Branching stochastic processes as models of Covid-19 epidemic development

Var6 - 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 Var6. The data comes from European Centre for Disease Prevention and Control available at https://opendata.ecdc.europa.eu/covid19/casedistribution/csv.

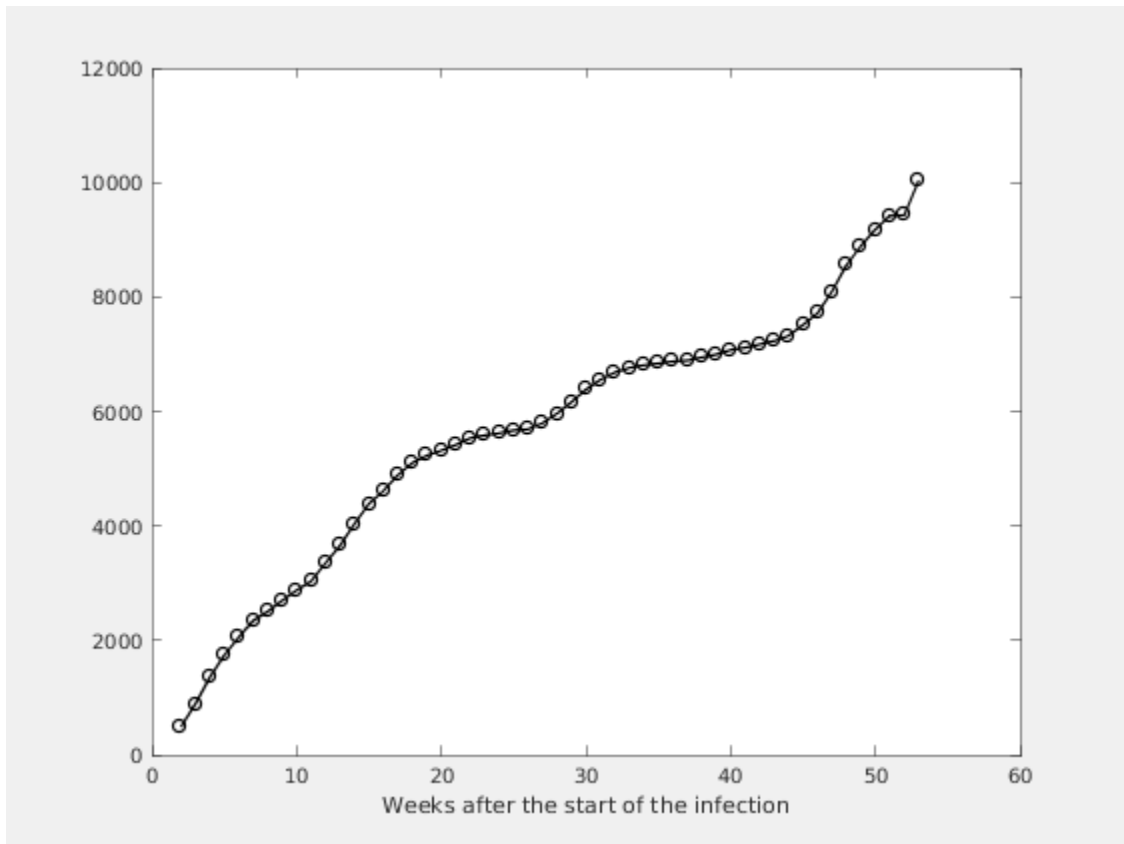# Table of Contents

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Chapter 1. Observed Infection data

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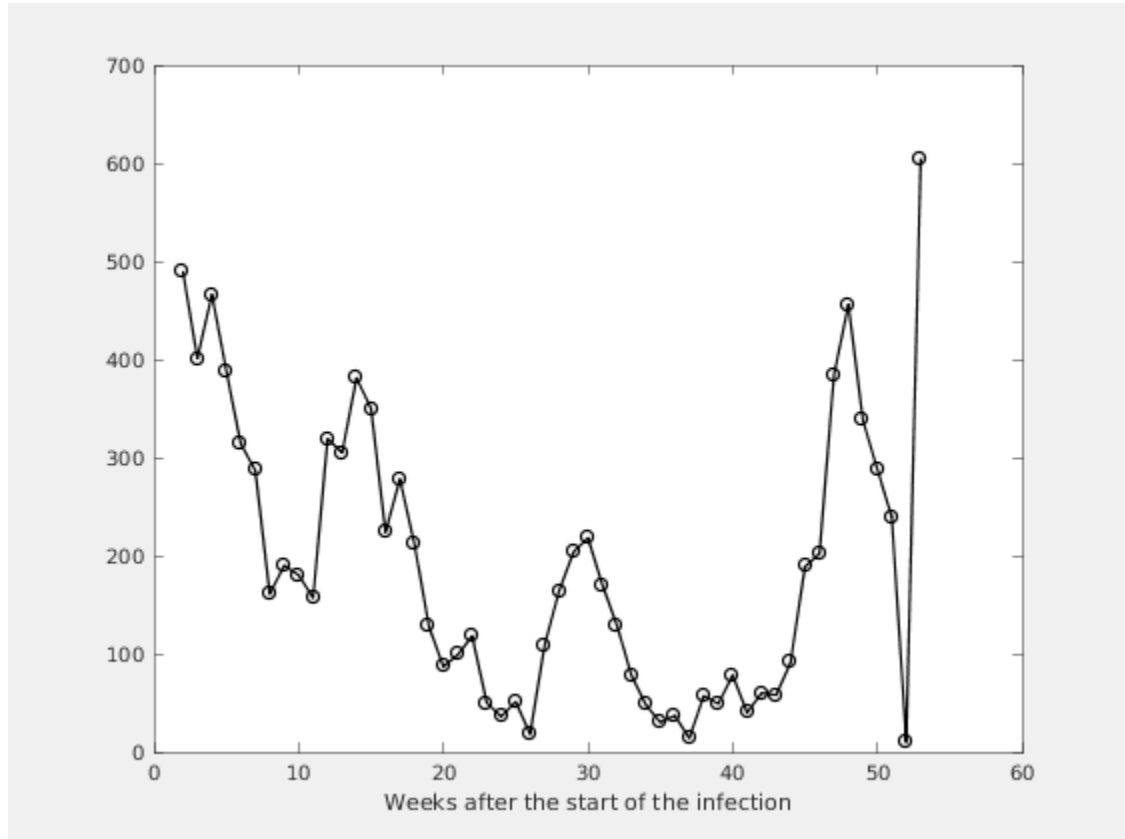
Figure 1.2. Number of the total registered cases

Chapter 2. Estimating of the main parameter and some predictions

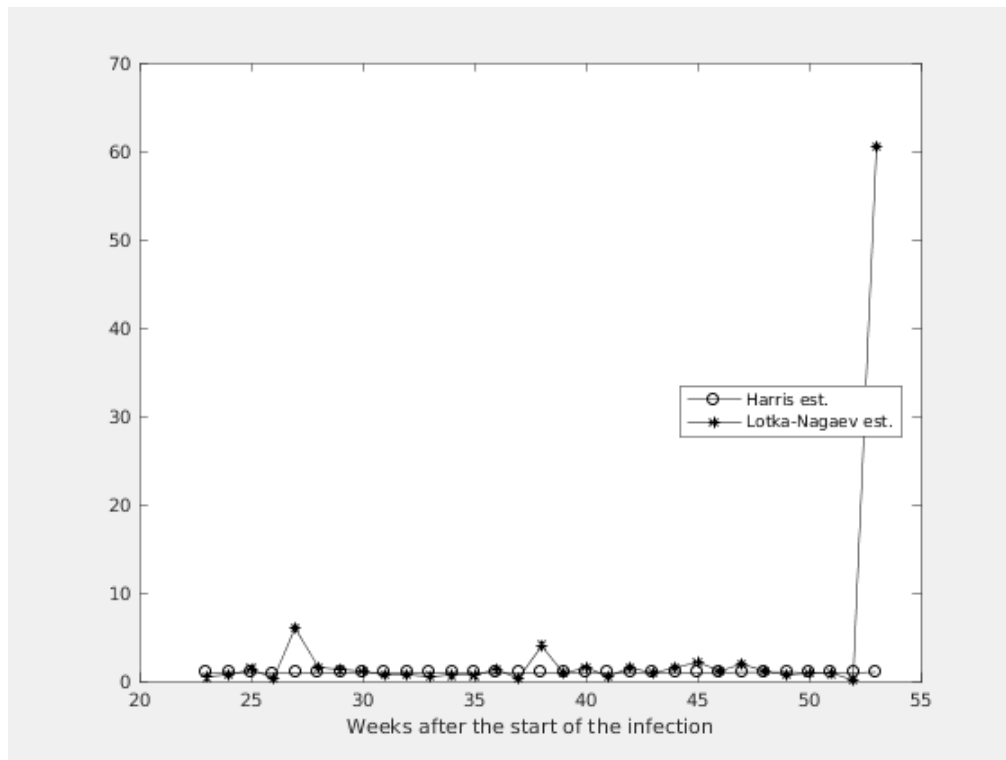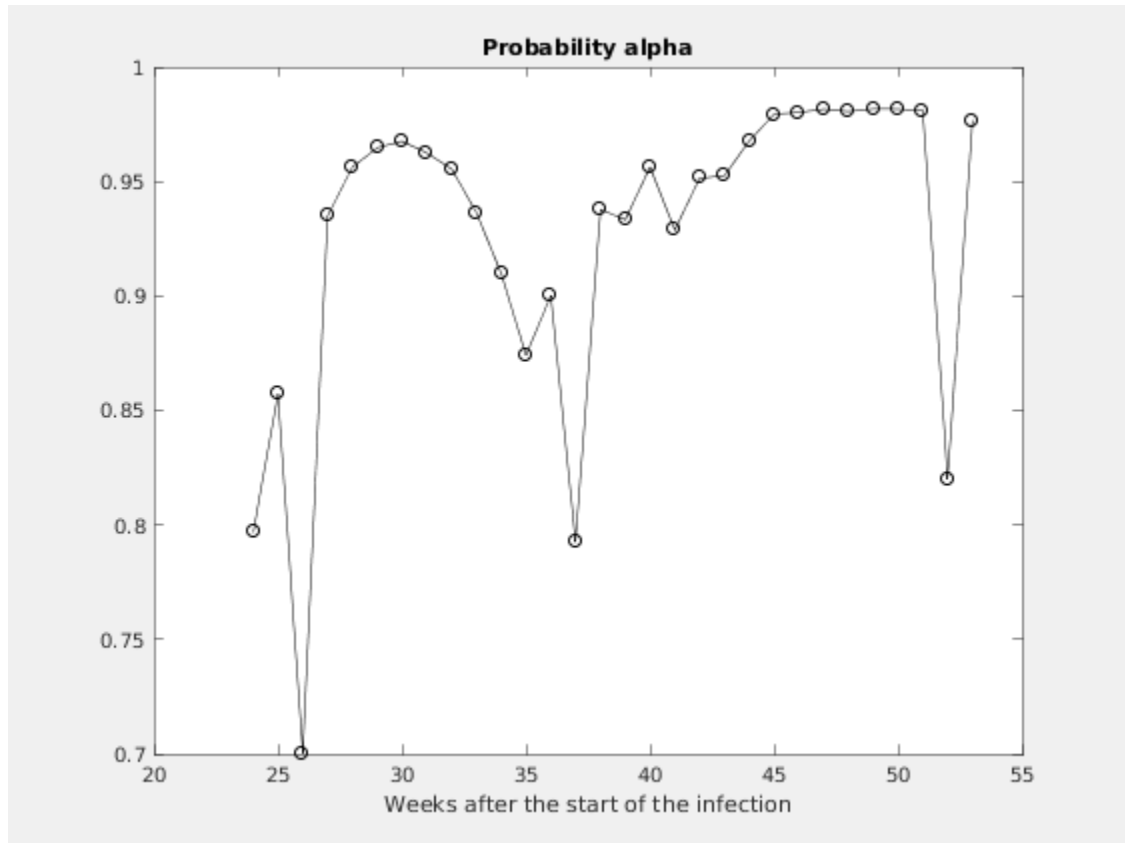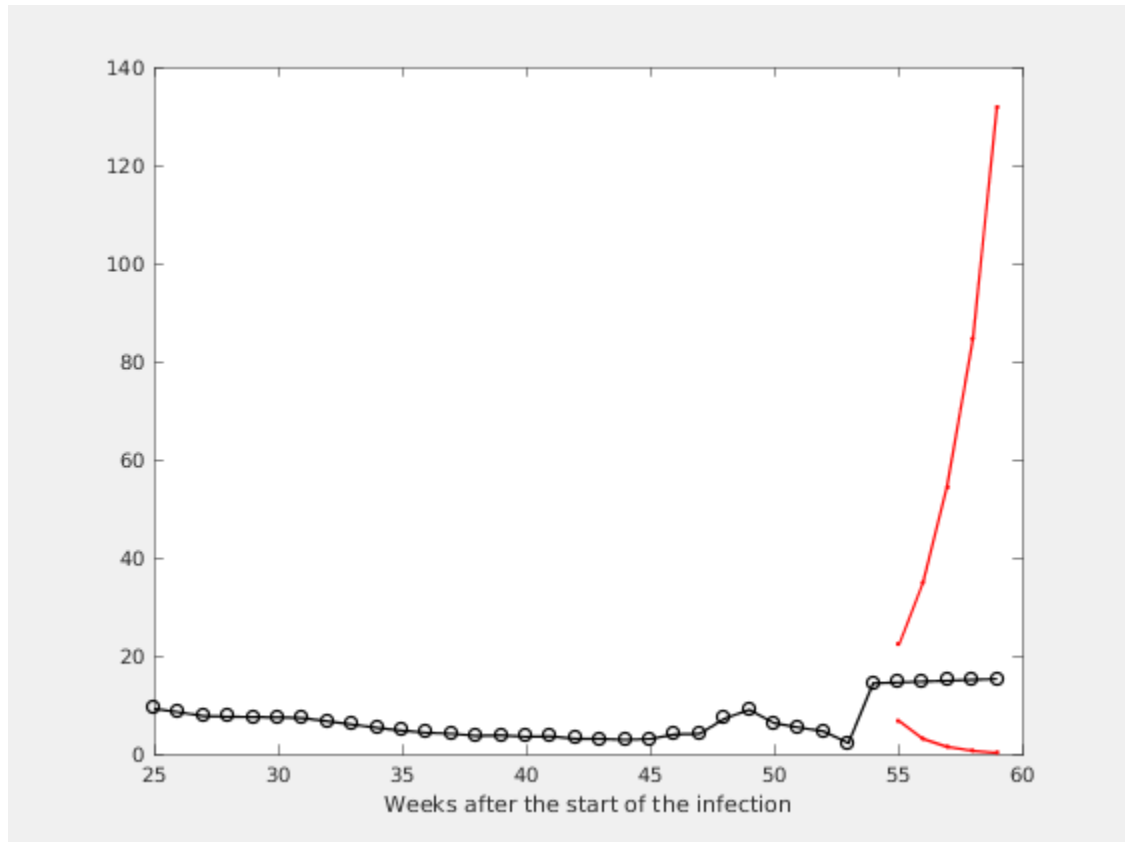**Figure 2.1. The Lotka-Nagaev and the Harris type estimator of the growth rate**
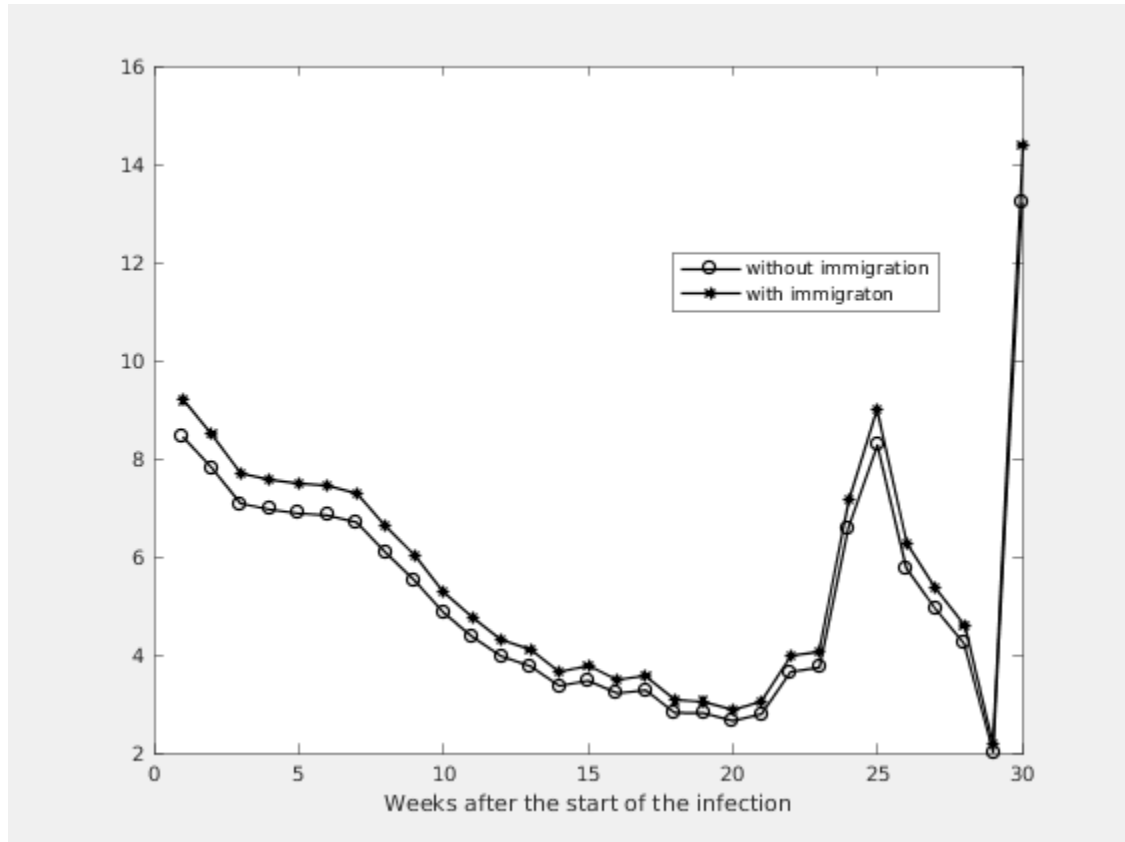
Figure 2.2. Figure

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  |  0.9822  | 0.8514 - 1.1130  | 0.9817 | 7 | 7  |
 3  |  0.9773  | 0.8503 - 1.1043  | 0.9806 | 9 | 8  |
 2  |  0.9727  | 0.8494 - 1.0959  | 0.9818 | 6 | 6  |
 1  |  0.9490  | 0.8290 - 1.0691  | 0.9817 | 5 | 5  |
 0  |  1.0122  | 0.8948 - 1.1296  | 0.9811 | 5 | 4  |
```