REAL-TIME DATA ANALYTICS AND PREDICTION OF THE COVID-19 PANDEMIC (PERIOD TO APRIL 4TH, 2020)

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Abstract

This brief paper is versioned 5 in a series of short papers that describe a set of descriptive and predictive analytics of the pandemic COVID-19 around the world. We exceptionally propose this new and uncommon way of publications because of the current emergency circumstances where Data are gathered and analyzed directly day by day. Because of the new behavior regarding the spread speed and the contagion features of this virus, we opted by comparative analytics based on demographic characteristics in localities and countries for prediction, without using historical data in epidemiology. The test proofs of our findings are done day by day with the real figures reported from the Data. To feed our models in algorithms, we refer to the reported cases from the Data of the World Health Organization (WHO). Because of the current circumstances of emergency, this paper is brief and will be succeeded with a series of versions until the end of the pandemic. The full paper will be published afterward with more details about the functions, the model, and the variables included in our algorithms.

Findings 1: The prediction of our algorithm published on March 28, 2020, is confirmed near-accurate with the real cases of yesterday in France April 03, 2020.
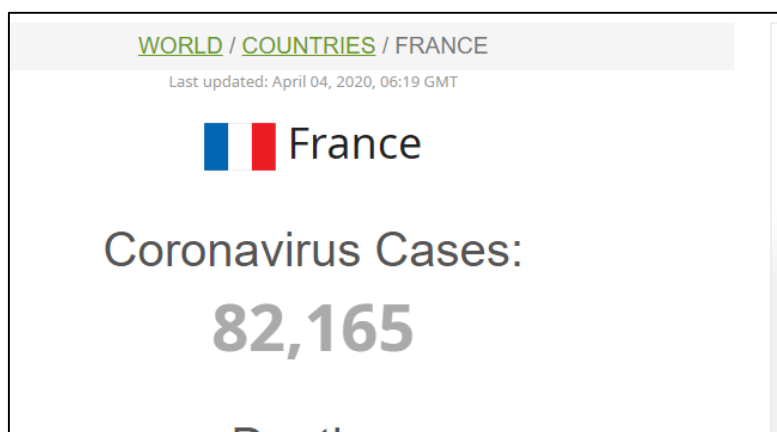

Figure 1. Screenshot of the announced total cases in France from Worlometer® for April 03, 2020 (Data source French government)

The total number of cases officially announced yesterday, April 03, 2020, by the French government is 82 165.

Our algorithm had predicted on March 28, 2020 (cf. preprint [1]), that the number of 84 788 total cases would have been reached on this date of April 03 in the beginning of the peak period in France. Our algorithm predicted the first day of peak at this date. At the time, March 28, the number was only at 37 575. The algorithm has a small error of 2 623 cases (around 3.19% less than 5%), and proves its effectiveness in estimating behavior in the series of new cases announced in France.

Findings 1: The prediction of our algorithm published on March 28, 2020, is confirmed accurate with the real cases of yesterday in Algeria April 03, 2020.
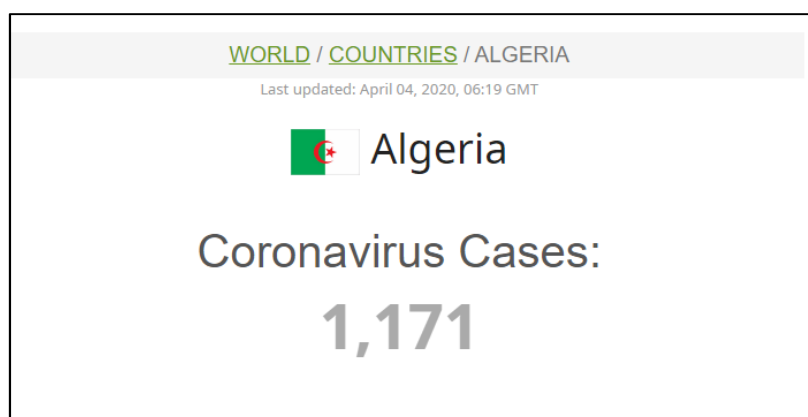

Figure 2. Screenshot of the announced total cases in Algeria from Worlometer® for April 03, 2020 (Data source Algerian government)

The total number of cases officially announced yesterday, April 03, 2020, by the Algerian government is 1 171.

Our algorithm had predicted that the cap of 1000 cases would have been crossed on this date of April 03, with a total number of 1161, last Saturday, March 28, 2020 (cf. preprint [1]). At the time, March 28, the number was only at 409. The algorithm becomes precise and proves its effectiveness in estimating behavior in the series of new cases announced in Algeria.

The reminder of the predicted figures from the published preprint [1] is shown in figure 3.
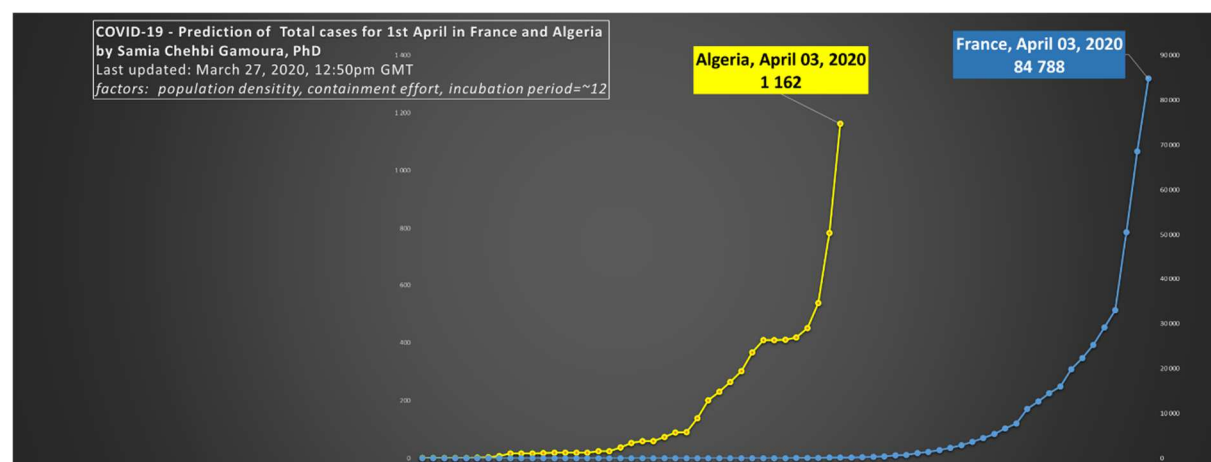

Figure 3. The predicted figures already published in the preprint [1]

A comparative study between our algorithm and the other conventional methods used in epidemiology, such as LSTM and ARIMA can demonstrate its prevalence.

Reference

[1] "REAL-TIME DATA ANALYTICS AND PREDICTION OF THE COVID-19 PANDEMIC (PERIOD TO MARCH 28, 2020)," *Preprint with DOI: https://doi.org/10.13140/RG.2.2.25996.46726,* 28 03 2020.