Review of: "The Spherical Horse and COVID-19"

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In "The Spherical Horse and COVID-19" the author discusses the SIR model and attempts to assess what the theoretical weaknesses of the model are and what could be done to improve future iterations of the model. However there are a number of issues herein. First, the author uses the SIRD nomenclature which stands for Susceptible, Infected, Recovered, and Dead. However, this is really a less used nomeclature than SIR which is Susceptible, Infected and Removed" (where removed includes both recovered and deceased individuals). This nomeclature is often preferred in public health as its less morbid and for diseases which offer long term immunity (unlike those typically caused by coronoaviridae) R and D are mathematically equivalent. The author's more complex Fig. 2 model does not have any routes for population to pass back from the RD set to S either, making it more complex but unable to model the lack of long term immunity either. Fig. 2 is also unreadable as it as the figure legend requires the reader to both have access to and then go read a separate article for the figure labels to be understood. This is unacceptable, even if there are strict space requirements for this publication. This may also be why the article is both short and has only two references, one of which is a self-reference unfortunately. This does not properly reflect the state of the art in this area and is unfortunately self-congratulatory, especially when the author makes the value judgement that the "The publication mentioned above has not yet received the attention it deserves". This is despite the author recognizes that satisfactory performance is the metric by which theoretical models are judged. Some or any kind of assessment of the predictive value of the model is needed to make any kind of value judgement like this (see Gneiting T and Raftery AE Journal of the American Statistical Association 102, 359–378 (2007) for example). What is also highly concerning, is the author is conflating population changes with rates. While these are not entirely separate, there is no need to hypothesize about "conveyor belt" processes. The SIR model is focused on percentages of the total population (which is assumed to be unchangingly stable). Individual members within the model are identical/equivalent and the model works without regard to tracking the fate of individual members of the population so the author's assertion that this somehow makes the model less useful is also completely lacking in support.