

Response to Review-Report-Section-II-Ch-03-2.

A section with the conclusions is needed,

A new Section with Conclusions is included

The effect of the density of population needs some discussion

We added the following paragraph:

RMBA consists of Ciudad Autónoma de Buenos Aires (CABA) plus forty municipalities covering an area of about thirteen thousand square kilometers. Some of these municipalities have rural areas. Thus RMBA has an average population density of 1100 persons/sq.km. But in CABA and many of its neighboring cities this number increases significantly. For example CABA has a population density of about 14000 people/sq.km. In this work we consider that RMBA has a uniform distribution of its population.

In page 4 is stated that "the epidemic has a relatively short period" I presume that they mean that the epidemic has a relative short time duration but it should be made clear to what is relatively short.

We changed this paragraph as follows:

Given the short period of the epidemic in Argentina (6 months at the time of writing), and that the average life expectancy is about 76 years, it is reasonable to assume that $\Lambda = \mu N$, so that the deaths balance the newborns.

Top of page 6. It is necessary to quantify the agreement.

The following paragraph was added:

To quantify this agreement, we compute a mean quadratic relative error between the estimations of both methods. For example, in the computation of infected individuals the following errors are obtained: 1.512×10^{-5} for $\nu = 1$, 9.880×10^{-6} for $\nu = 0.9$ and 1.053×10^{-5} for $\nu = 0.8$.

In page 6 how realistic is to assume $R < 1$. Quote cases discussed.

In page 6 we added the following sentence

In this work the case $R_0 < 1$ occurs and is analyzed in Subsection 4.2 when simulating the evolution of the epidemic in the RMBA using fractional derivatives. This value of R_0 is associated with the strict lockdown imposed by the government, with the corresponding decrease in the number of infected individuals.

In page 6 and following ones the insert in the figures does seem consistent. Something seems missing..

We added a missing sentence about Figure 5:

Also note that Figure 5 shows a delay and decrease in the number of recovered individuals as the order of the fractional derivative decreases.

In page 17 Please specify what means " we refer to."

We clarified the sentence as follows:

Concerning the error of the numerical scheme ABM, Abdullah et al. [18] give a bound in terms of the time step size Δt . On the other hand, Li, C. and Zeng, F. [15] and Li, C. et al. [27] show that the fractional forward Euler and ABM methods are stable and convergent of order one in Δt .

Concerning Section 6. The paper adds to theoretical cases which we may not rule out as possible which are infinite. I would make this section shorter. This would add to the significance of the first part of the paper.

Section 6 is an Appendix where the ABM method is defined in order to have the paper self-contained. There are no theoretical cases analyzed in Section 6. So we keep this Appendix as it is in the original submission

The reference [5] for the Caputo Fractional Derivative is fine as is the reference [12] but I would add Kochubei A.N., General fractional calculus evolution equations and renewal processes, Integral Equations of fractional order, theory, 2011, 71, 585-600, as well the reference to the 1967 Caputo original paper

Caputo, M. (1967). Linear models of dissipation whose Q is almost frequency independent, Part II, Geophys. J. R. Astr. Soc. 13, 529-539. [Reprinted in Fract. Calc. Appl. Anal. 11, 414 (2008)]

These two references are included.

Finally we want to remark that all data was updated, so the analysis is done until September 22th, 2020 (Section 5 is now Subsection 4.2). Besides we added a new Case 4, considering 30% more casualties to date, taking into account that the reported number of deceased people could have been underestimated due to delays in the upload of official data.