

Branching stochastic processes as models of Covid-19 epidemic development

Lebanon - 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 Lebanon. 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

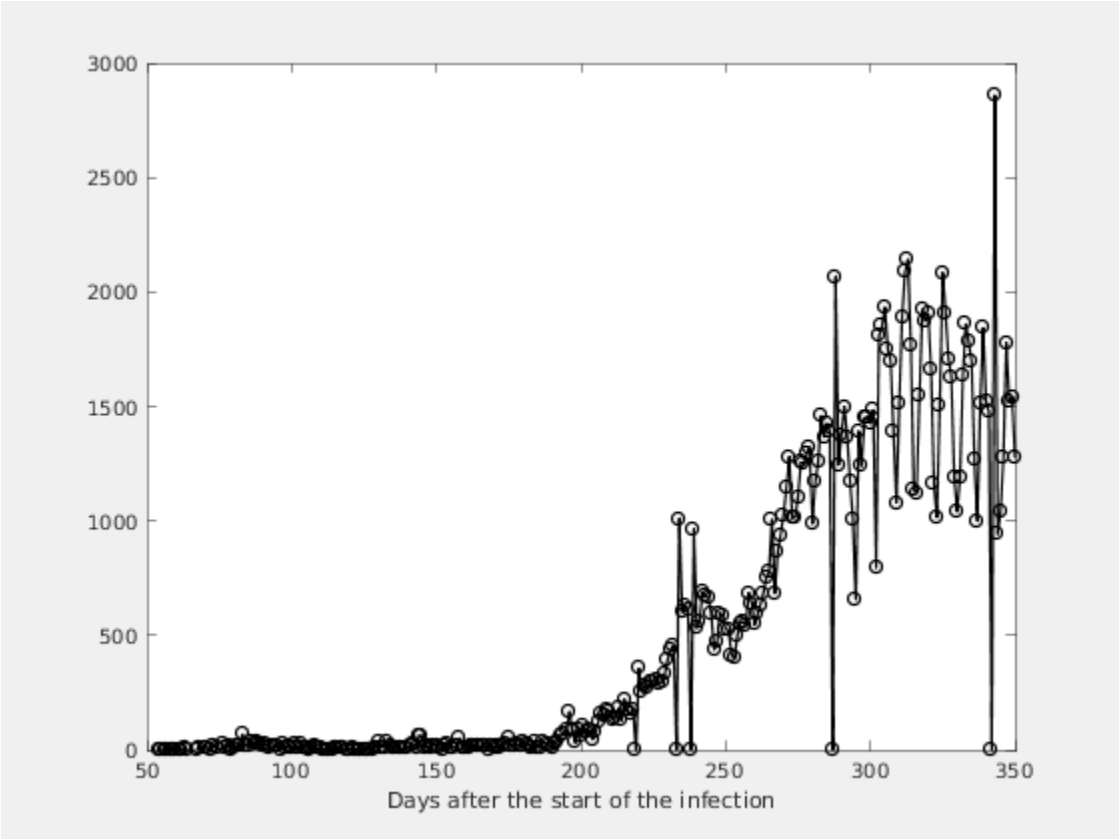
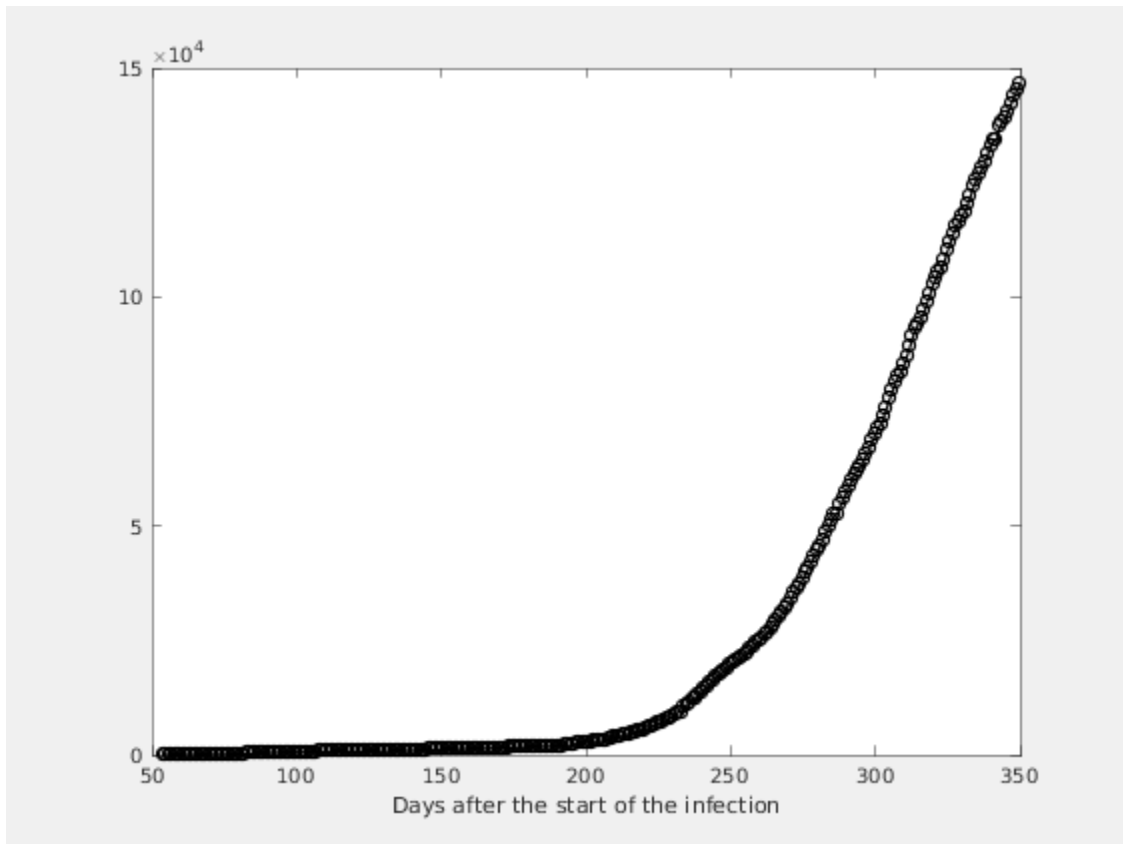


Figure 1.2. Number of the total registered cases



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

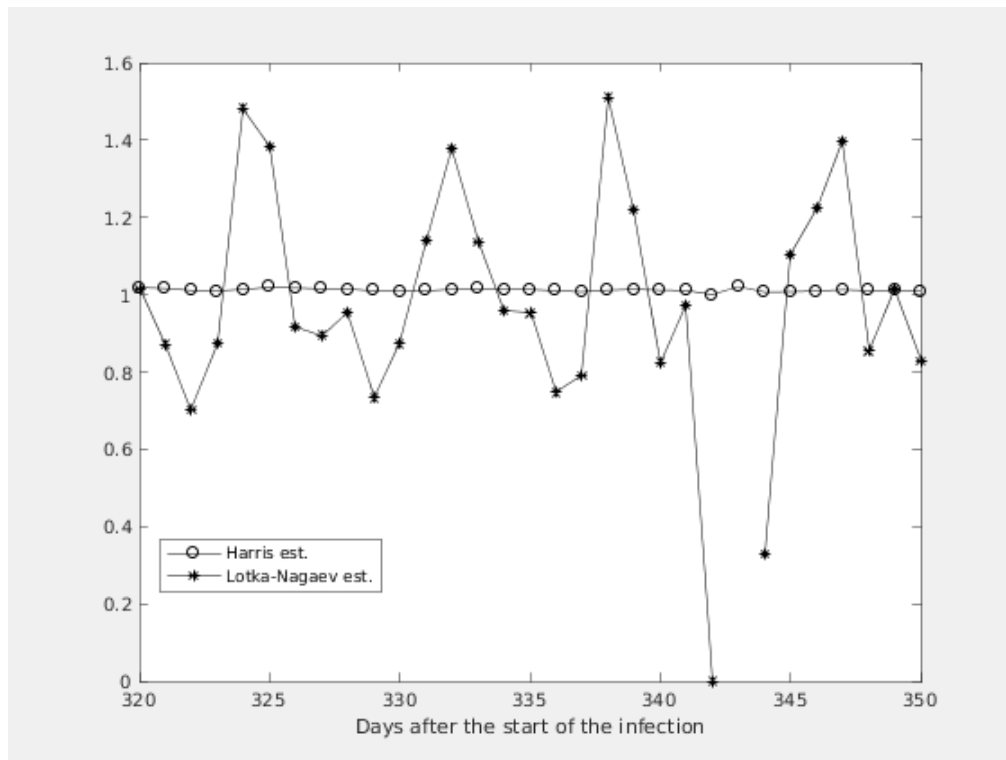


Figure 2.2. Figure

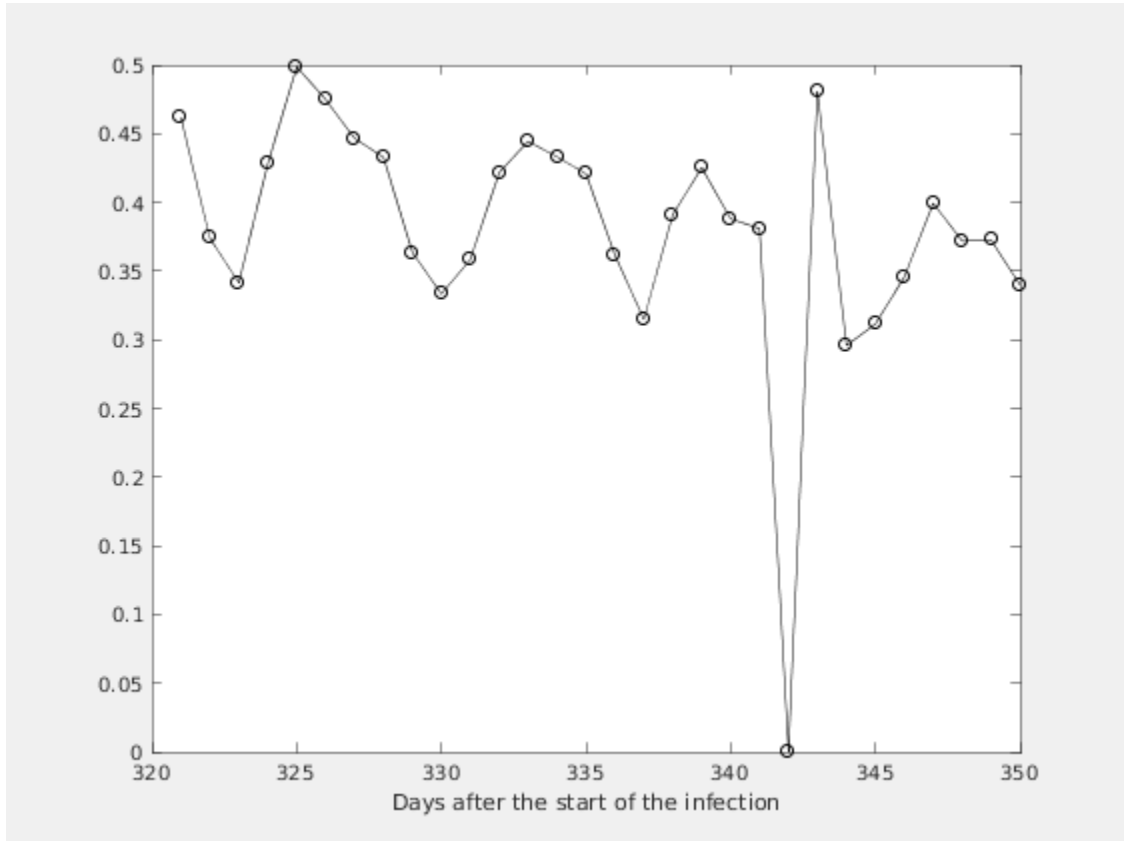


Figure 2.3. Expected number of the nonregistered infected individuals without immigration

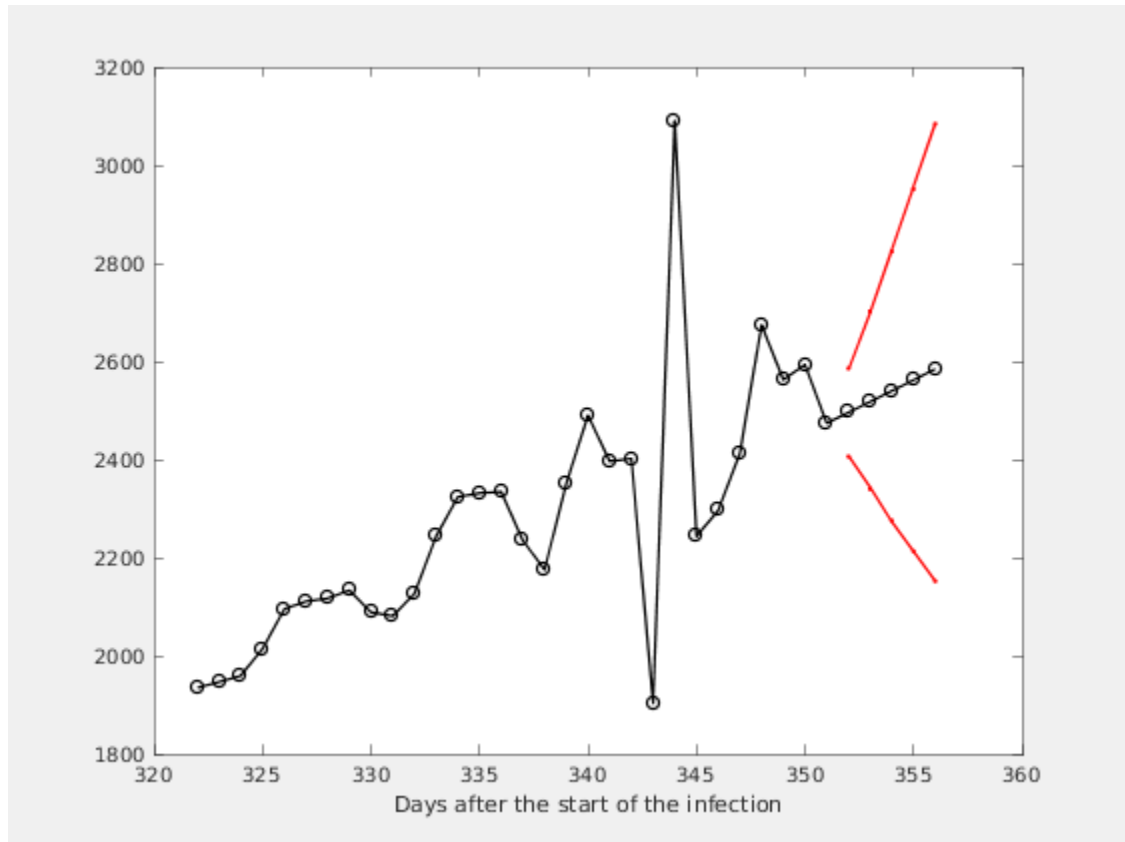
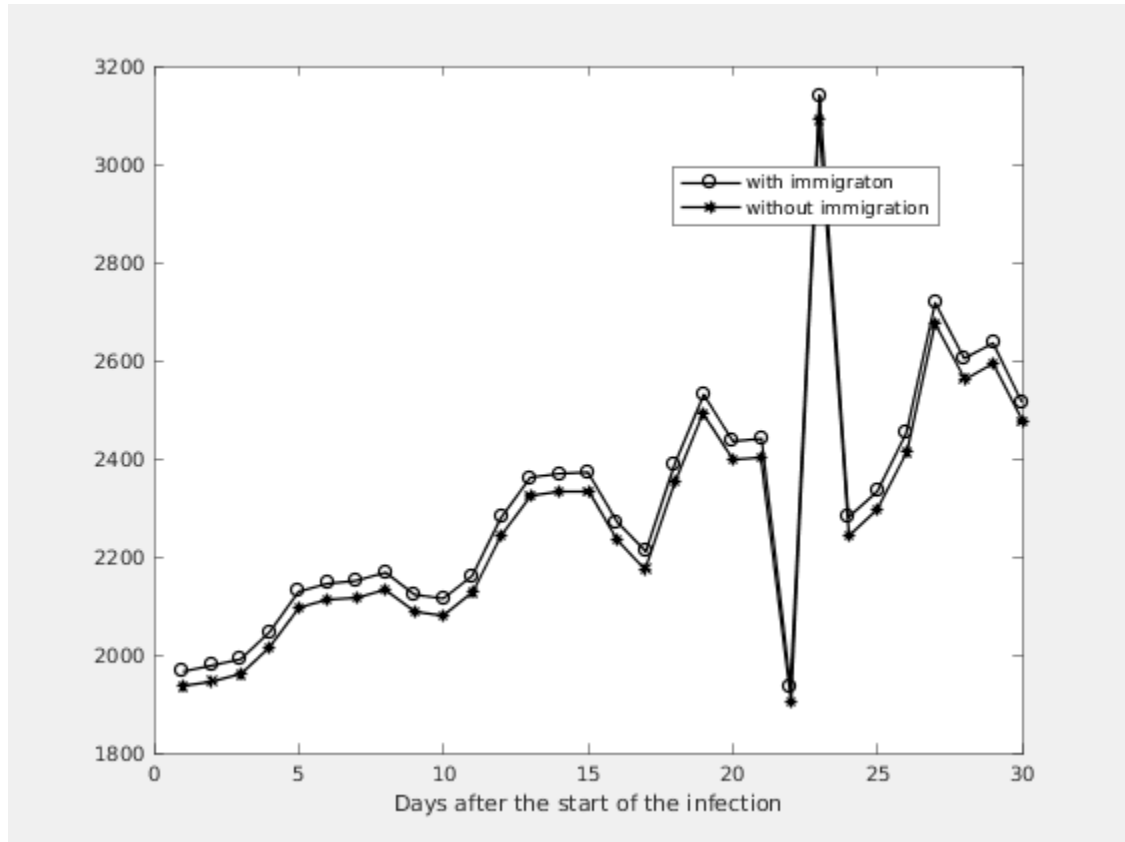


Figure 2.4. Expected number of the nonregistered infected individuals with immigration



Estimation of the model parameters.

k	m	ci	alpha	M1	A1
4	1.0091	0.9719 - 1.0464	0.2959	2244	2280
3	1.0127	0.9756 - 1.0498	0.3115	2296	2333
2	1.0107	0.9737 - 1.0476	0.3456	2413	2452
1	1.0107	0.9737 - 1.0477	0.3994	2674	2717
0	1.0088	0.9720 - 1.0455	0.3720	2563	2604