Branching stochastic processes as models of Covid-19 epidemic development

France - 20201214

N. Yanev, V. Stoimenova, D. Atanasov

Branching stochastic proc-
esses as models of Covid--
19 epidemic development

Branching stochastic processes as models of Covid-19 epidemic development : France - 20201214

Abstract

The results presented here are obtained using the methologi proposed in the paper https://arxiv.org/abs/2004.14838 for the country France. The data comes from European Centre for Disease Prevention and Control available at https://opendata.ecdc.europa.eu/covid19/casedistribution/csv.

Table of Contents

List of Figures

Chapter 1. Observed Infection data

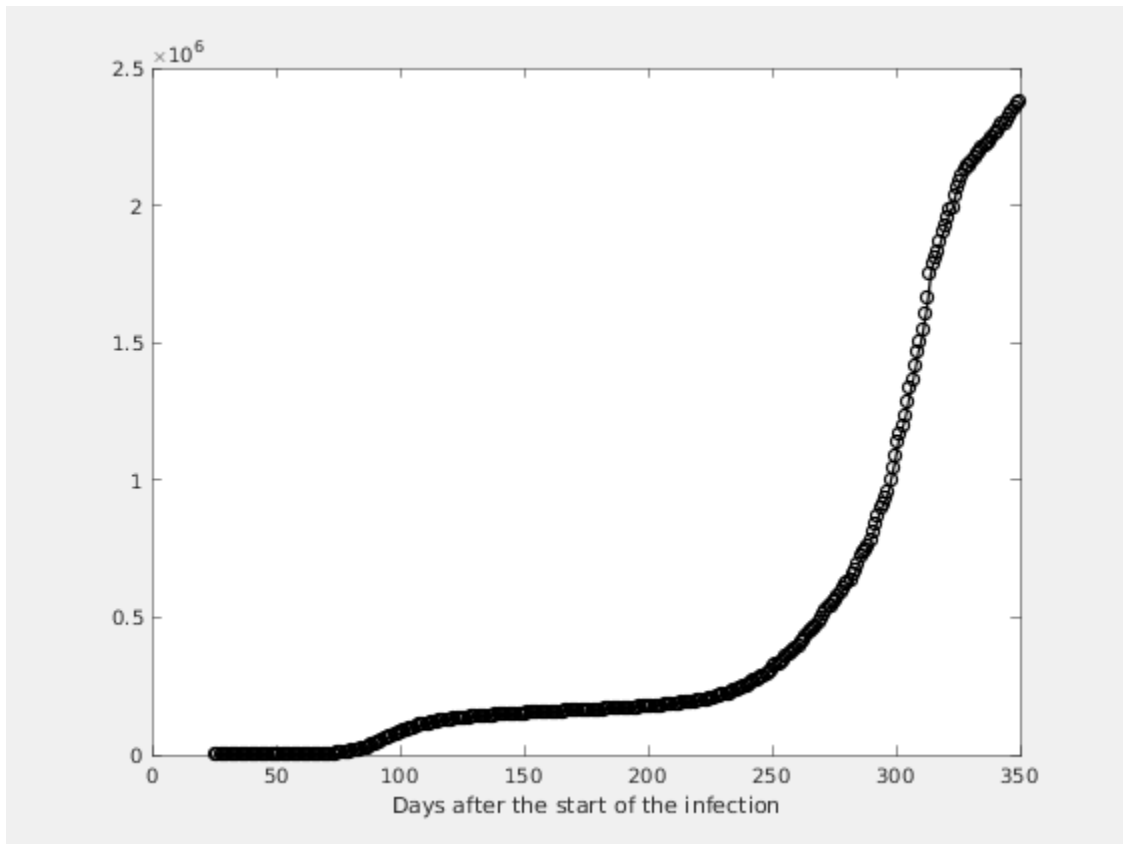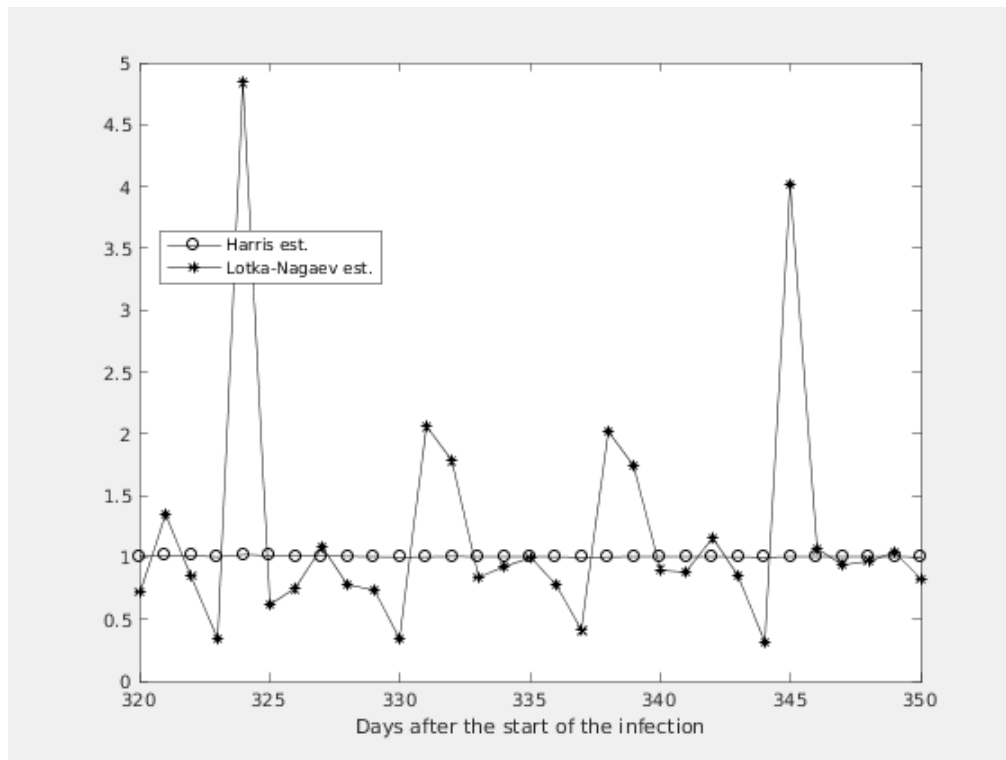**Figure 1.1. Number of the daily reported laboratory-confirmed cases**
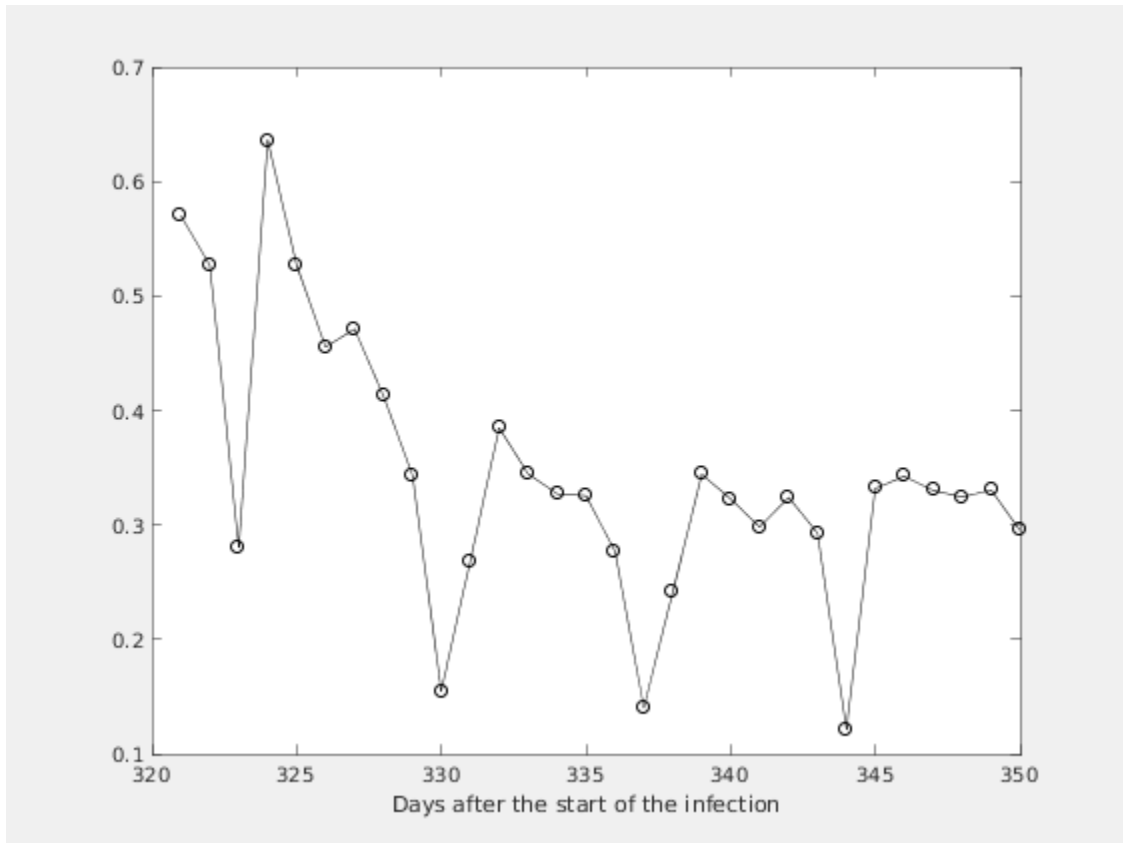
Figure 1.2. Number of the total registered cases

Chapter 2. Estimating of the main parameter and some predictions

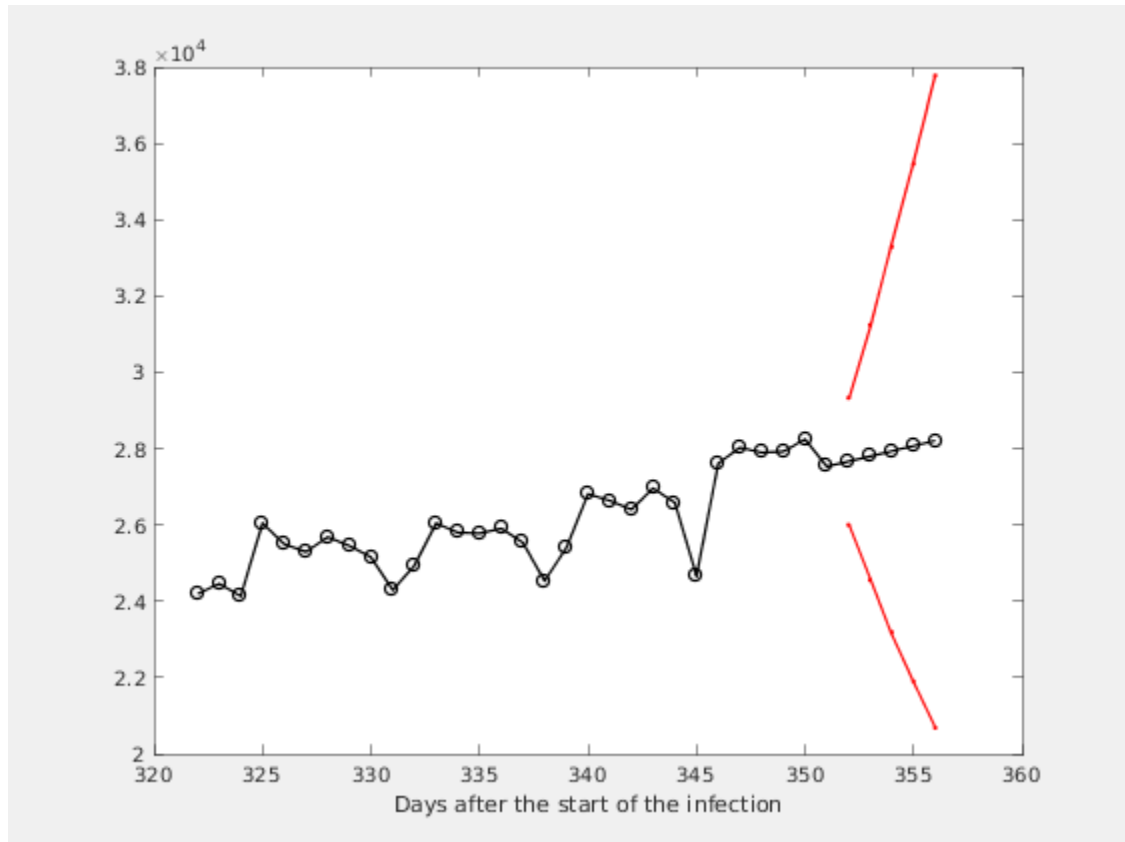**Figure 2.1. The Lotka-Nagaev and the Harris type estimator of the growth rate**
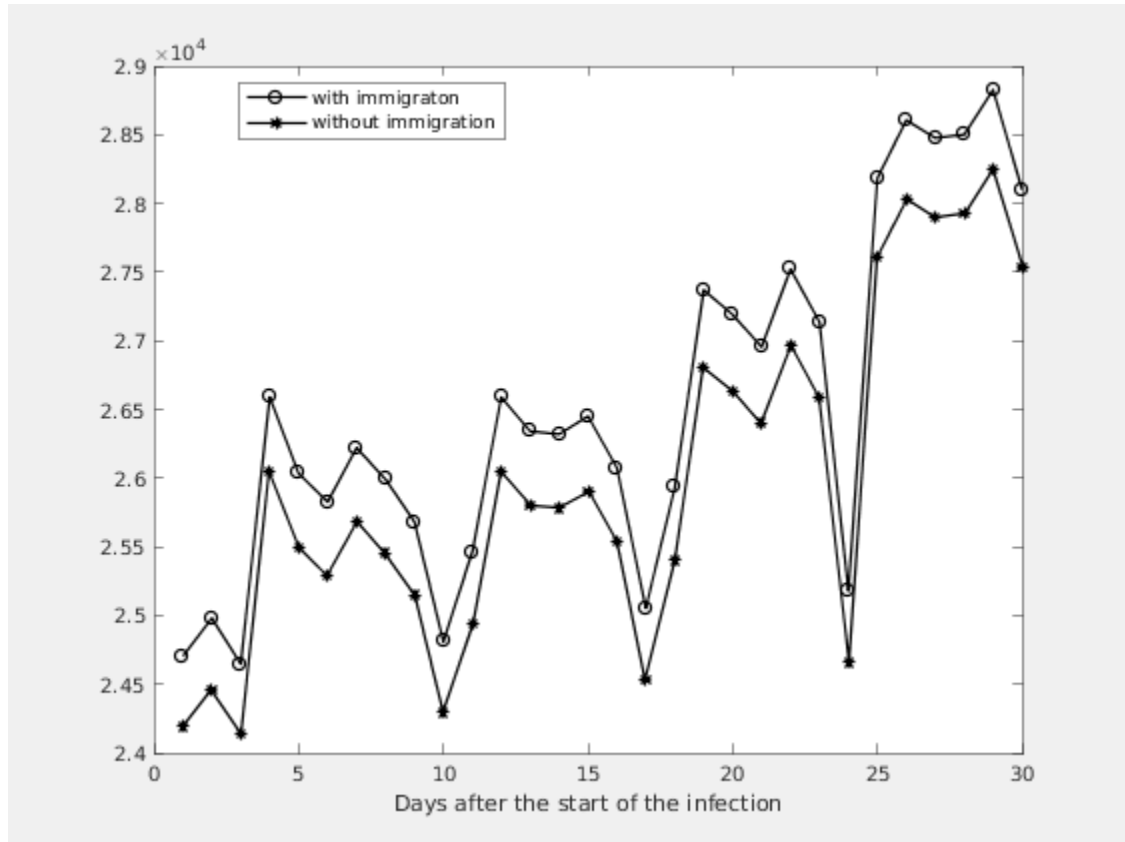
Figure 2.2. Figure

Figure 2.3. Expected number of the nonregistered infected individuals without immigration

Figure 2.4. Expected number of the nonregistered infected individuals with immigration

Estimation of the model parameters.

```
k |    m     |          ci        | alpha  |  M1   |   A1   |
-------------------------------------------------------------
4   |  1.0063  | 0.9458 - 1.0668  |  0.1215 | 24658 | 25180  |
3   |  1.0059  | 0.9440 - 1.0678  |  0.3318 | 27613 | 28184  |
2   |  1.0057  | 0.9441 - 1.0673  |  0.3424 | 28027 | 28606  |
1   |  1.0059  | 0.9446 - 1.0672  |  0.3301 | 27901 | 28477  |
0   |  1.0049  | 0.9439 - 1.0659  |  0.3244 | 27924 | 28501  |
```