Dissertation

Project report

3 Ba INF 2018-2019

ACED

1 Introduction

In this report we will look at the effects of expanding the simulated area. Previously, the simulations were limited to Flanders, this paper will compare the previous results to those aqcuired using simulations for (a large part) of Belgium. Using simulations for both Flanders and Belgium using the same configuration, we will attempt to draw meaningful conclusions from the observed differences or similarities between them.
For both Belgium and Flanders we have simulated a 'standard' scenario 1000 times in order to acquire a representative baseline for comparison. This scenario uses the measles disease profile with $R_0 = 11$, immunity rate = 80% and a population of 600,000 over 300 days. This is based on the scenario used in the stochastic variation tests in the simulation paper. Participation partitions are as follows

- College = 0.5
- Workplace = 0.75
- Daycare = 0.45
- Preschool = 0.99

The sections below will detail the results.

2 Comparison

From the plots for the outbreaks, it would seem there is no large difference in results between simulations for Flanders and simulations for Belgium. The magnitude of the outbreak (measuring in new cases per day) and the speed seem virtually identical. This is likely because we're generating a population using the same conditions in both cases, so the geographical layout has minimal impact on the actual simulation. Figures 1 and 2 show the average new cases per day for Belgium and Flanders respectively.

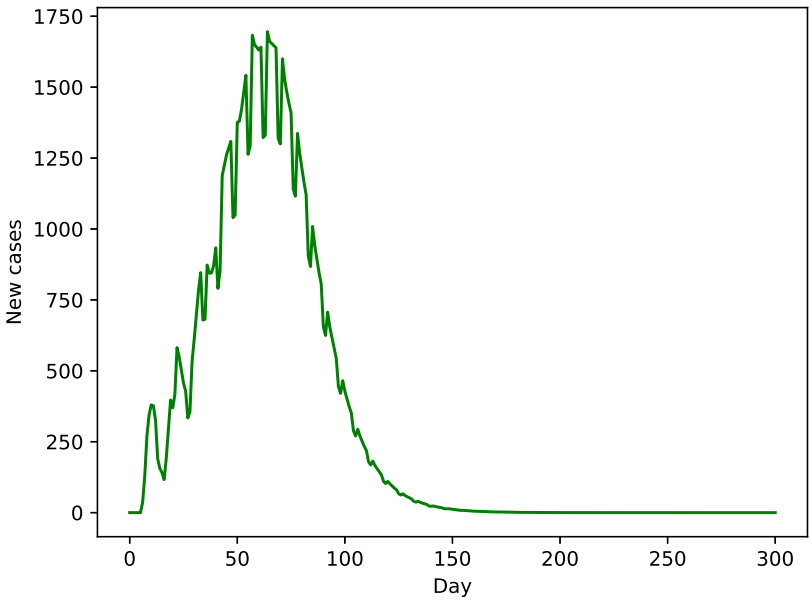

Figure 1: Average new cases per day simulated for Belgium. Using measles profile, $R_0 = 11$, immunity rate = 80%, seeding rate = 0.2%, for a population of 600,000 over 300 days.

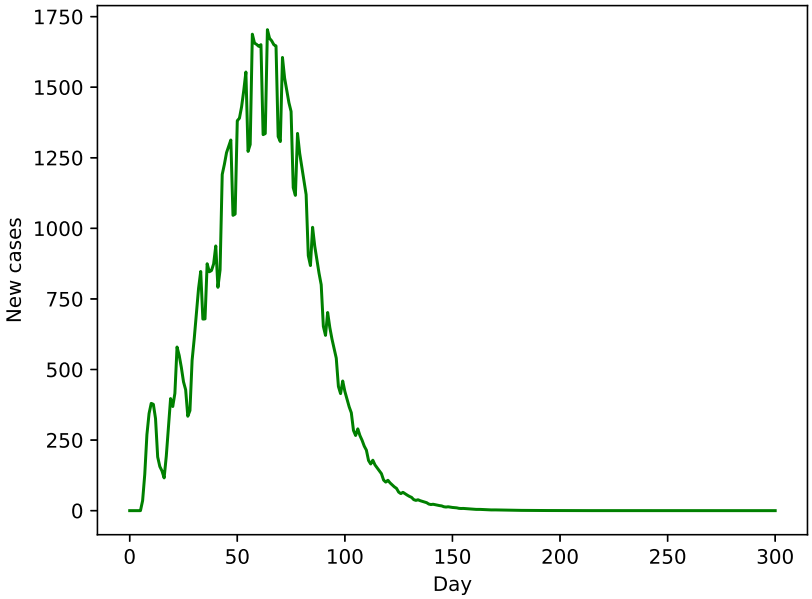

Figure 2: Average new cases per day simulated for Flanders. Using measles profile, $R_0 = 11$, immunity rate = 80%, seeding rate = 0.2%, for a population of 600,000 over 300 days.