

# **Branching stochastic processes as models of Covid-19 epidemic development**

**Bulgaria - week 53**

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## **Branching stochastic processes as models of Covid-19 epidemic development : Bulgaria - week 53**

### **Abstract**

The results presented here are obtained using the methodology proposed in the paper <https://arxiv.org/abs/2004.14838> for the country Bulgaria. 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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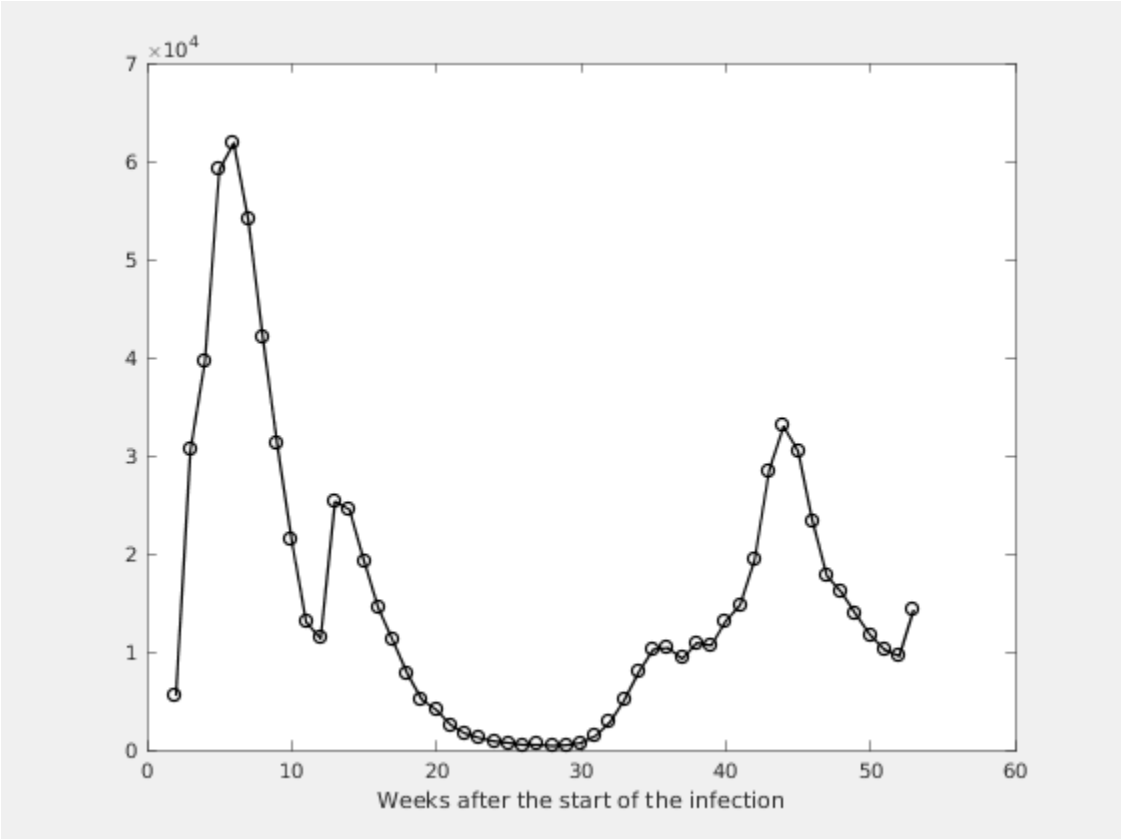
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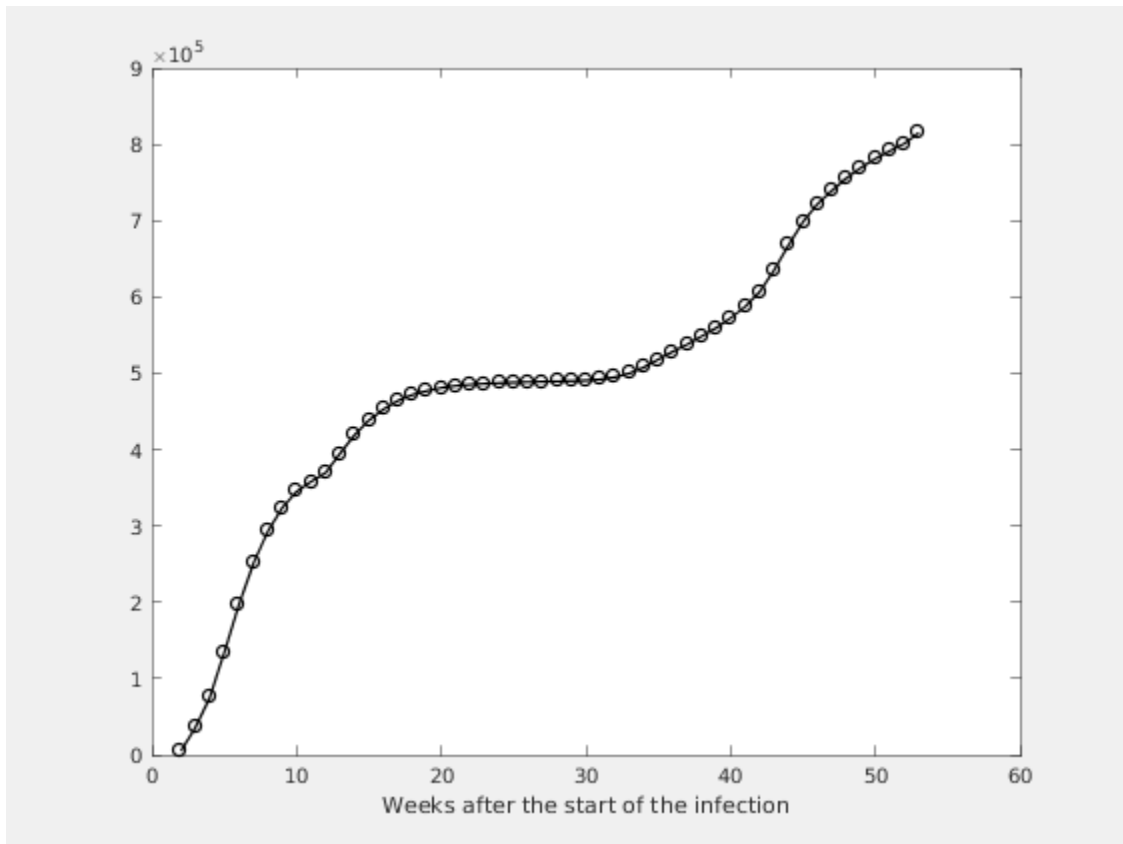
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# Chapter 1. Observed Infection data

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



**Figure 1.2. Number of the total registered cases**



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# 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

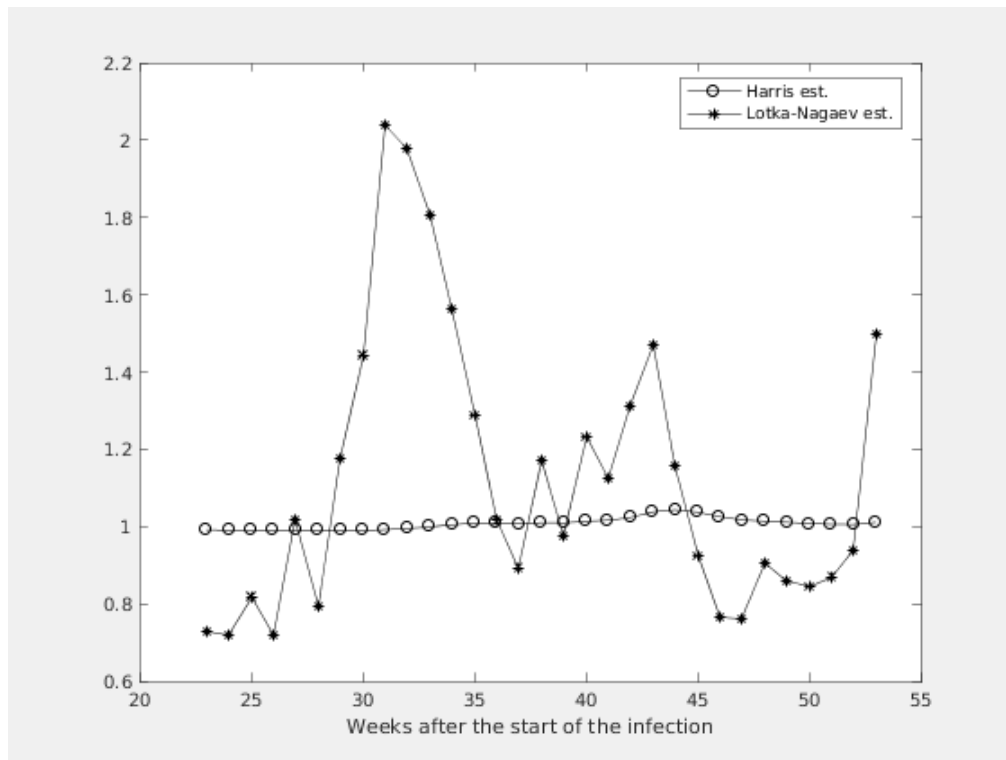
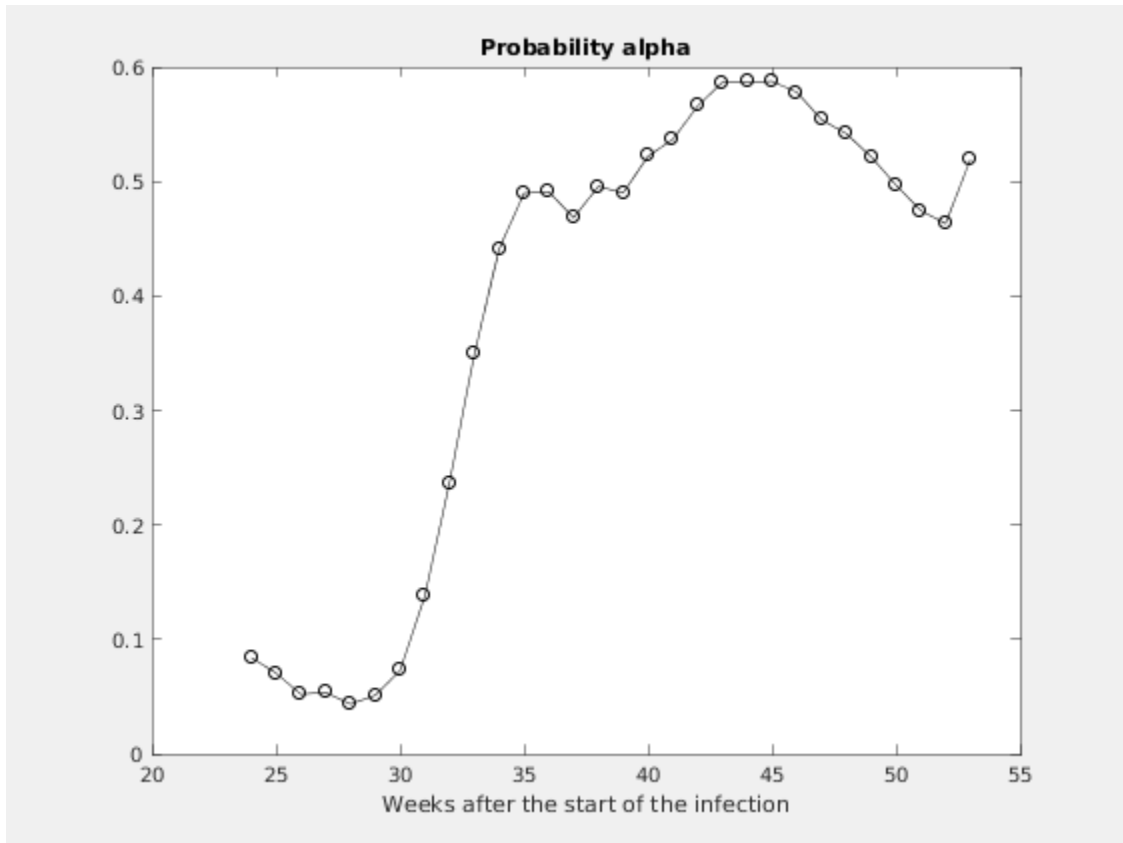
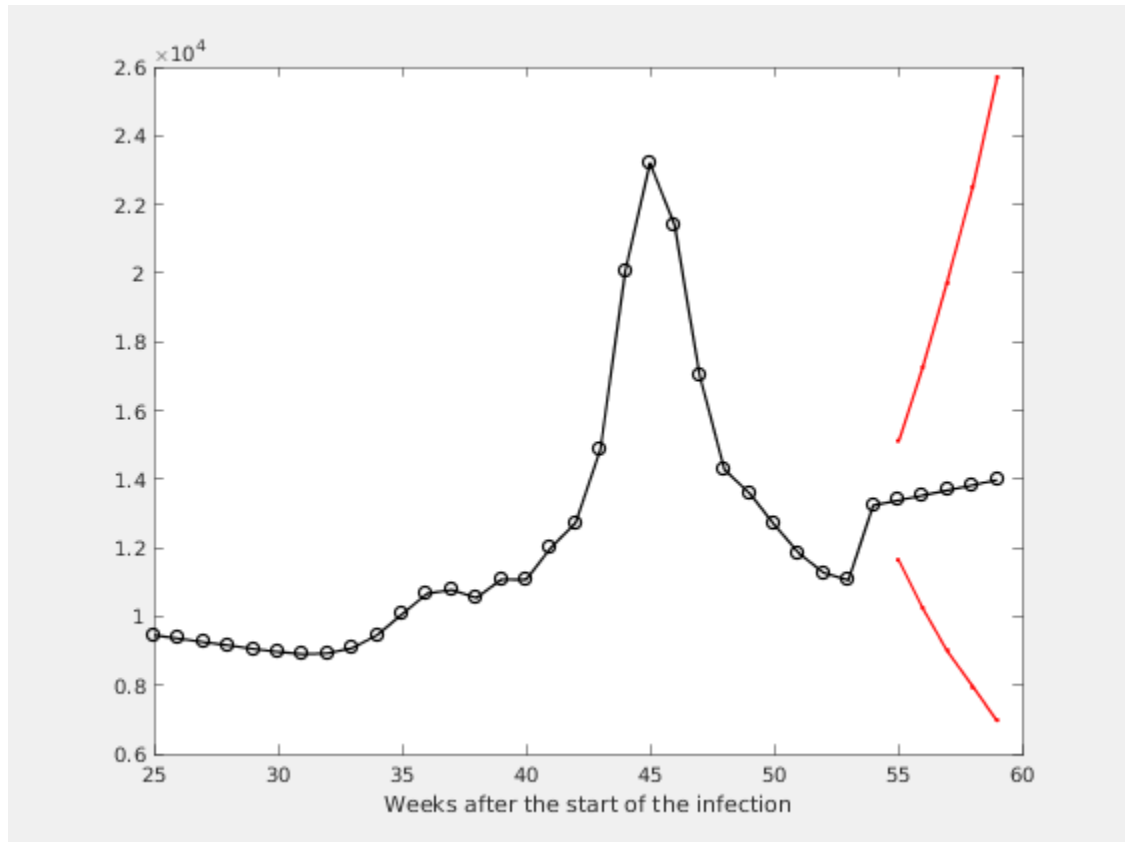


Figure 2.2. Figure

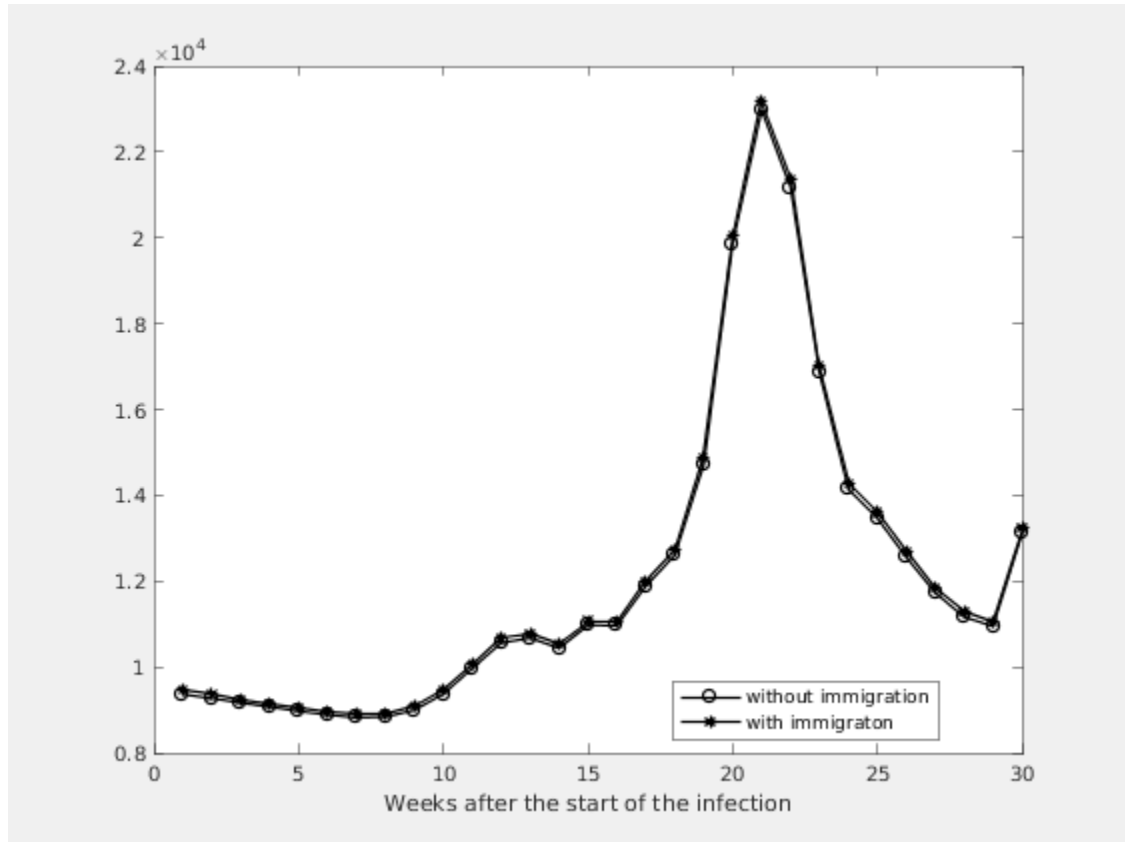




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

k	m	ci	alpha	A1	M1
4	1.0110	0.8655 - 1.1565	0.5540	14276	14139
3	1.0080	0.8658 - 1.1503	0.5417	13599	13469
2	1.0060	0.8666 - 1.1453	0.5216	12680	12559
1	1.0051	0.8683 - 1.1419	0.4970	11844	11731
0	1.0110	0.8765 - 1.1454	0.4746	11273	11165