

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

**SouthSudan - week 53**

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## **Branching stochastic processes as models of Covid-19 epidemic development : SouthSudan - 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 SouthSudan. 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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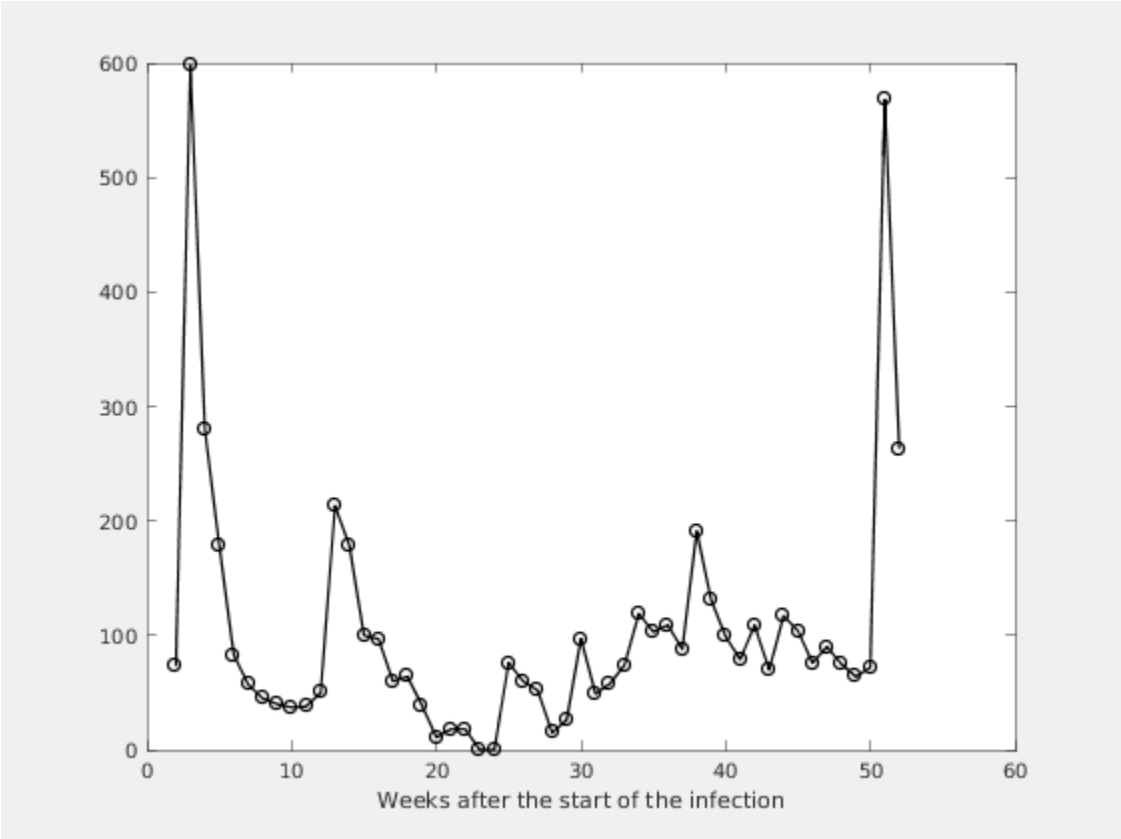
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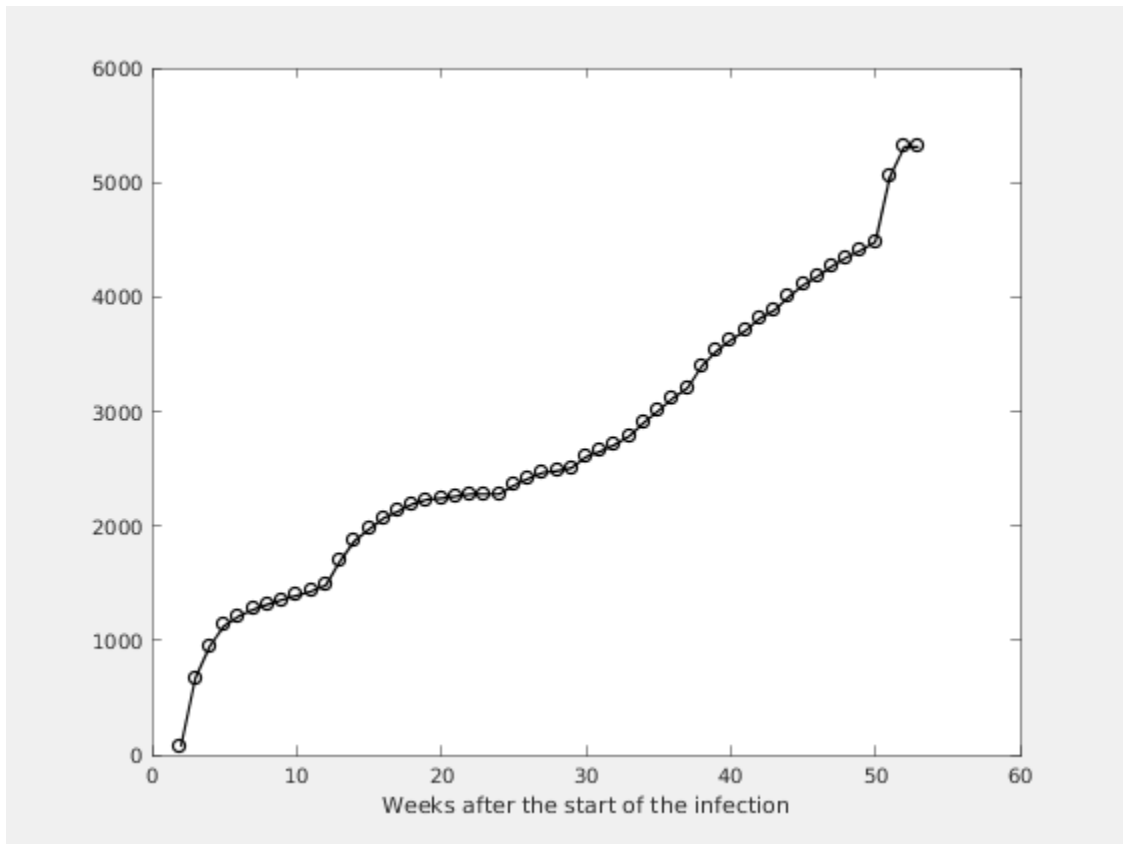
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# Chapter 1. Observed Infection data

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

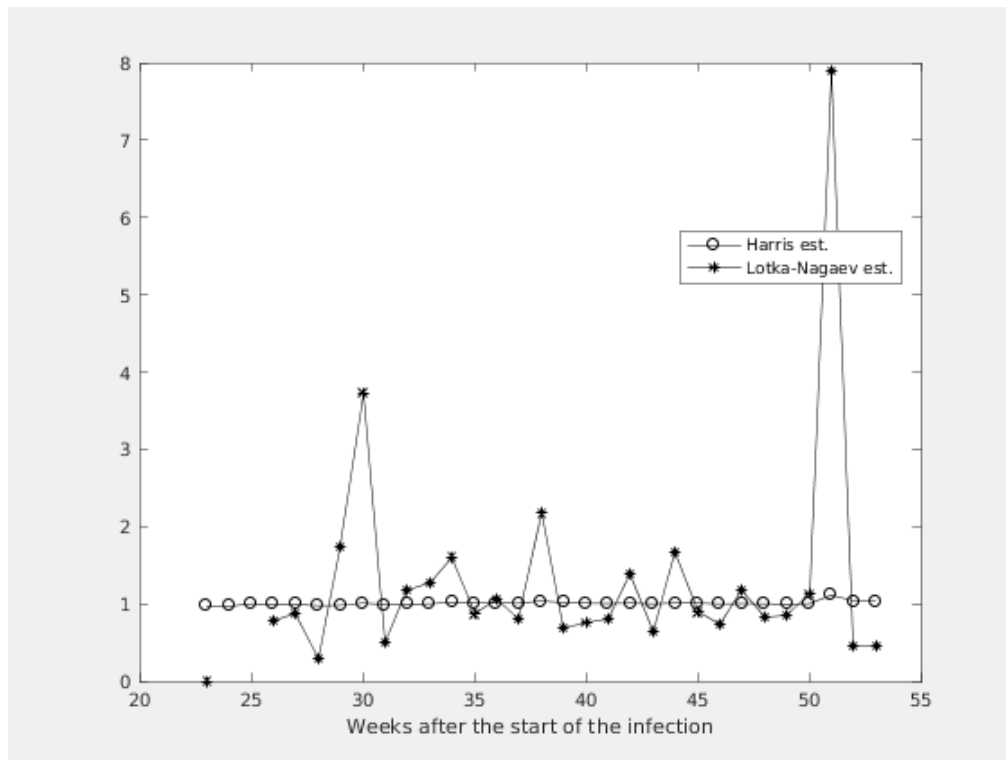
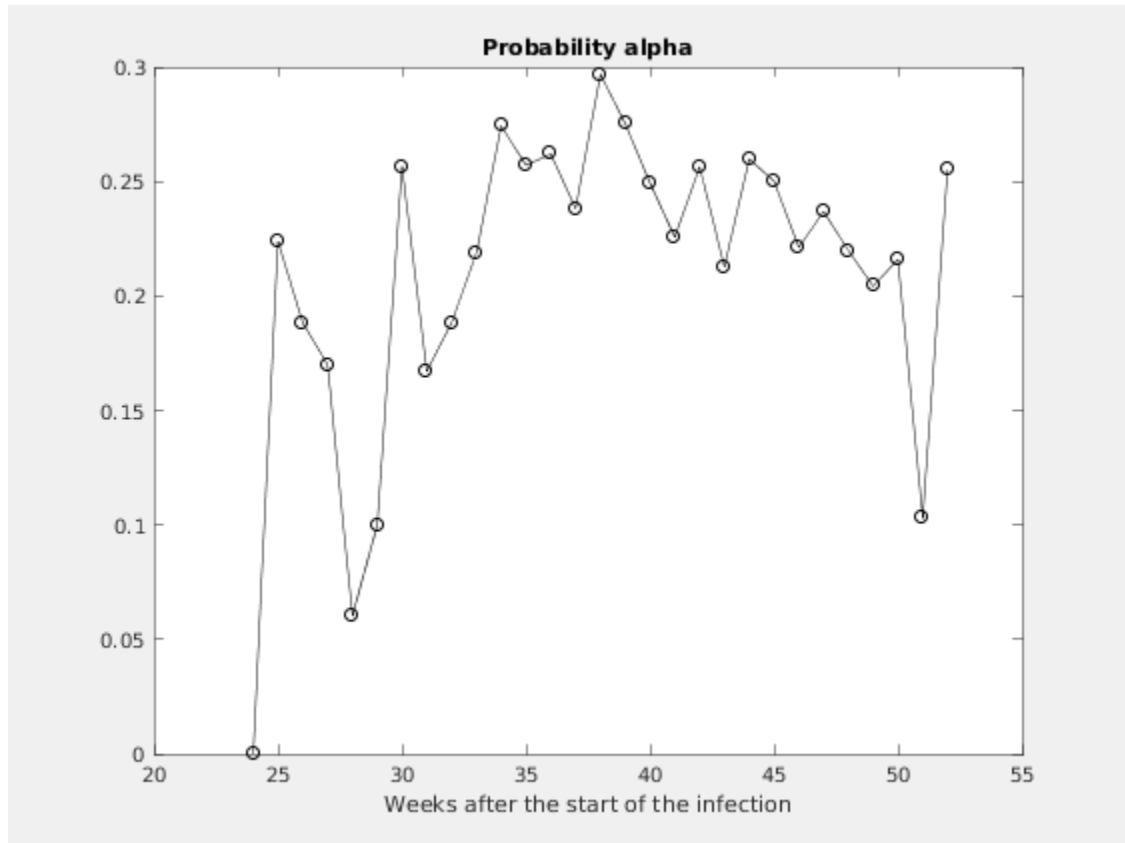
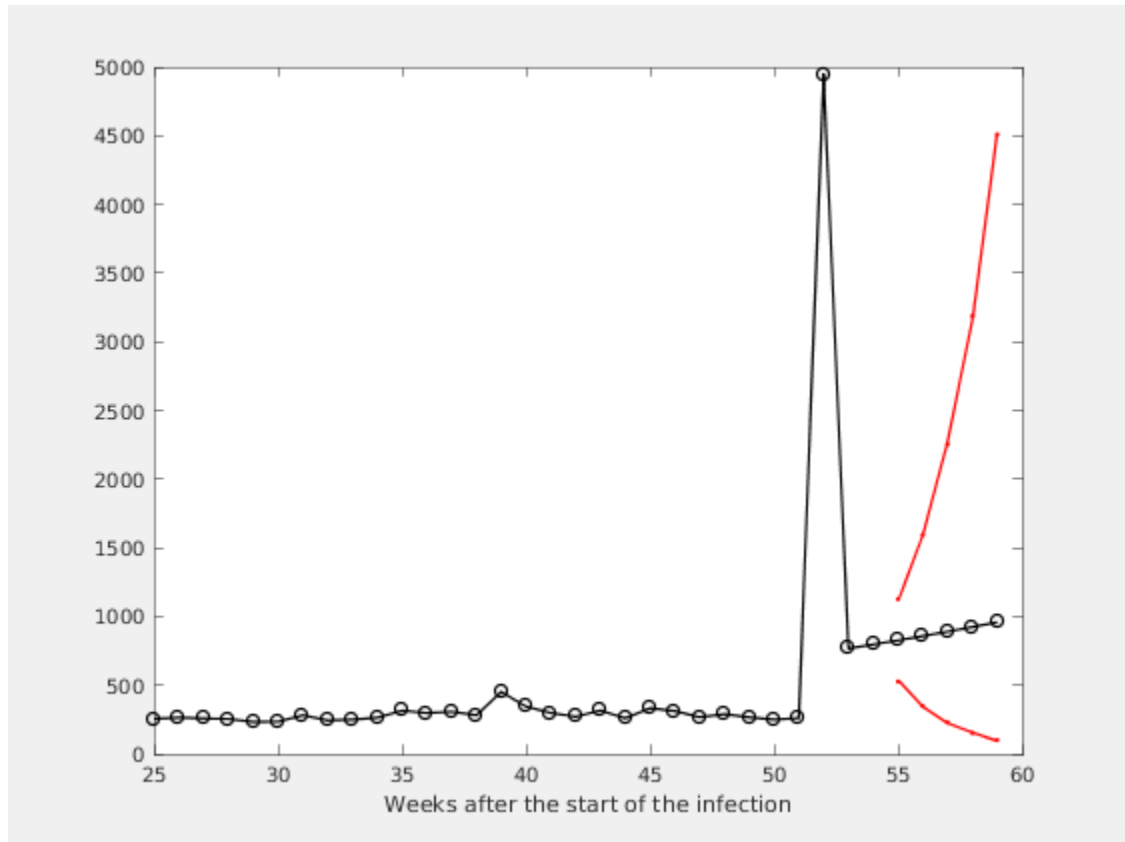


Figure 2.2. Figure

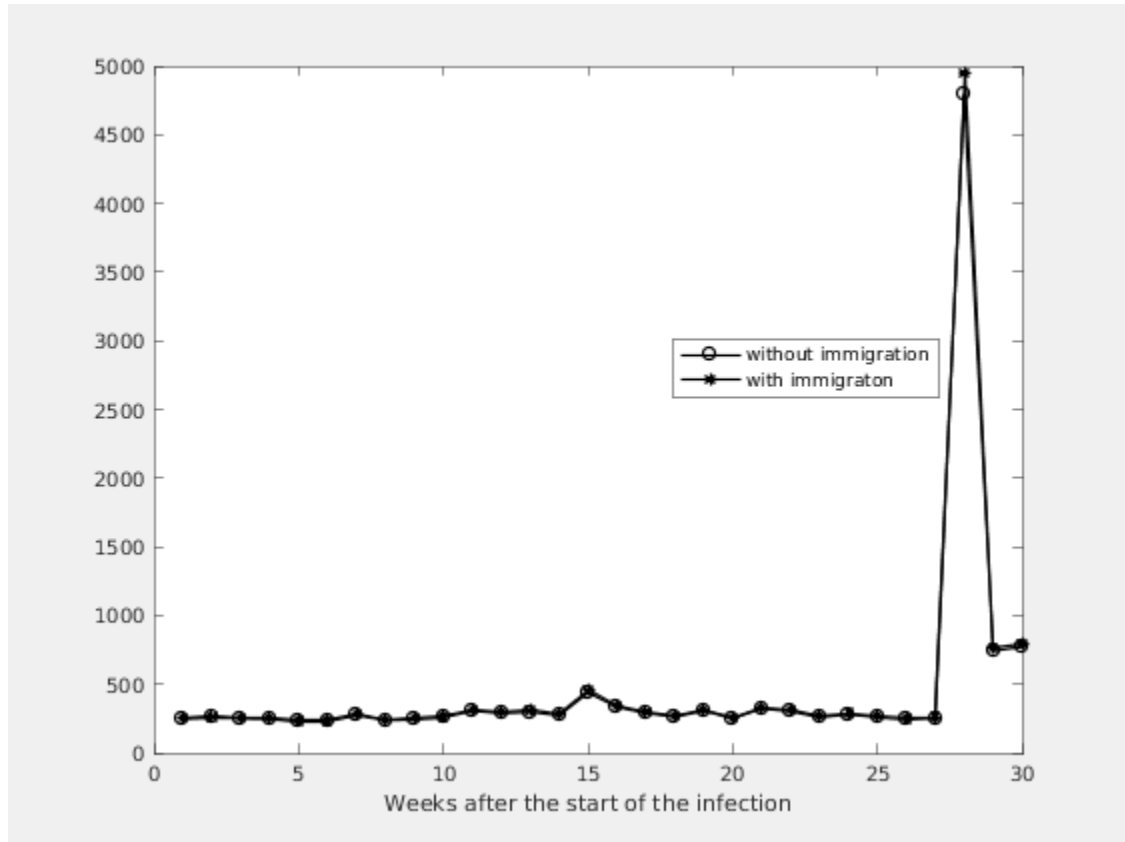




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

k	m	ci	alpha	A1	M1
4	0.9979	0.6591 - 1.3368	0.2369	290	281
3	0.9998	0.6683 - 1.3313	0.2199	266	258
2	1.1105	0.7838 - 1.4372	0.2043	249	241
1	1.0376	0.7183 - 1.3570	0.2160	261	253
0	1.0376	0.6378 - 1.4375	0.1030	4947	4789