Review of: "Measuring the efficacy of a vaccine during an epidemic"

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Potential competing interests: No potential competing interests to declare.

This work deals with the Measurement of the efficacy of a vaccine during an epidemic. The authors using the recent Covid-19 epidemic, show that when performing large cohorts phase III clinical trials near the epidemic peak, the measured effectiveness represents a strong under-estimate of the vaccine efficacy even in absence of confounding factors. In particular, they show that the underestimation grows with the fraction of infectious individuals present in the population during the experiment and with the severity of the epidemic measured by its basic reproduction number.

The general framework of the paper is interesting. However, the following issues and observations are required to be addressed in order to improve the present form of the manuscript:

1- In the abstract, there are two "we show that". Delete one.

2- Equation (1) ends with a ";"

3- The use of models (SIR and others) must justify. Would the results be the same if the authors use a SEIR compartmental model, for example? This must be discussed.

4- The following references must be include in the literature review part:

(a)\url{https://www.mdpi.com/2076-393X/8/3/482};\\ (b)\url{https://www.nature.com/articles/s41591-021-01230-y}

(c)\url{https://www.bmj.com/content/374/bmj.n2015.full}