

# Review of: "Qualitative Analysis of a Time-Delay Transmission Model for COVID-19 Based on Susceptible Populations With Basic Medical History"

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Potential competing interests: No potential competing interests to declare.

In this manuscript, the authors established a COVID-19 time-delay epidemic model of susceptible people with basic medical histories, and conducted some qualitative analysis. However, there are some typos and problems need to be corrected or to be clarified.

1. On page 6, in the calculation of  $\frac{A}{d}$ ,  $\frac{A}{d} - \frac{me^{d\tau}}{A}$  should be  $\frac{d}{A} - \frac{me^{d\tau}}{A}$ .

2. On page 6, in the calculation of  $\frac{A}{d}$ , how to determine the size relationship between  $d$  and  $me^{d\tau}$ ?

3. On page 6, "It follows that the function  $f(l)$  is monotonically decreasing with respect to  $l$ ," only based on the above explanation, you cannot get this conclusion, you need to calculate the derivative of  $f(l)$ .

4. On page 8,  $\beta_1 S_{10} + \beta_2 S_{20} - m$  should equal  $m(\mathcal{R}_0 - 1)$ .

5. On page 8, in the proof of Theorem 3, the characteristic equation of the system at  $E^*$  may be wrong, please check it.

6. On page 10, in the proof of Theorem 4,  $e^{-i\omega\tau} = \cos\omega\tau - i\sin\omega\tau$ , please check your calculations.

7. On page 11, in the Theorem 5,  $E_0$  should be  $(S_{10}, S_{20}, 0)$ .

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\noindent 8. On page 11, in the calculation of the Lyapunov function, please check if there are any errors in your calculation process.

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\noindent 9. On page 12,  $S_{10}(\mathcal{R}_{0}-1)$  should be  $S_{10}e^{d\tau}(\mathcal{R}_{0}-1)$

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\noindent 10. On page 12, what is  $e_0$

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\noindent 11. On page 16, "so the other parameters are unchanged and the time delay is set to, respectively", it makes me a bit confused.

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\noindent 12. Please check the grammar, symbolic input and calculation process systematically again.

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Accept after modifying these issues