

Branching stochastic processes as models of Covid-19 epidemic development

Bulgaria - 20201214

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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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Chapter 1. Observed Infection data

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

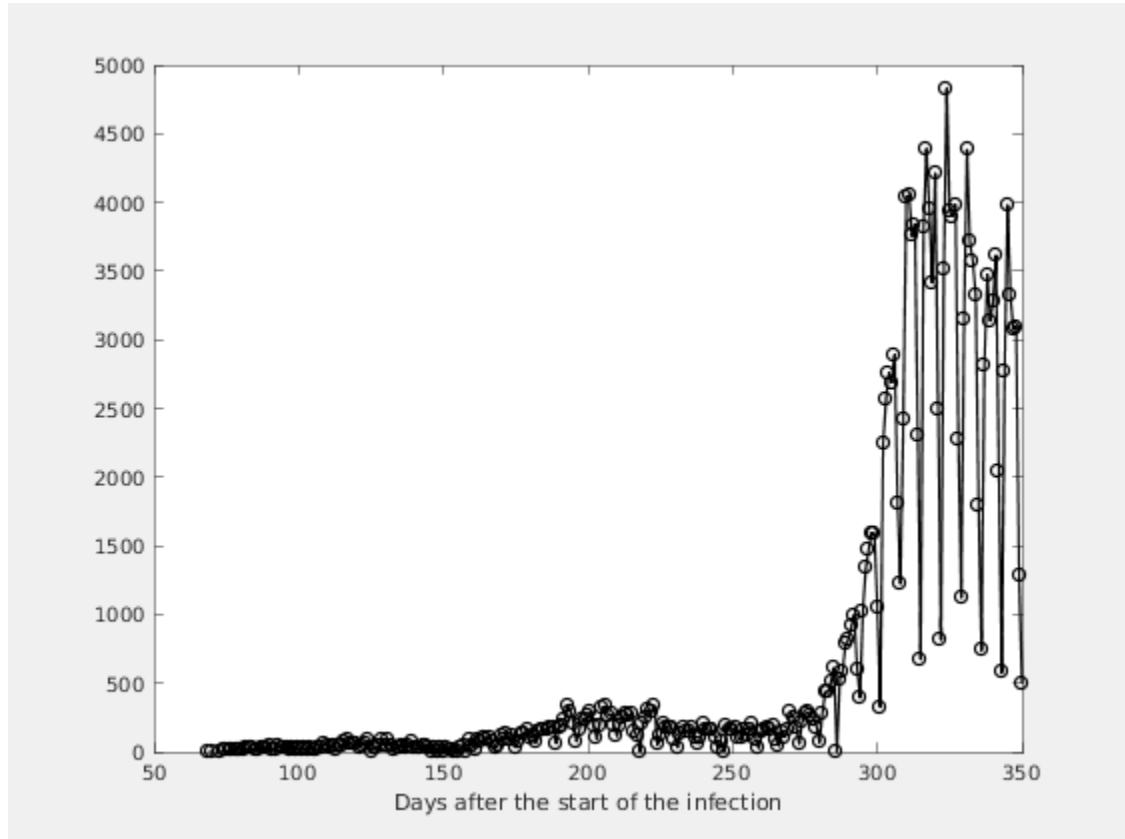
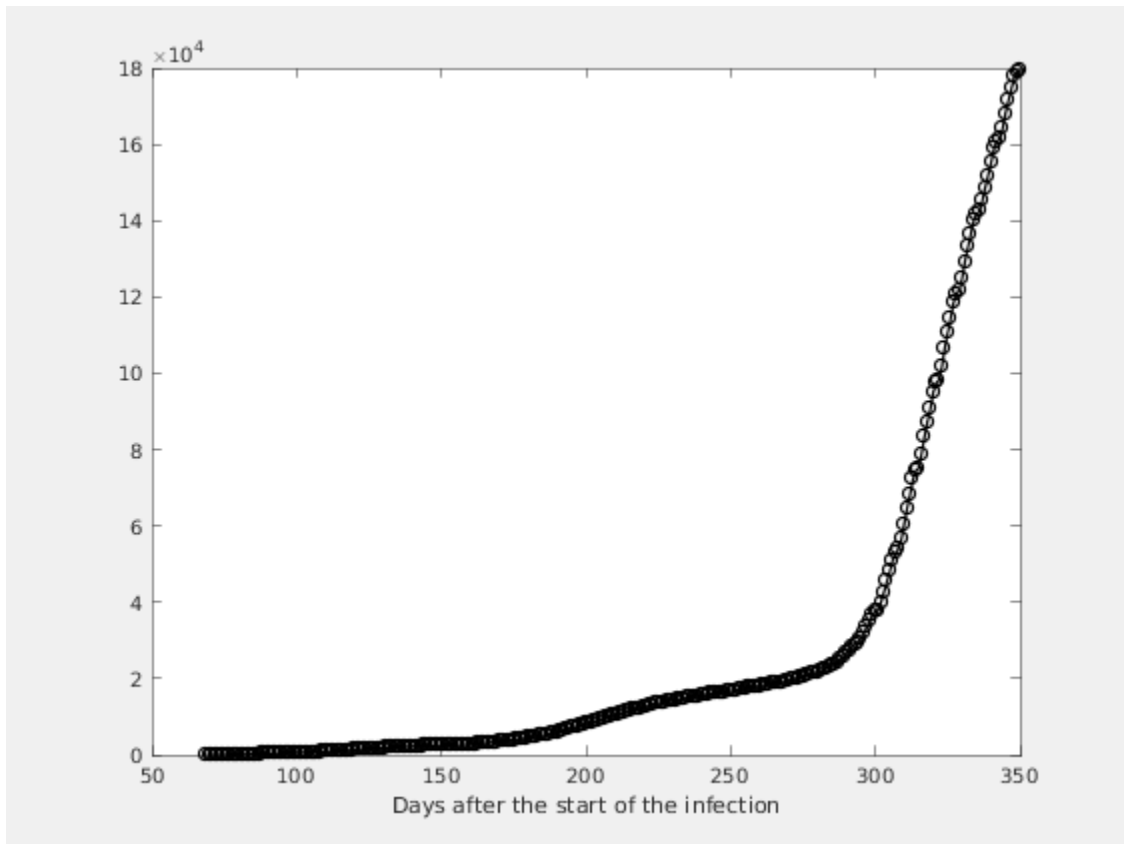


Figure 1.2. Number of the total registered cases



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

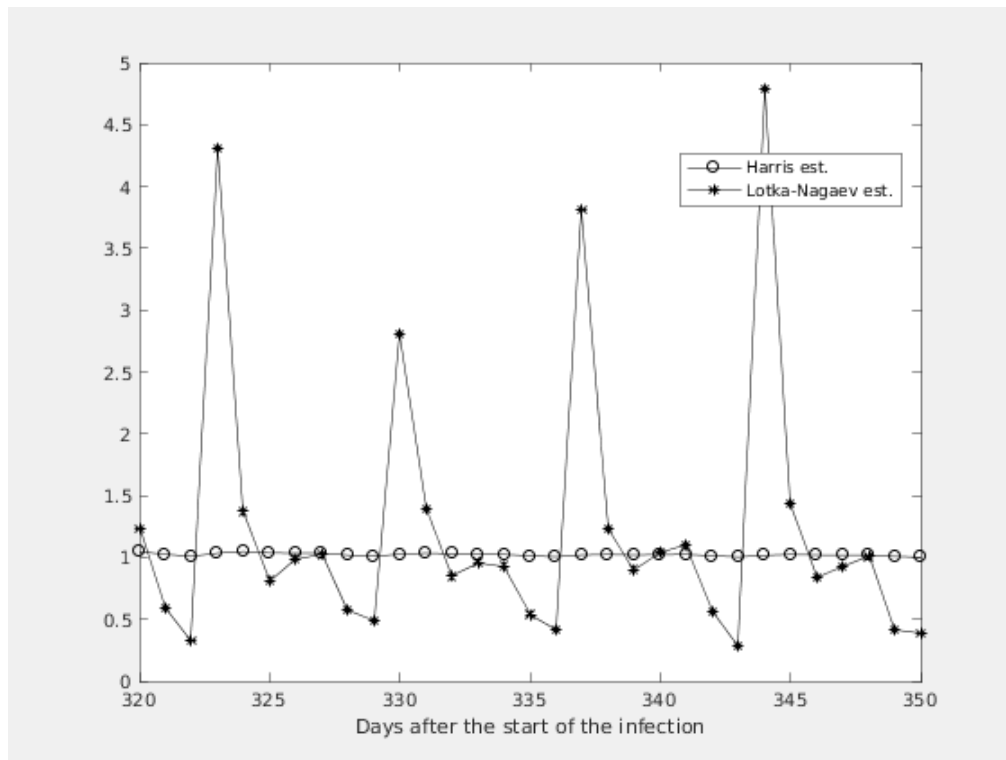


Figure 2.2. Figure

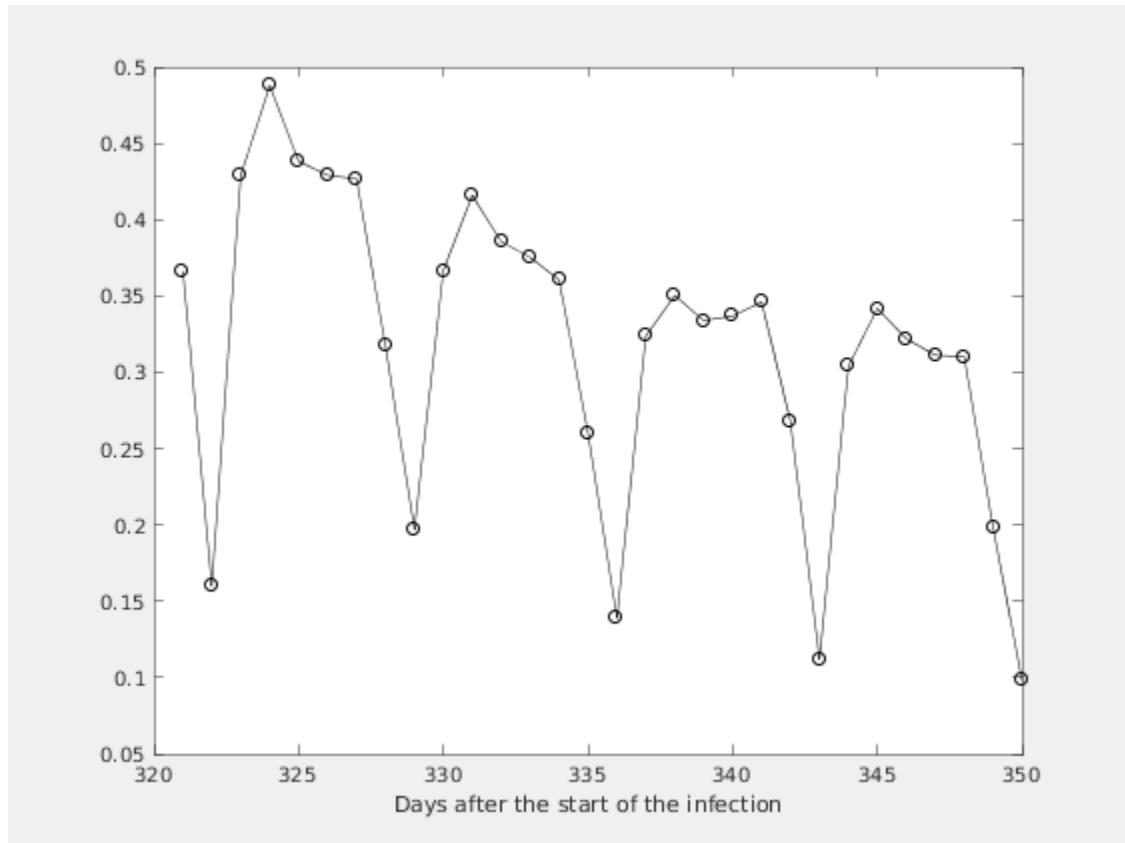


Figure 2.3. Expected number of the nonregistered infected individuals without immigration

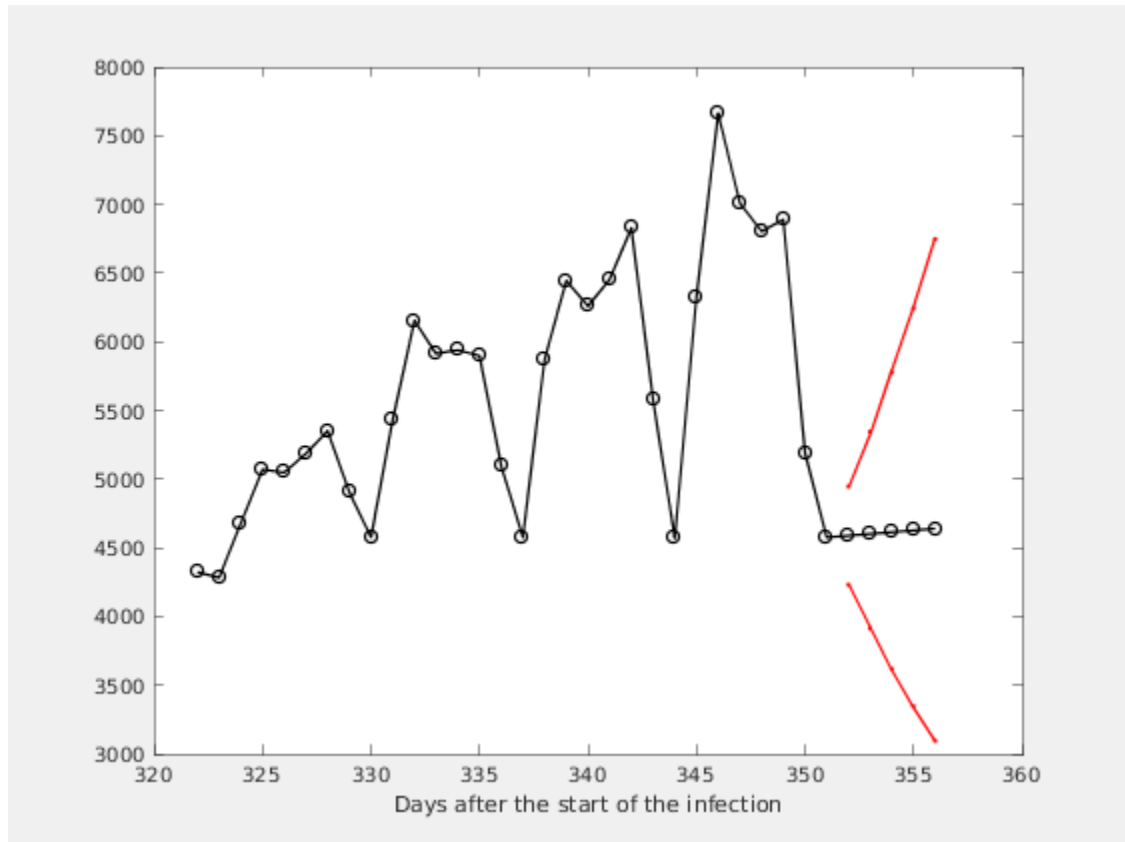
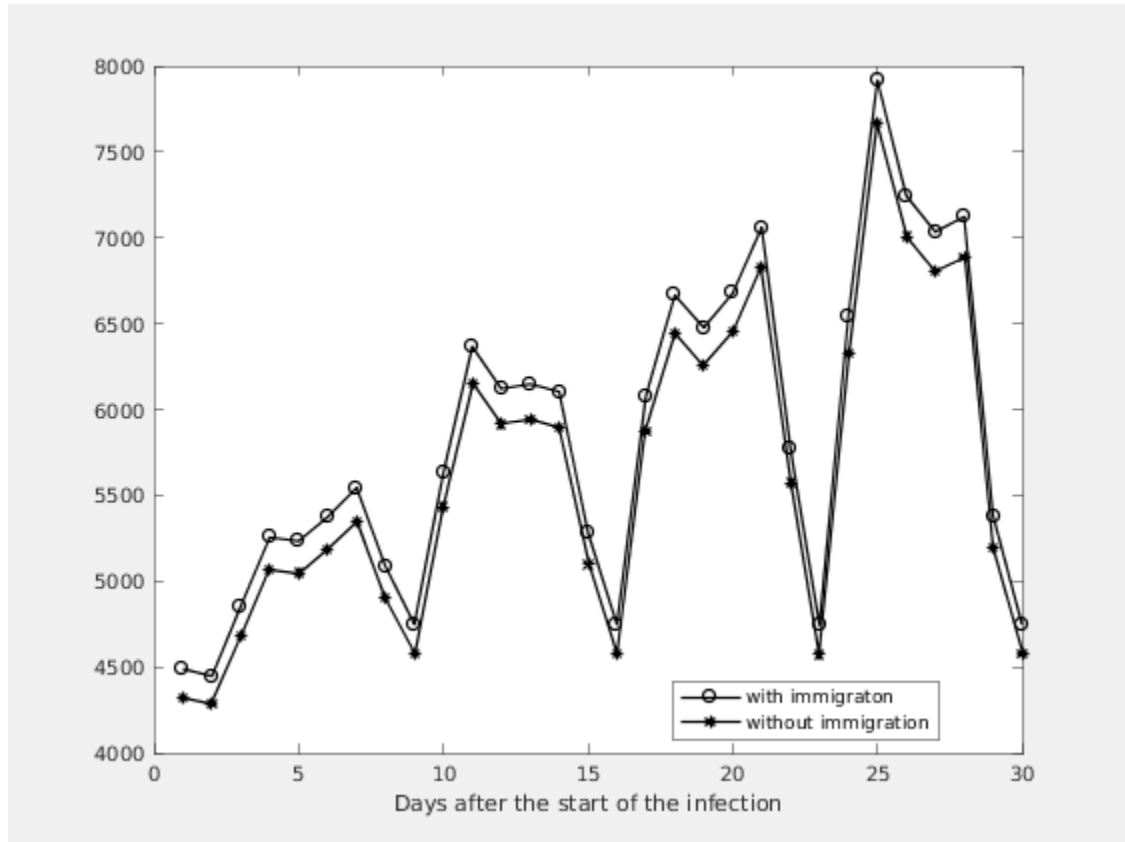


Figure 2.4. Expected number of the nonregistered infected individuals with immigration



Estimation of the model parameters.

k	m	ci	alpha	M1	A1
4	1.0198	0.9379 - 1.1016	0.3040	6329	6547
3	1.0179	0.9367 - 1.0992	0.3418	7663	7916
2	1.0177	0.9375 - 1.0979	0.3220	7009	7245
1	1.0072	0.9279 - 1.0865	0.3113	6804	7034
0	1.0028	0.9243 - 1.0812	0.3101	6890	7122