

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

**Czechia - 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 Czechia. 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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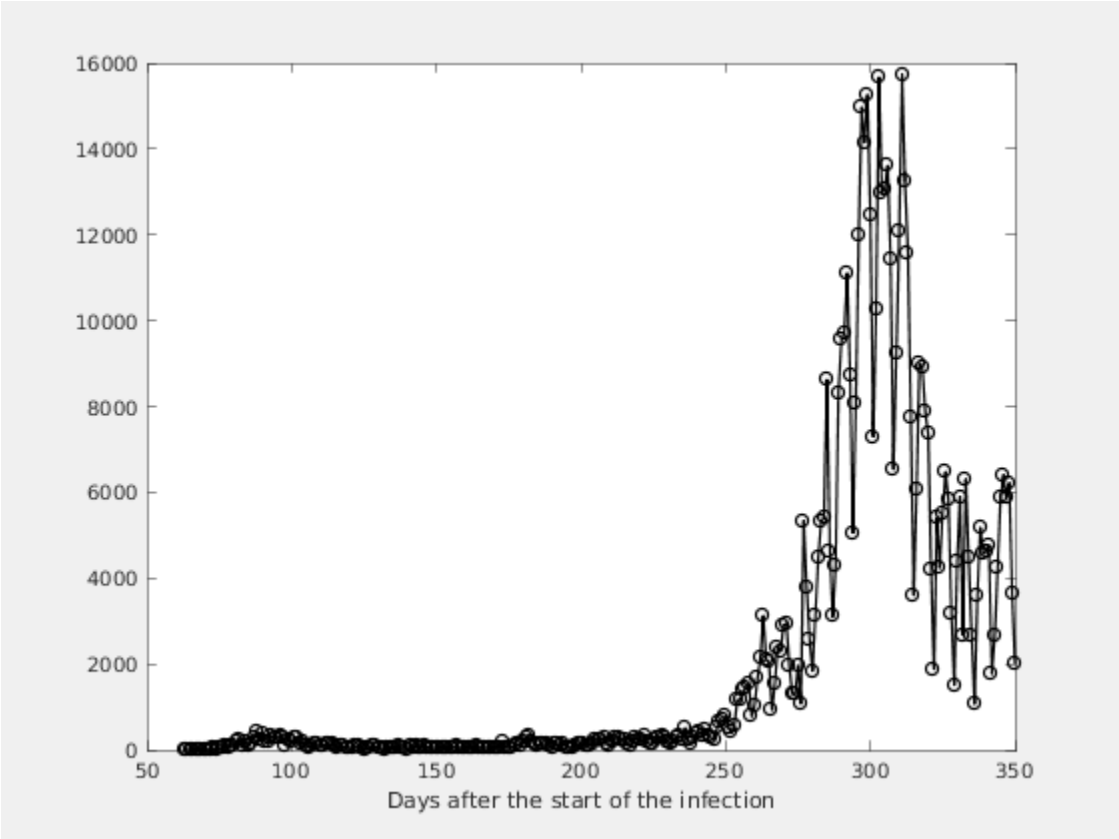
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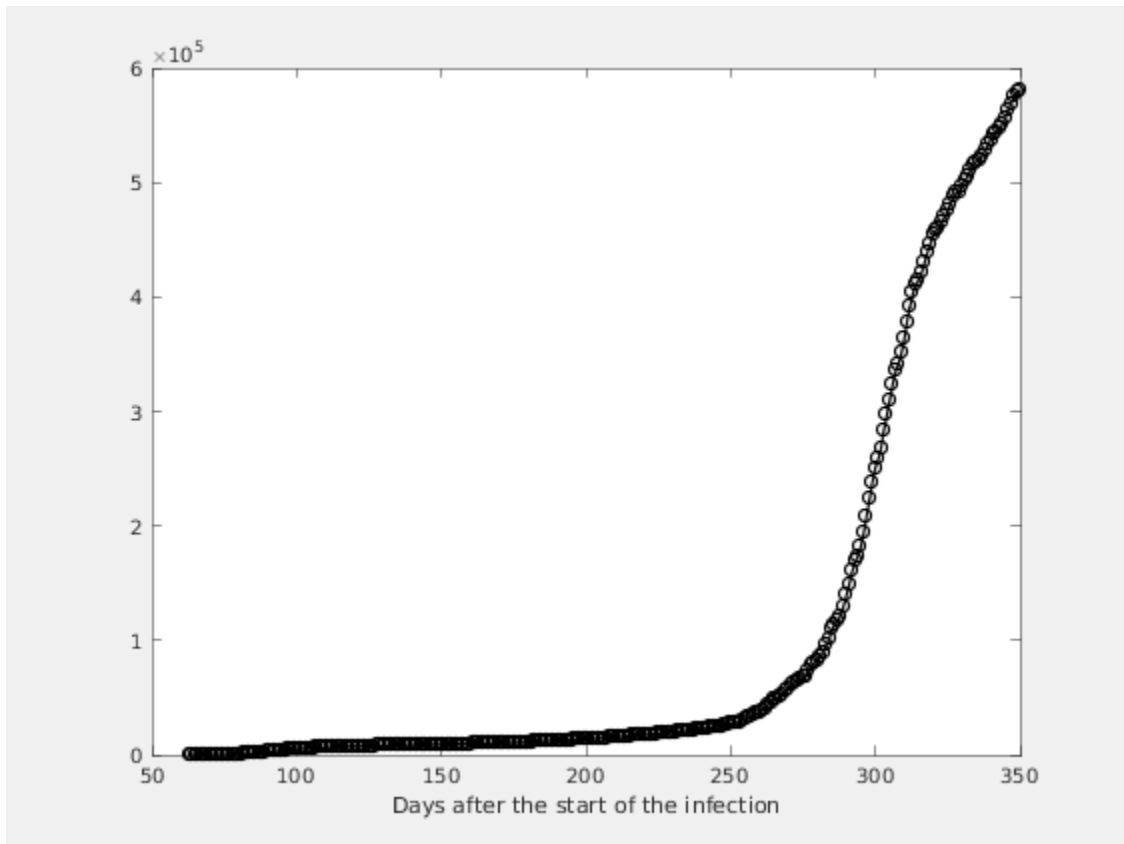
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# Chapter 1. Observed Infection data

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



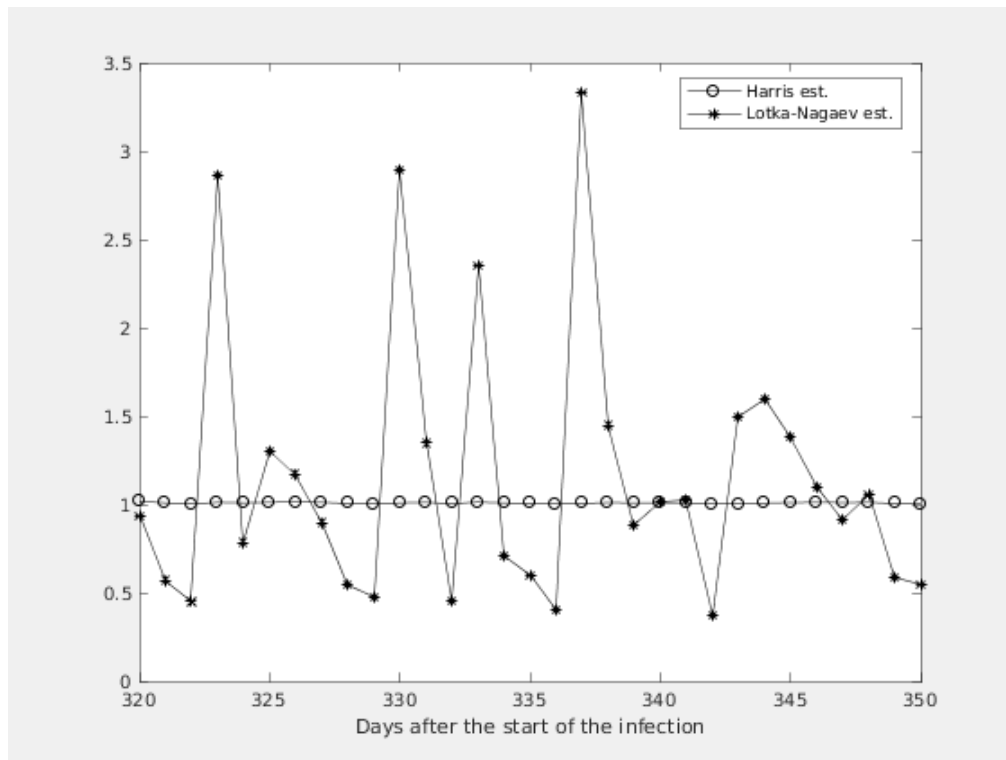
**Figure 1.2. Number of the total registered cases**



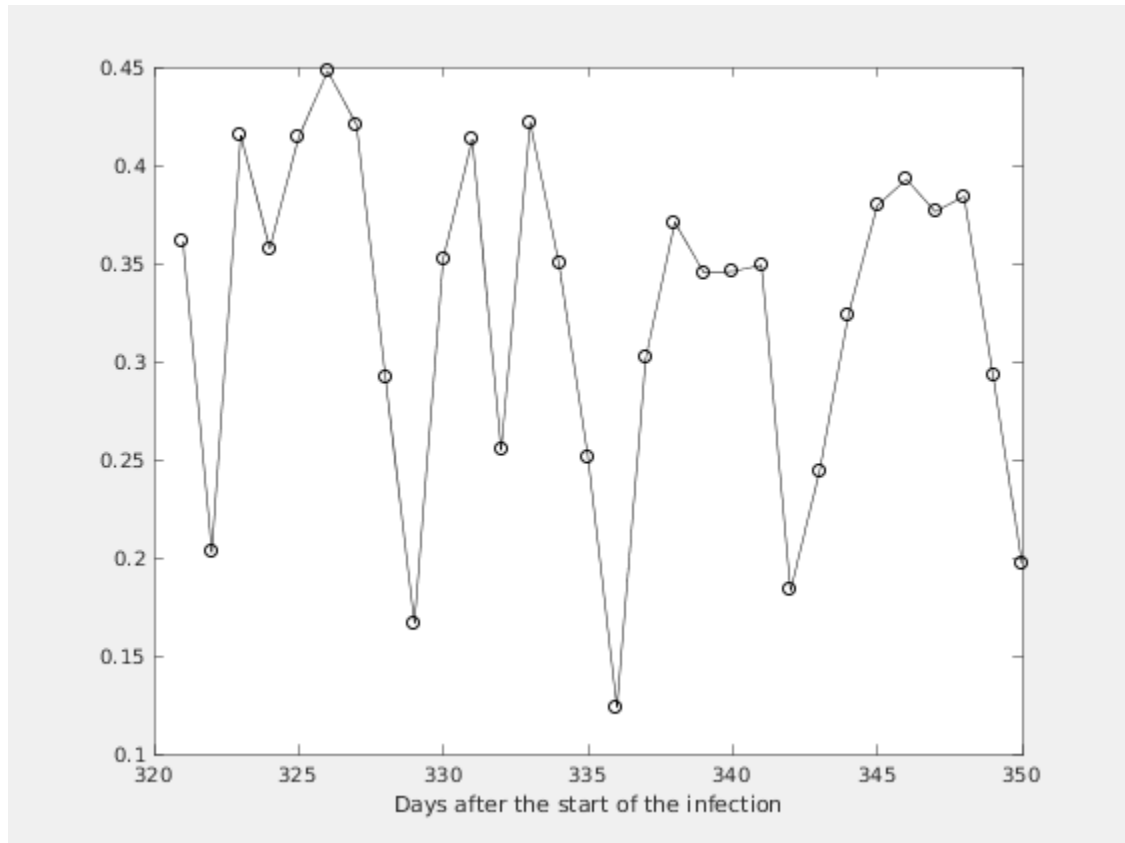
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# Chapter 2. Estimating of the main parameter and some predictions

Figure 2.1. The Lotka-Nagaev and the Harris type estimator of the growth rate

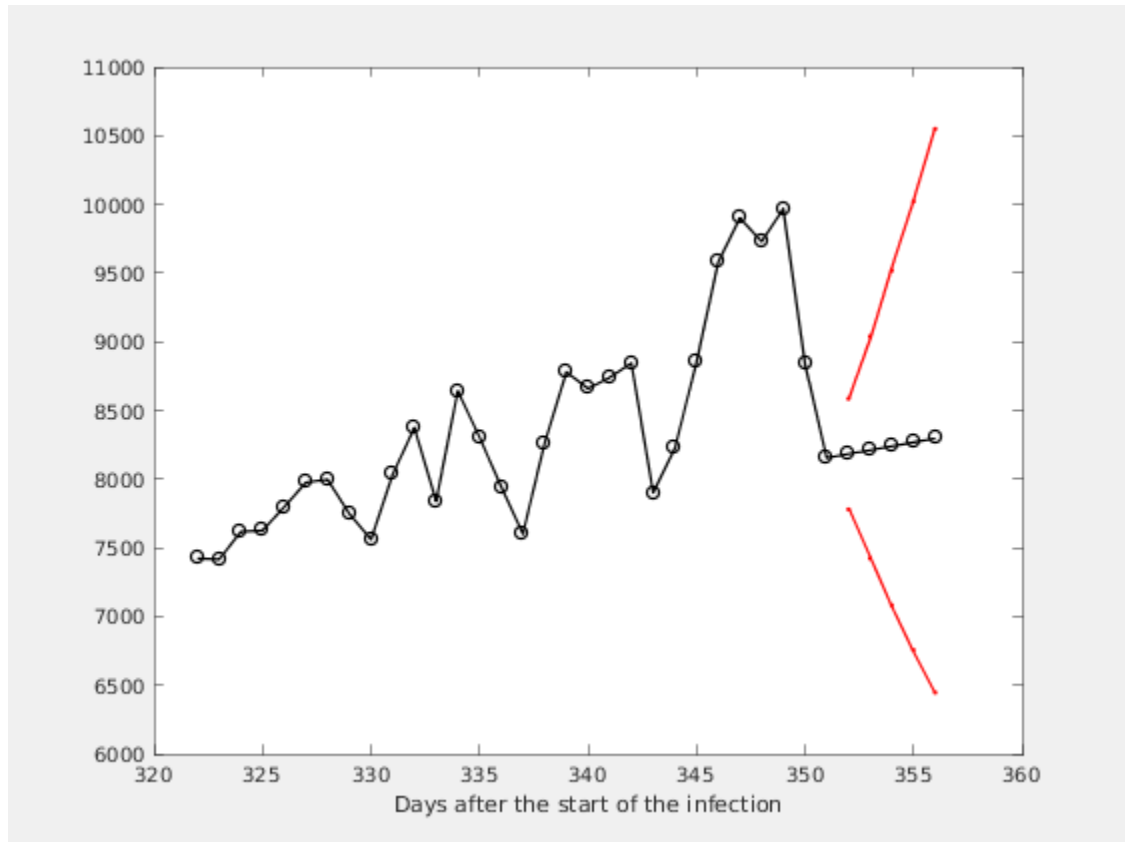


**Figure 2.2. Figure**

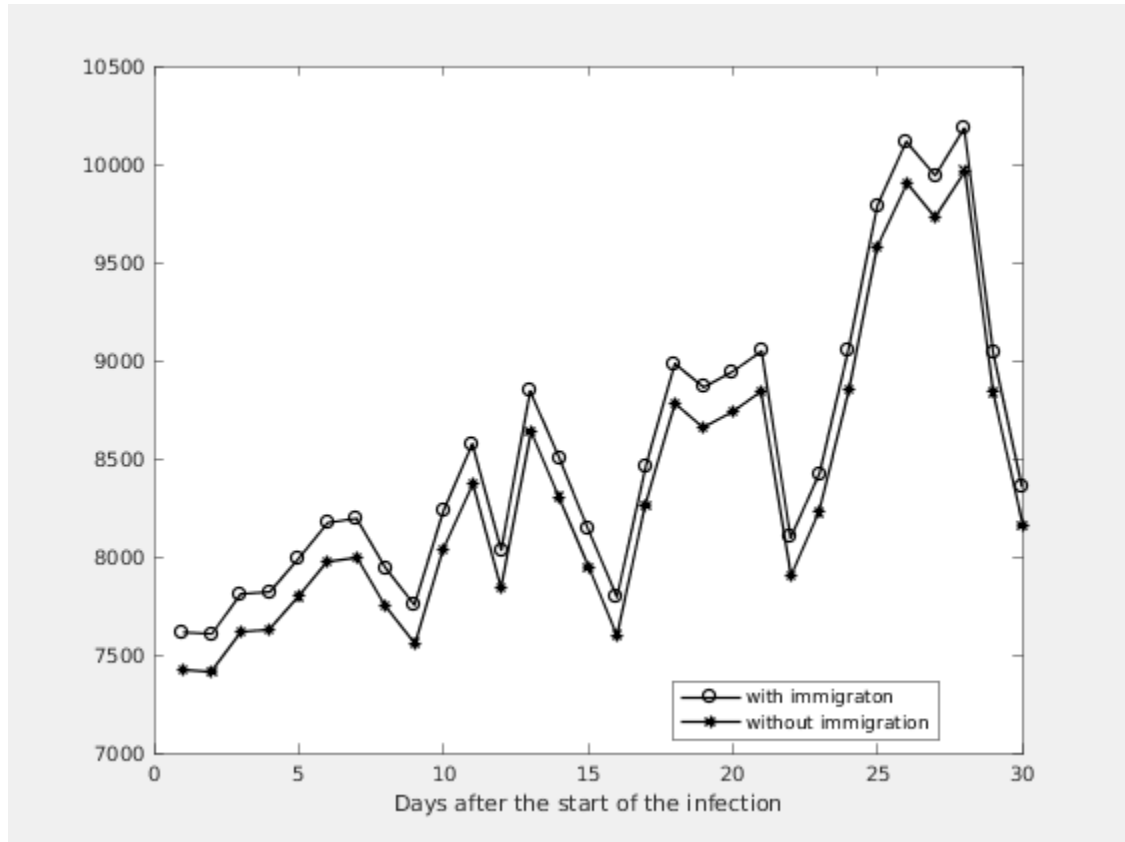




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

k	m	ci	alpha	M1	A1
4	1.0115	0.9607 - 1.0622	0.3237	8851	9055
3	1.0104	0.9598 - 1.0610	0.3794	9579	9790
2	1.0109	0.9607 - 1.0612	0.3928	9901	10115
1	1.0064	0.9564 - 1.0563	0.3764	9730	9943
0	1.0034	0.9539 - 1.0530	0.3841	9968	10183