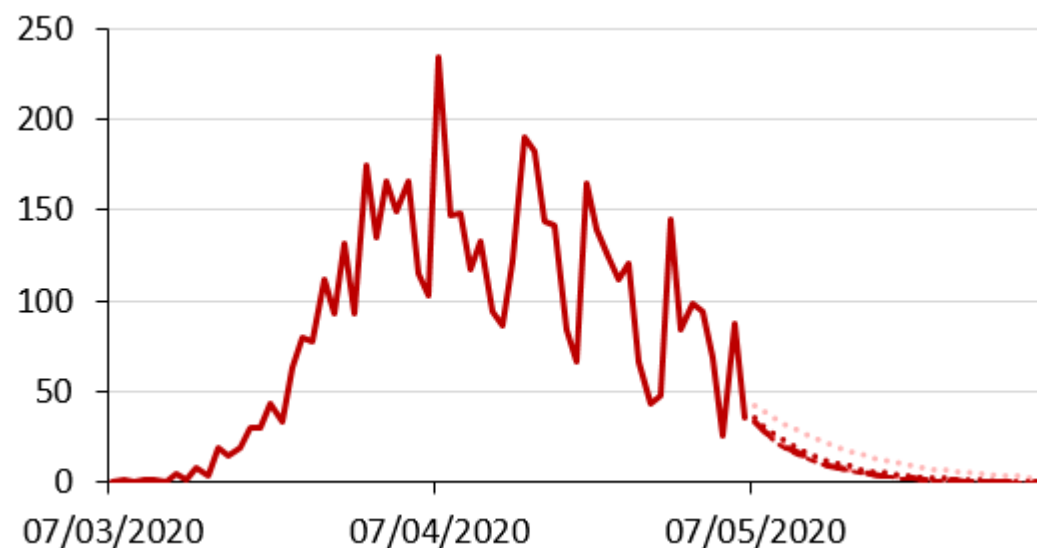
# Netherlands

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## Cumulated



## Daily

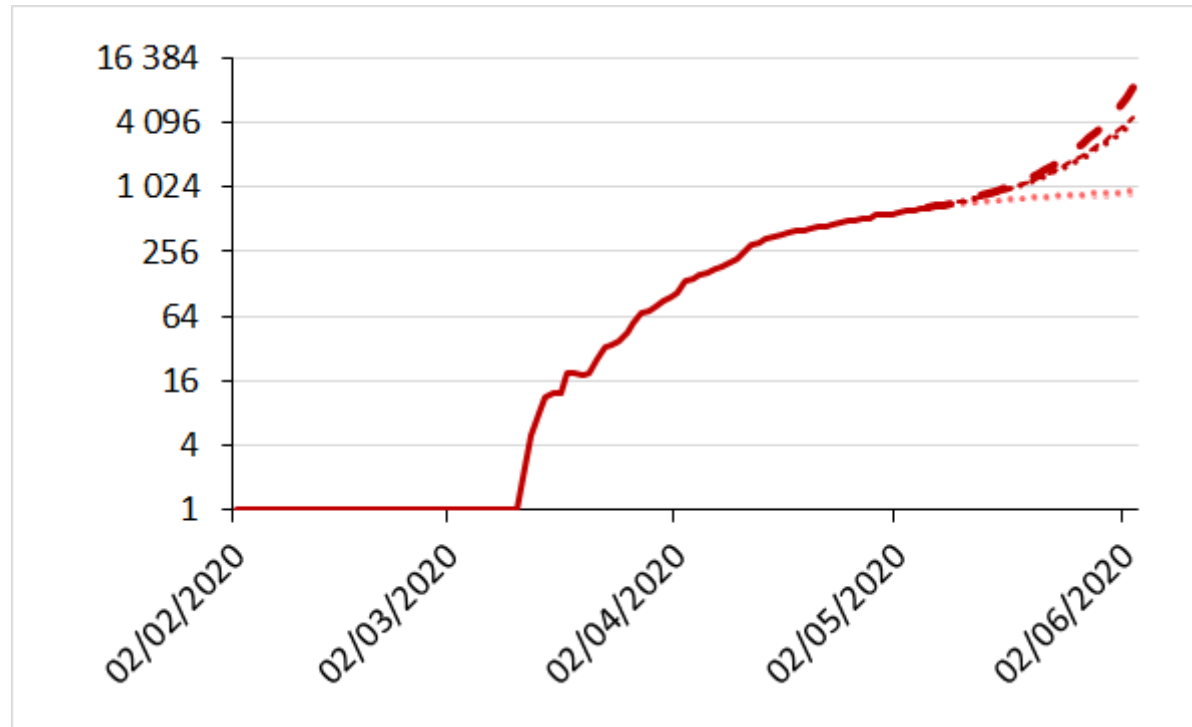


Data: The Johns Hopkins University, Politolog.com

# Philippines

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



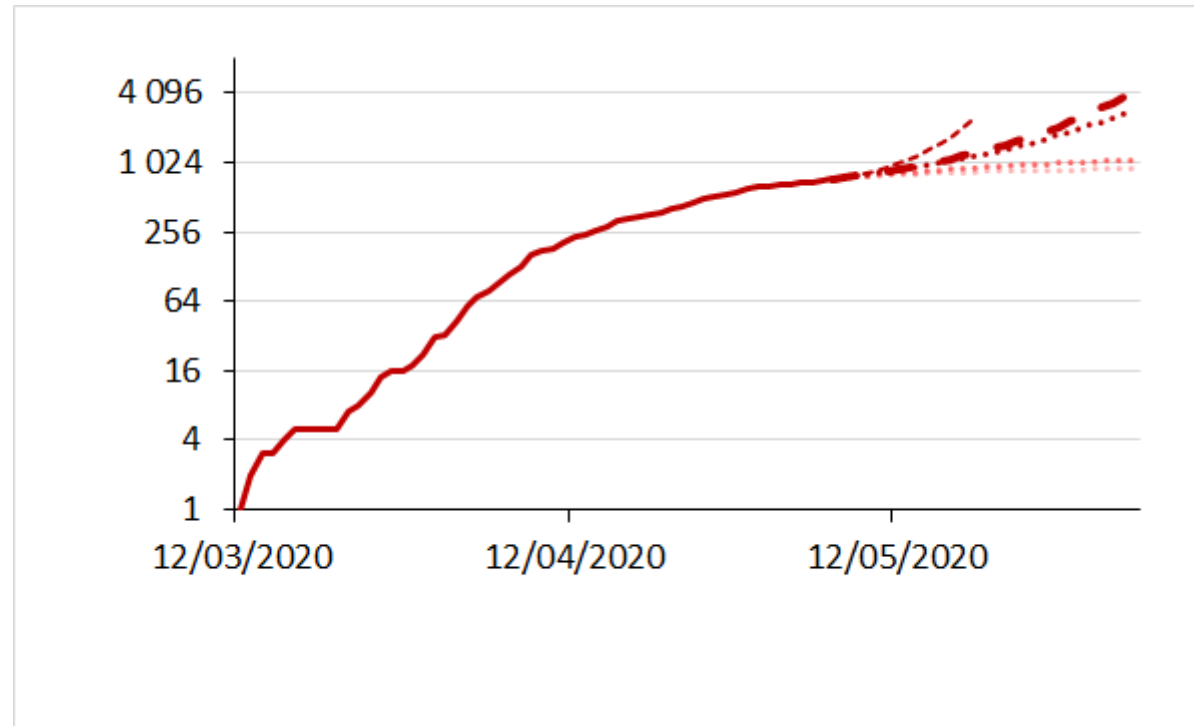
Data: The Johns Hopkins University, Politolog.com



# Poland

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated

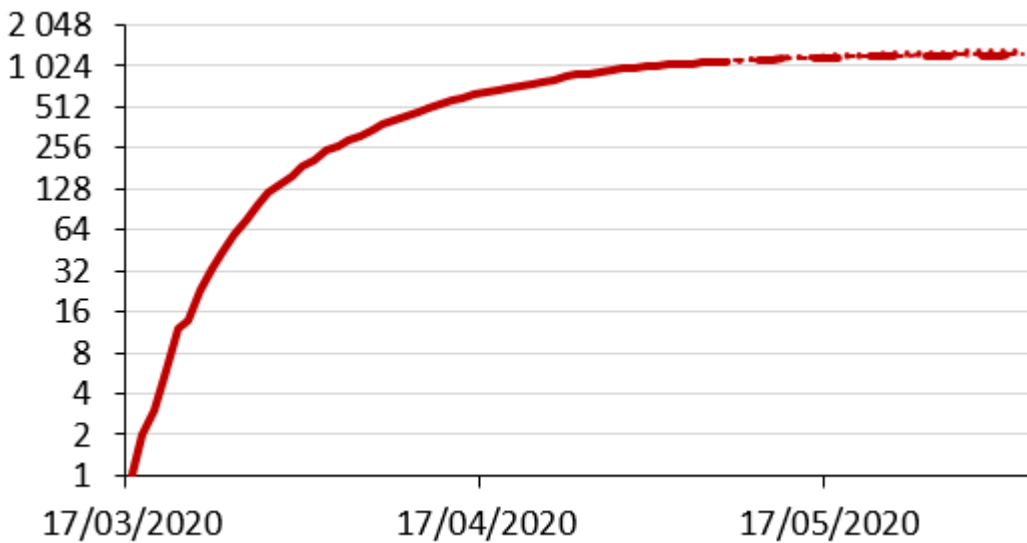


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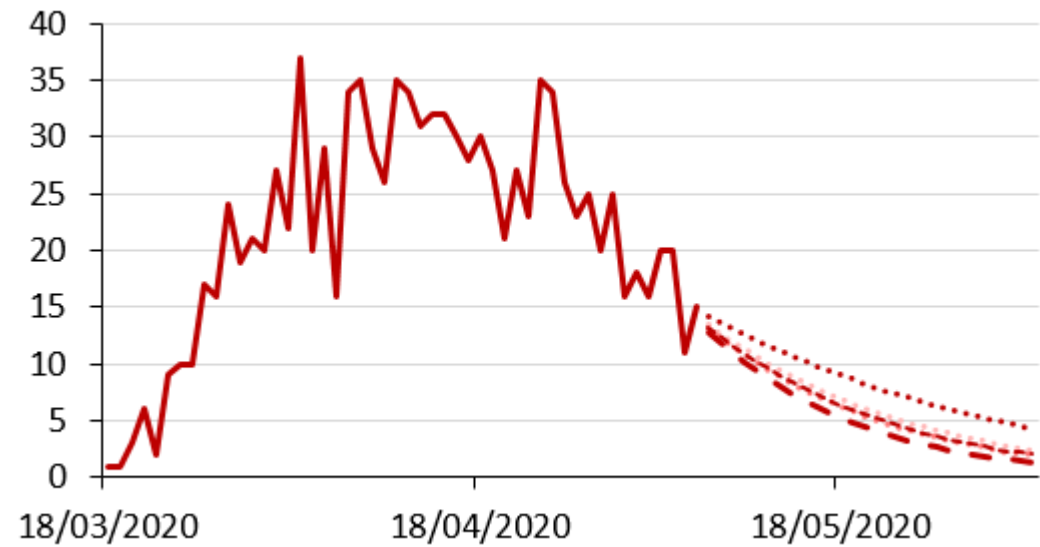
# Portugal

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

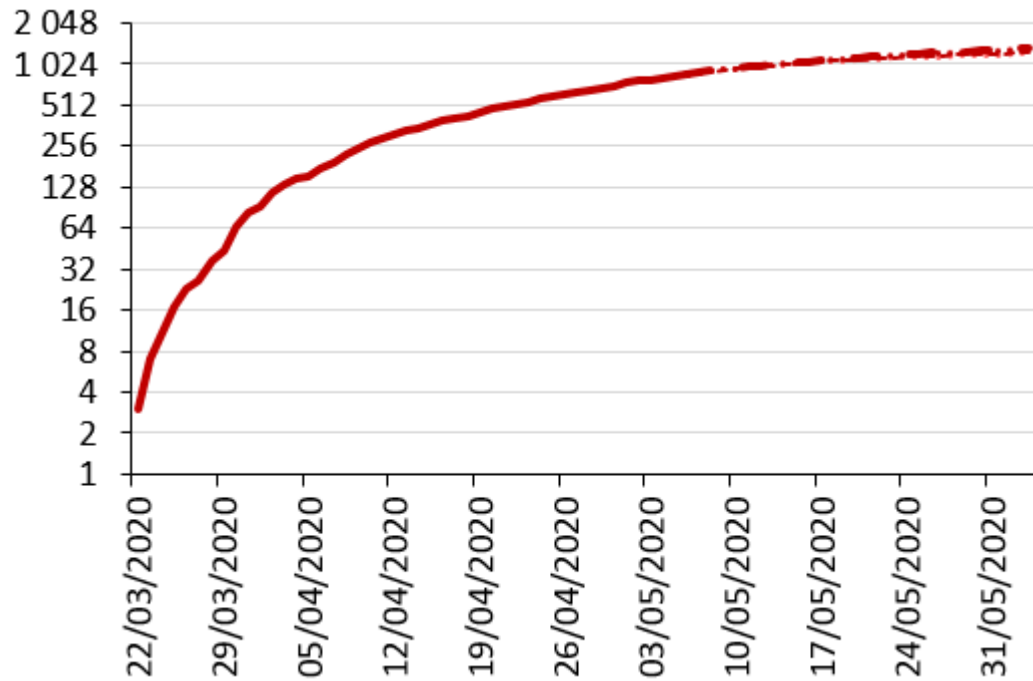


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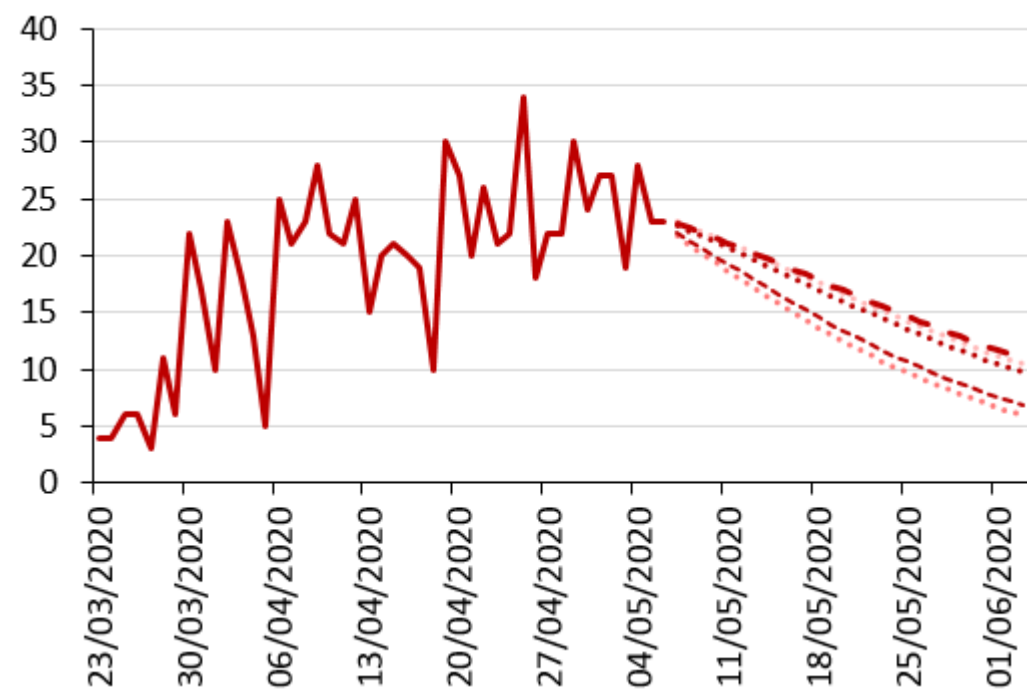
# Romania

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

### Cumulated



### Daily

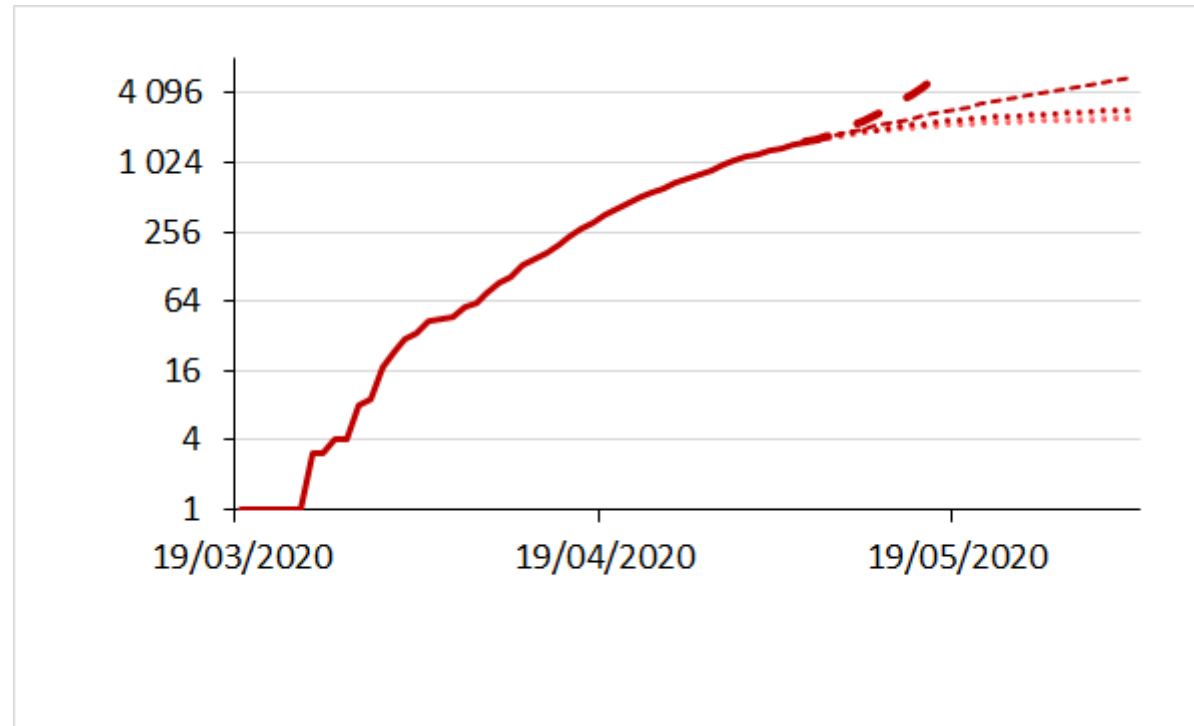


Data: The Johns Hopkins University, Politolog.com

# Russia

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

Cumulated

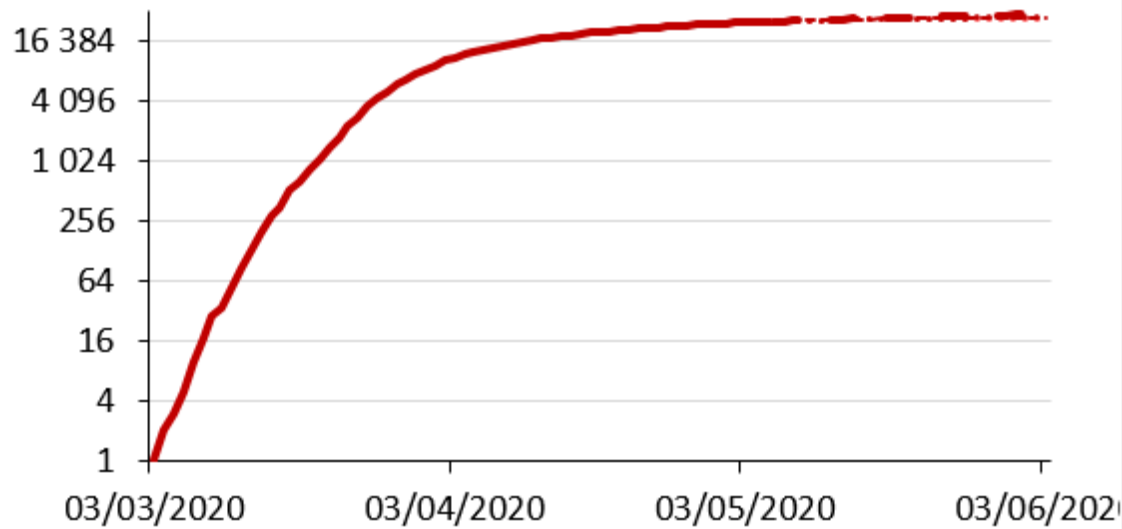


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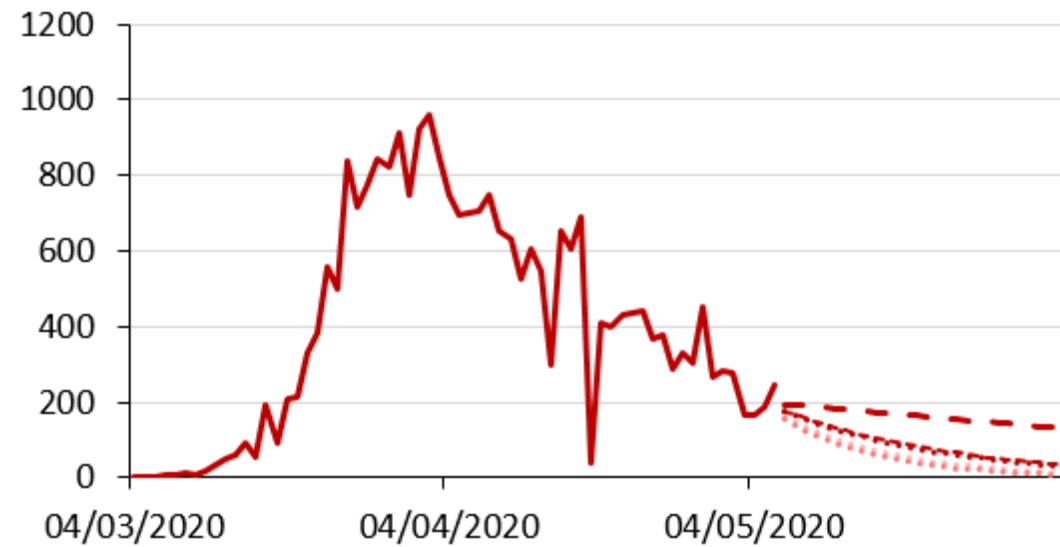
# Spain

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit    - - - 5 days'fit

## Cumulated



## Daily

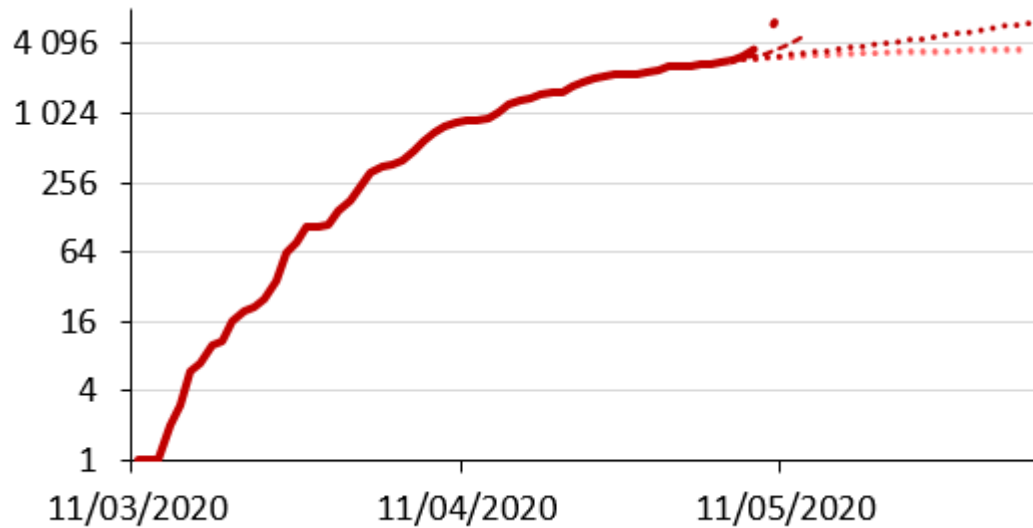


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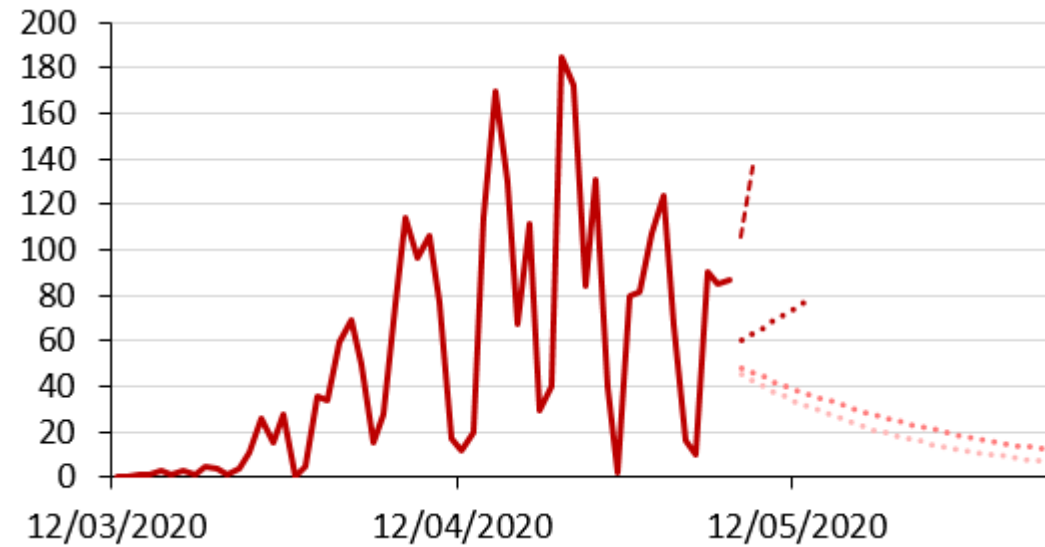
# Sweden

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## Cumulated



## Daily

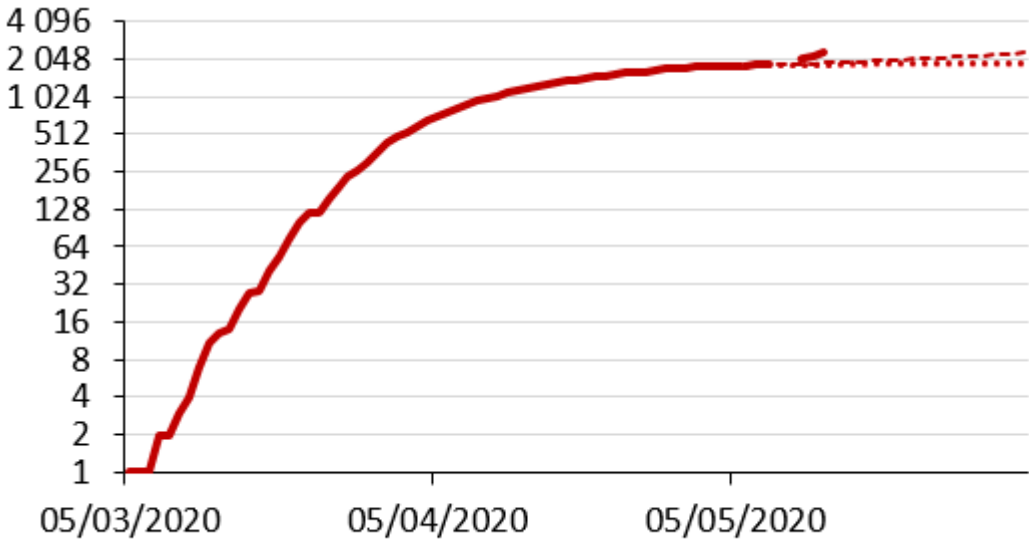


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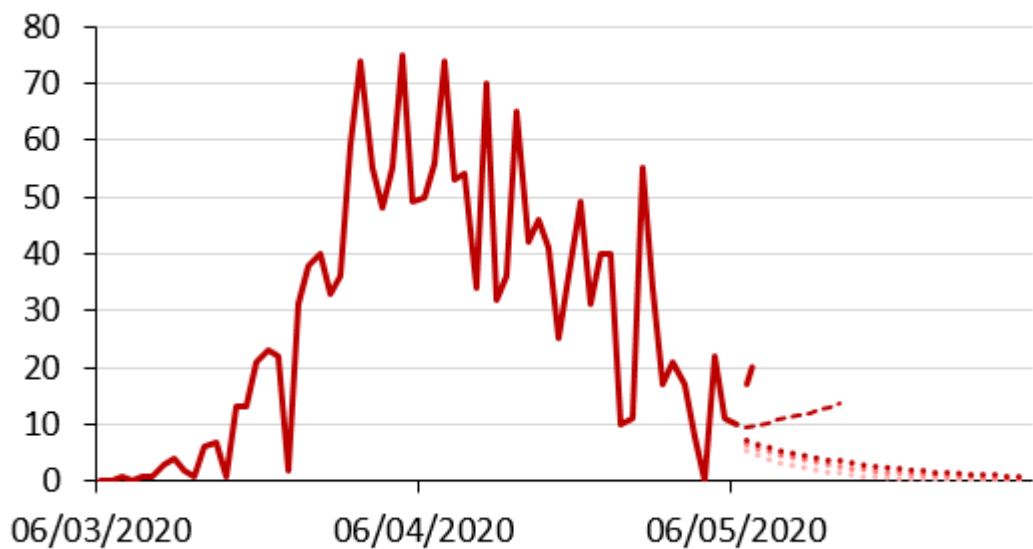
# Switzerland

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - - 6 days'fit    - - - - 5 days'fit

### Cumulated



### Daily

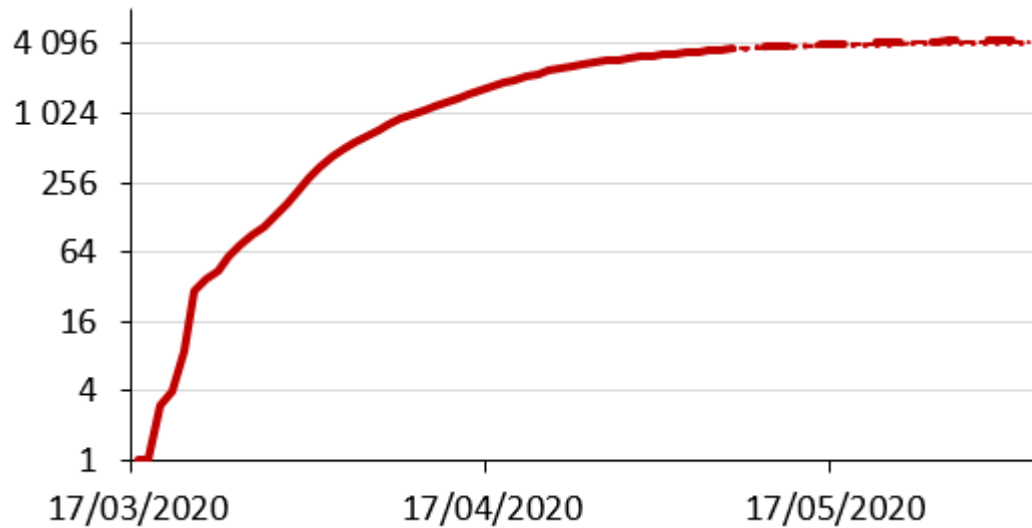


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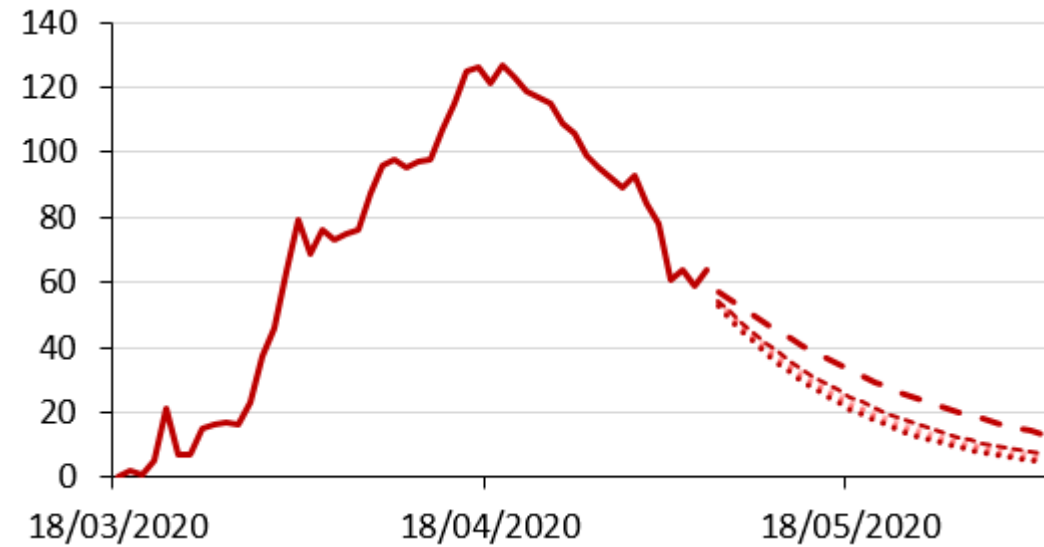
# Turkey

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## Cumulated



## Daily



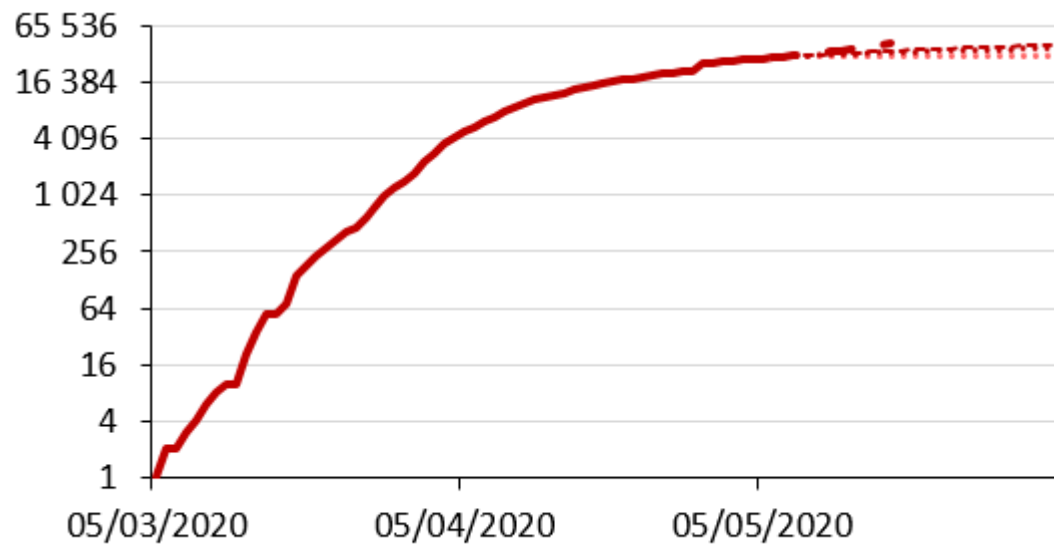
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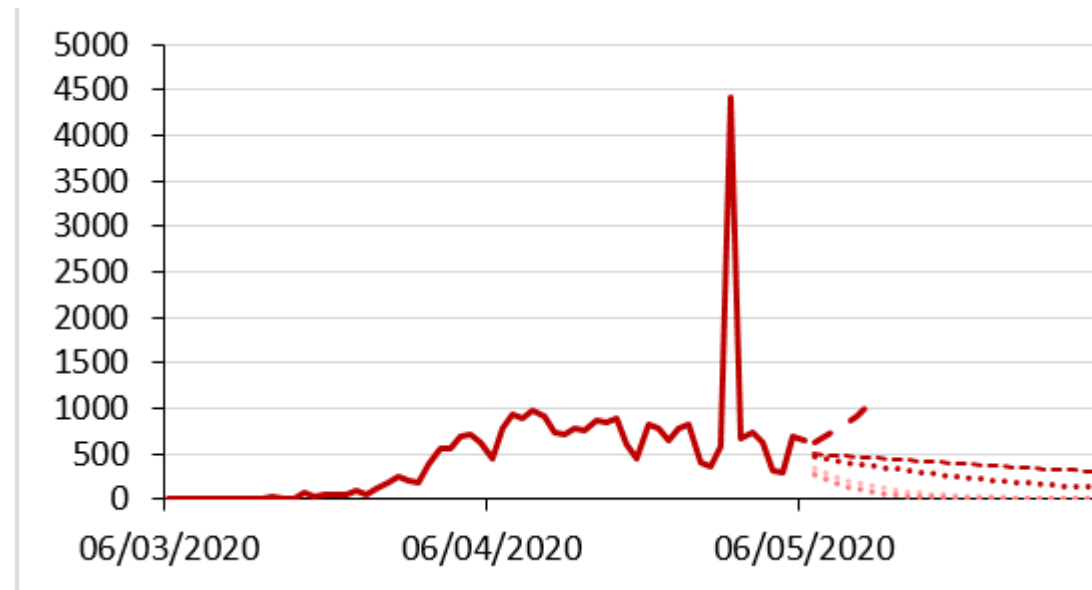
# United Kingdom

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## Cumulated



## Daily



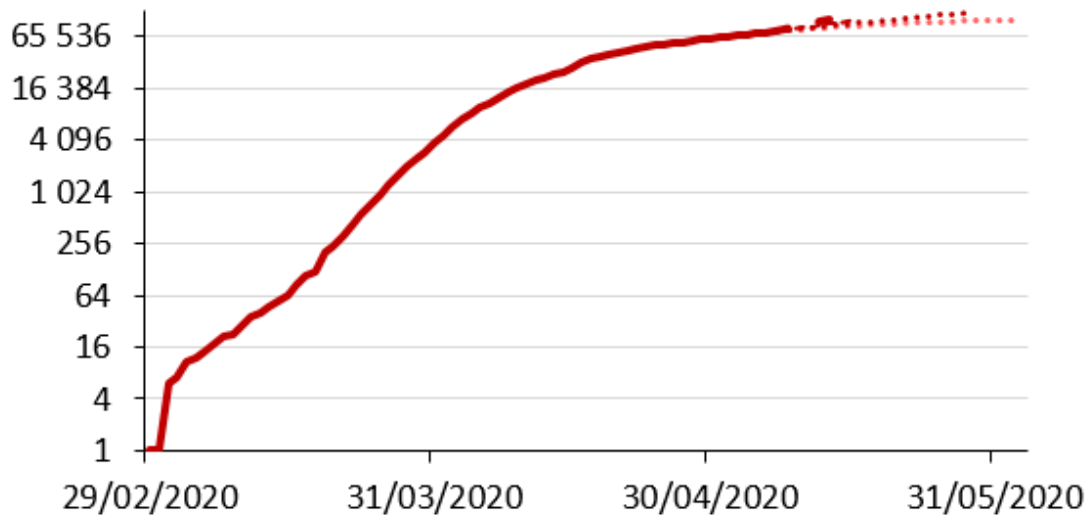
The UK changed its reporting method on the 29<sup>th</sup> of May (second peak)

Data: The Johns Hopkins University, Politolog.com

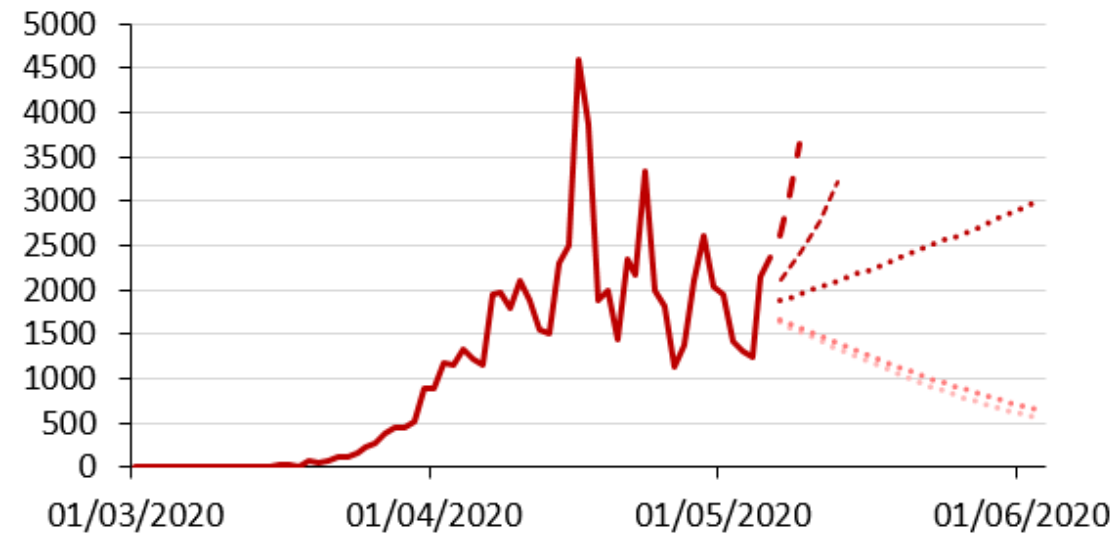
# USA

— CONFIRMED    ..... 9 days'fit    ..... 8 days'fit    ..... 7 days'fit    - - - 6 days'fit

### Cumulated



### Daily



Data: The Johns Hopkins University, Politolog.com



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