

Covid19 Report

Dimitris Kavroudakis

Assistant Professor of *Geographical Analysis*,
Department of Geography, University of the Aegean
dimitrisk@aegean.gr
www.dimitrisk.gr

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1 The *CRISTINA* project

This report is part of a research project “**Co**Rona vIrus **Spa**Tial **aNA**lysis” (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

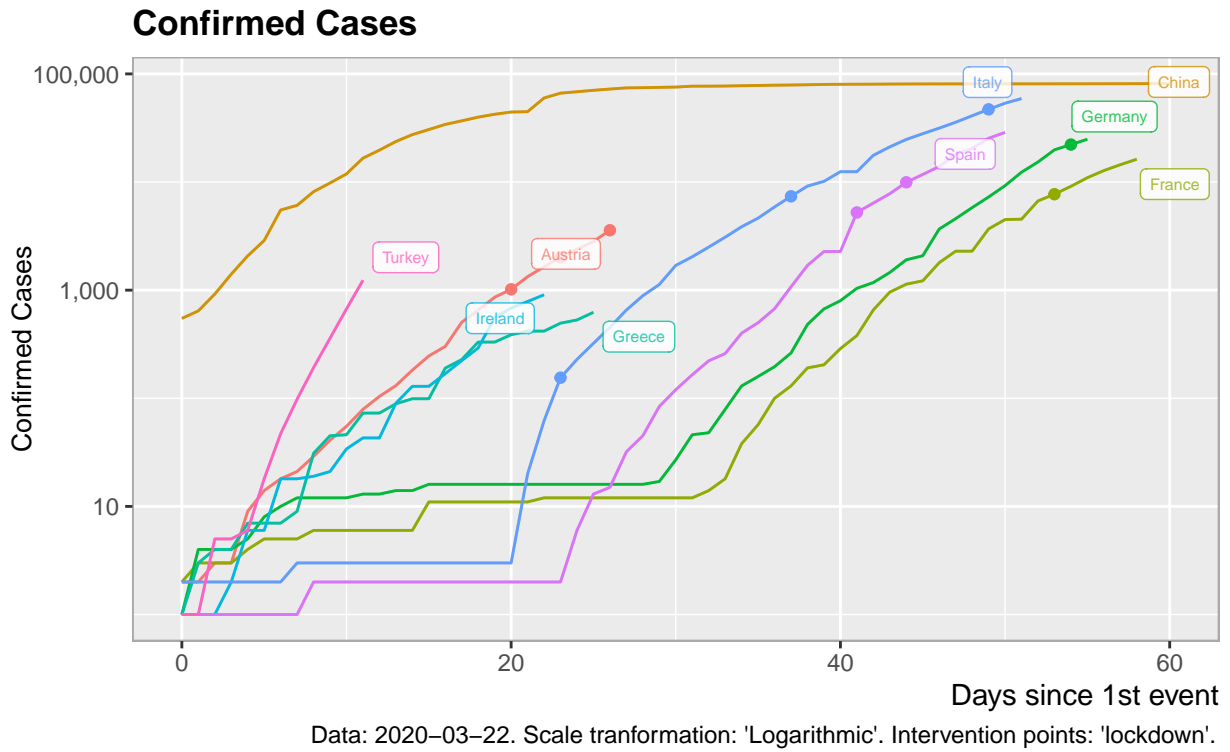


Figure 1: Confirmed Cases

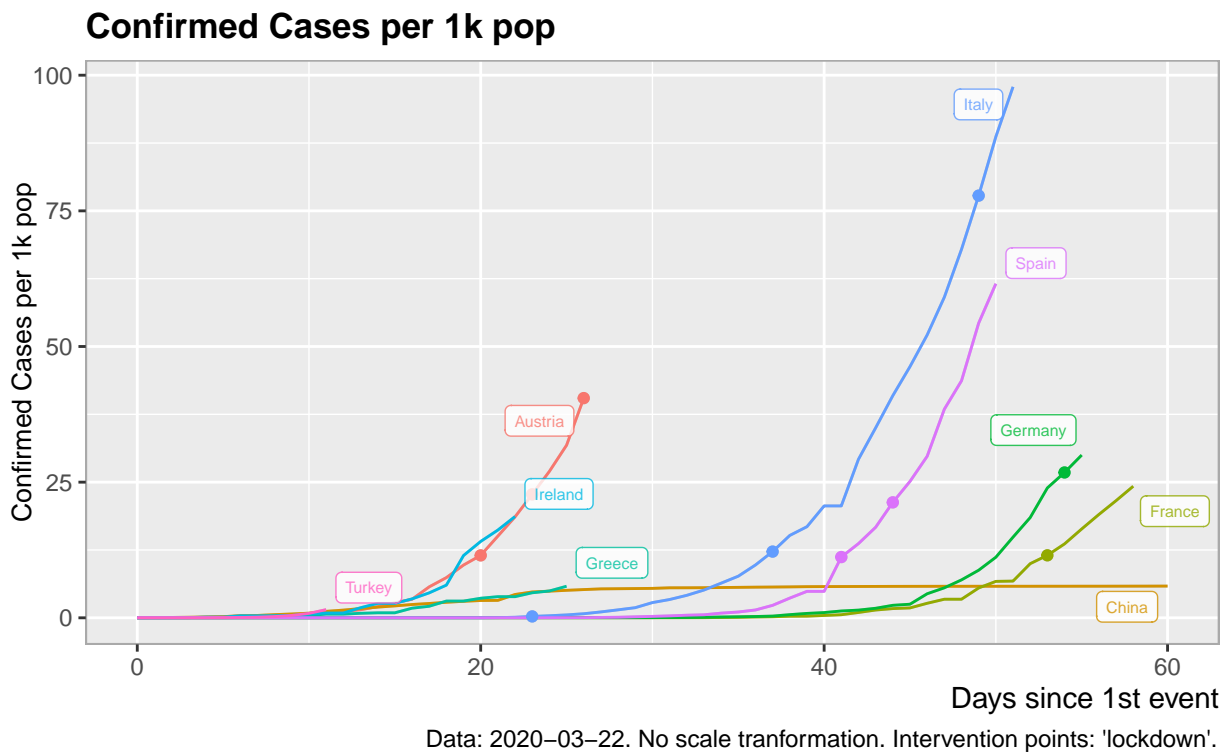


Figure 2: Confirmed Cases by 1000 population

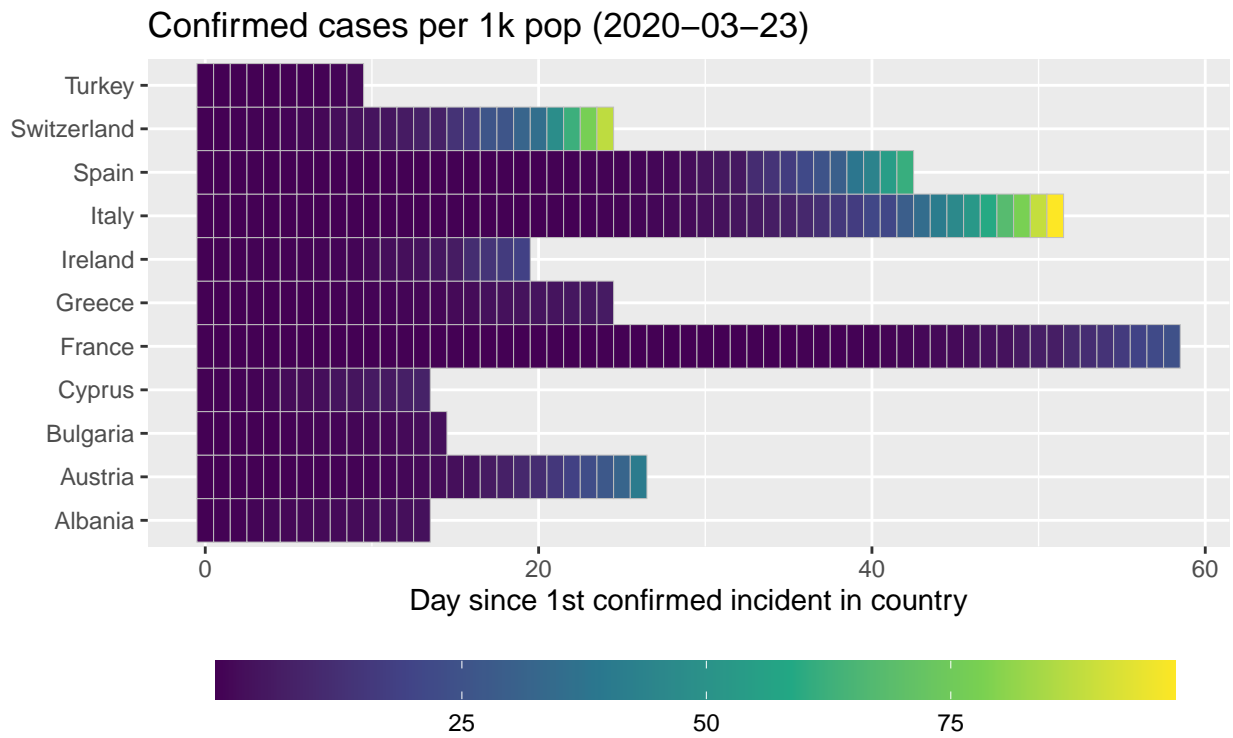


Figure 3: Confirmed Cases by 1000 population

2.2 Deaths

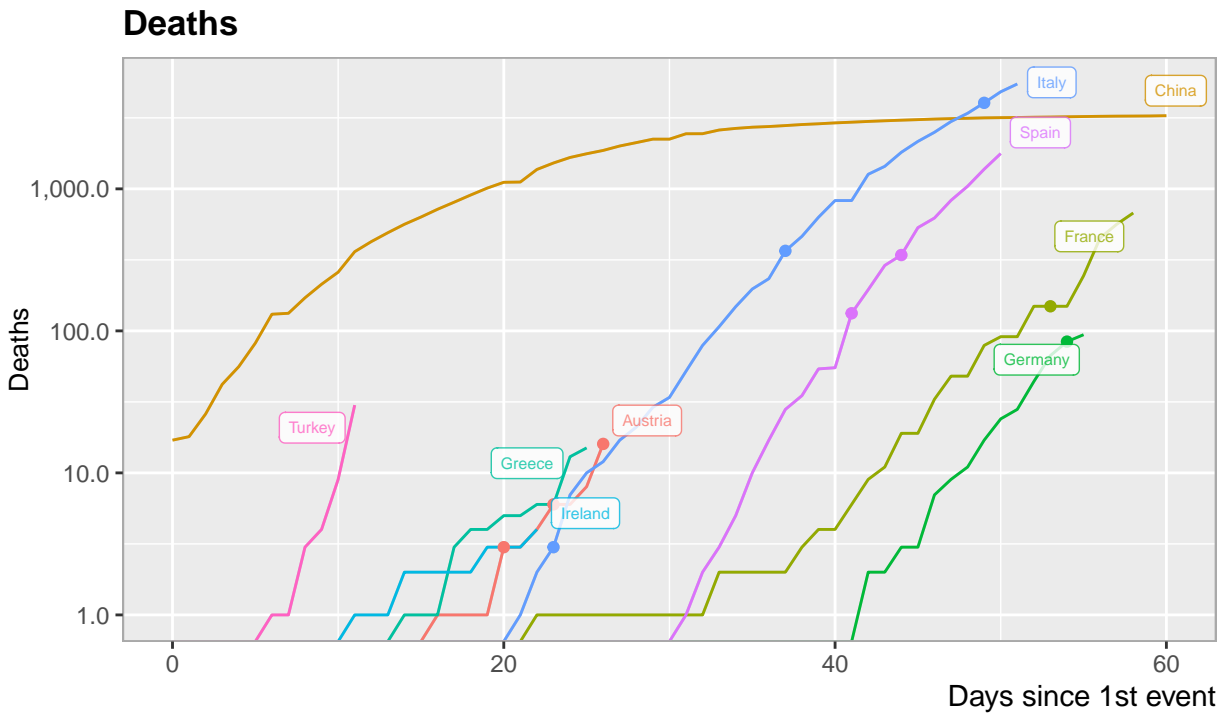


Figure 4: Number of deaths by country

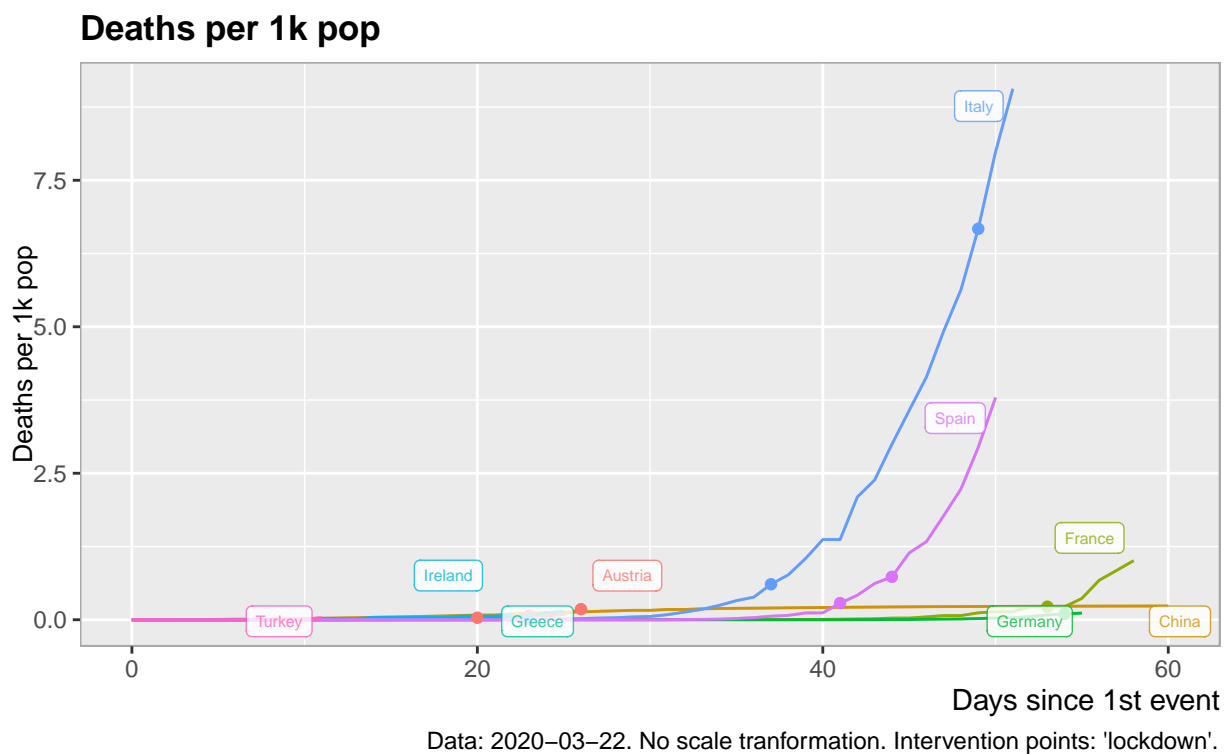


Figure 5: Deaths by 1000 population

3 Rate of change over time

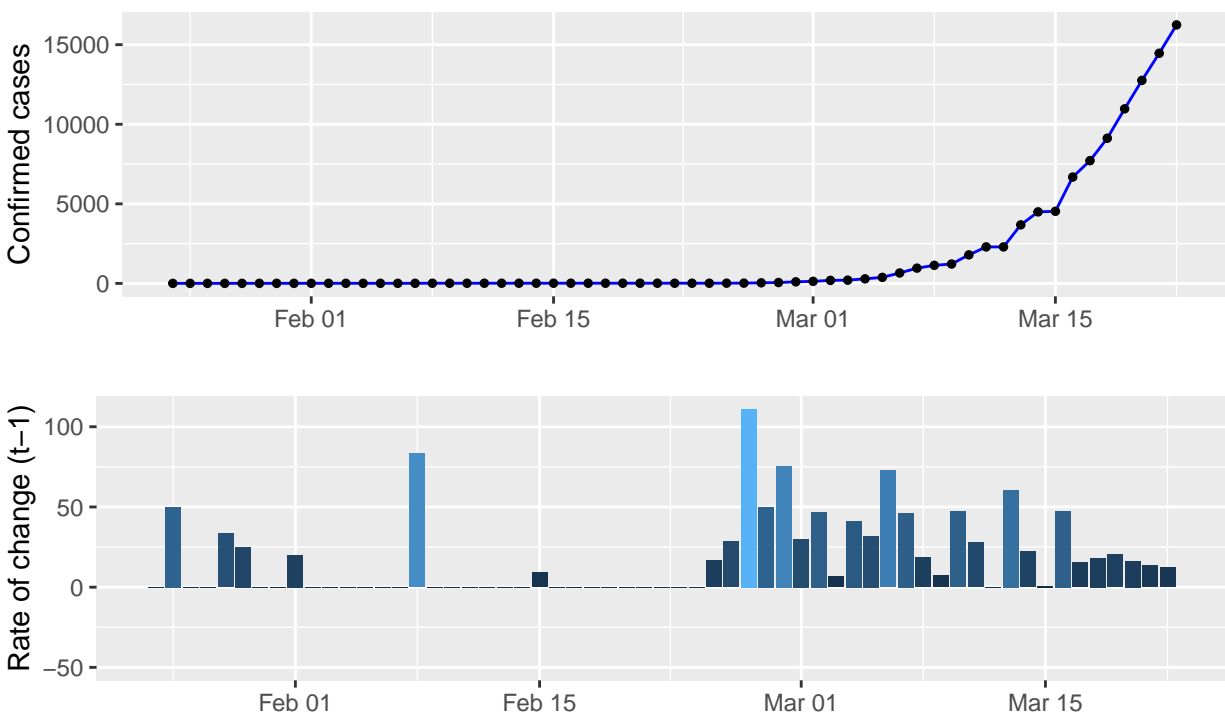


Figure 6: Rate of change of confirmed cases

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

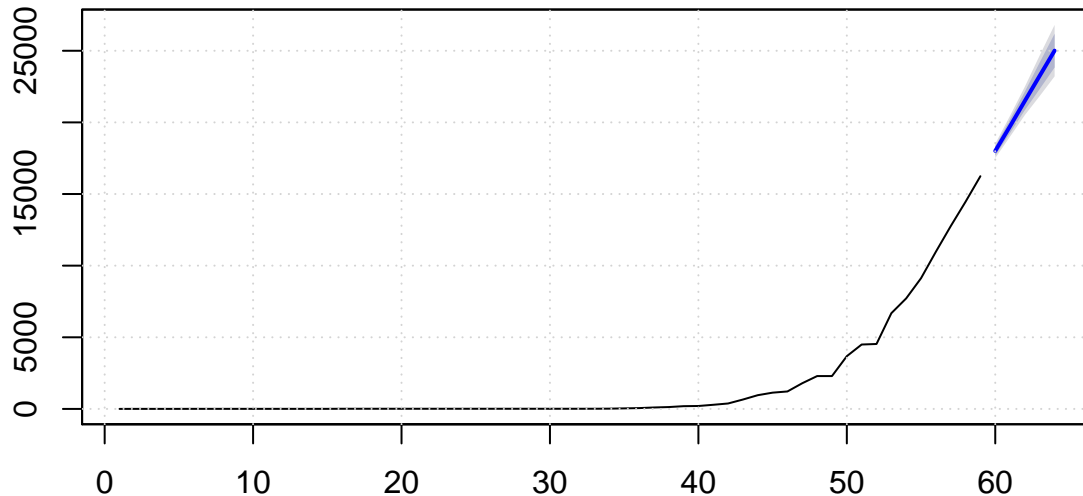


Figure 7: ARIMA projection

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

	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1 (2020-03-23)	18007	17510	18504
t+2 (2020-03-24)	19737	19010	20465
t+3 (2020-03-25)	21509	20519	22500
t+4 (2020-03-26)	23265	21846	24684
t+5 (2020-03-27)	25008	23212	26805

- The estimated proportion of cases detected is 5.46%.
- With data up to 2020-03-22 in France we have 16243 confirmed cases and 676 deaths.
- Estimated doubling time (based on 5 days time window) is approximately 4.8 days

4.2 PROPHET projection

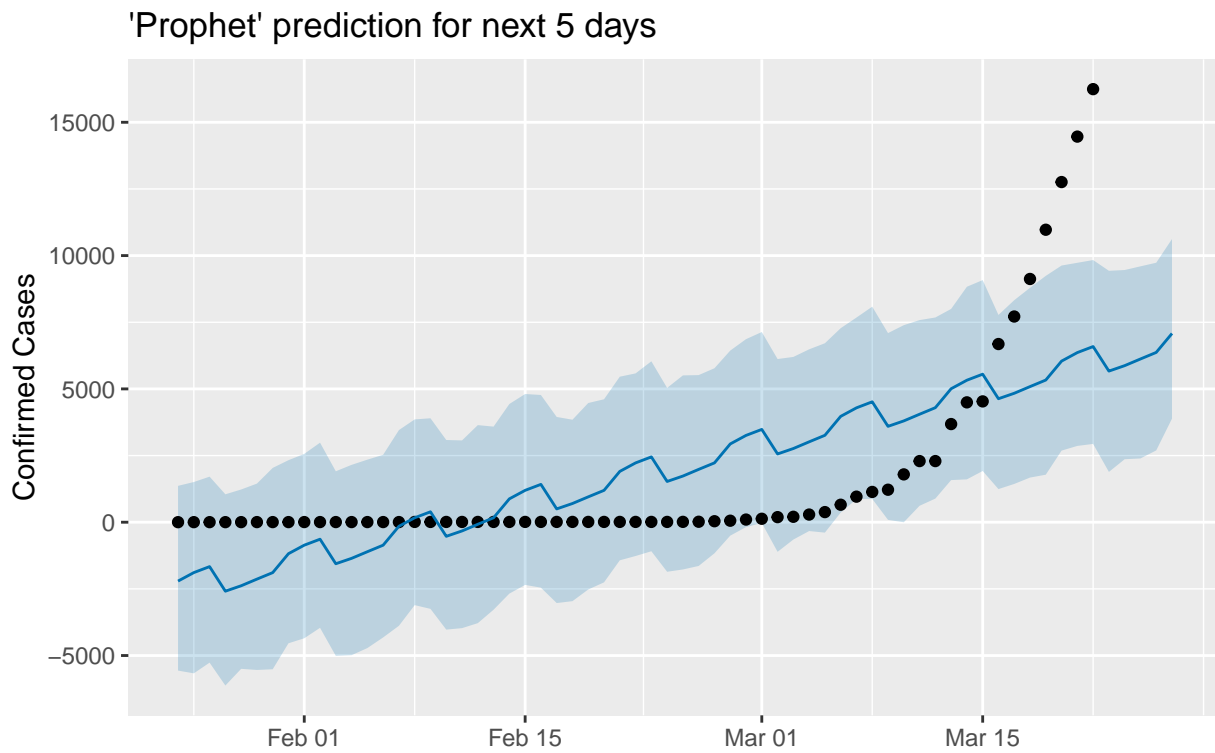


Figure 8: PROPHET Projection of confirmed cases over the next 5 days for France

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

	Future_Date	Estimation	Confidence 95% (Low)	Confidence 95% (High)
t+1	2020-03-23	5669	1886	9430
t+2	2020-03-24	5872	2363	9459
t+3	2020-03-25	6123	2392	9597
t+4	2020-03-26	6368	2693	9732
t+5	2020-03-27	7079	3885	10623