Branching stochastic processes as models of Covid-19 epidemic development

Var174 - week 53

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Abstract

The results presented here are obtained using the methologi proposed in the paper https://arxiv.org/abs/2004.14838 for the country Var174. The data comes from European Centre for Disease Prevention and Control available at https://opendata.ecdc.europa.eu/covid19/casedistribution/csv.

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Chapter 1. Observed Infection data

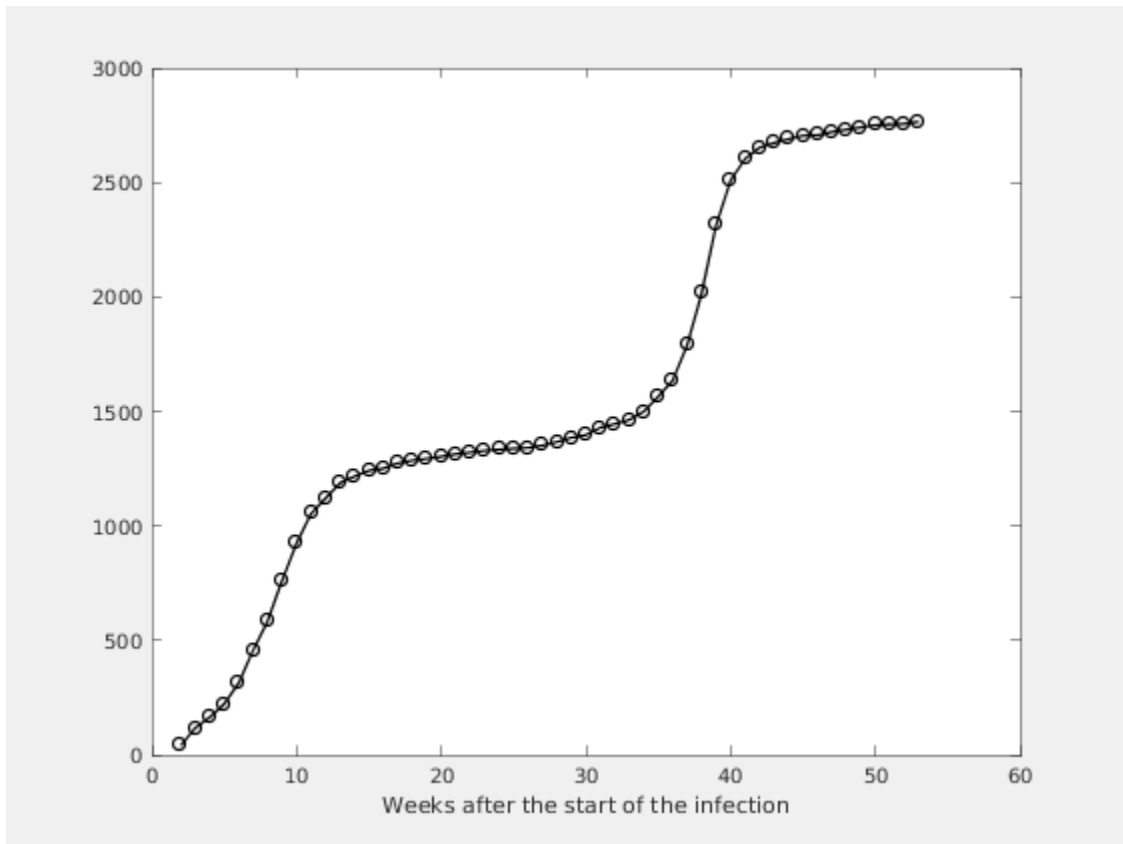**Figure 1.1. Number of the weekly reported laboratory-confirmed cases**
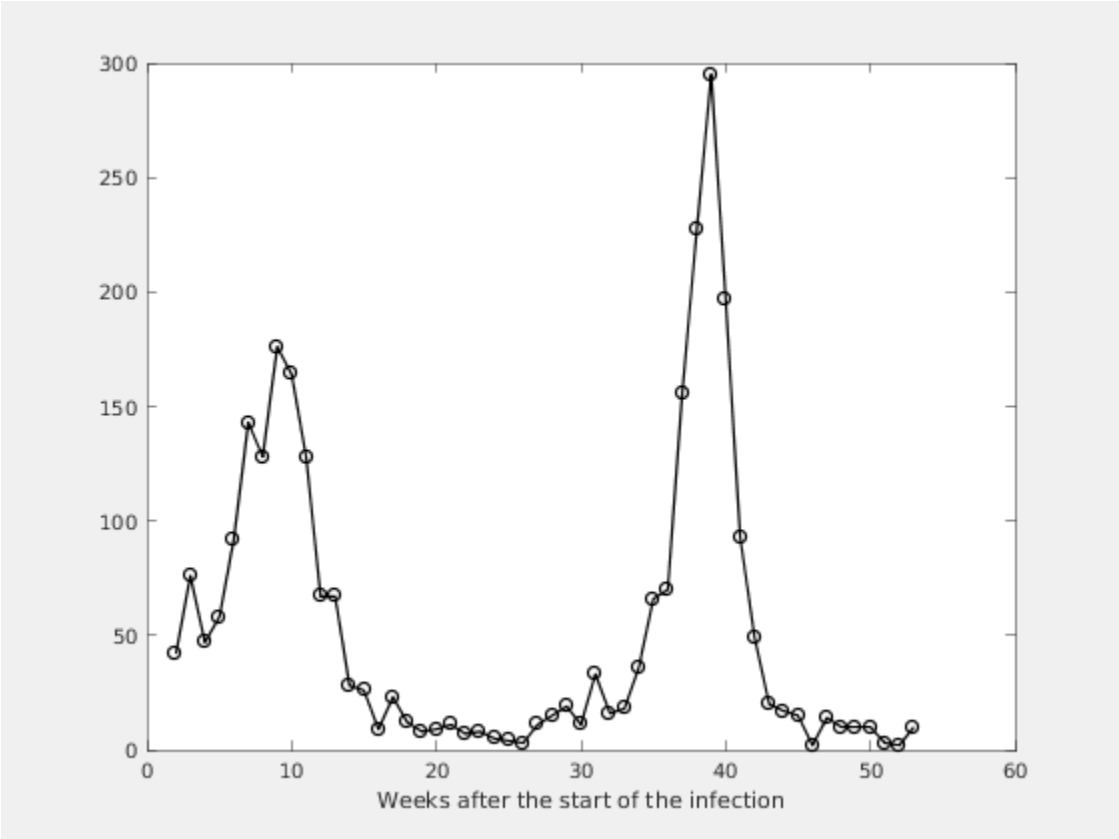
Figure 1.2. Number of the total registered cases

Chapter 2. Estimating of the main parameter and some predictions

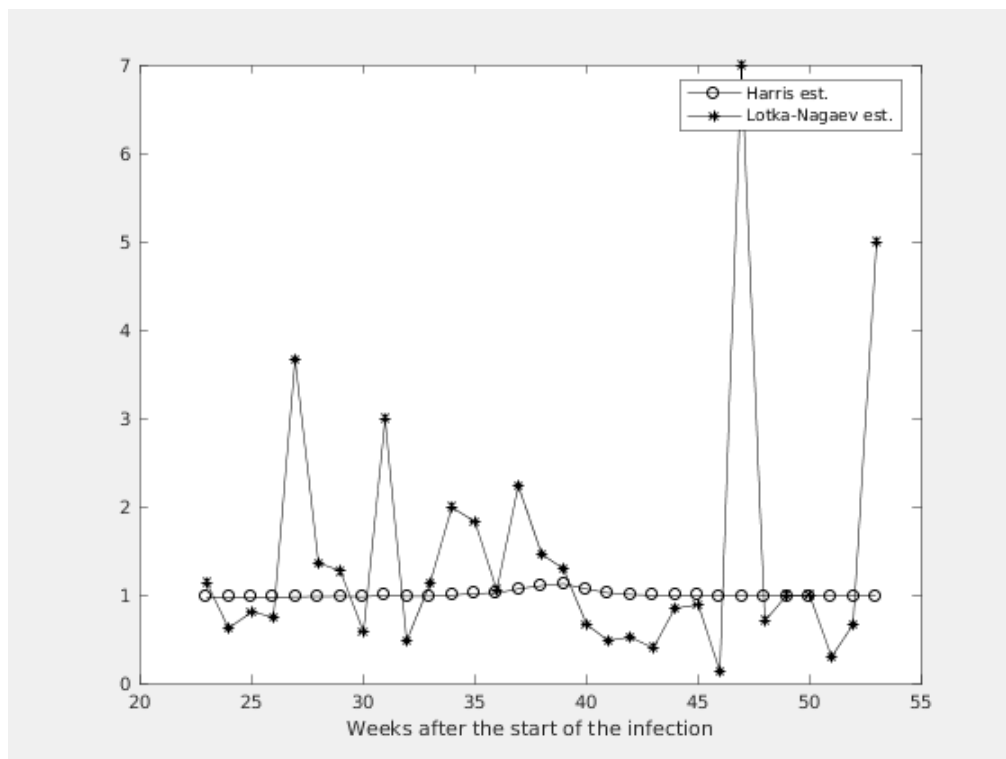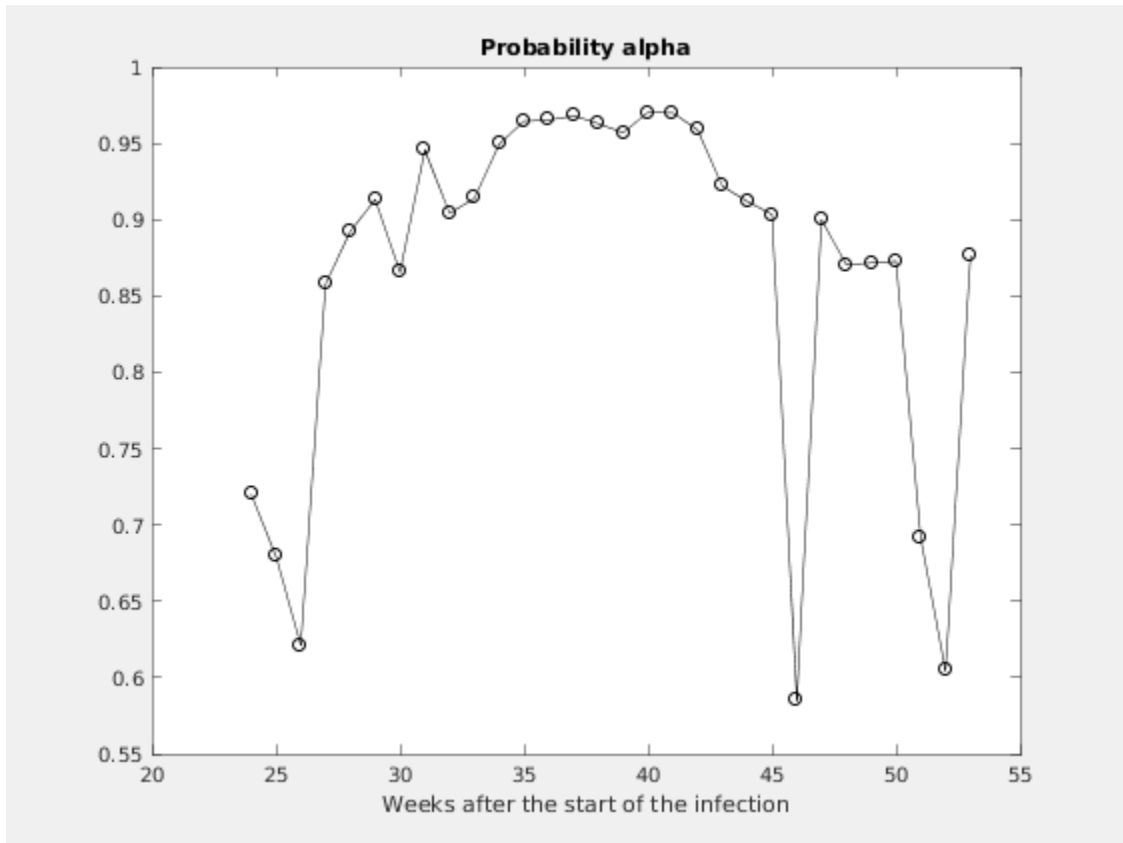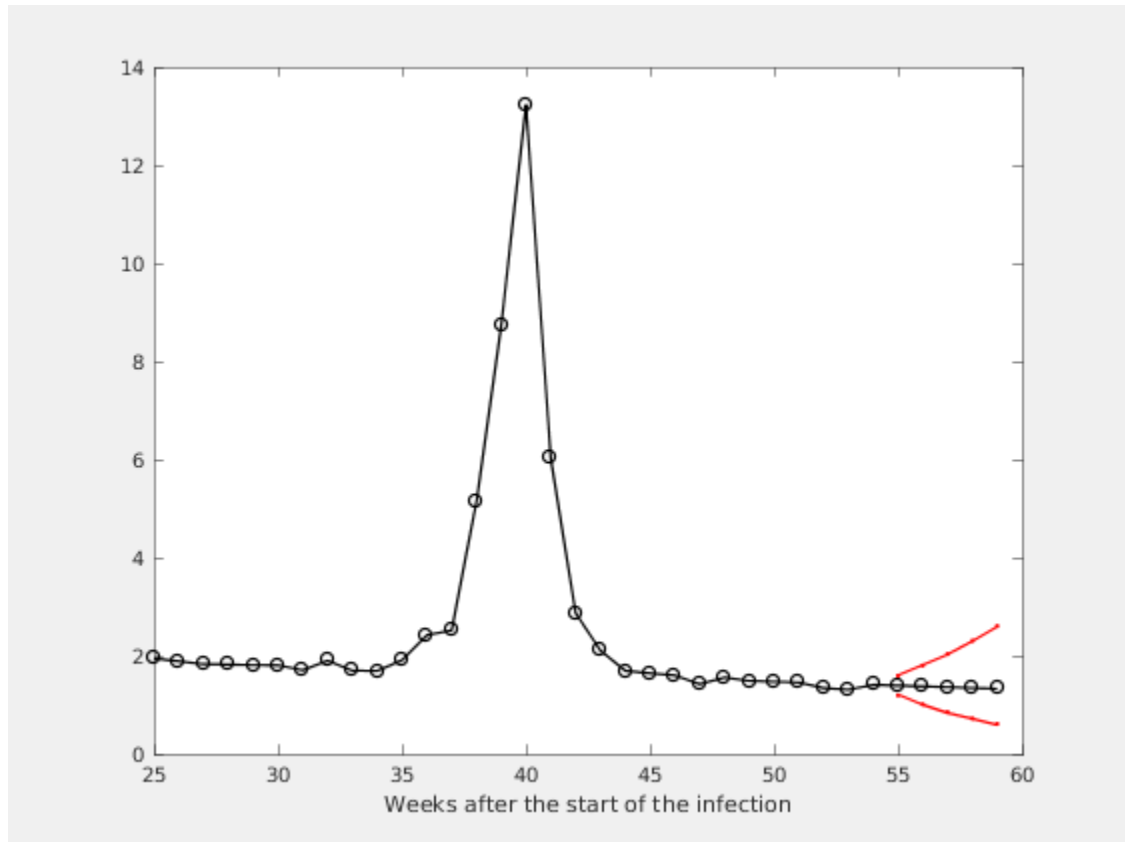**Figure 2.1. The Lotka-Nagaev and the Harris type estimator of the growth rate**
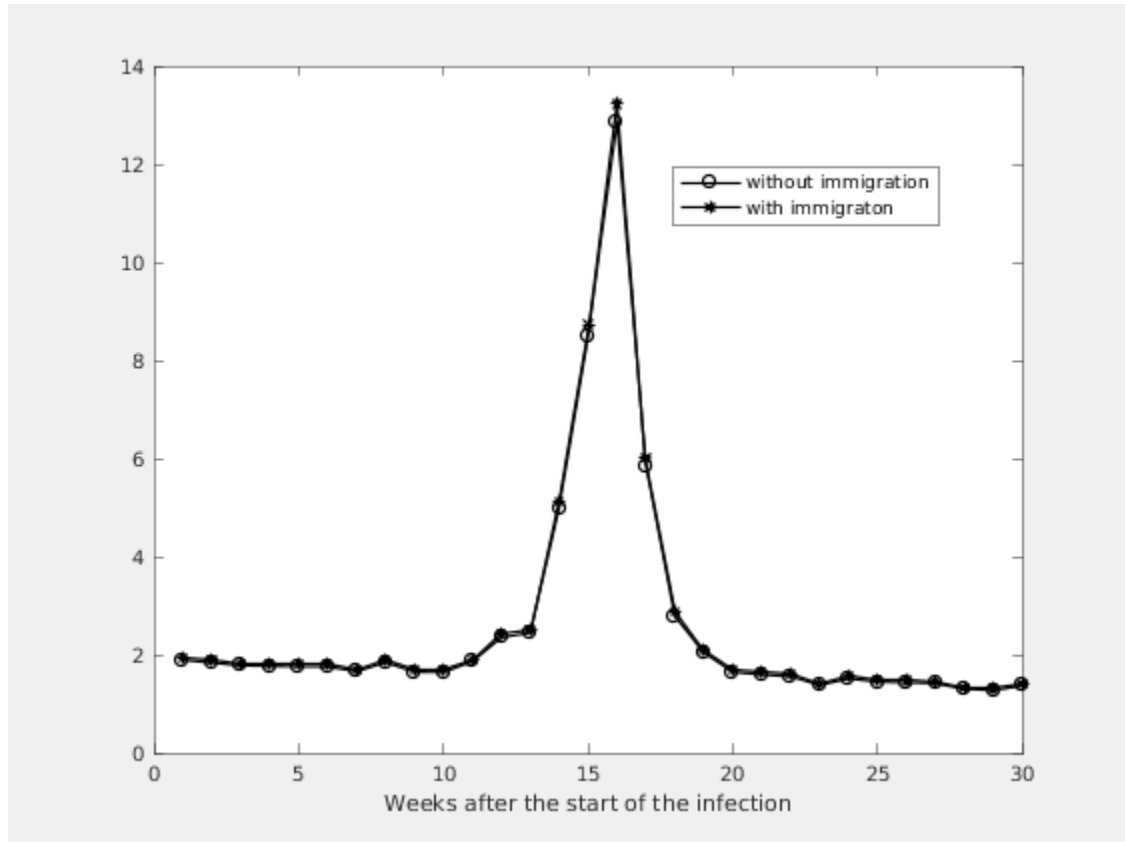
Figure 2.2. Figure

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  |  A1  |   M1  |
------------------------------------------------------------
4  |  0.9883  | 0.8393 - 1.1373  | 0.8998  | 2  | 2   |
3  |  0.9883  | 0.8413 - 1.1354  | 0.8705  | 1  | 1   |
2  |  0.9858  | 0.8406 - 1.1311  | 0.8717  | 1  | 1   |
1  |  0.9855  | 0.8420 - 1.1289  | 0.8729  | 1  | 1   |
0  |  0.9884  | 0.8462 - 1.1306  | 0.6911  | 1  | 1   |
```