

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

**Libya - 20201214**

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

### **Abstract**

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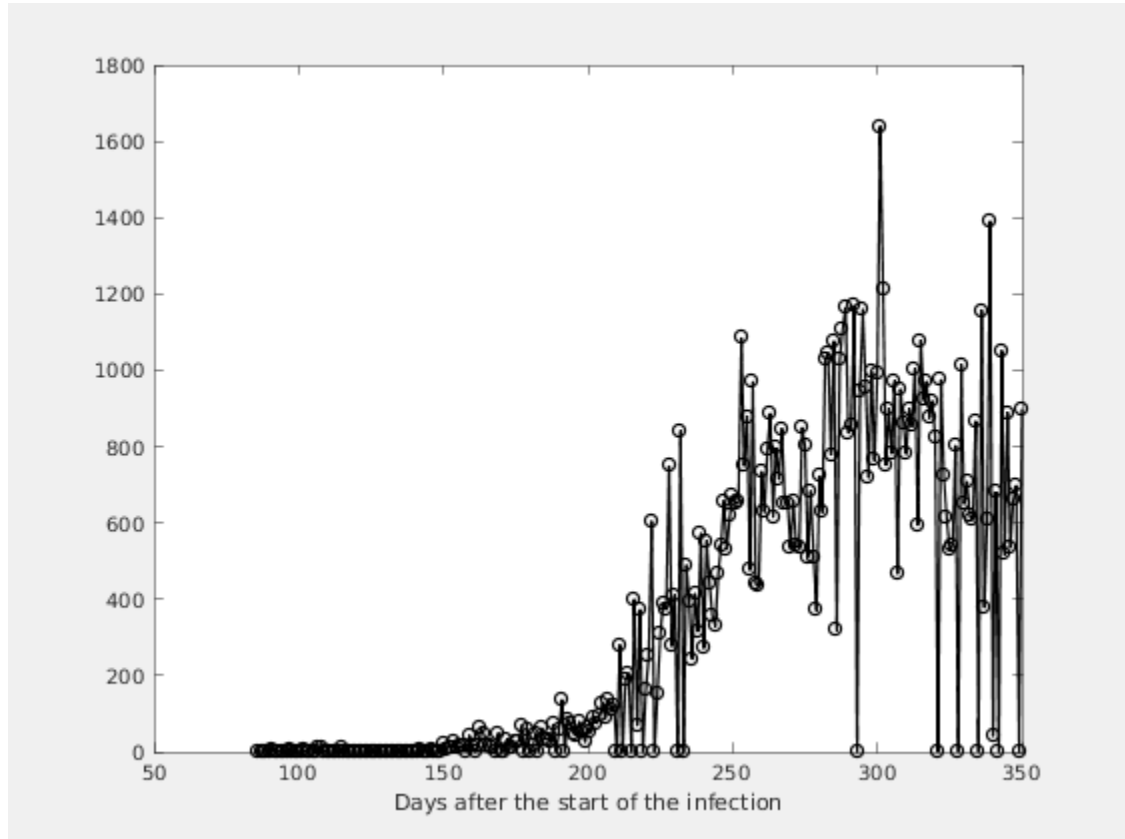
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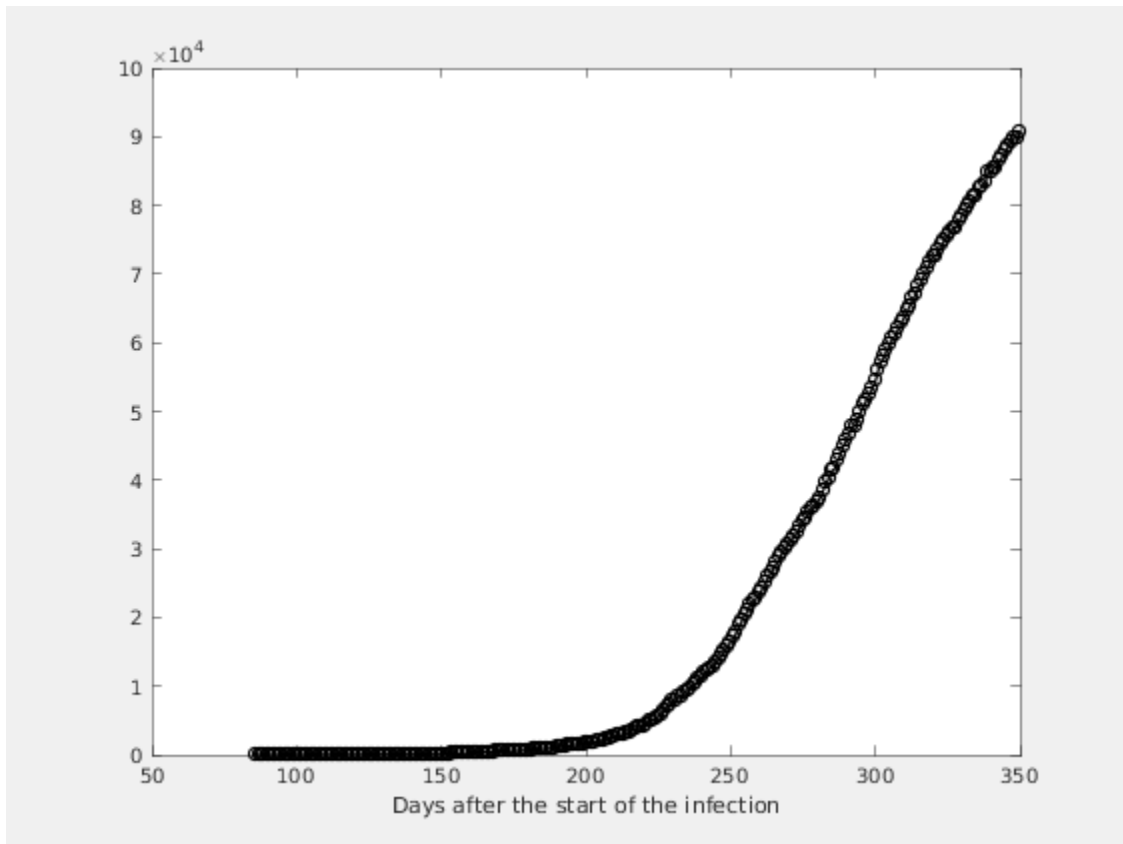
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# Chapter 1. Observed Infection data

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

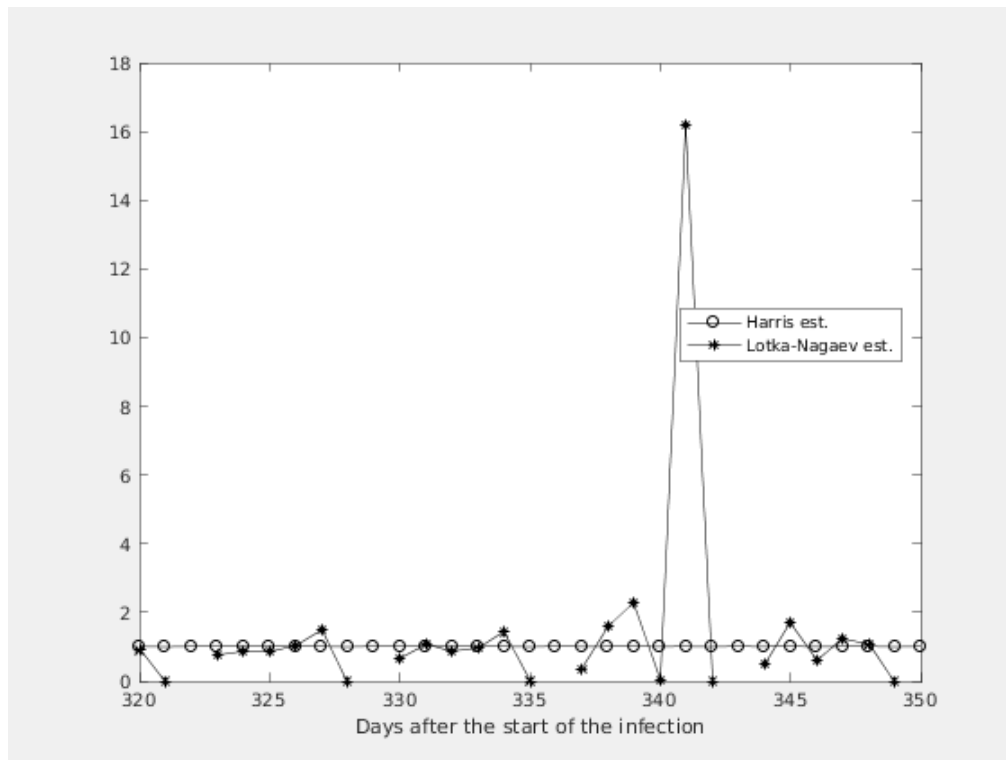
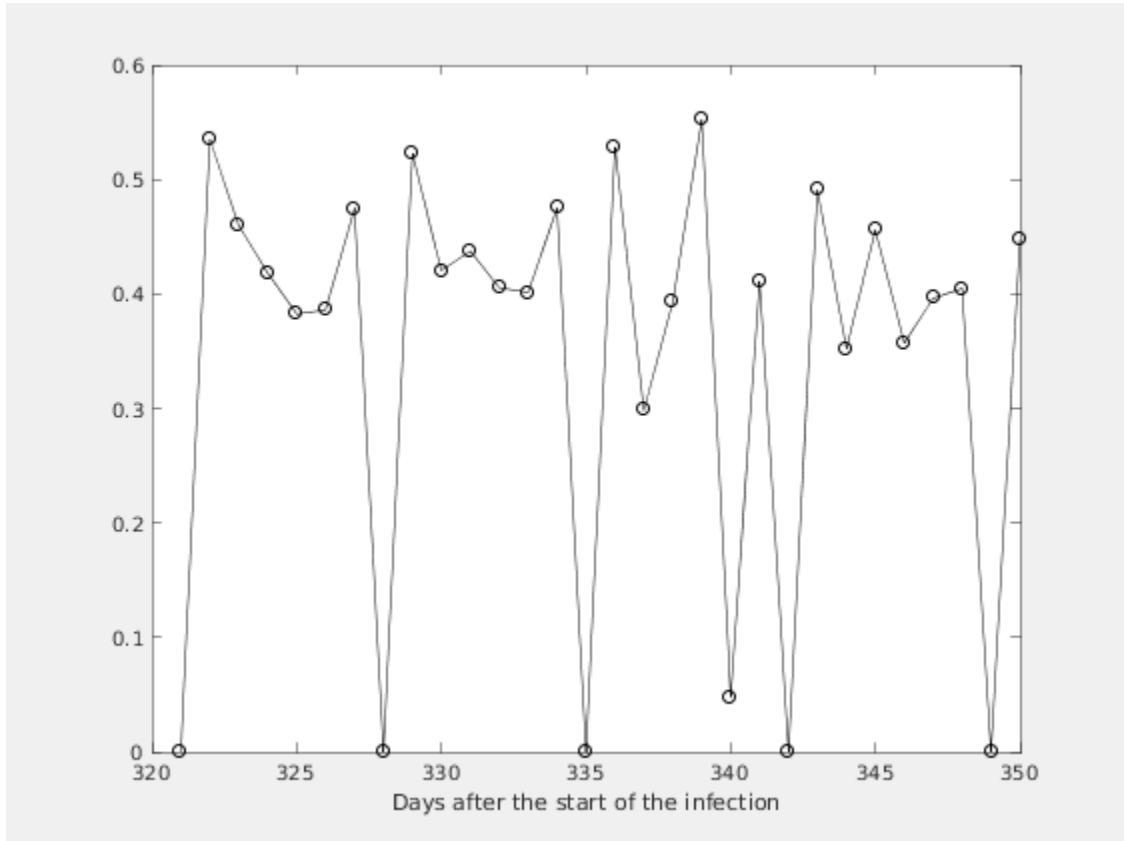
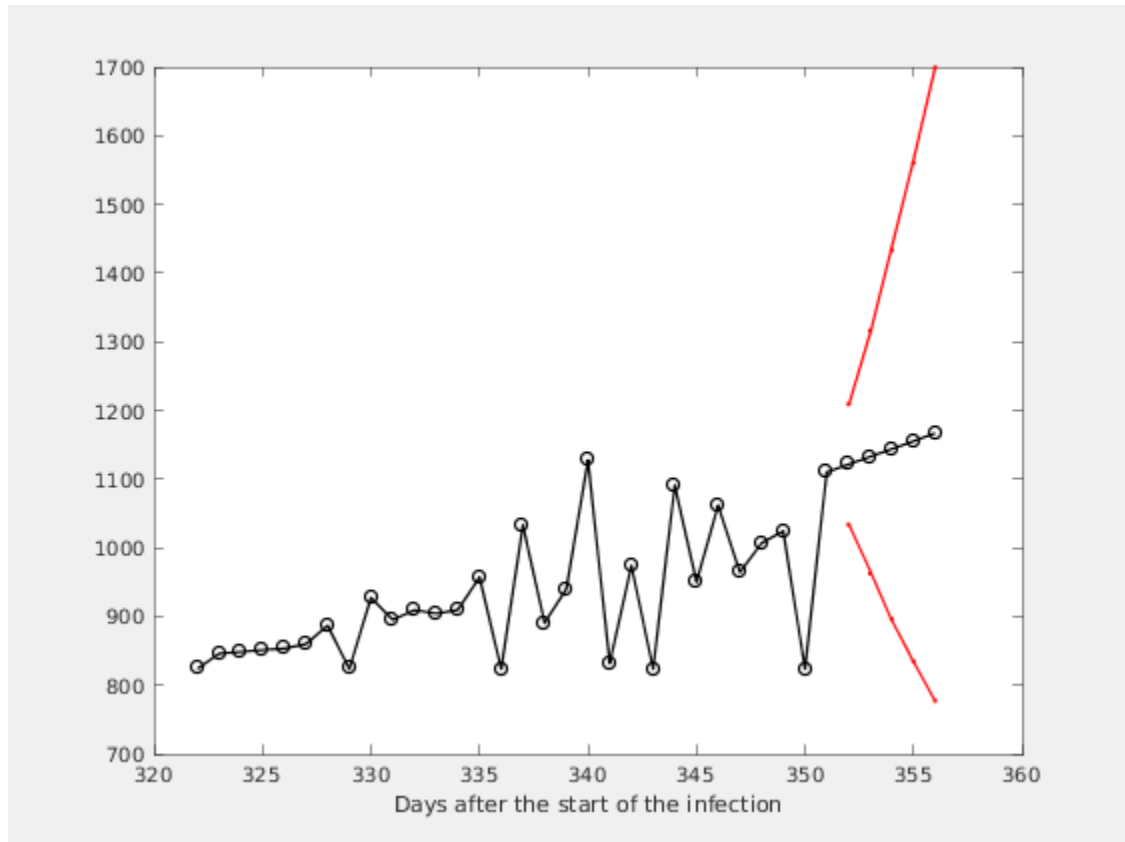


Figure 2.2. Figure

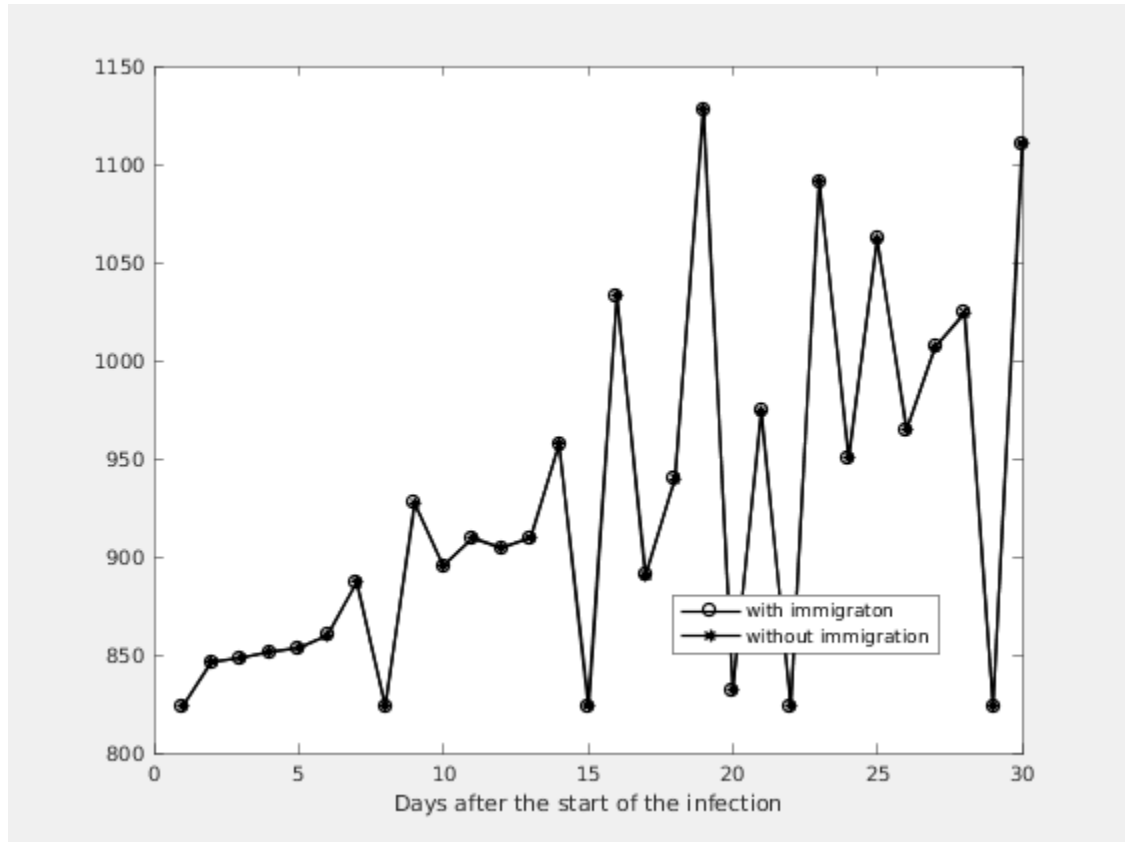




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

| k | m      | ci              | alpha  | M1   | A1   |
|---|--------|-----------------|--------|------|------|
| 4 | 1.0061 | 0.9254 - 1.0867 | 0.3523 | 950  | 950  |
| 3 | 1.0075 | 0.9269 - 1.0880 | 0.4557 | 1062 | 1062 |
| 2 | 1.0078 | 0.9277 - 1.0880 | 0.3572 | 965  | 965  |
| 1 | 1.0000 | 0.9202 - 1.0797 | 0.3963 | 1007 | 1007 |
| 0 | 1.0100 | 0.9307 - 1.0892 | 0.4049 | 1024 | 1024 |