Review of: "A Mathematical Characterisation of COVID-19 in Mauritius"

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The article discusses the first and second wave of Covid-19 spread in Mauritius. This work is divided into 6 sections, plus an abstract and a conclusion.

The abstract is a fairly good summary of this analysis, which is based on a continuous approach combined with statistical inference.

The methodology is clearly explained in the introduction, as well as the distribution of the results in the different parts. The state of the art is not very developed and quite oriented.

The second section is devoted to the fitting of a logistic function to the official real data, via the least squares method. The result is very convincing and validates this choice, even if this fit is, after all, relative to the official data, the quality of which must be questioned.

The third section consists of a discussion on the sensitivity of the model with respect to the parameters. The impact of health measures and a comparison with other countries allows the author to conclude that the choices made by the Mauritian authorities were rather well adapted to the local situation.

The fourth section begins with a plea for the importance of the basic number of reproductions. This part seems to me to be rather uninteresting except at the end to explain how the authorities use this number. It would have been, in my opinion, more interesting to discuss the fact that immunization is only of limited duration in this pandemic, regardless of its source (cure or vaccination). The following two subsections are devoted to the approximation of the initial growth rate for Mauritius and the second to the approximation of the basic reproduction number from Western European data because of the lack of necessary data for the island concerned.

The fifth section is devoted to the study of the second wave, still considering a modified but simplified logistic evolution. The author explains the difficulties encountered in fitting the model, citing the inadequacy of the model chosen for the situation to be modelled, particularly with the appearance of a new, more contagious variant. The adjustment is less good than for the first wave as announced. This fact is then explained by the lack of reliability of the official data during this second wave. It seems to me that this question should have been addressed in the first wave study, unless it was dismissed as a working hypothesis.

The performance of the model is analyzed in the sixth section. The problem of real data versus confirmed data used for

the performance indicators does not allow for completely reliable comparisons. Nevertheless, using official data, the author concludes that the management of the pandemic by the Mauritian authorities is satisfactory.

The conclusions are interesting but completely hide the fact that immunity is only temporarily acquired. The perspectives are also of interest.

To complete, the paper is original and quite interesting, the bibliography is of quite good quality. A better consideration of the uncertainty of the data would be wiser because one knows, for example, that young people have been rarely tested since they are generally asymptomatic.