

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

**Lesotho - 20201214**

**N. Yanev, V. Stoimenova, D. Atanasov**

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## **Branching stochastic processes as models of Covid-19 epidemic development : Lesotho - 20201214**

### **Abstract**

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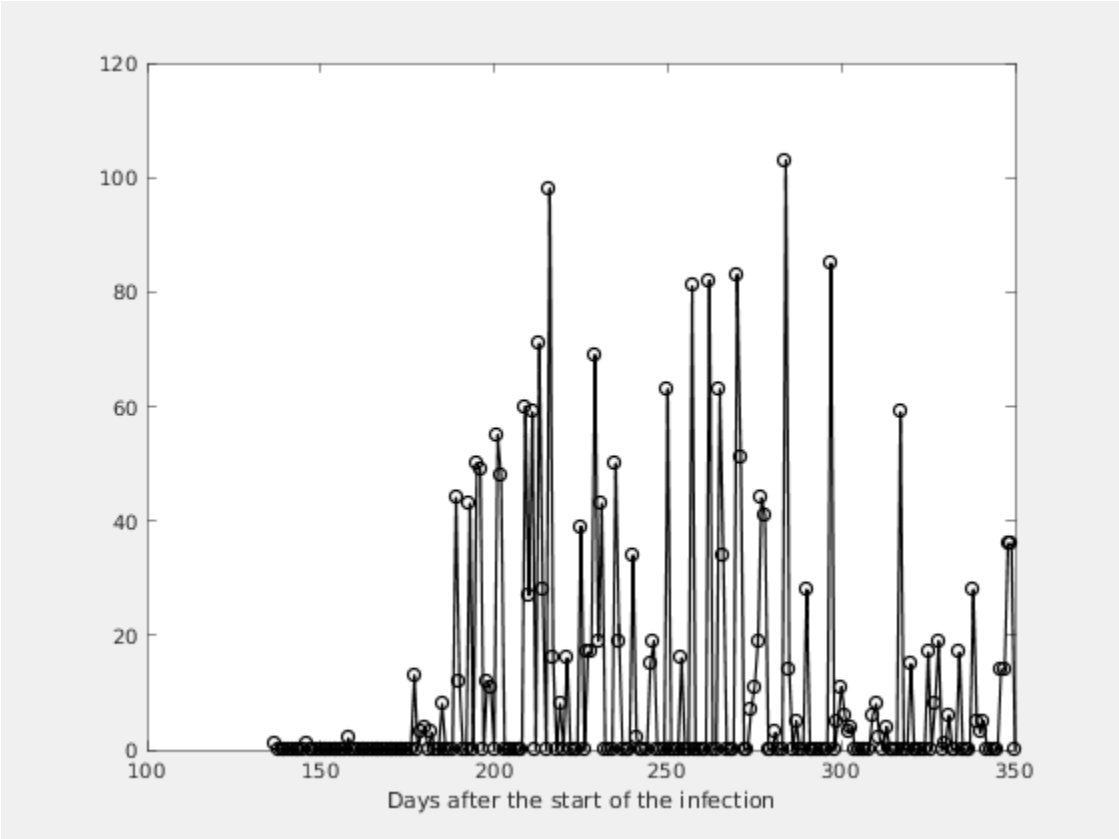
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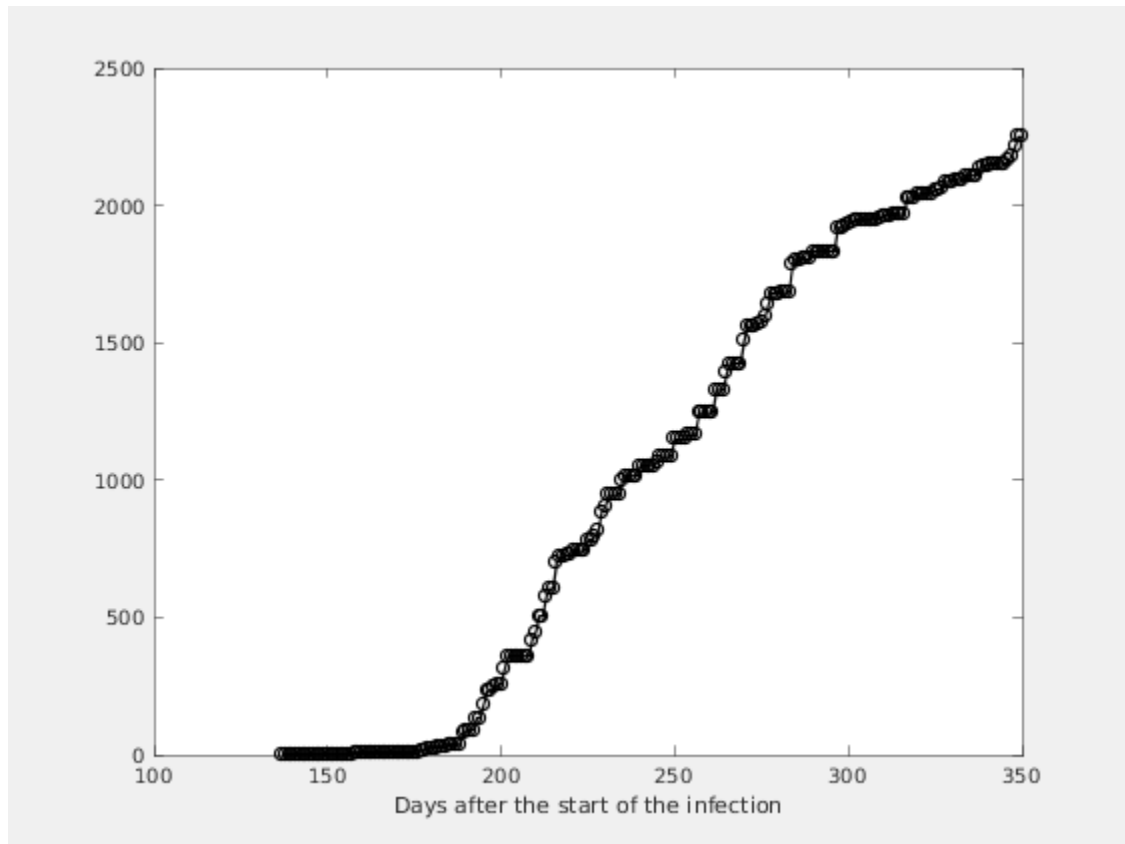
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# Chapter 1. Observed Infection data

Figure 1.1. Number of the daily 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

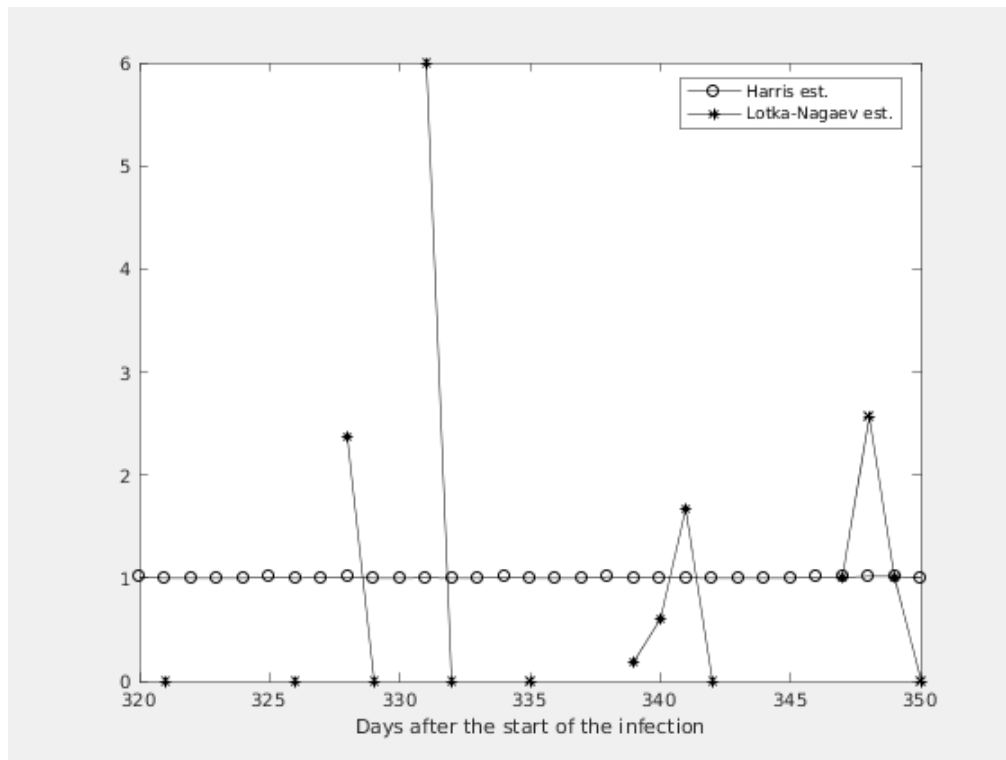
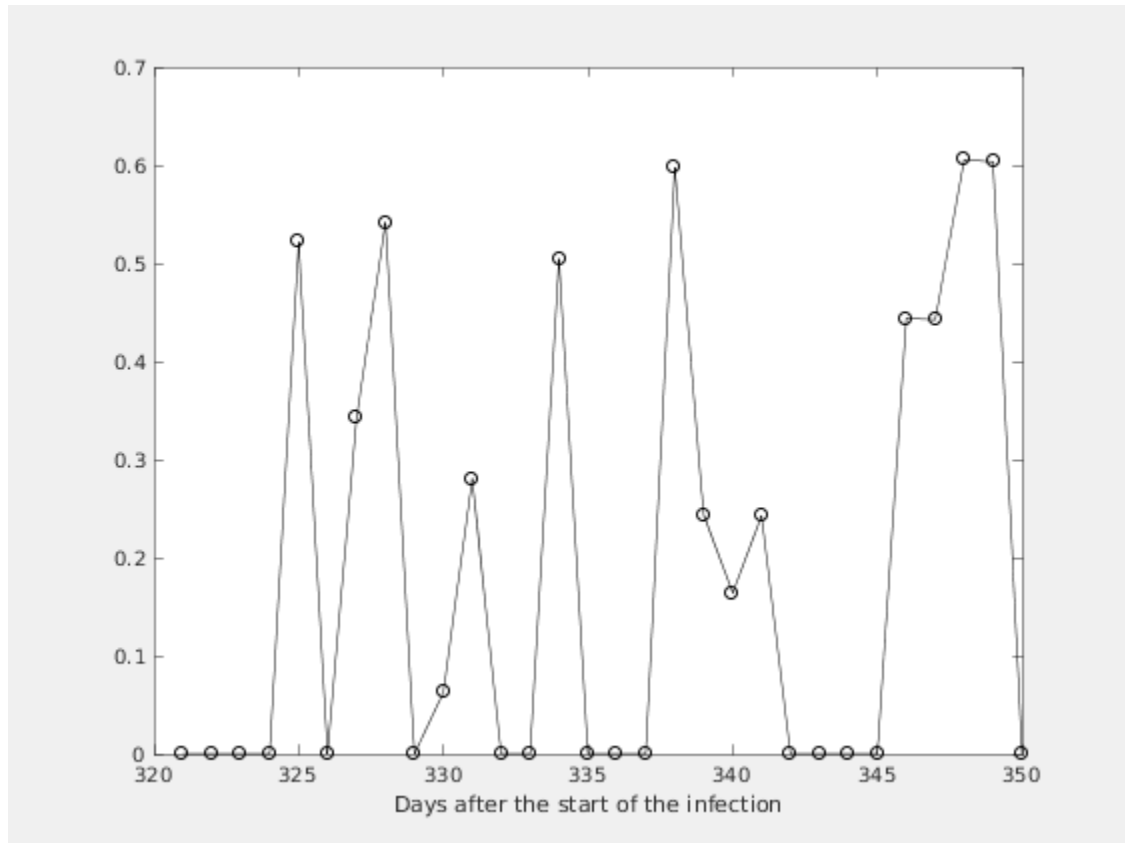
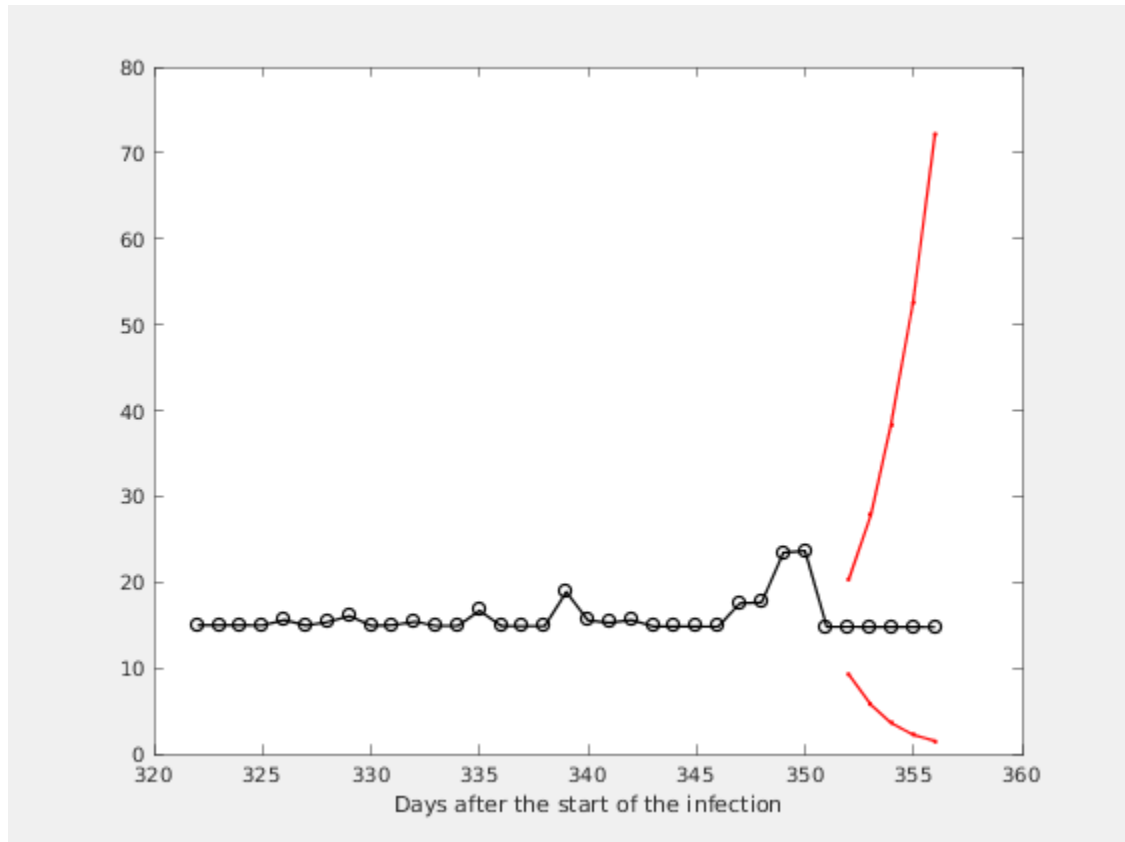


Figure 2.2. Figure

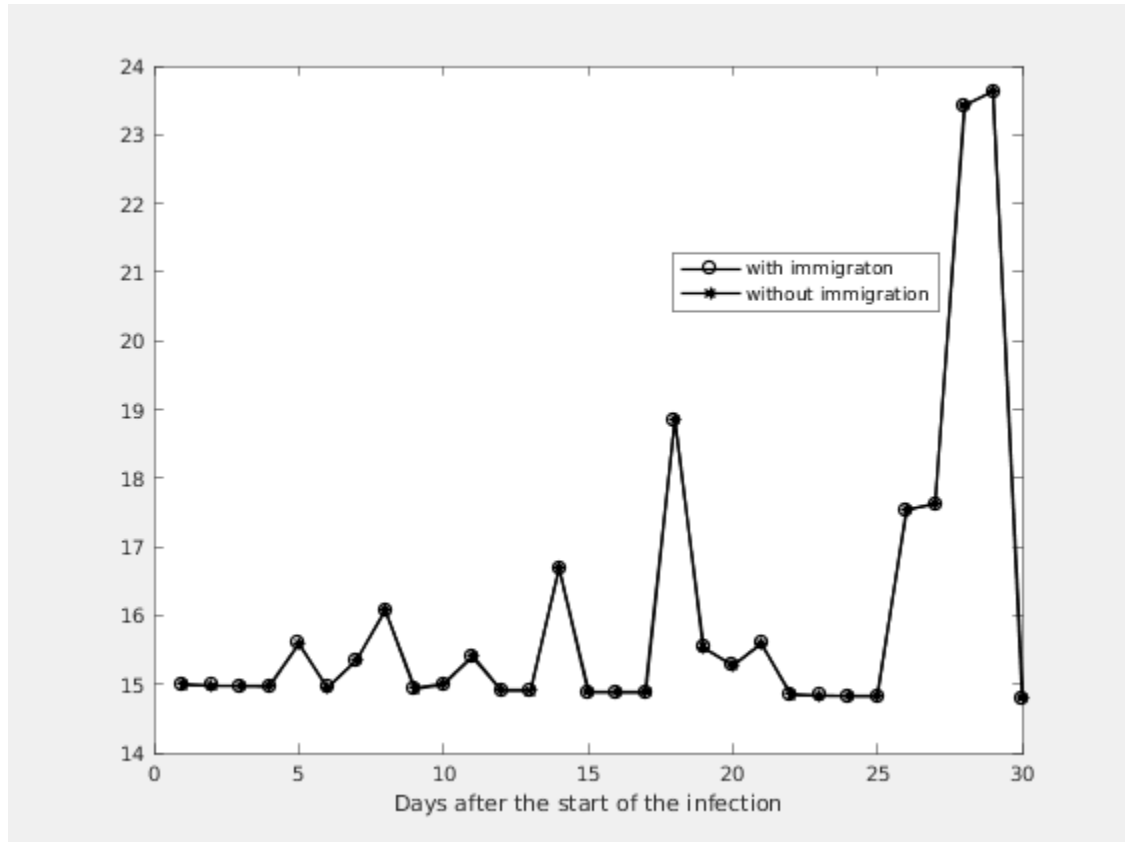




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

k	m	ci	alpha	M1	A1
4	1.0060	0.6159 - 1.3962	0.0000	15	15
3	1.0060	0.6159 - 1.3962	0.0000	15	15
2	1.0161	0.6279 - 1.4042	0.4438	18	18
1	1.0158	0.6314 - 1.4002	0.4426	18	18
0	0.9996	0.6178 - 1.3813	0.6057	23	23