

Covid19 Report

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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 Spain

A series of visualizations for the progress of COVID-19 for **Spain**. 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

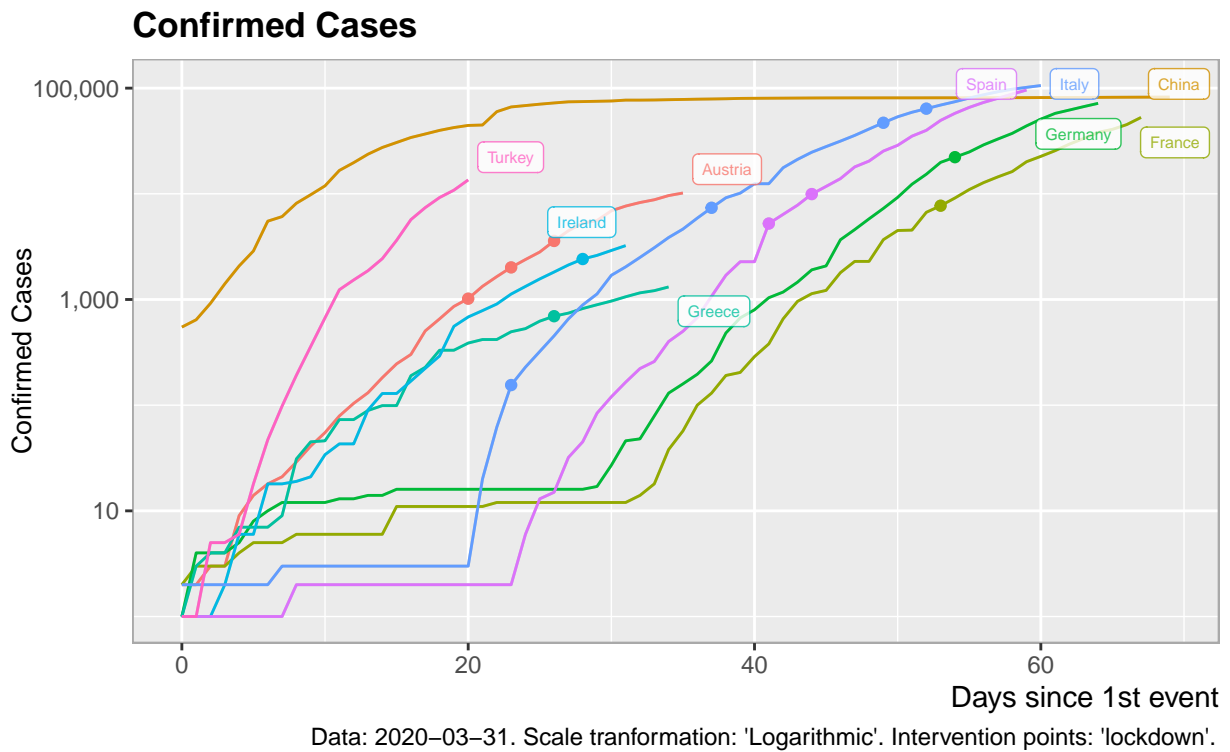


Figure 1: Confirmed Cases

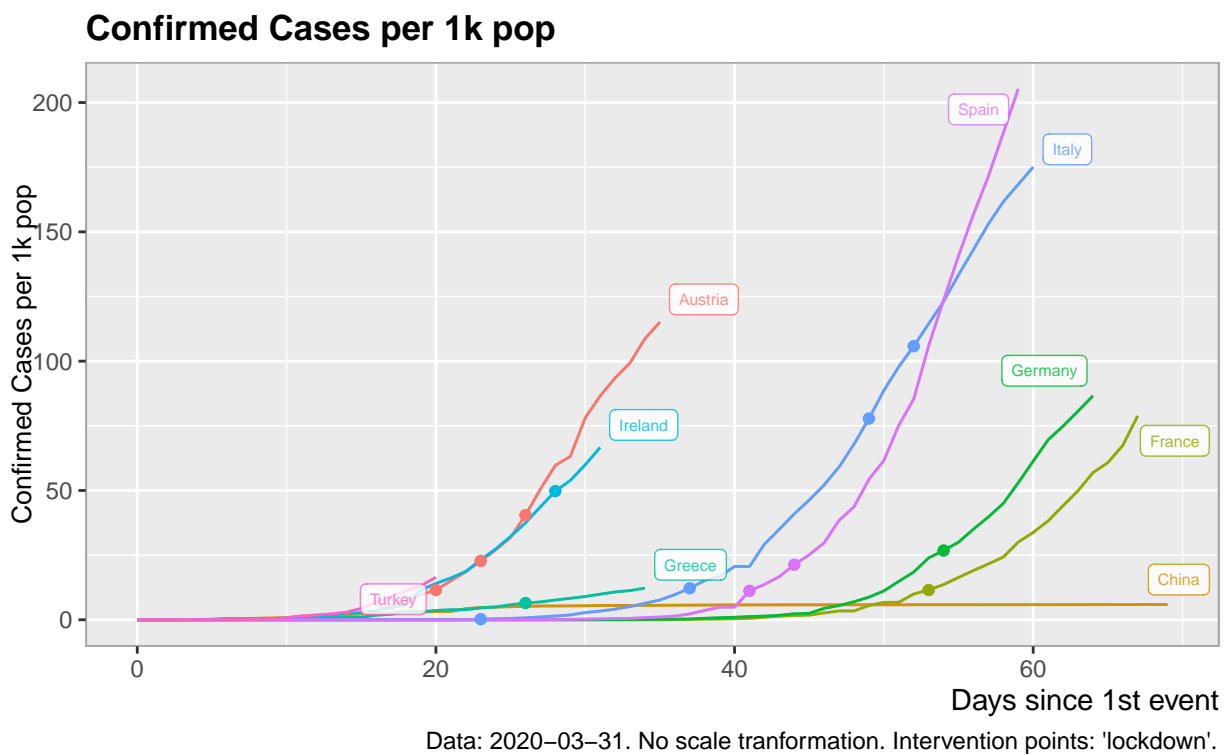


Figure 2: Confirmed Cases by 1000 population

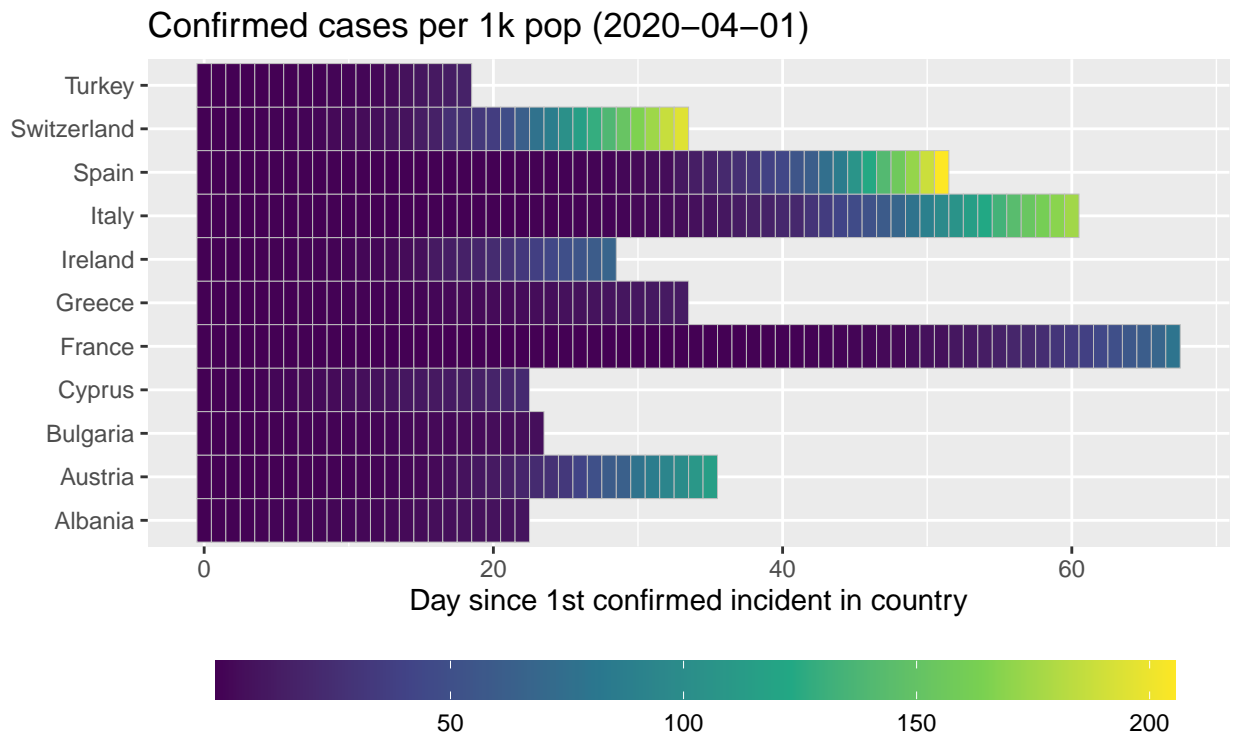


Figure 3: Confirmed Cases by 1000 population

2.2 Deaths

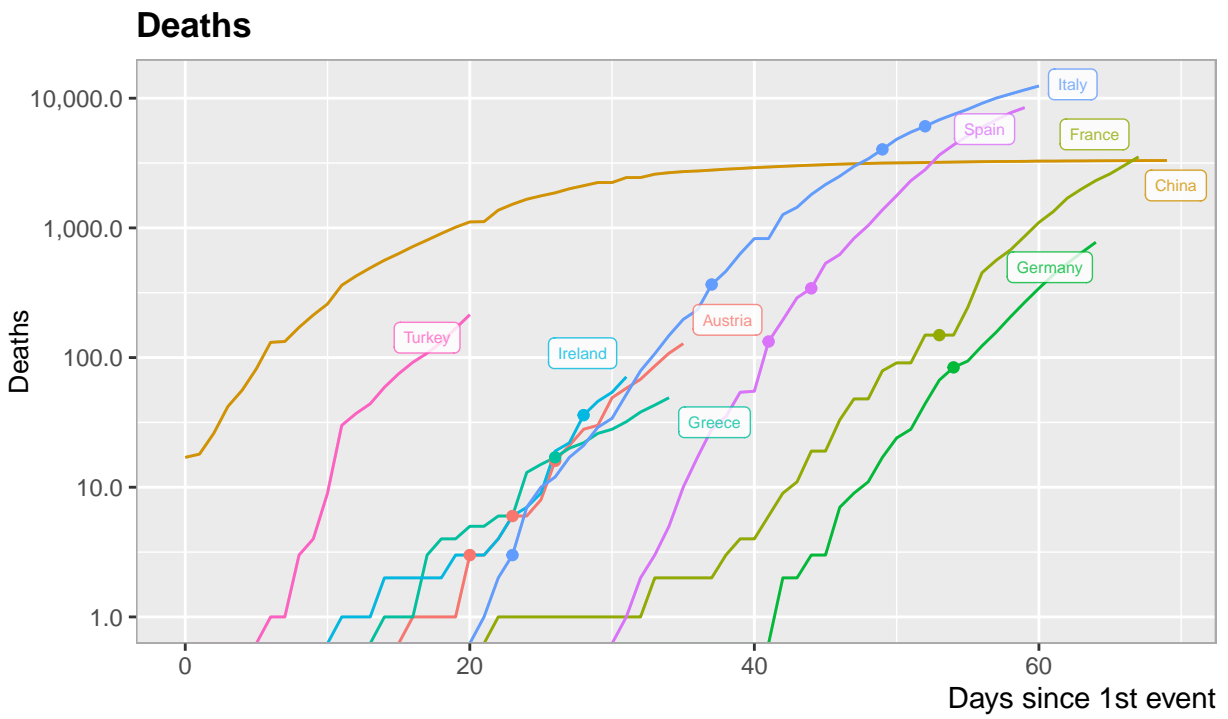


Figure 4: Number of deaths by country

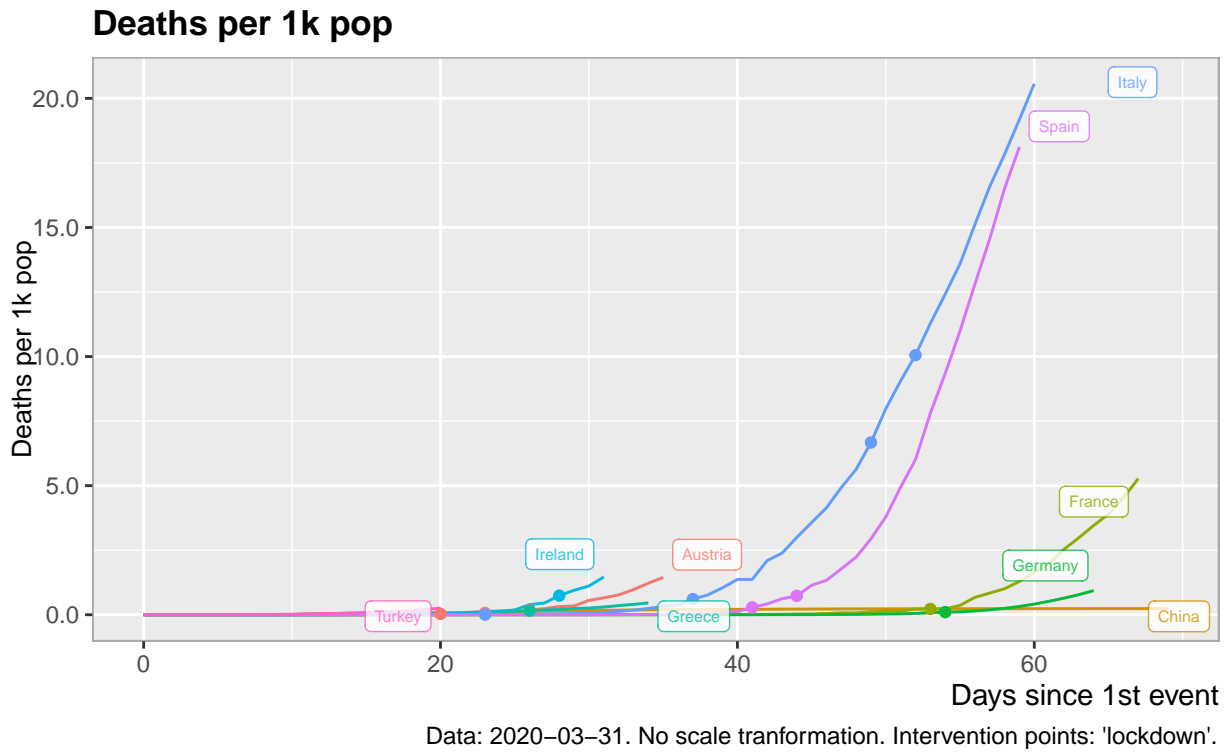


Figure 5: Deaths by 1000 population

3 Rate of change over time

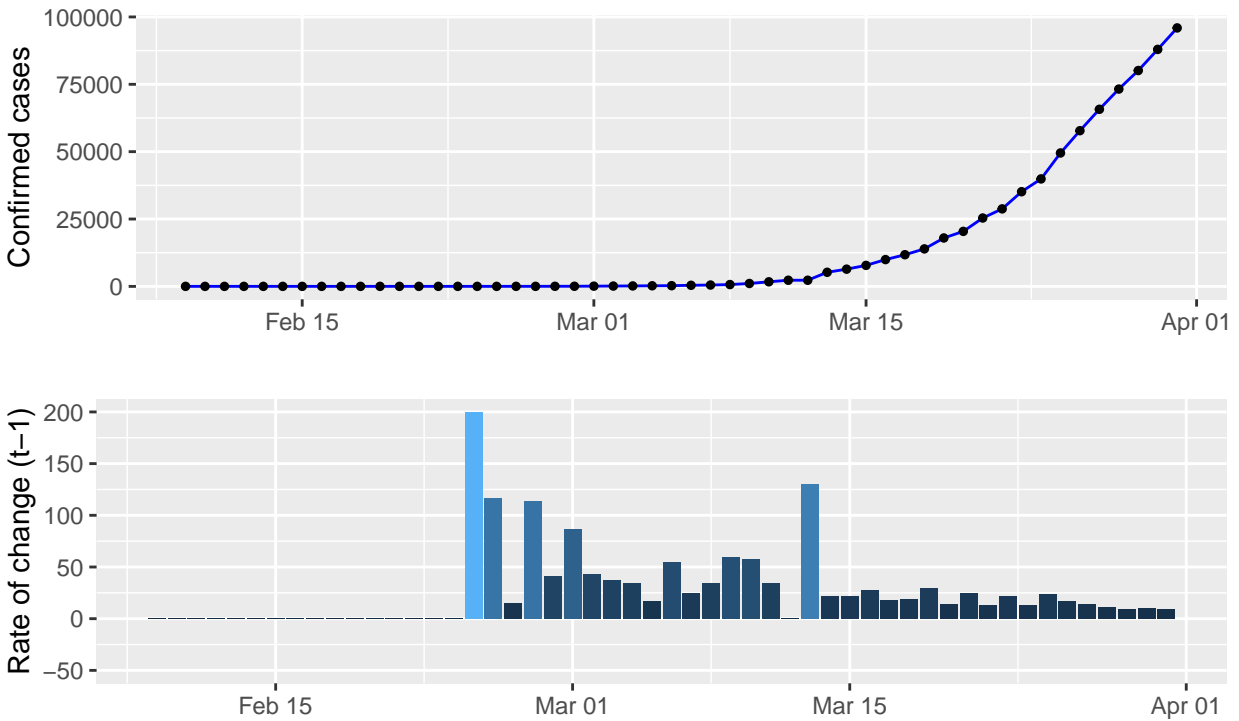


Figure 6: Rate of change of confirmed cases

4 Estimations

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

4.1 ARIMA projection

Projection of 'confirmed' cases for 5 ahead

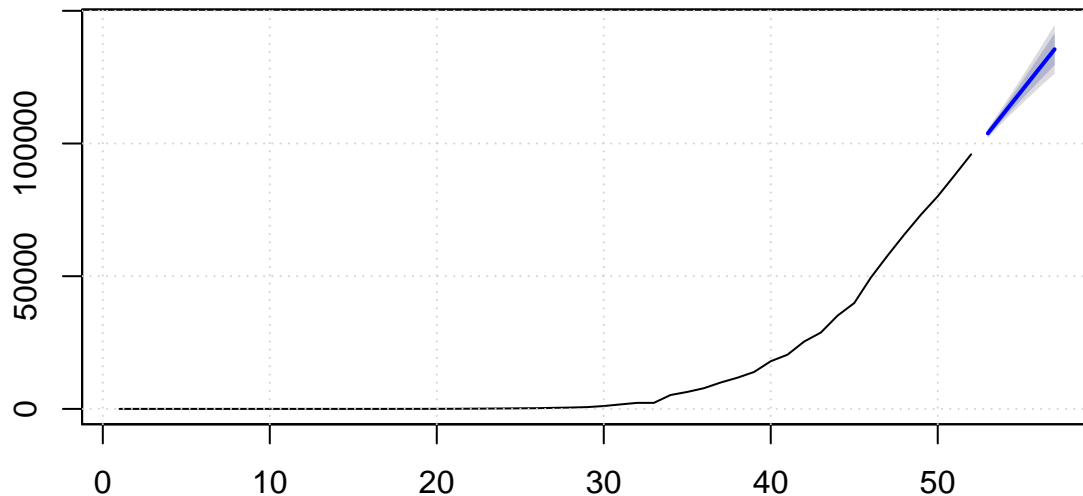


Figure 7: ARIMA projection

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

	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1 (2020-04-01)	103816	102019	105613
t+2 (2020-04-02)	111754	108676	114833
t+3 (2020-04-03)	119665	114721	124609
t+4 (2020-04-04)	127593	120680	134506
t+5 (2020-04-05)	135510	126329	144691

- The estimated proportion of cases detected is 1.02%.
- With data up to 2020-03-31 in Spain we have 95923 confirmed cases and 8464 deaths.
- Estimated doubling time (based on 5 days time window) is approximately 7.4 days

4.2 PROPHET projection

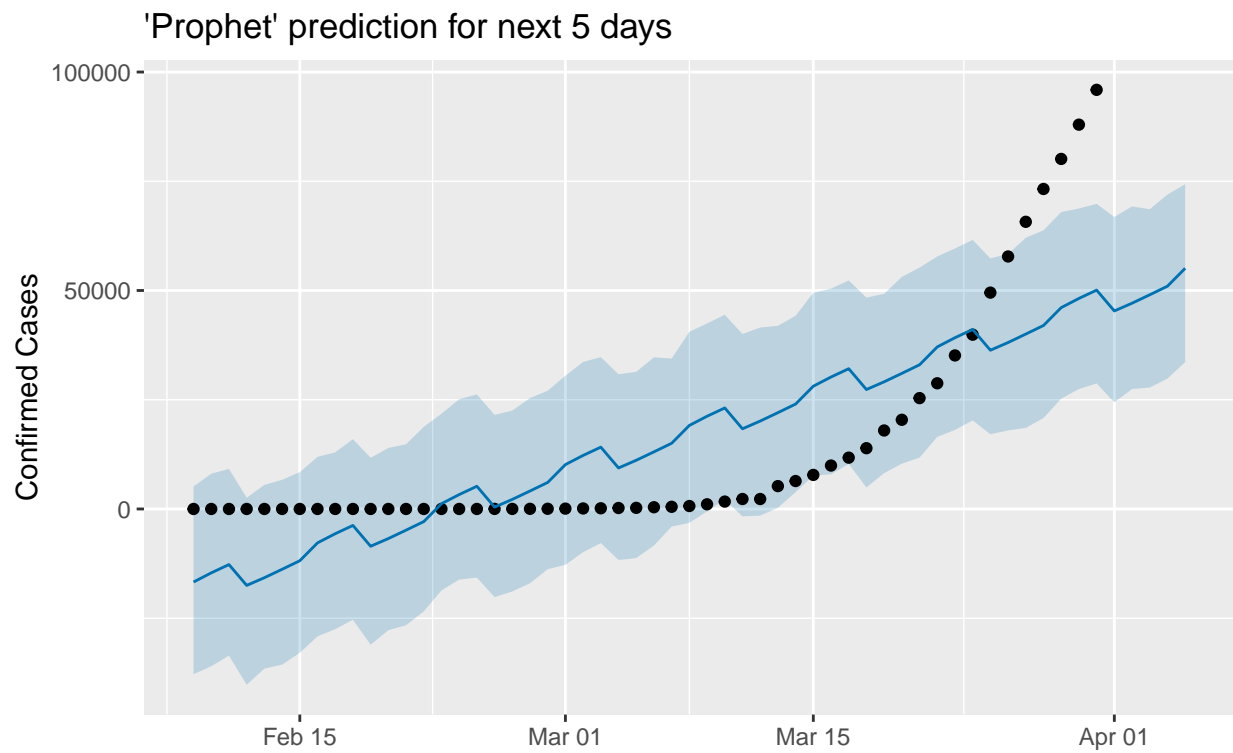


Figure 8: PROPHET Projection of confirmed cases over the next 5 days for Spain

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

	Future_Date	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1	2020-04-01	45324	24390	66827
t+2	2020-04-02	47091	27445	69241
t+3	2020-04-03	49020	27782	68607
t+4	2020-04-04	50986	29841	71949
t+5	2020-04-05	55077	33616	74329