Supplementary Material

Prediction of local COVID-19 spread in Heidelberg
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A1: 500 Simulations with fixed $R_0=2.2$ and changing values for $\kappa \sim U[0.1818,0.2857]$ and $\gamma \sim U[0.2222,0.6666]$. The red line portrays the outbreak progression for $\kappa=0.2$ and $\gamma=0.3448$ which corresponds to a incubation of 5 days and infectious period of 2.9 days.

A2: Outbreak simulations with varying number of first infected individuals on 12 March 2020. The basic reproduction number is $R_0=2.2$. 

![Graph 1](image1.png)

![Graph 2](image2.png)
Outbreak simulations with different reductions in transmission from Monday, 23 March 2020. After three weeks of lock-down transmission will go back fully to its original state ($R_0 = 2.2$).

### Table 1: Choices of model parameters

| Description                          | Value                                      | Literature |
|--------------------------------------|--------------------------------------------|------------|
| Incubation period                    | 5 days, 3.5 – 5.5 days                     | [6]        |
| Infectious period                    | 2.9 days, 1.5 – 4.5 days                   | [7]        |
| Basic reproduction number            | 1.5, 2.2, 3                                | [8, 9, 10] |
| Duration hospital admittance to death| 11.2 days                                  | [14]       |
| Duration hospital admittance to discharge | 11.5 days                              | [14]       |
| Duration of intubation               | 7 days                                     | [19]       |
| Population size Heidelberg           | 150000                                     | [11]       |
| Age distribution Heidelberg          | 72.4% (<55), 11.06% (55-65), 7.77% (65-75), 8.77% (>75) | [11]       |
| Mortality probability                | 0.1% (<55), 1.5% (55-65), 7% (65-75), and 20% (>75) | [13]       |