## B. Sensitivity analysis

In the paper, we fix most parameters in our model and examine transmission dynamics only through and . It is necessary to design and implement a sensitivity analysis focusing on various combinations of the parameters that were previously fixed. The details of the sensitivity analyses can be found in section 12 of the supplementary materials of [Bhaduri et al. (2020)](https://pubmed.ncbi.nlm.nih.gov/32995829/). The basic findings from the sensitivity analyses are summarized as follows.

We observe that the predictions for the reported active cases (P) remains same for all parameter choices. The estimates for mainly differ in the first period, although some variation is noted for the second period as well. However, the estimated are almost the same for the later stages of the pandemic in the different models.

For the untested cases, in some of the settings of our analysis, there are substantial deviations from the true numbers. The total number of active cases (which include both the unreported and the reported cases) also varies substantially with different parameter values. Consequently, we note how the estimation of unreported cases is sensitive to different choices for the parameter values. In particular, we see different values of have the most impact on our sensitivity analysis, while different choices of have the least impact.

## C. Uses in other countries (states)

We have not done any analysis for the different countries but, we have run our model for different states in India and it has been able to capture the COVID-19 scenario of most states of India quite efficiently. For example for Delhi ([Bhattacharyya et al. (2020)](https://www.medrxiv.org/content/10.1101/2020.07.31.20166249v1)), our predictions for under-reporting factors have matched quite well the sero-survey results. Also, for the other states, the predicted reported cases came out to be quite close to the observed reported cases (MRE is very small and the observed cases lie in the Confidence interval). We will be soon working on the analysis of the different countries.

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