

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 Italy

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

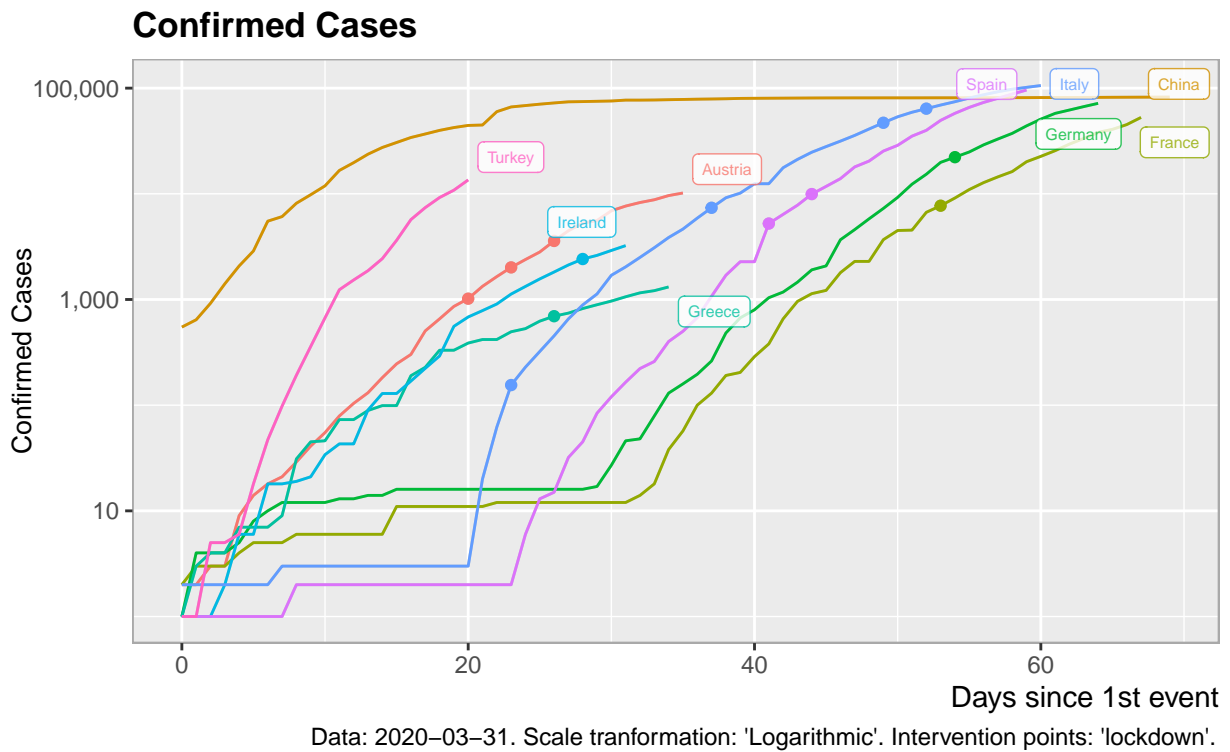


Figure 1: Confirmed Cases

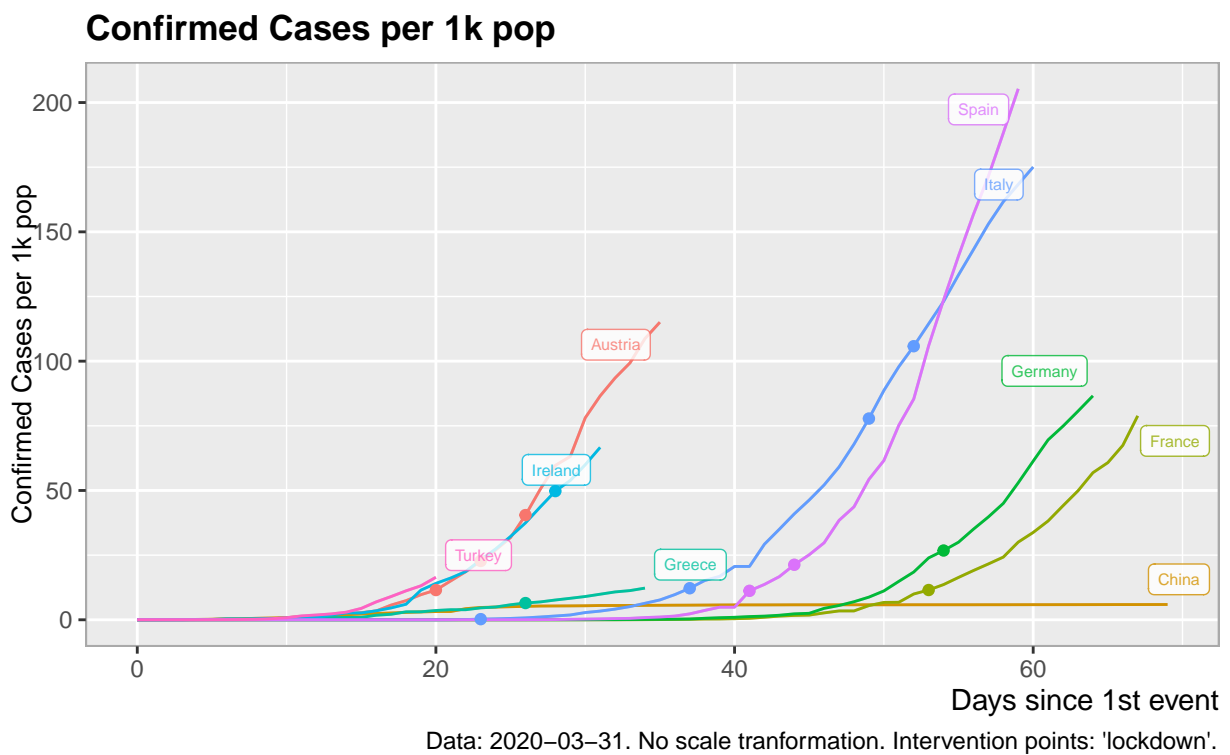


Figure 2: Confirmed Cases by 1000 population

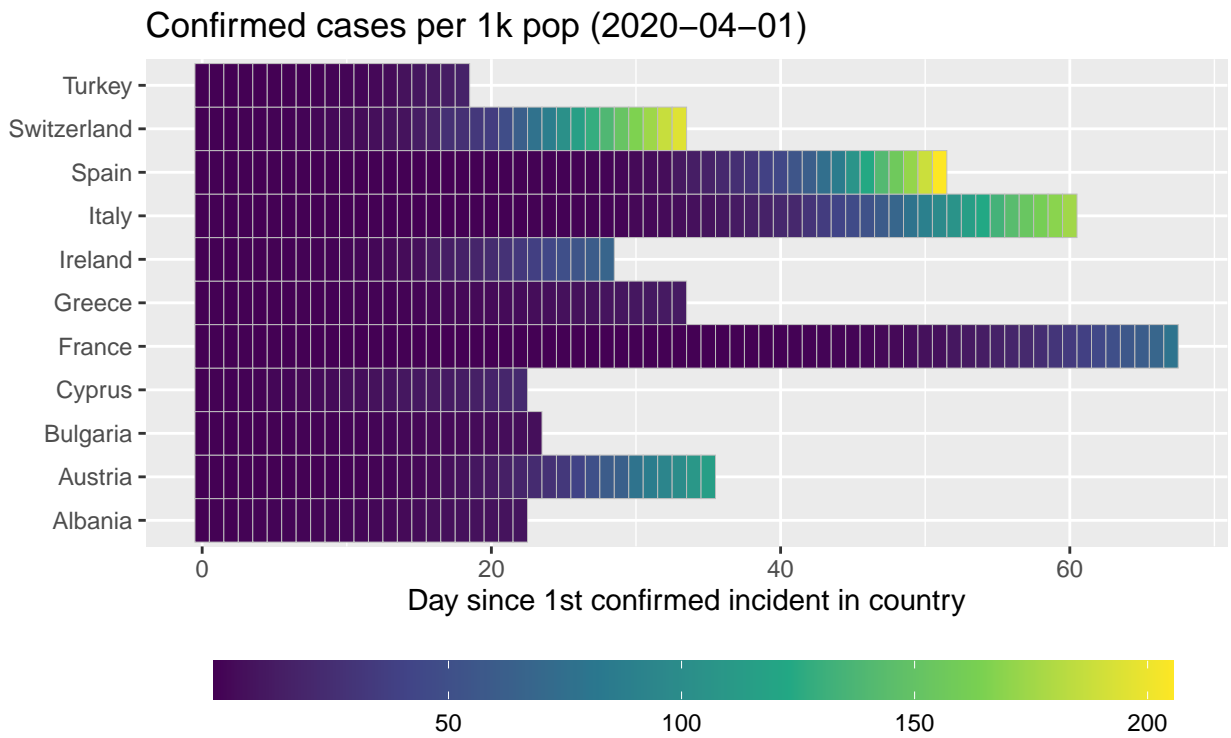


Figure 3: Confirmed Cases by 1000 population

2.2 Deaths

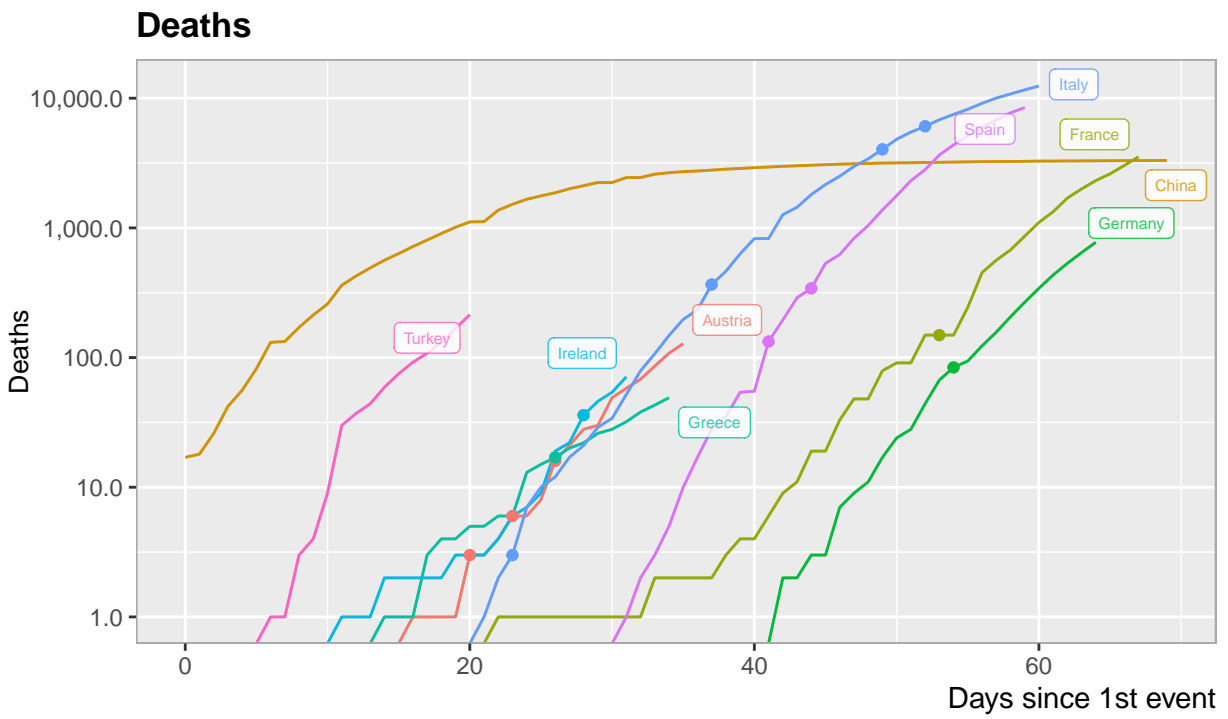


Figure 4: Number of deaths by country

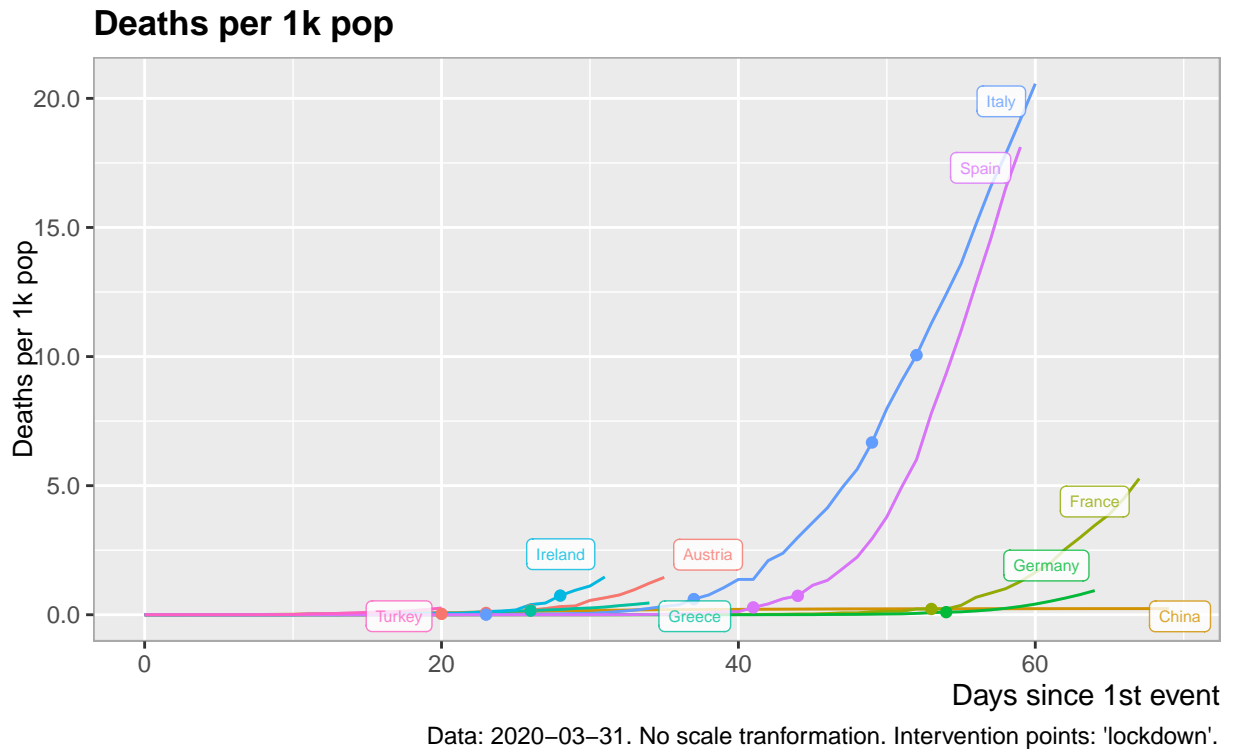


Figure 5: Deaths by 1000 population

3 Rate of change over time

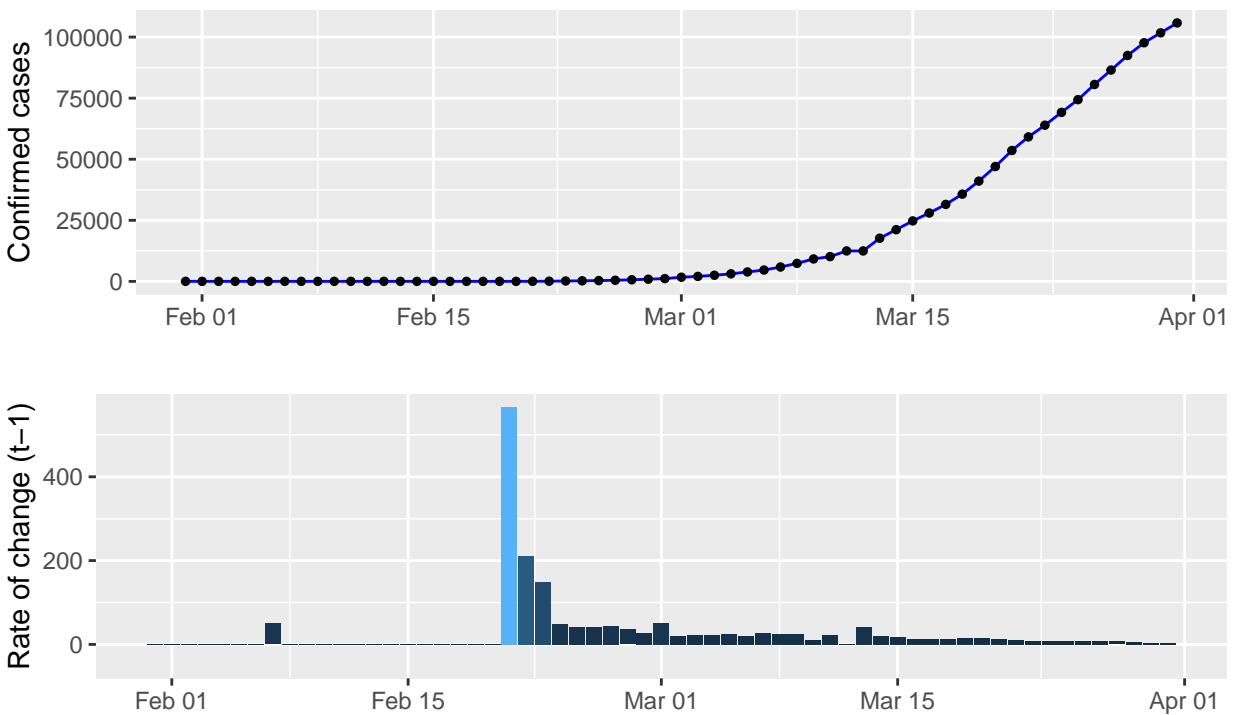


Figure 6: Rate of change of confirmed cases

4 Estimations

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

4.1 ARIMA projection

Projection of 'confirmed' cases for 5 ahead

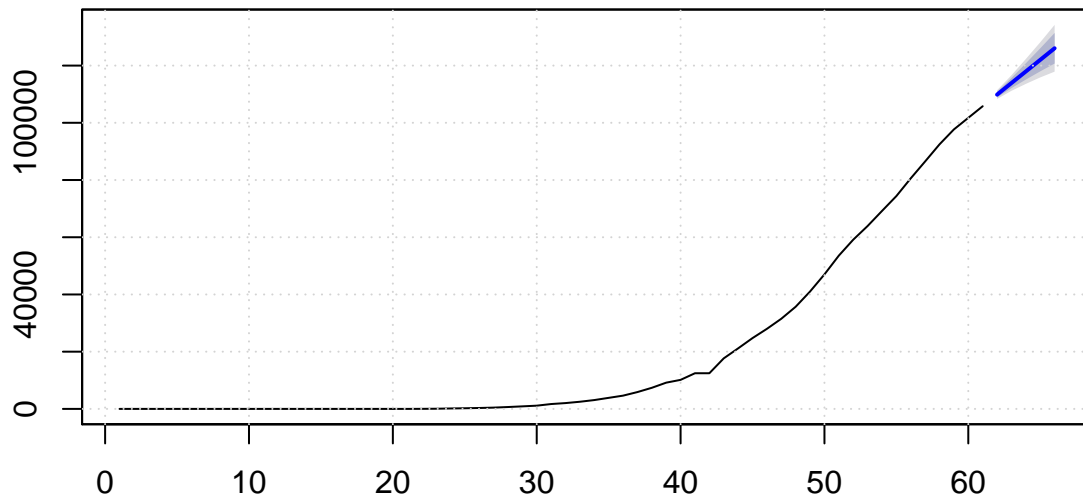


Figure 7: ARIMA projection

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

	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1 (2020-04-01)	109844	108338	111349
t+2 (2020-04-02)	113896	111175	116616
t+3 (2020-04-03)	117948	113597	122298
t+4 (2020-04-04)	122000	115854	128146
t+5 (2020-04-05)	126052	117884	134219

- The estimated proportion of cases detected is 2.81%.
- With data up to 2020-03-31 in Italy we have 105792 confirmed cases and 12428 deaths.
- Estimated doubling time (based on 5 days time window) is approximately 13.9 days

4.2 PROPHET projection

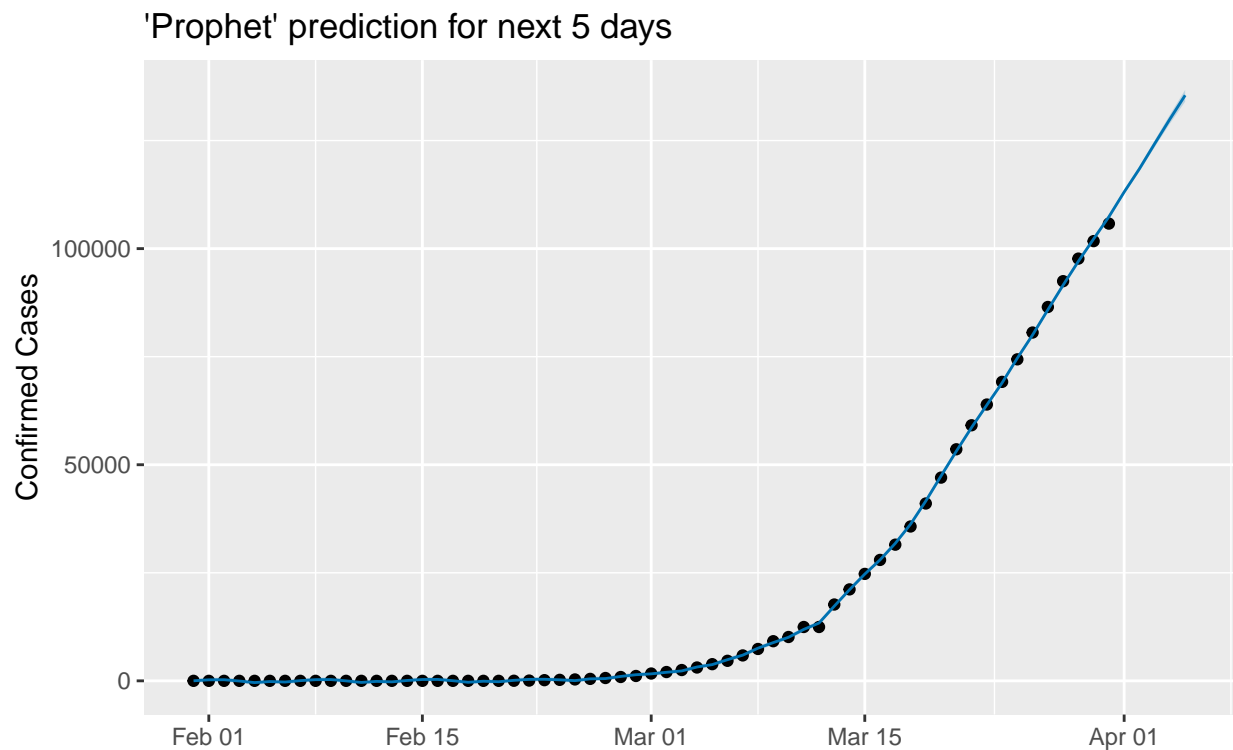


Figure 8: PROPHET Projection of confirmed cases over the next 5 days for Italy

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

	Future_Date	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1	2020-04-01	113094	112551	113590
t+2	2020-04-02	118466	117873	119042
t+3	2020-04-03	124270	123469	125028
t+4	2020-04-04	129977	128922	130974
t+5	2020-04-05	135483	134006	136740