

# Covid19 Report

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2020-04-04

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## 1 The *CRISTINA* project

This report is part of a research project “**CoRona vIrus SpaTial aNAlysis**” (*CRISTINA*) which examines the time series progress of COVID-19 events in 177 countries of the world.

## 2 France

A series of visualizations for the progress of COVID-19 for **France**. We use absolute numbering scale and logarithmic scale to visualize the progress of “*confirmed cases*”, “*deaths*” and “*recovered cases*”. We also indicate the goverment interventions as dots on top of each line.

### 2.1 Confirmed Cases

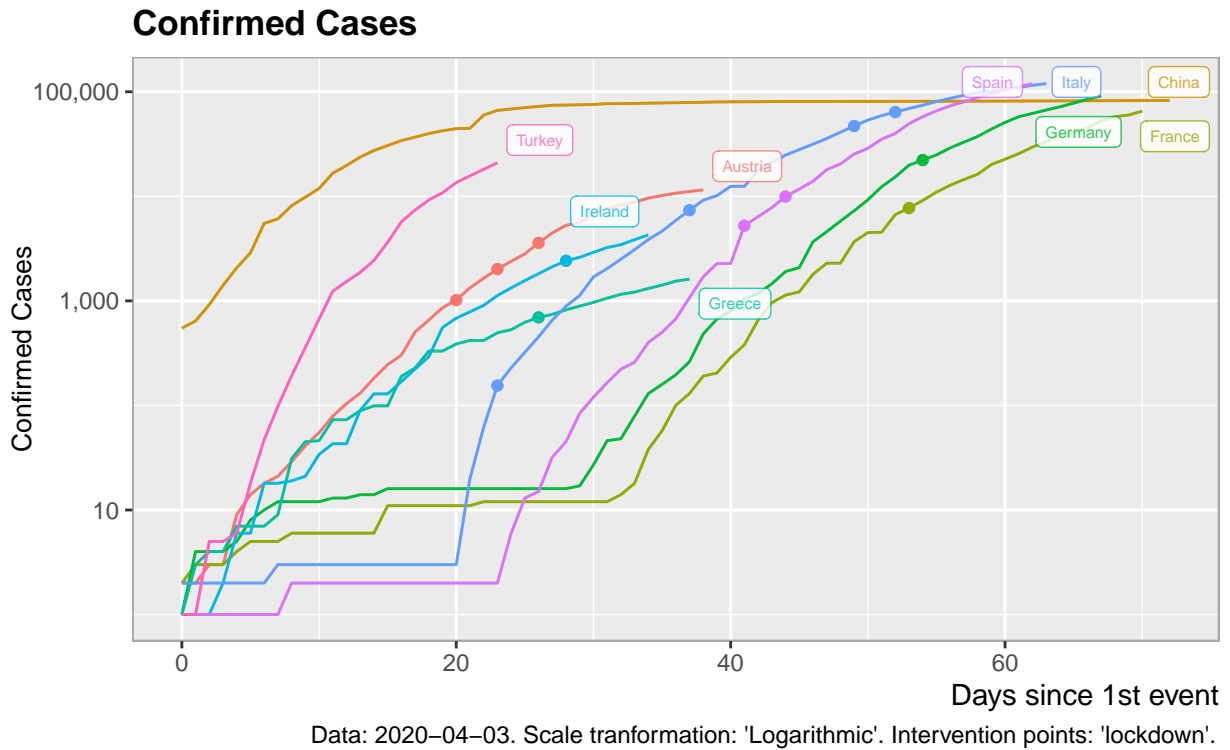


Figure 1: Confirmed Cases

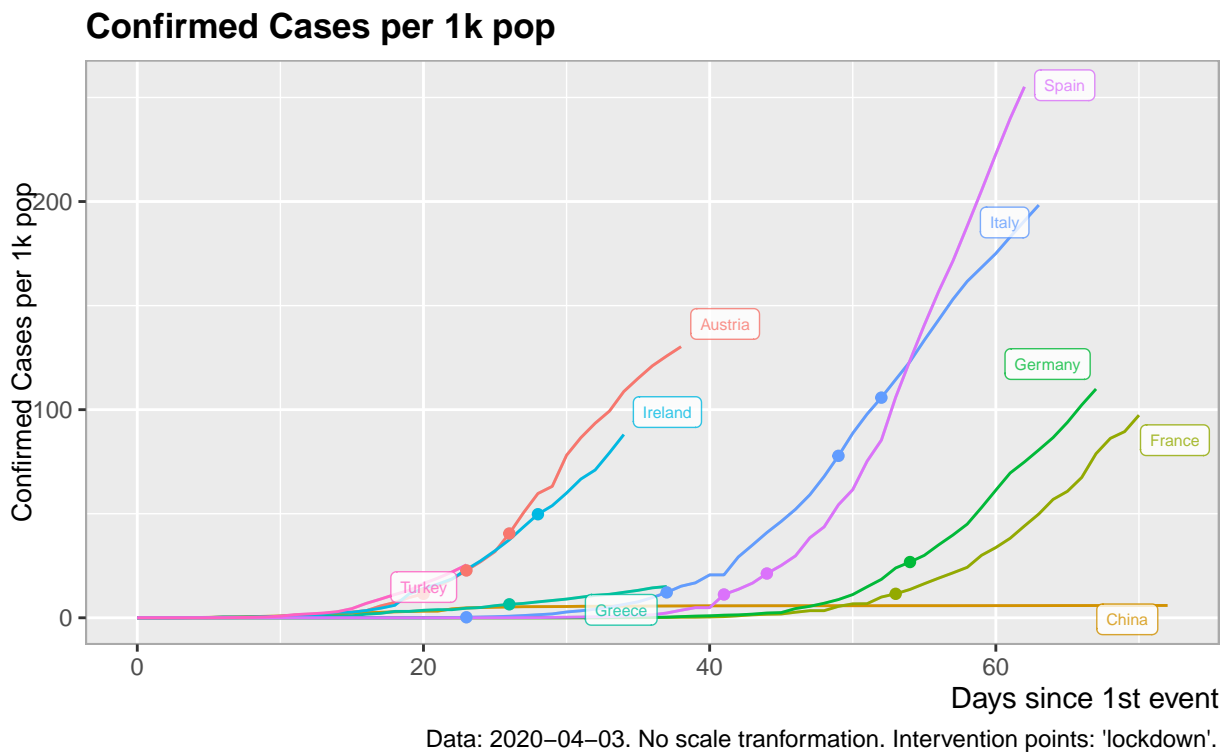


Figure 2: Confirmed Cases by 1000 population

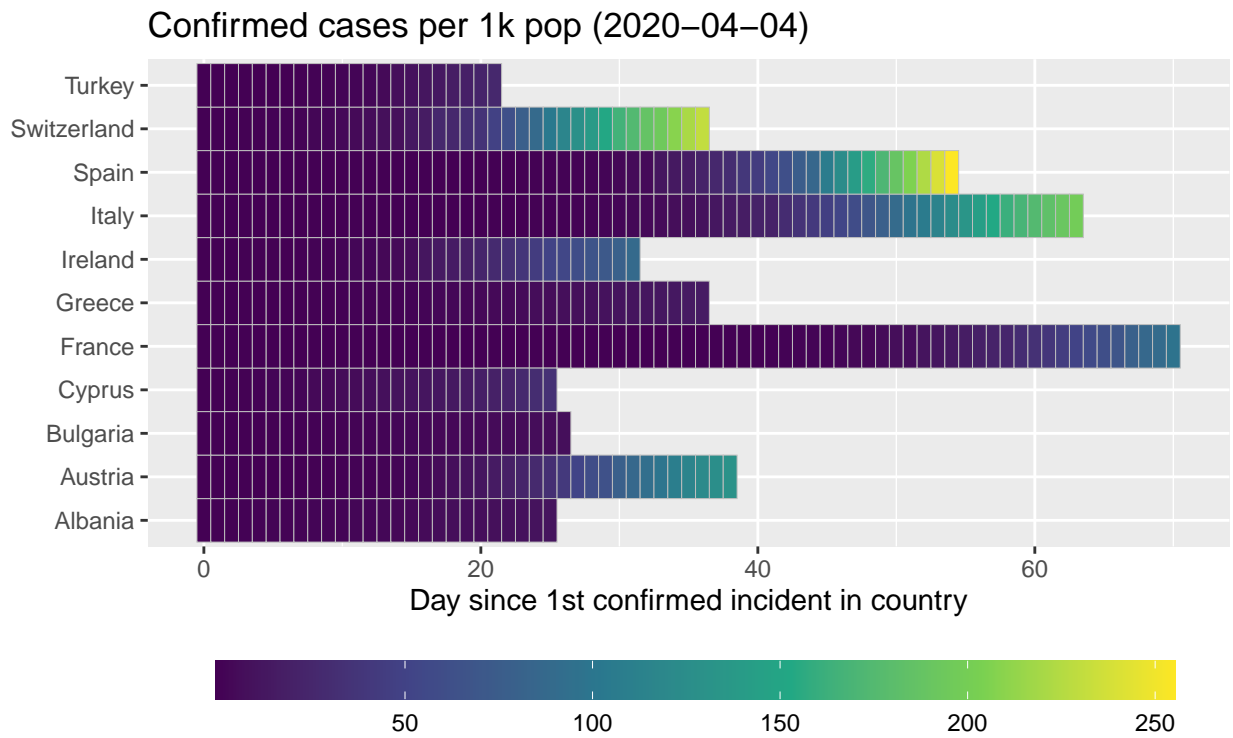


Figure 3: Confirmed Cases by 1000 population

2.2 Deaths

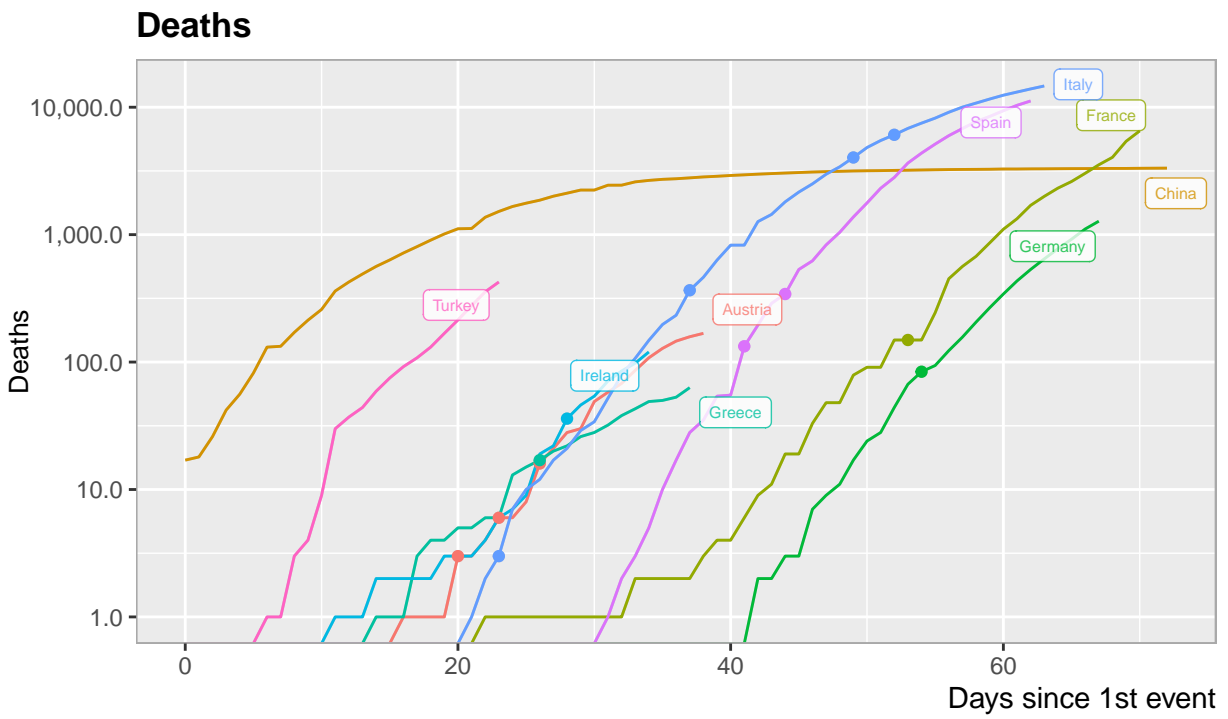


Figure 4: Number of deaths by country

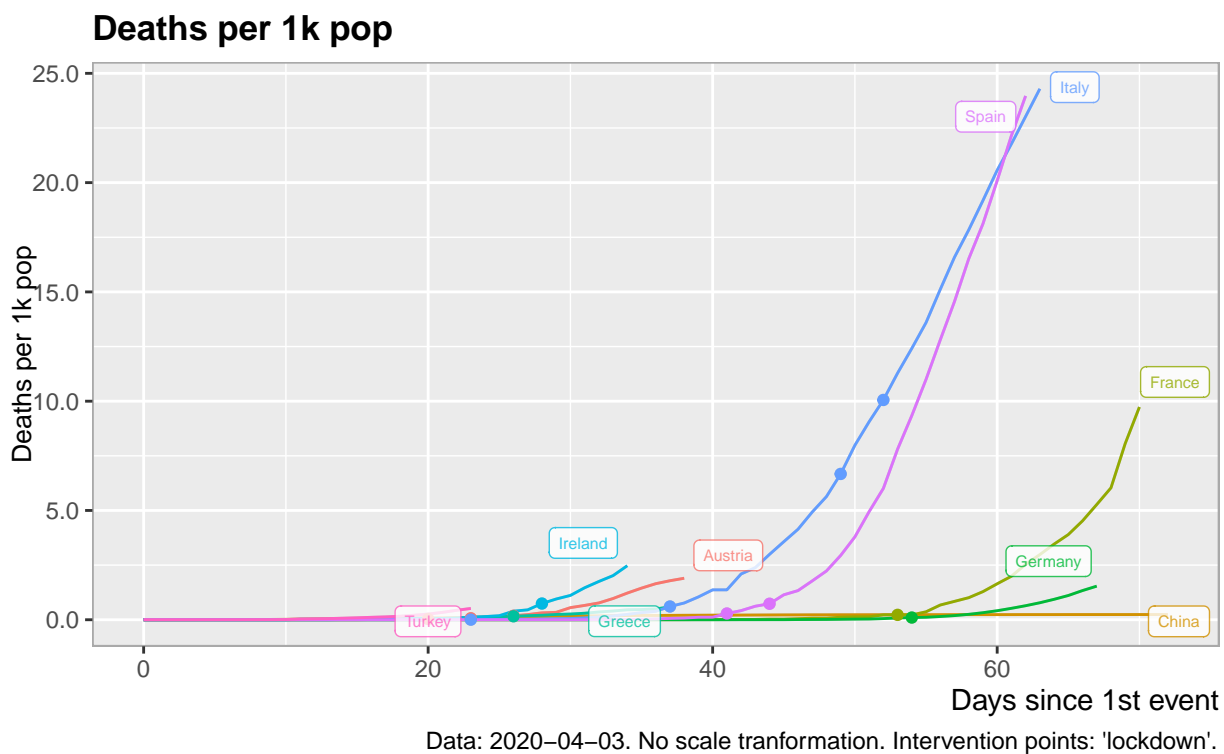


Figure 5: Deaths by 1000 population

### 3 Rate of change over time

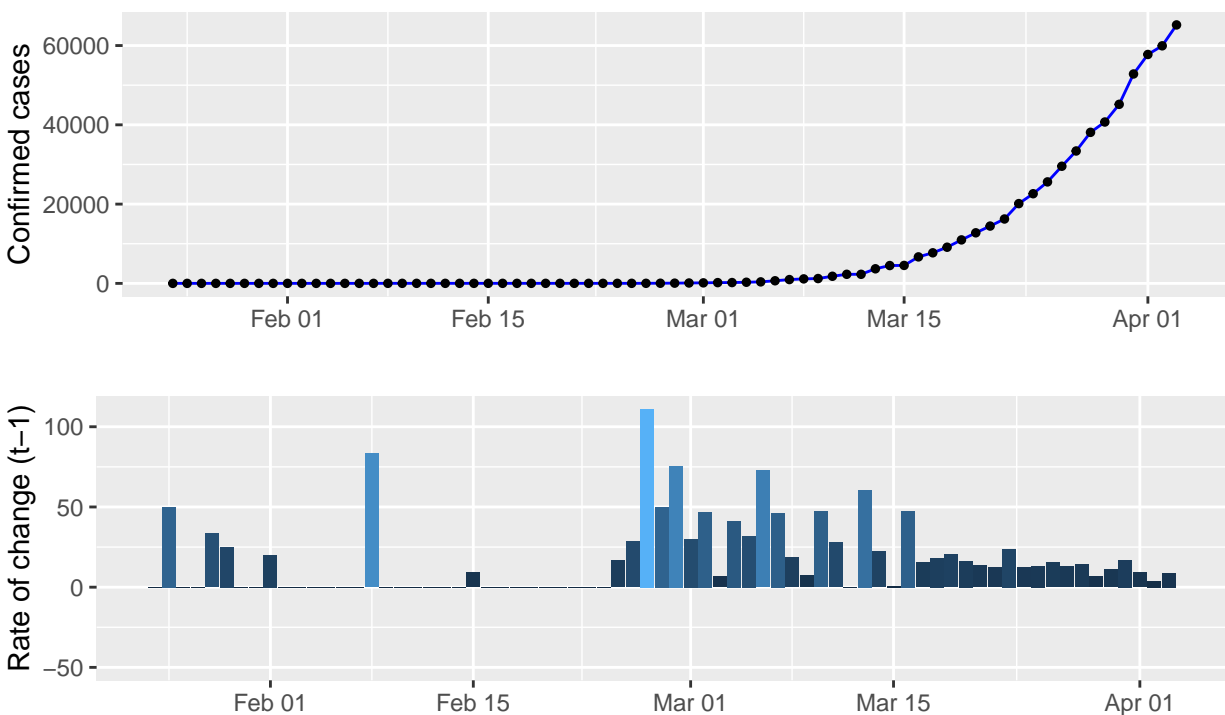


Figure 6: Rate of change of confirmed cases

## 4 Estimations

We estimate the future projection of *confirmed cases* for the next 5 days in France with two methods.

### 4.1 ARIMA projection

#### Projection of 'confirmed' cases for 5 ahead

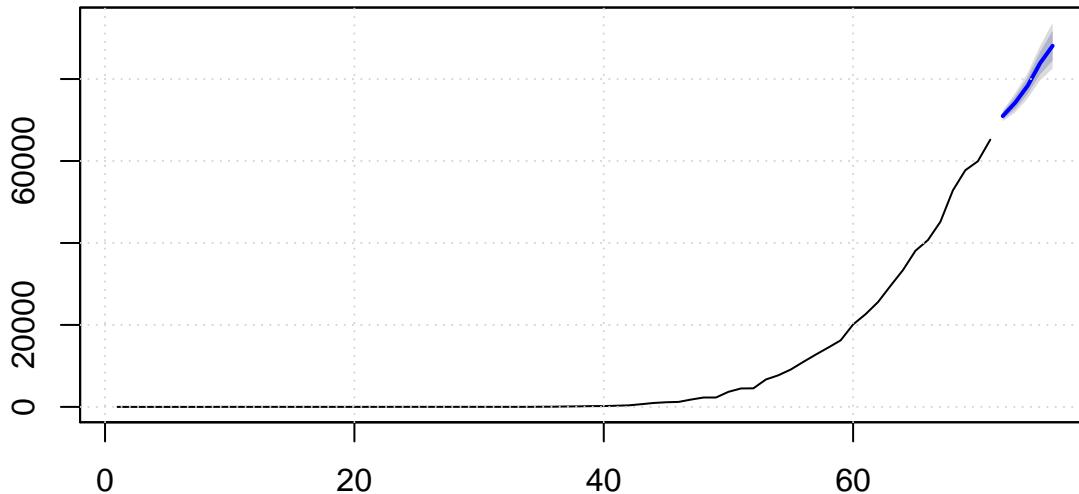


Figure 7: ARIMA projection

Table 1: ARIMA of 'confirmed cases' for 5 days ahead

	Estimation	Confidence 95% (Low)	Confidence 95% (High)
<b>t+1 (2020-04-04)</b>	70969	69661	72276
<b>t+2 (2020-04-05)</b>	74232	71862	76602
<b>t+3 (2020-04-06)</b>	78358	75256	81459
<b>t+4 (2020-04-07)</b>	83893	79709	88076
<b>t+5 (2020-04-08)</b>	88108	82521	93695

- The estimated proportion of cases detected is 4.93%.
- With data up to 2020-04-03 in France we have 65202 confirmed cases and 6520 deaths.
- Estimated doubling time (based on 5 days time window) is approximately 8.1 days

## 4.2 PROPHET projection

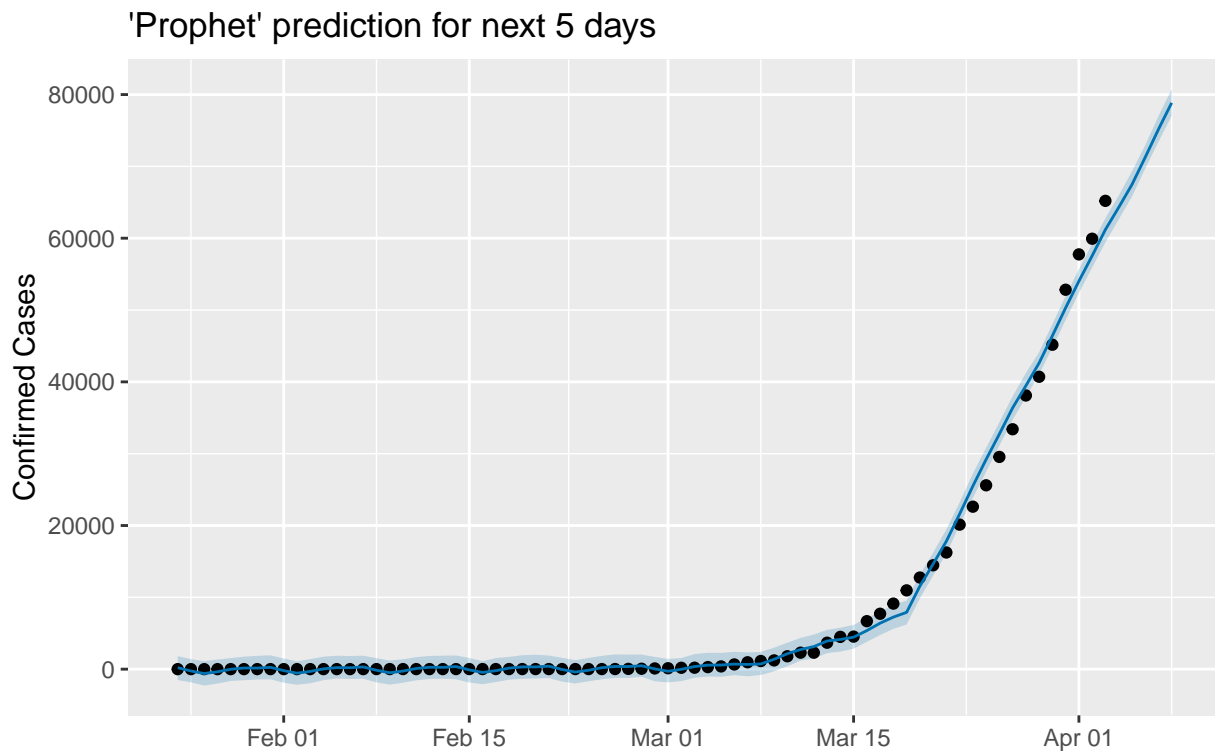


Figure 8: PROPHET Projection of confirmed cases over the next 5 days for France

Table 2: PROPHET of 'confirmed cases' for 5 days ahead for France

	Future_Date	Estimation	Confidence 95% (Low)	Confidence 95% (High)
<b>t+1</b>	2020-04-04	64280	62598	65933
<b>t+2</b>	2020-04-05	67462	65781	69298
<b>t+3</b>	2020-04-06	71245	69673	72926
<b>t+4</b>	2020-04-07	75142	73403	76979
<b>t+5</b>	2020-04-08	78851	77008	80755