

Branching stochastic processes as models of Covid-19 epidemic development

South_Africa - 20201214

N. Yanev, V. Stoimenova, D. Atanasov

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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 South_Africa. 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

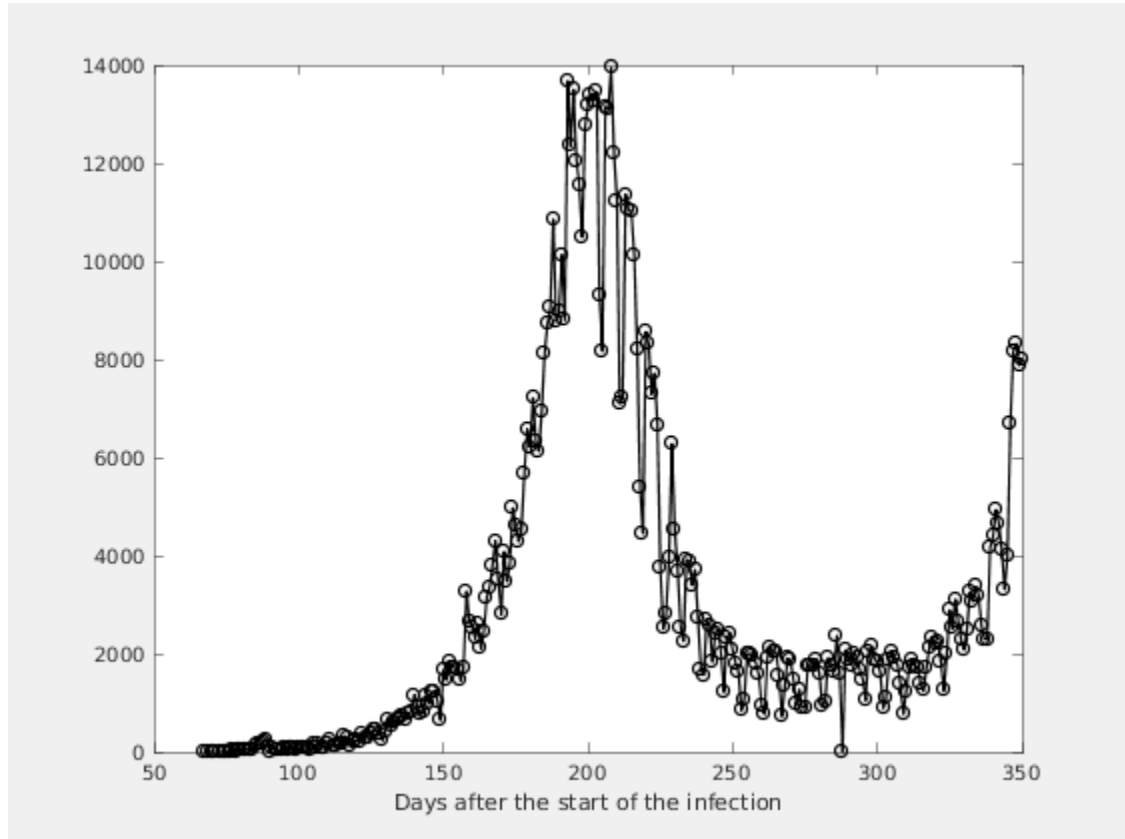
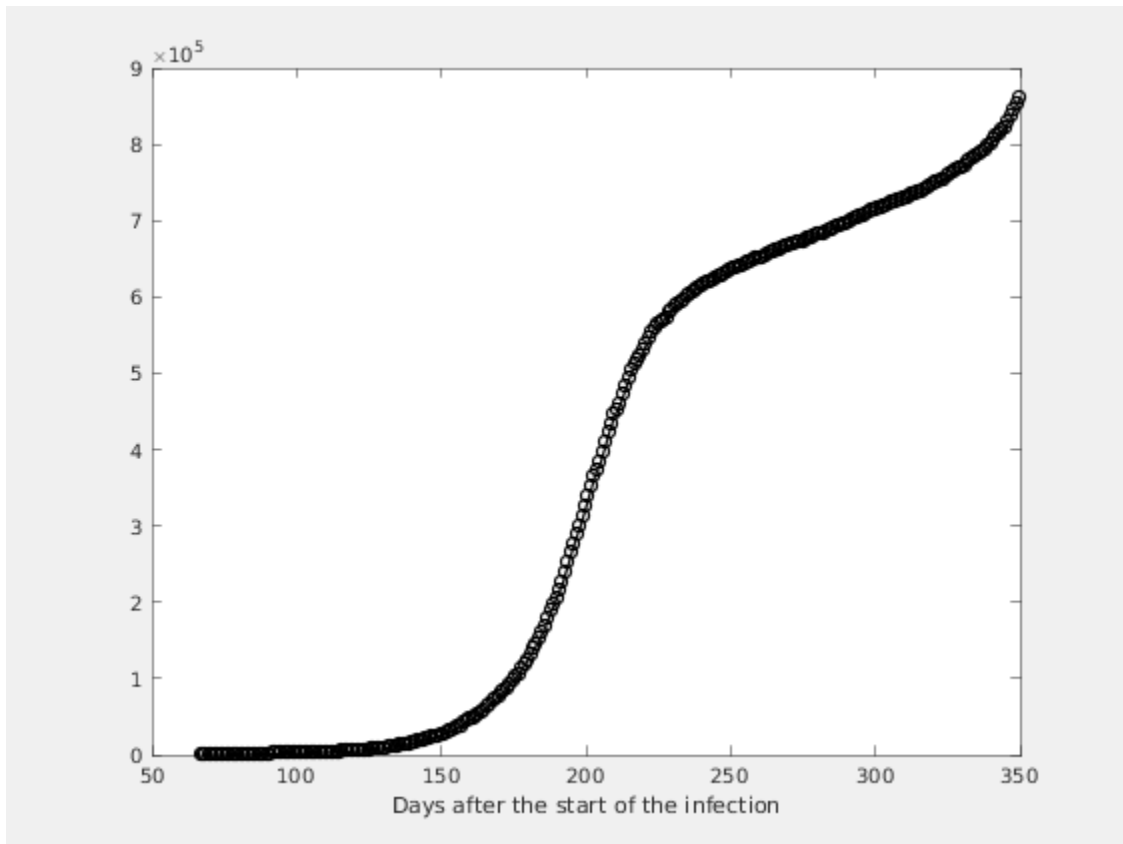


Figure 1.2. Number of the total registered cases



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

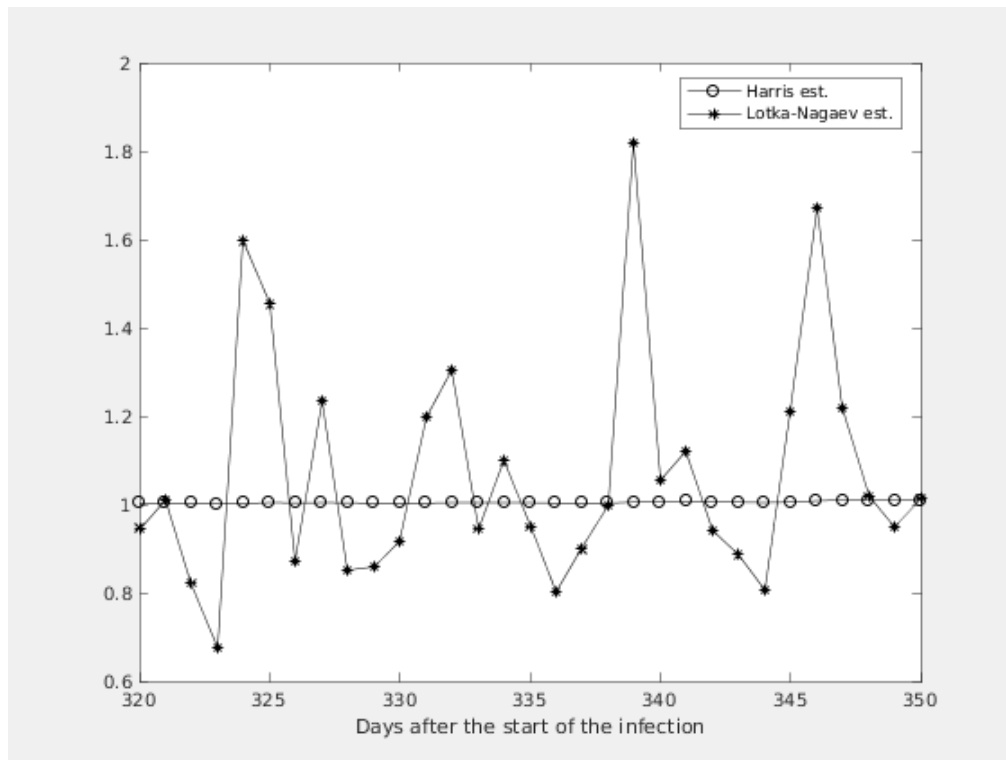


Figure 2.2. Figure

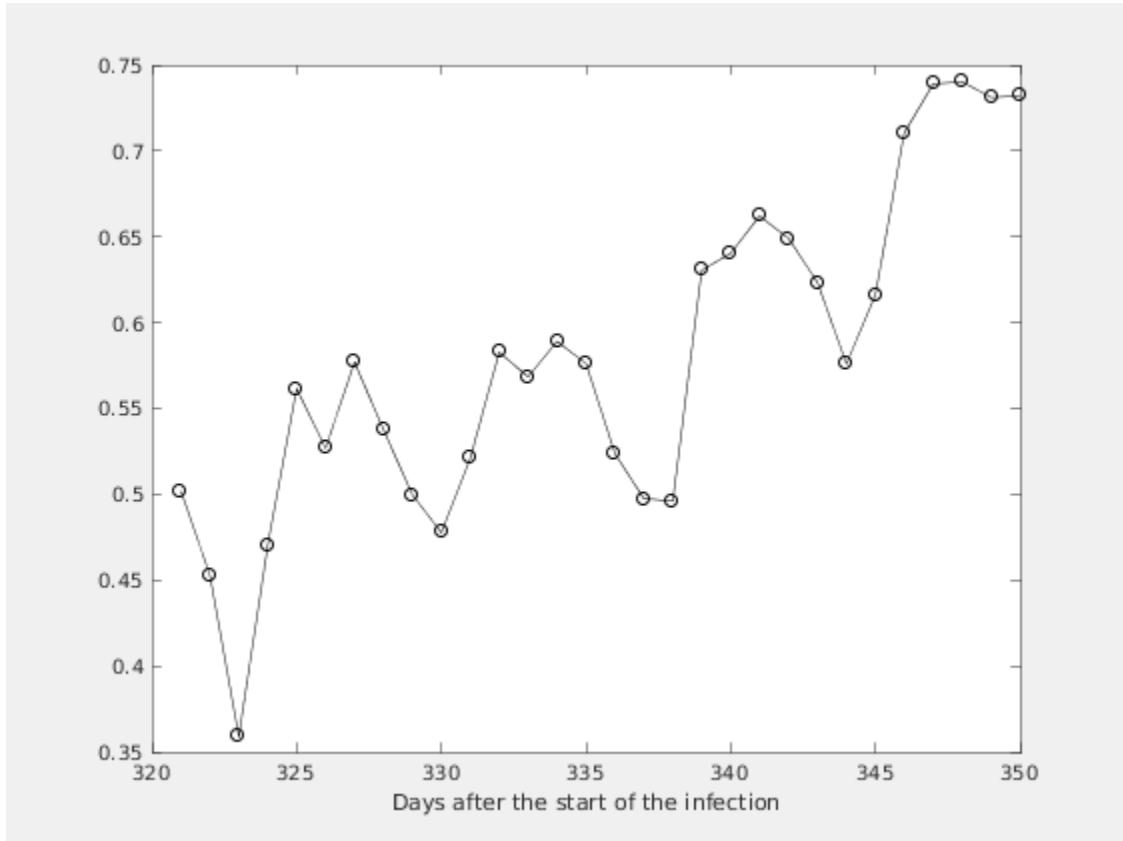


Figure 2.3. Expected number of the nonregistered infected individuals without immigration

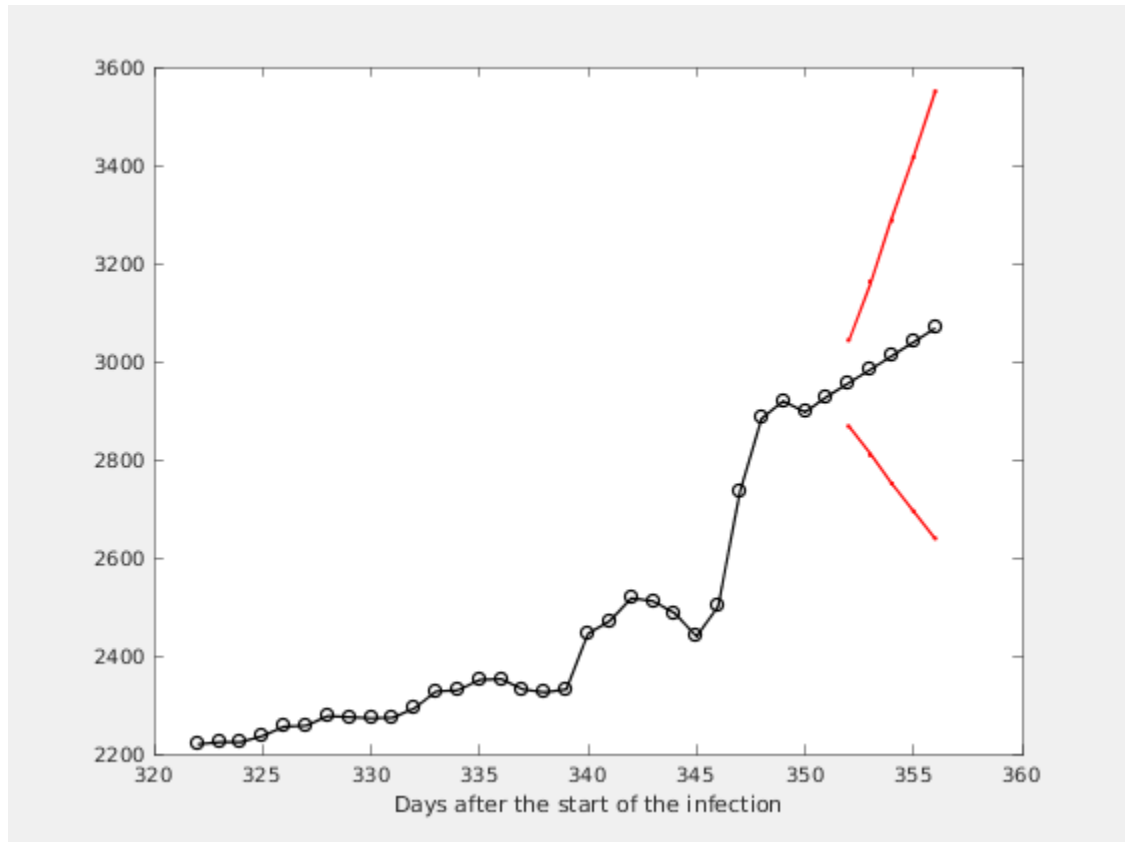
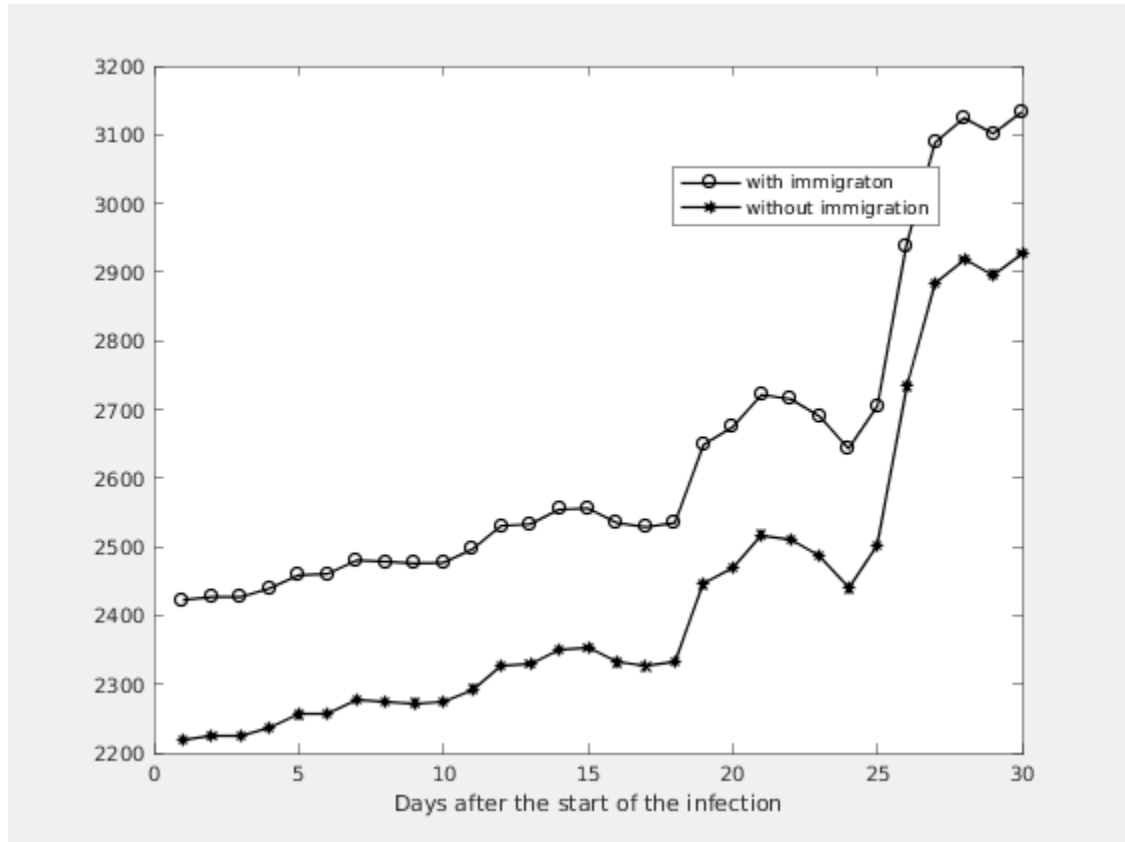


Figure 2.4. Expected number of the nonregistered infected individuals with immigration



Estimation of the model parameters.

k	m	ci	alpha	M1	A1
4	1.0082	0.9778 - 1.0385	0.5759	2439	2643
3	1.0099	0.9796 - 1.0401	0.6160	2501	2705
2	1.0099	0.9793 - 1.0406	0.7105	2734	2938
1	1.0093	0.9788 - 1.0398	0.7390	2884	3089
0	1.0094	0.9791 - 1.0397	0.7402	2919	3124