

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

**Nicaragua - 20201214**

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

### **Abstract**

The results presented here are obtained using the methodology proposed in the paper <https://arxiv.org/abs/2004.14838> for the country Nicaragua. 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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## Table of Contents

|  |   |
|--|---|
| 1. Observed Infection data .....                               | 1 |
| 2. Estimating of the main parameter and some predictions ..... | 3 |

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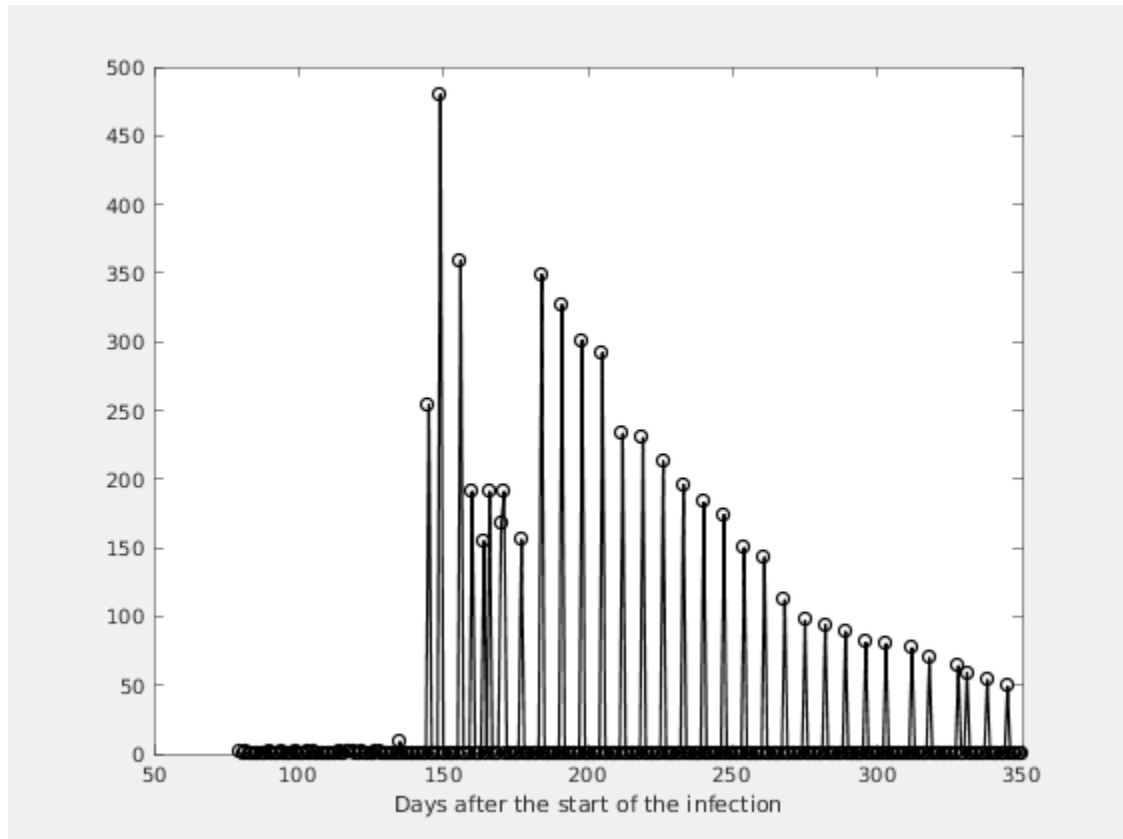
## List of Figures

|   |   |
|---|---|
| 1.1. Number of the daily reported laboratory-confirmed cases .....                            | 1 |
| 1.2. Number of the total registered cases .....   | 2 |
| 2.1. The Lotka-Nagaev and the Harris type estimator of the growth rate .....                  | 3 |
| 2.2. Figure .....   | 4 |
| 2.3. Expected number of the nonregistered infected individuals without immigra-<br>tion ..... | 5 |
| 2.4. Expected number of the nonregistered infected individuals with immigration .....         | 6 |

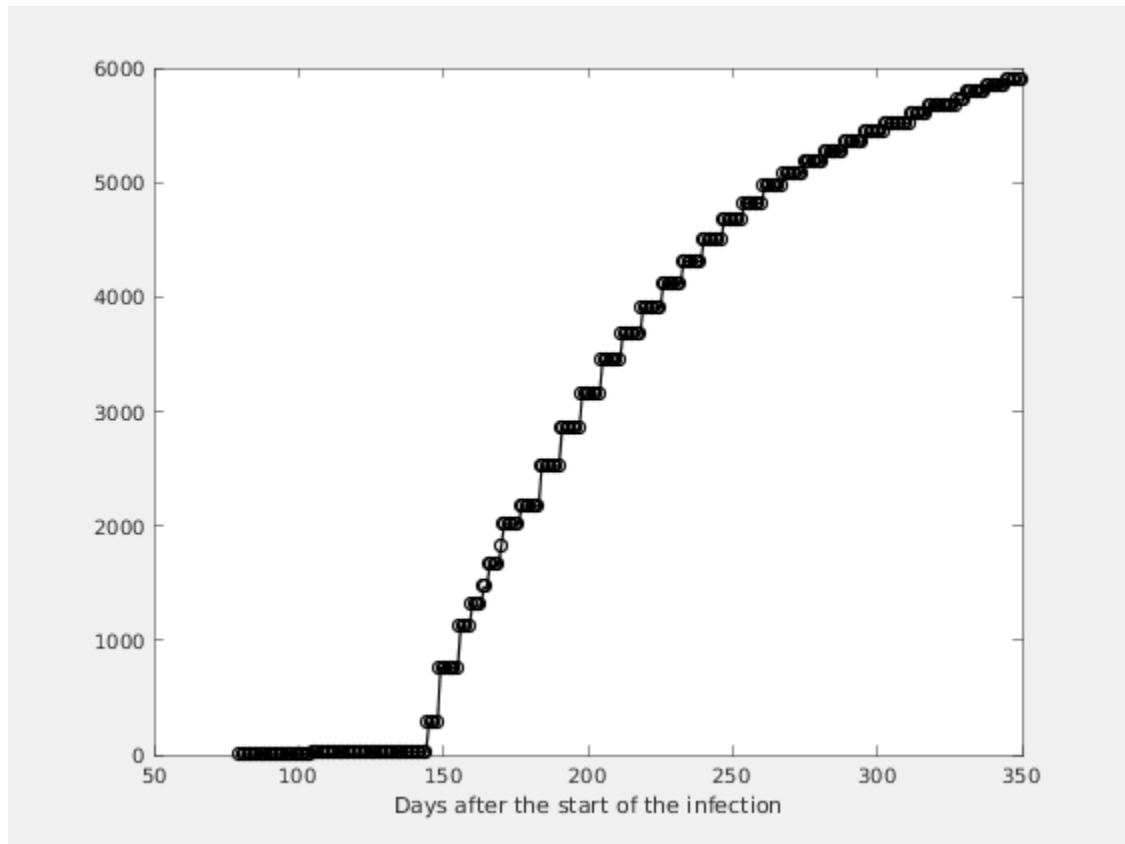
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# Chapter 1. Observed Infection data

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



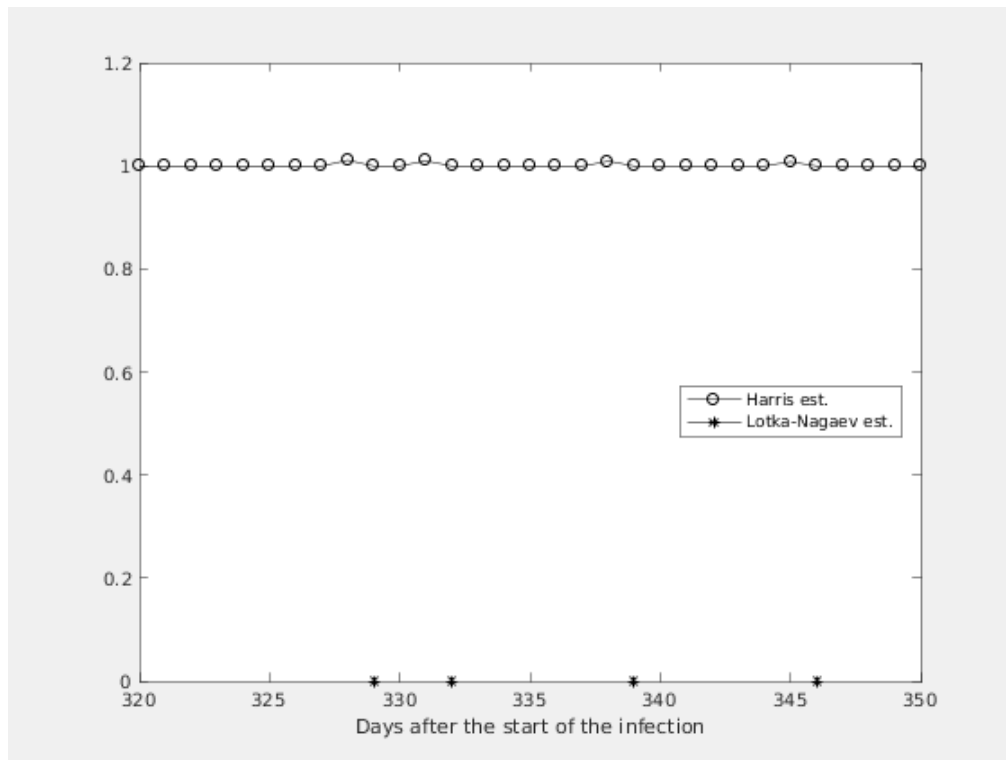
**Figure 1.2. Number of the total registered cases**



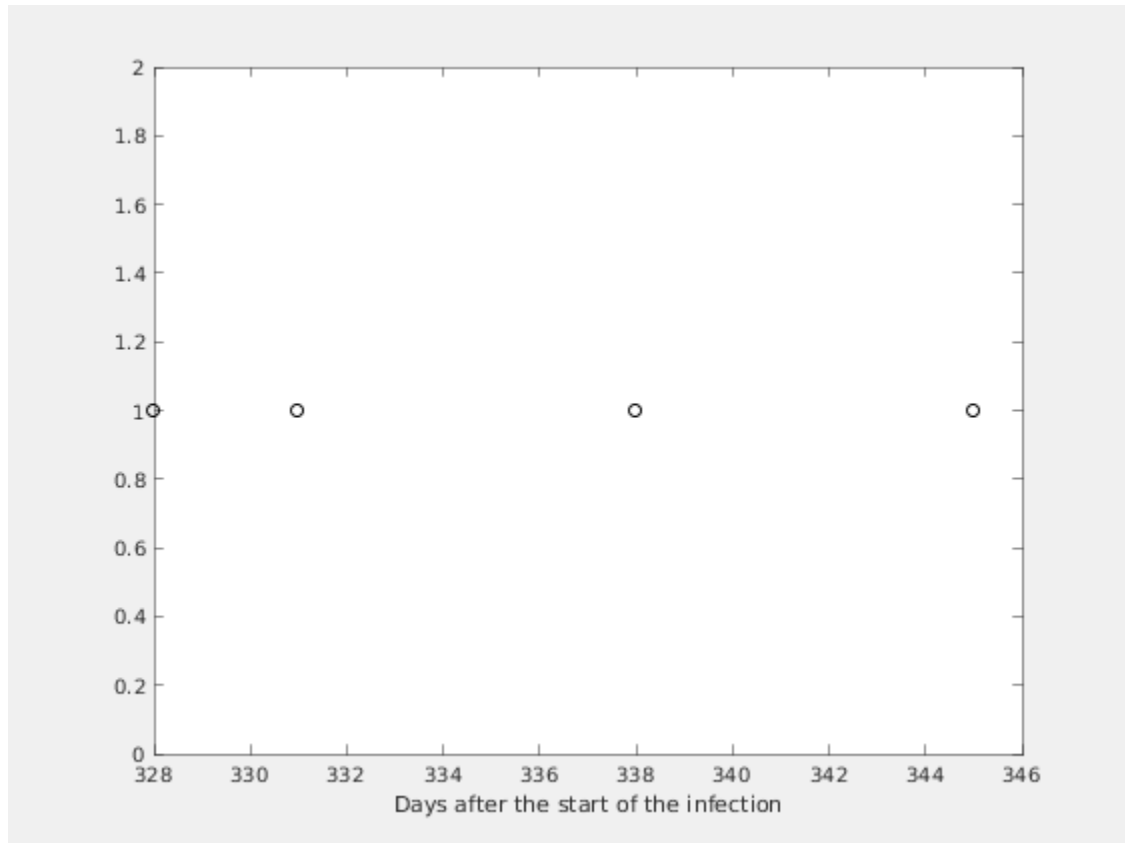
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# Chapter 2. Estimating of the main parameter and some predictions

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

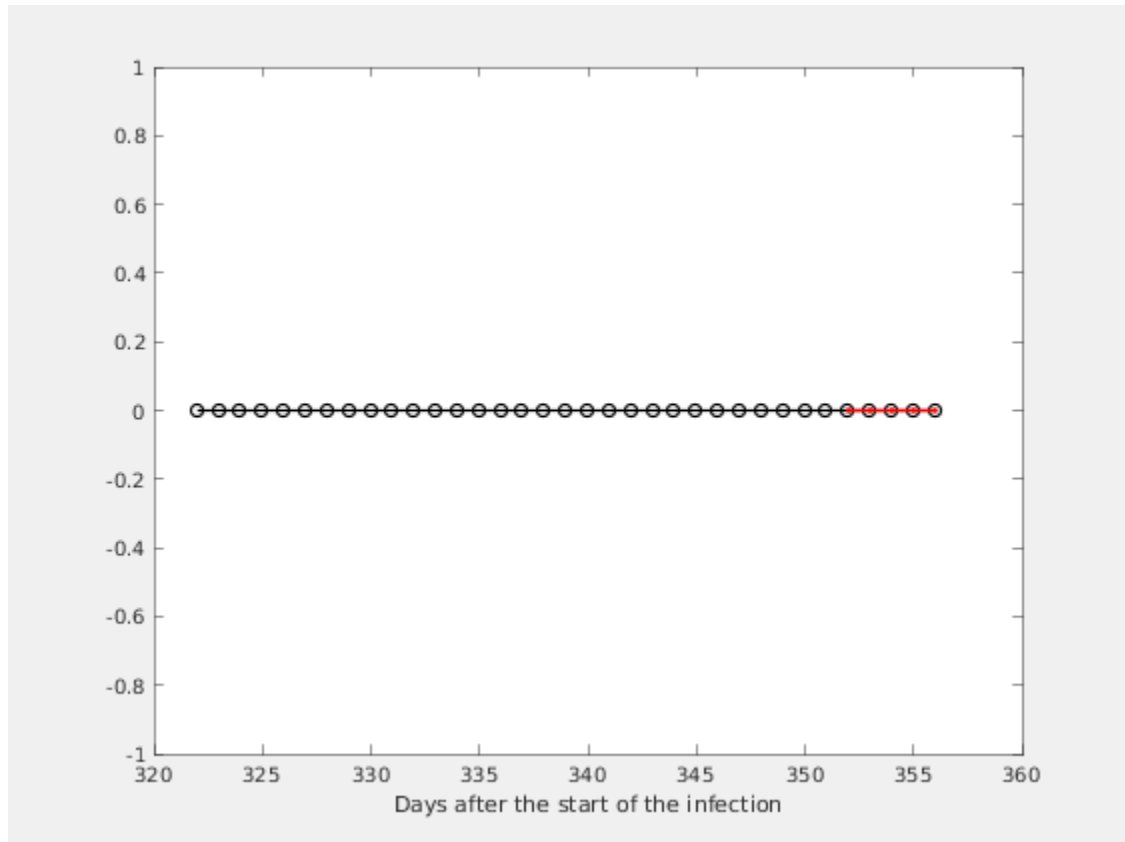


**Figure 2.2. Figure**

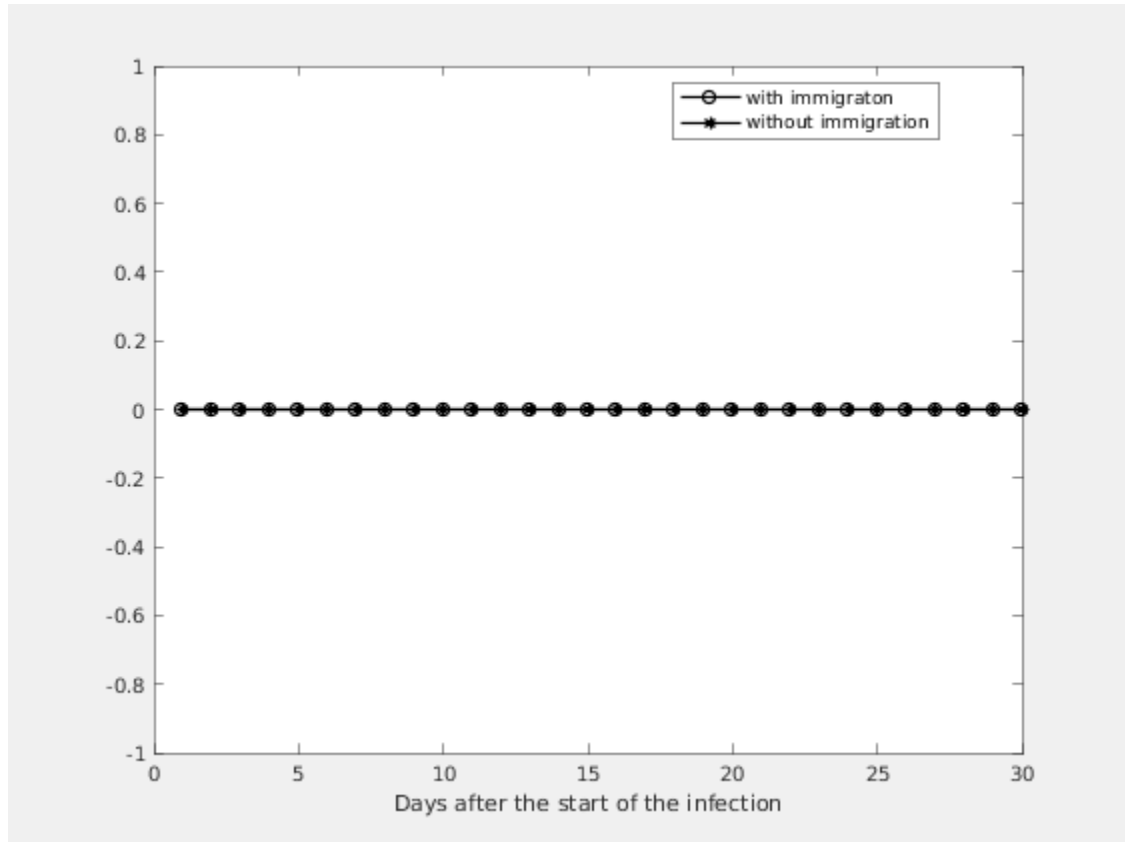




**Figure 2.3. Expected number of the nonregistered infected individuals without immigration**



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



**Estimation of the model parameters.**

| k | m      | ci              | alpha  | M1 | A1 |
|---|--------|-----------------|--------|----|----|
| 4 | 0.9998 | 0.6756 - 1.3240 | NaN    | 0  | 0  |
| 3 | 0.9998 | 0.6791 - 1.3206 | 1.0000 | 0  | 0  |
| 2 | 0.9998 | 0.6804 - 1.3192 | NaN    | 0  | 0  |
| 1 | 0.9998 | 0.6804 - 1.3192 | NaN    | 0  | 0  |
| 0 | 0.9998 | 0.6804 - 1.3192 | NaN    | 0  | 0  |