



**HAL**  
open science

# REAL-TIME DATA ANALYTICS AND PREDICTION OF THE COVID-19 PANDEMIC (PERIOD TO MARCH 28TH, 2020)

Chehbi Gamoura Chehbi

► **To cite this version:**

Chehbi Gamoura Chehbi. REAL-TIME DATA ANALYTICS AND PREDICTION OF THE COVID-19 PANDEMIC (PERIOD TO MARCH 28TH, 2020). 2020. hal-02522999

**HAL Id: hal-02522999**

**<https://hal.science/hal-02522999v1>**

Preprint submitted on 28 Mar 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# REAL-TIME DATA ANALYTICS AND PREDICTION OF THE COVID-19 PANDEMIC <sup>1</sup>

(PERIOD TO MARCH 28<sup>TH</sup>, 2020)

SAMIA CHEHBI GAMOURA

Humanis, EM Strasbourg, University of Strasbourg, Strasbourg, France

[samia.gamoura@em-strasbourg.eu](mailto:samia.gamoura@em-strasbourg.eu)

## Abstract

This brief paper is versioned 3 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.

## Model of Relative Contagion Factor (RCF)

Our predictive algorithm discovers a correlative coefficient that affects directly the epidemic curve in countries. We name this coefficient “the Relative Contagion Factor (RCF)” as a function of the following parameters:

- The population density in countries or localities (pDensity),
- The containment effort in the country or locality (cEffort),
- The incubation period, averaged to 12 (iPeriod).

$$\text{Relative Contagion Factor} = f(\text{pDensity}, \text{cEffort}, \text{iPeriod})$$

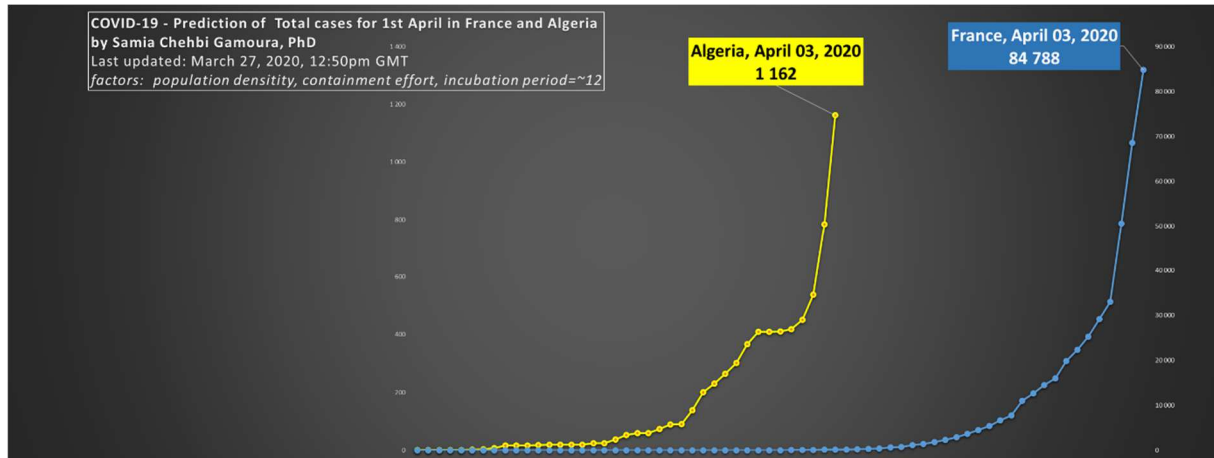
Our algorithm computes this factor automatically from the Dataset that is changing every day. The factor is adapted day by day depending on the progress of the Dataset.

This factor is different from the contagion coefficient “RO” widely used in epidemiology.

---

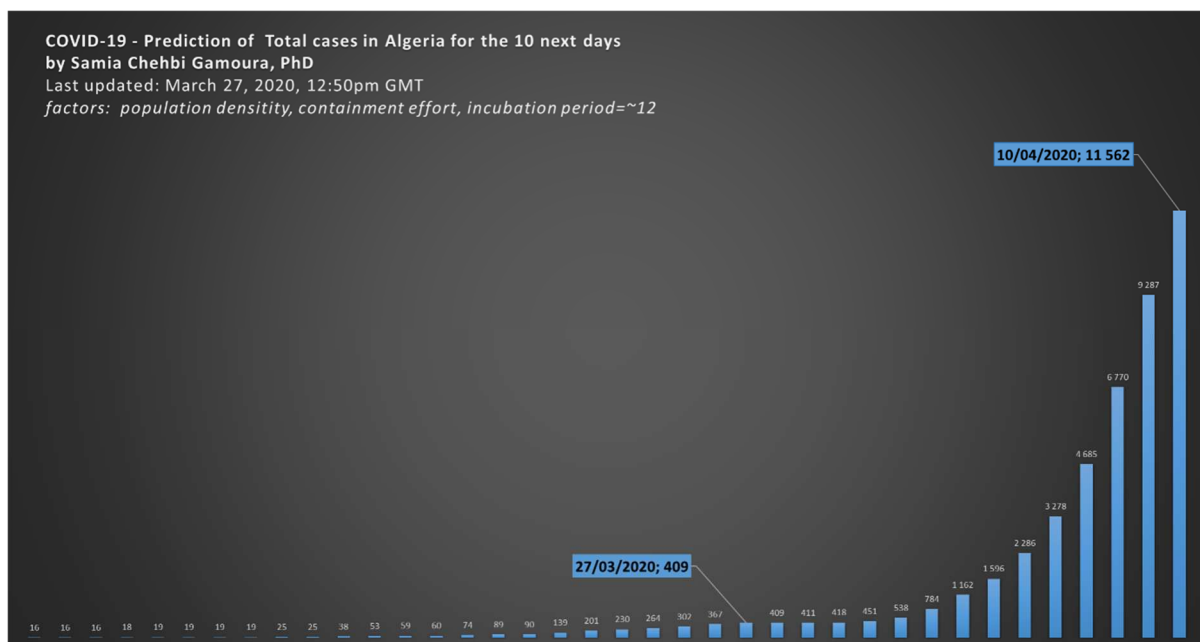
<sup>1</sup> Date of publication : March 26, 2020

## Findings 1: Prediction of total cases in Algeria and France for the next week (April 03<sup>rd</sup>, 2020)



In applying on actual total cases of yesterday March 27<sup>th</sup>, the algorithm predicts 1 162 total cases for Algeria and 84 788 in France next week on the day April 03<sup>rd</sup>, 2020. Even, France with this huge number starts slowing as starting the peak epidemic period.

## Findings 2: Prediction of total cases in Algeria for the next 10 days (April 10<sup>th</sup>, 2020)



In applying on actual total cases of yesterday March 27<sup>th</sup> in Algeria, the algorithm predicts achieving a total cases of 11 562 within 10 days (on April 10<sup>th</sup>, 2020).