

Branching stochastic processes as models of Covid-19 epidemic development

Italy - week 53

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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 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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Chapter 1. Observed Infection data

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

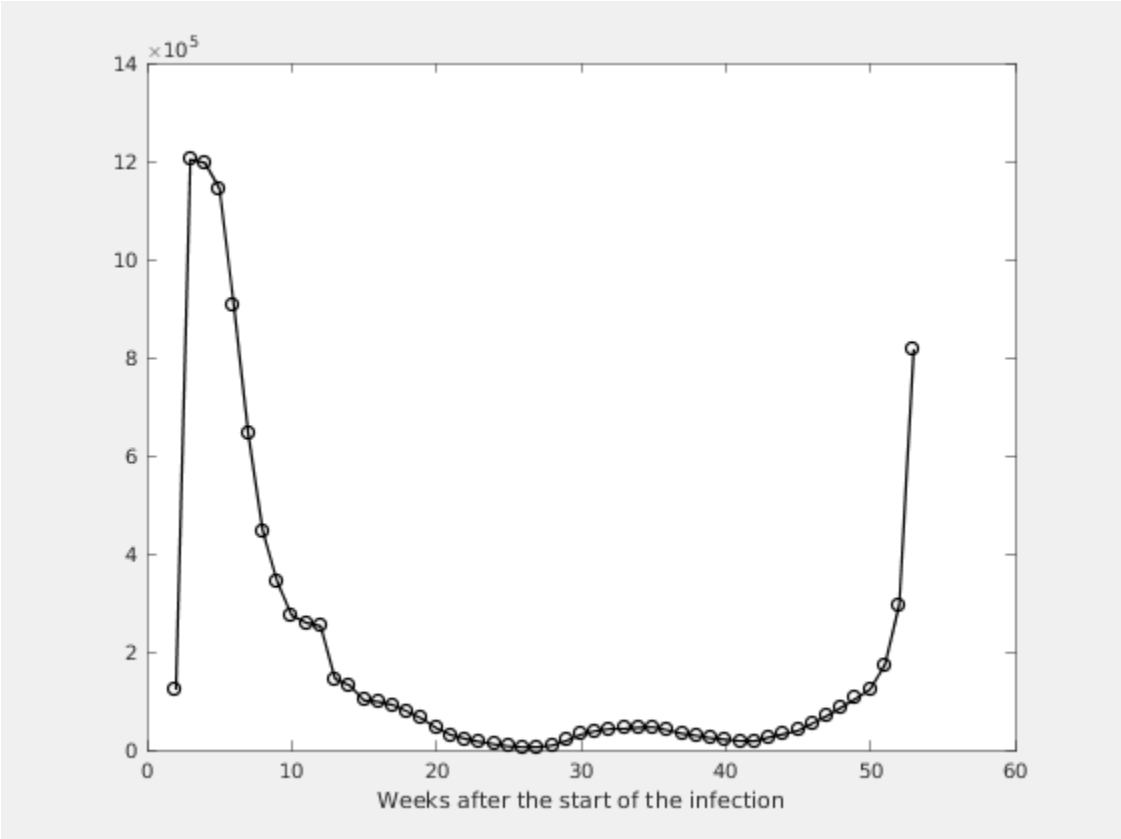
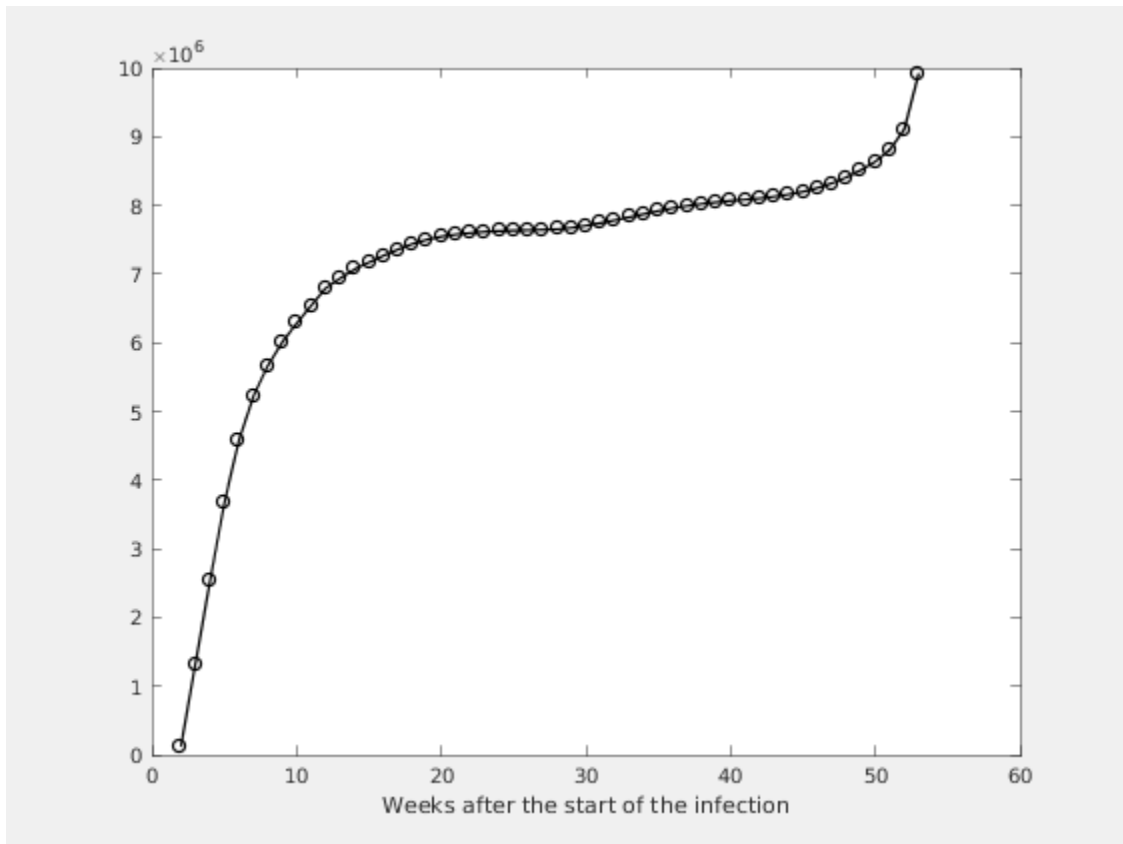


Figure 1.2. Number of the total registered cases



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

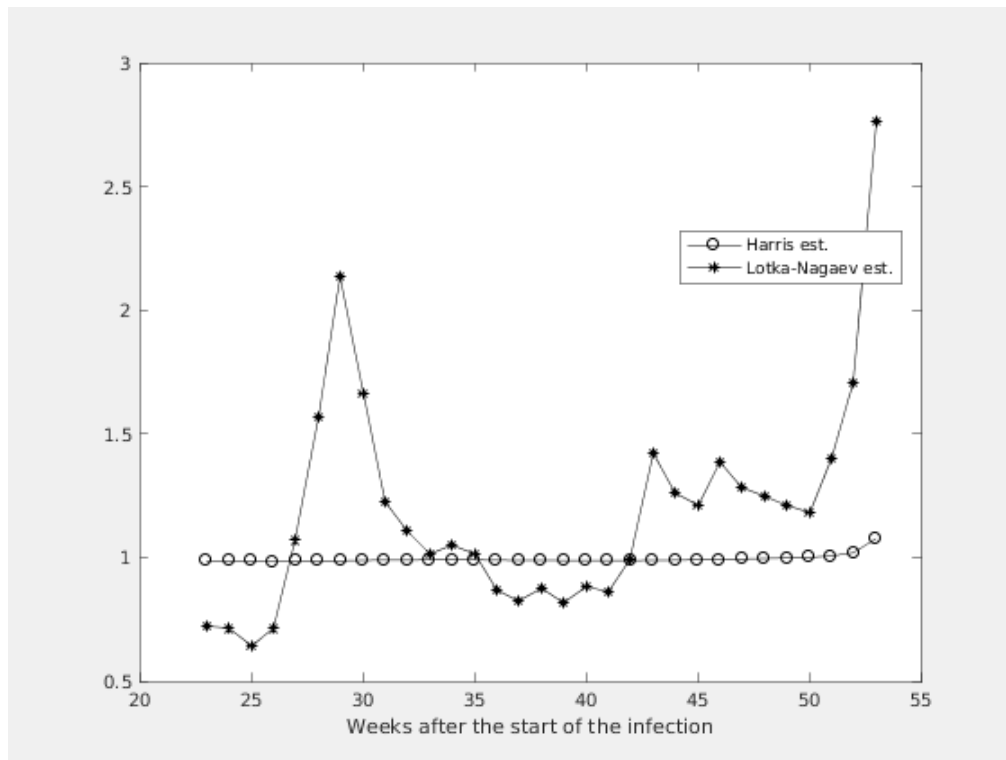


Figure 2.2. Figure

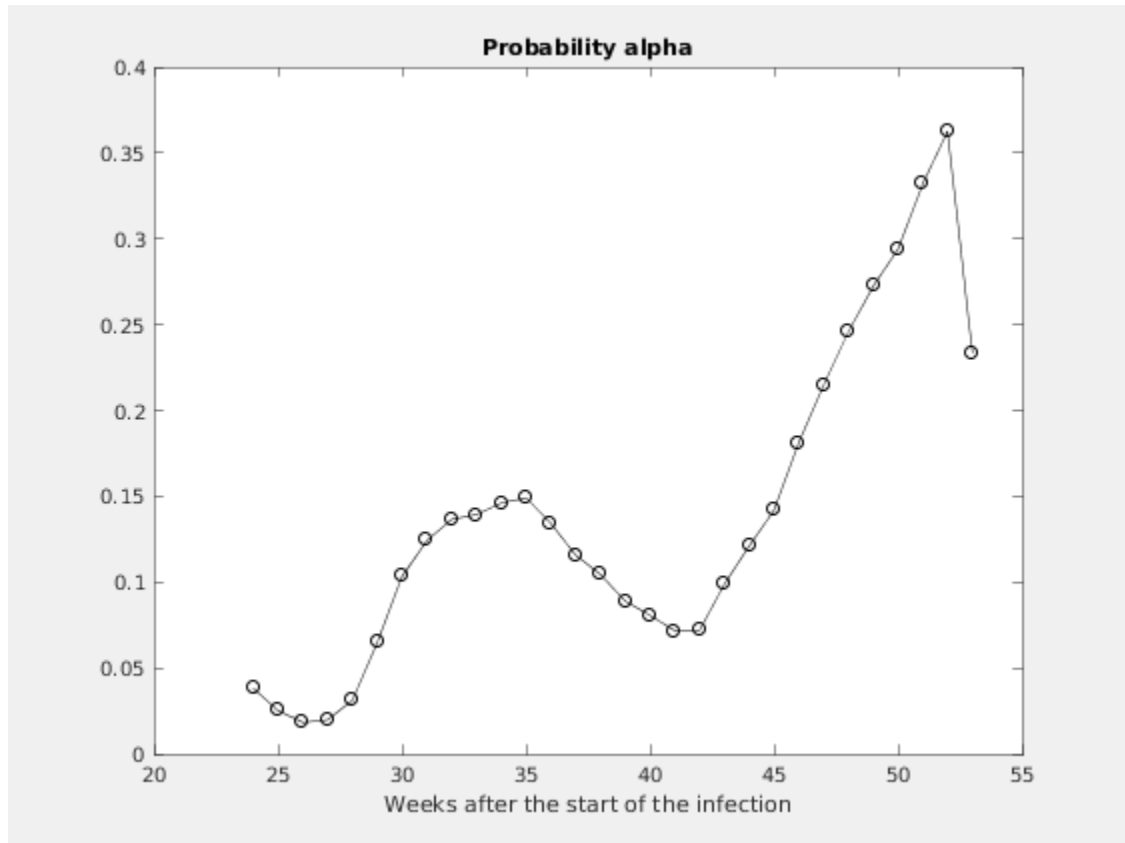


Figure 2.3. Expected number of the nonregistered infected individuals without immigration

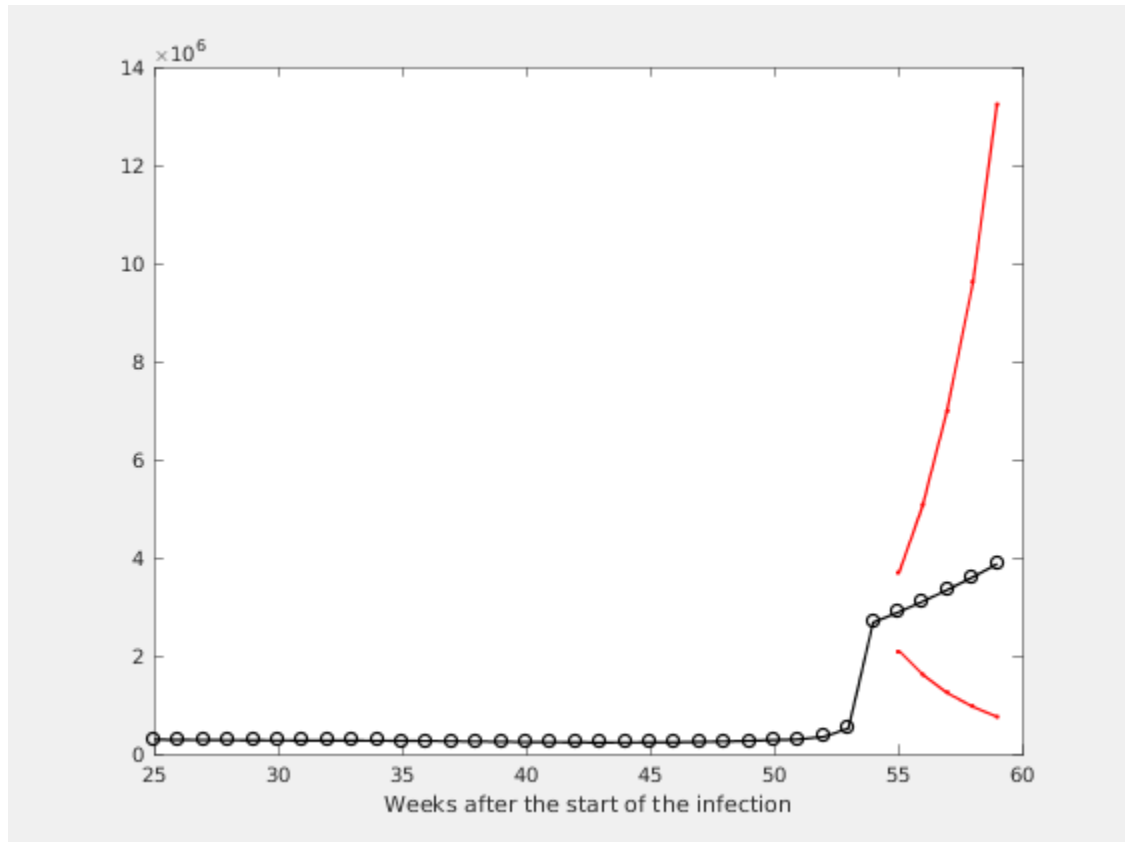
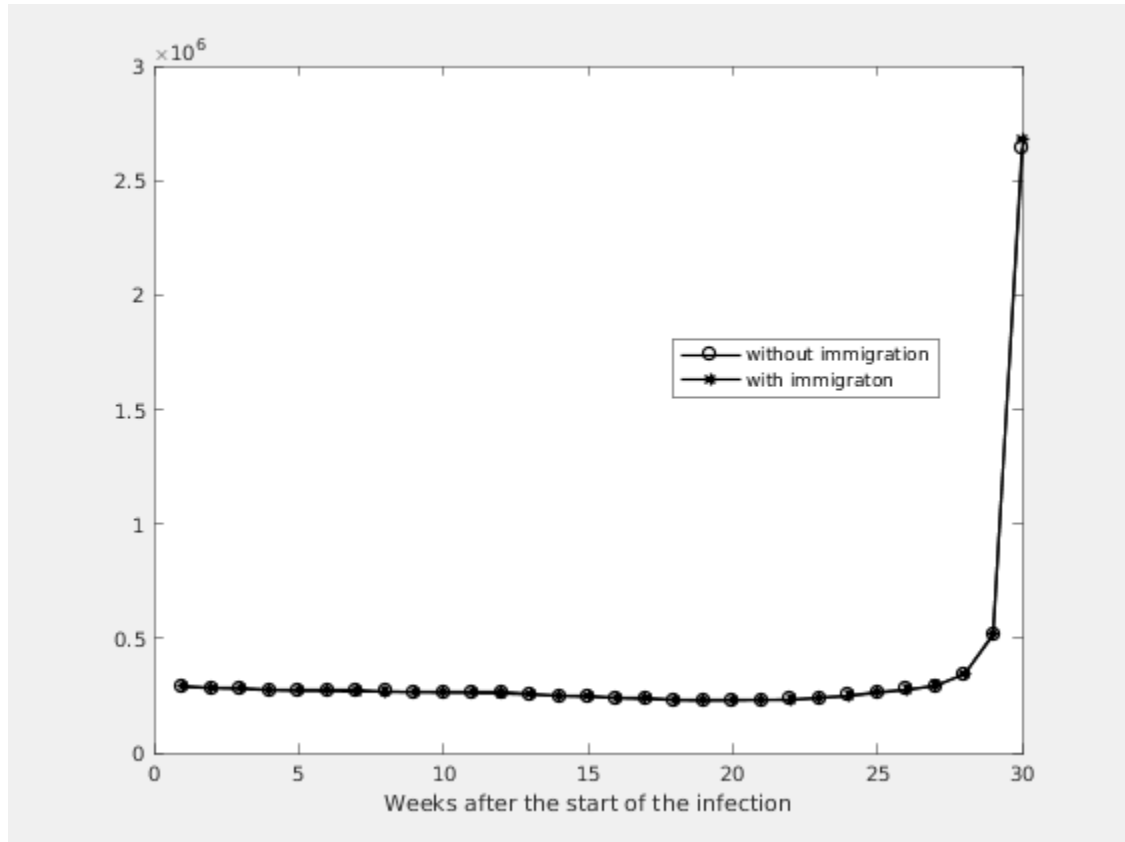


Figure 2.4. Expected number of the nonregistered infected individuals with immigration



Estimation of the model parameters.

k	m	ci	alpha	A1	M1
4	0.9979	0.6781 - 1.3177	0.2148	253140	249454
3	1.0001	0.6851 - 1.3152	0.2459	265299	261437
2	1.0059	0.6957 - 1.3160	0.2724	279883	275808
1	1.0197	0.7146 - 1.3248	0.2940	296618	292299
0	1.0763	0.7756 - 1.3770	0.3321	348374	343302