

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

**Italy - 20201214**

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

### **Abstract**

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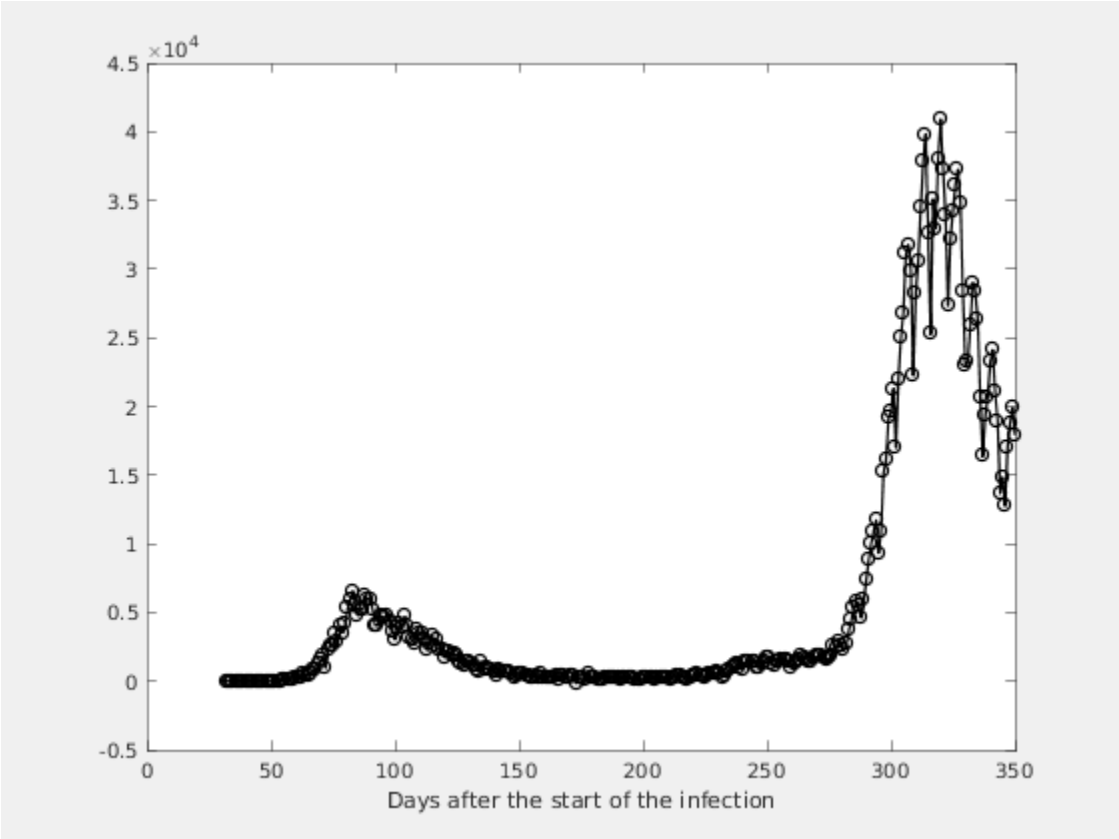
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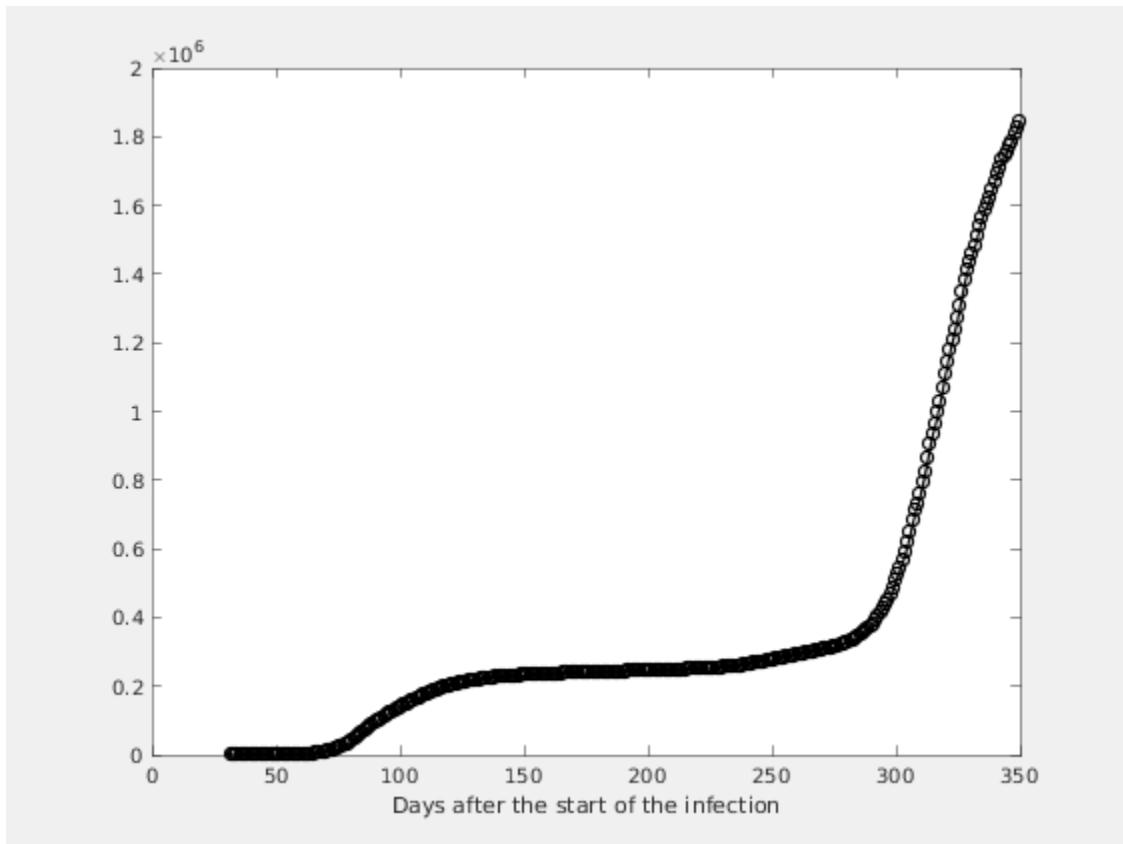
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# Chapter 1. Observed Infection data

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



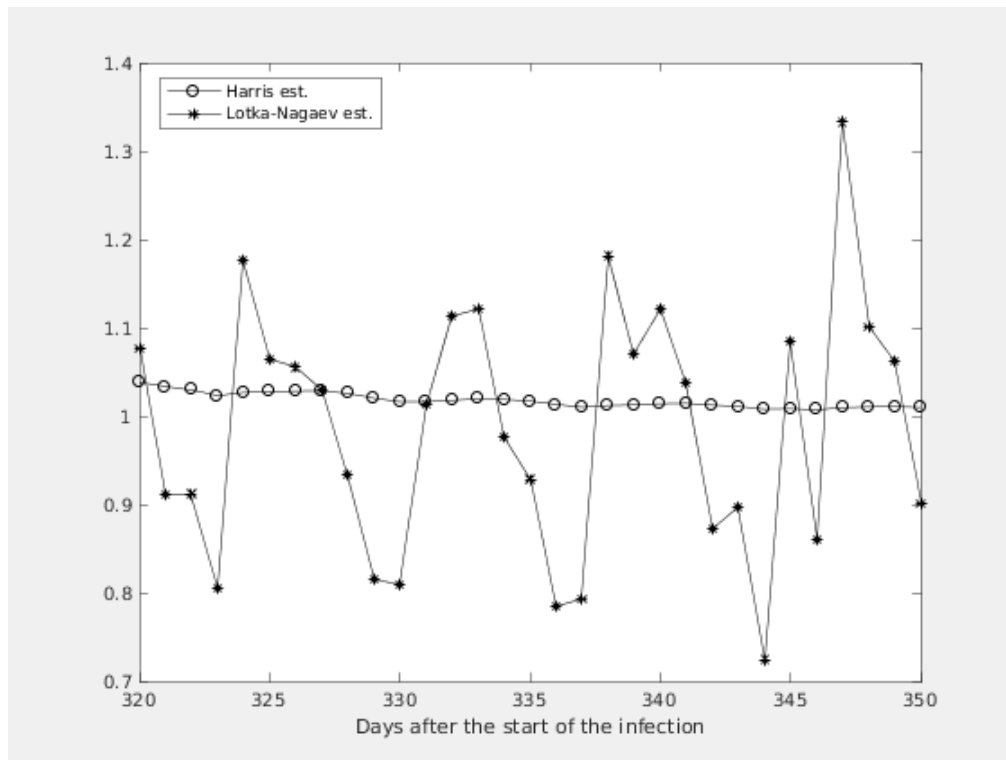
**Figure 1.2. Number of the total registered cases**



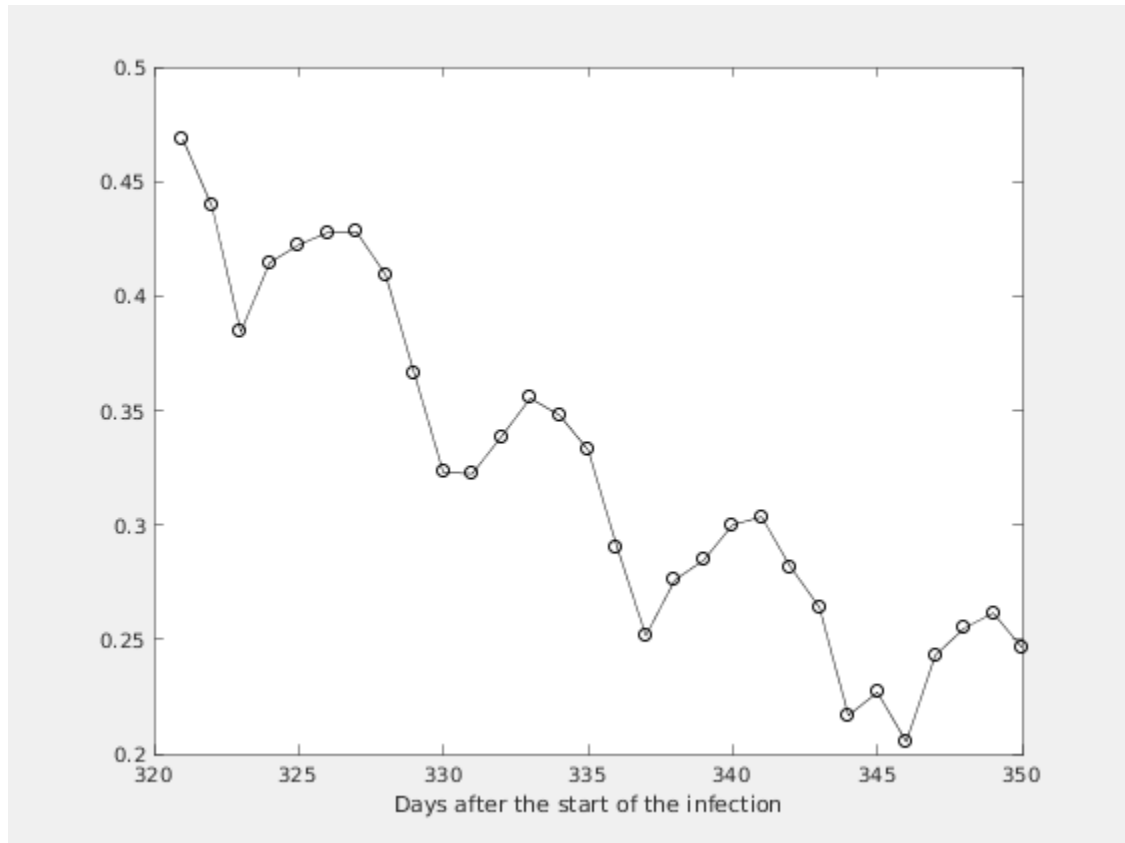
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# Chapter 2. Estimating of the main parameter and some predictions

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

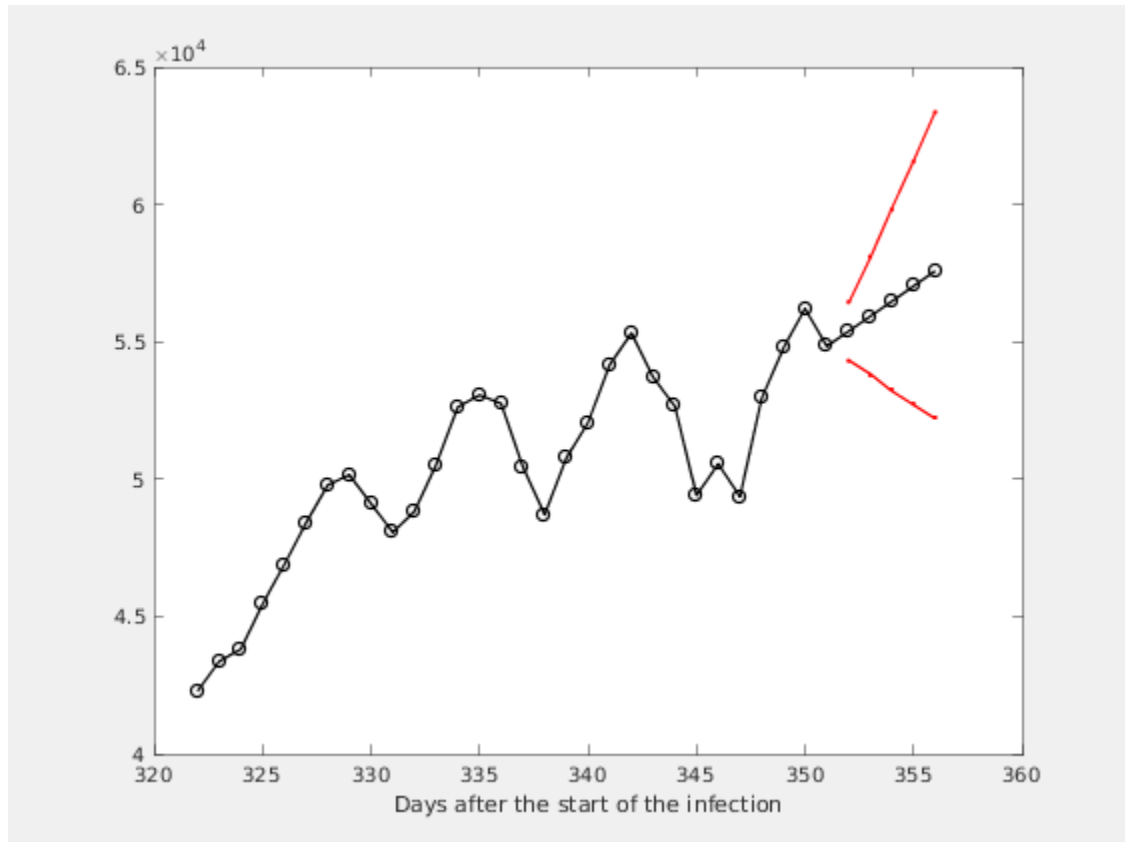


**Figure 2.2. Figure**

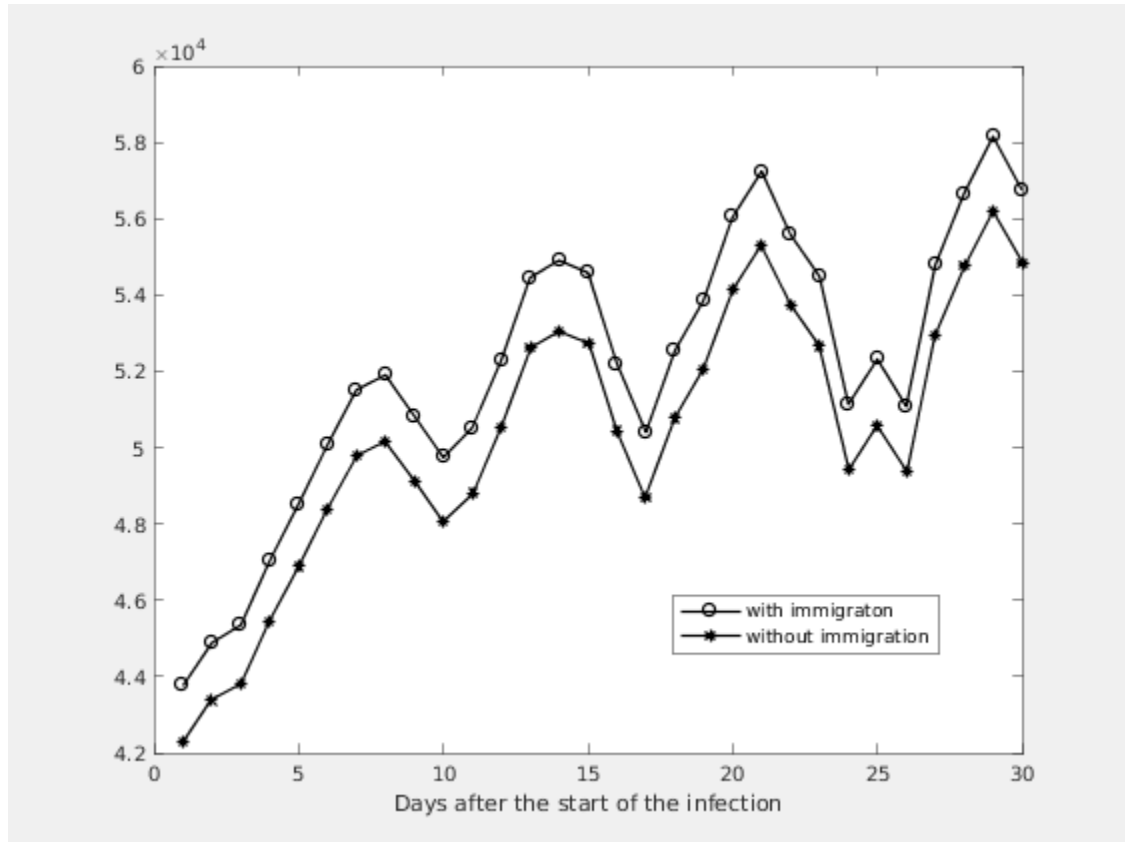




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

k	m	ci	alpha	M1	A1
4	1.0073	0.9874 - 1.0271	0.2168	49416	51139
3	1.0096	0.9899 - 1.0293	0.2269	50557	52318
2	1.0105	0.9908 - 1.0301	0.2053	49361	51082
1	1.0110	0.9912 - 1.0308	0.2430	52940	54782
0	1.0098	0.9901 - 1.0295	0.2548	54762	56664