

ASSIGNMENT 5

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1. Research

- I choose the Covid-19 last outbreak/ wave in Italy. This includes the period 26 December 2021 – 7 March 2022.
- As a reliable source for data I will use “The New York Times”. The data given here is based on The Italian Department of Civil Protection and Italian National Institute of Statistics.
- The time frame interval for the model is 70 days.
- The compartments of the population can be seen of following link: <https://www.nytimes.com/interactive/2021/world/italy-covid-cases.html>
- Susceptibility: Everyone can get infected - vaccinated and unvaccinated
- Immunity: Vaccination and recovered people. 79% fully vaccinated and 84% at least one dose

N – number of residents in Italy 59.554.657

I0 - number of initially infected people 36.880

R0 - number of initially recovered people 24.882

- Among the preventive measures there is: hand washing/desinfection, vaccination, wearing masks, avoiding direct contact with people.
- R0 is the basic reproduction number, also known as basic reproduction ratio or rate which is an epidemiological metric used to measure the transmissibility of infectious agents. R0 is a derivative of the following variables—the duration of infectivity after the patient gets infected, the likelihood of transmission of infection per contact between a susceptible person and an infectious individual, and the contact rate. R0 is an estimate of the contagiousness that is a function of human behavior and the biological character of pathogens.
- Re (effective reproduction number), is the number of people in a population who can be infected by an individual at any specific time. While measuring the transmissibility of the virus at any given time during an epidemic we use Re. It changes as the population becomes increasingly immunized, either by individual immunity following infection or vaccination and also as people die.