Number of required beds

Req 550 Syria Team

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1 Approach

I am using only the simulated maximum of hospitalised. The reasons to restrict to it are:

- The maximum number of required beds corresponds to the peak.
- Peaks for different age groups happen at different times, but the variation is small. Therefore I assume the worst case of all peaks happening at the same time. This may lead to a slight overestimate on the required number of beds.
- The time series would provide data on the flow of individuals in and out of the hospital beds. As a consequence of using a mean-field model, the flow out is proportional to the number of hospitalised individuals. If this has some effect in the number of available beds, it would be of the order of the rate of discharges per day, roughly 10% error (more precisely, order of one over length of stay in hospital).
- The main source of error when estimating the beds requirements in the region is the lack of knowledge about concurrent outbreaks in different camps.

Note that comparing the simulations for camps with 500, 1000 and 2000 people, the maximum number of hospitalized is proportional to the camp size. I will scale the results accordingly for the rest of the camps, using the closest simulation (e.g. for a camp with 345 people, I scale the simulations for 500 people with a factor of 345/500).

2 Results

Using the data in https://drive.google.com/open?id=1fyrafAu1ikxnELFf8jUw8UHtIDVZtYtJ, the largest camp in the region has 9219, and the simulations predict that an outbreak in the camp will require about 183 beds. Figure 1 shows a boxplot of the required number of beds for an outbreak in each of the camps. Note that here the mean is not relevant: an outbreak in the largest camp will require at least

183, and any other concurrent outbreak will increase that number. The Figure is included to show what the majority of camps would require for independent outbreaks.

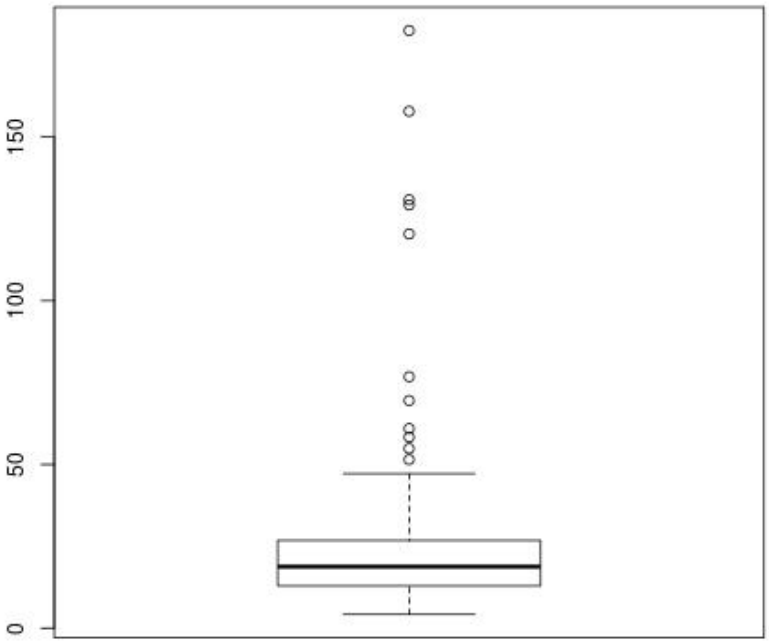

Figure 1: Number of beds required in different camps. Note that each data point is an independent outbreak; concurrent outbreaks (i.e. outbreaks happening at the same time in different camps) would require many more beds available.