

Review of: "Notes on the Implications of Ignoring Bayes' Rule in Search and Rescue Practice in the UK"

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Potential competing interests: No potential competing interests to declare.

Review of "Notes on the Implications of Ignoring Bayes' Rule in Search and Rescue Practice in the UK" by Andre Clark

1. The manuscript is well written with appropriate citations. This paper is a good example of the application of Bayesian Analysis in social aspects. The author has illustrated the gain in the probability of success of finding a missing person with the application of Bayesian rules. Instead of using traditional methods, the updated probabilities using Bayes rule may improve the search operation. The paper can set a good example of using a Bayesian approach in a very important and interesting real-life scenario. The author has explained the scenario very well. However, the following observations may be considered by the author to improve the clarity of the manuscript.
2. A confusing example has been illustrated by the author. The choice of more suitable words may explain what the author wants to convey in the 'With three marbles in a bag - red, blue, and yellow, for example, we know that the likelihood of our picking the yellow one, having previously picked the red one, is 16.5%, since there was a 1 in 3 (33%) chance of picking red, followed by a 1 in 2 (50%) chance of subsequently picking the yellow out instead of the blue.' In this example, the current text somehow conveys that the author wants to say that $P(Y|R) = 16.5\%$. Also, 'likelihood' may be replaced with 'probability' or 'chance.'
3. Before straightaway giving the formulas in equations A and B, the author should explain the general Bayes rule for better clarity of the paper and then link his equations to Bayes Rule. Readers might find it difficult to refer to somewhere else to look up the Bayes rule and then come to the paper to understand the author's point of view. Also, it seems that these are simply conditional probabilities. To illustrate Bayes probabilities, the prior information and the posterior probabilities may be explained explicitly to avoid confusion.
4. Instead of writing scenarios and their associated probabilities in a paragraph, the author should give the illustrations in a tabular way for better clarity.
5. The author's idea is great; however, as the author himself pointed out, the practical difficulty of applying Bayes rule and the interpretation of updated probabilities, the way forward could be on improving the POA based on the factors explained by the author, since the search manager may also be able to understand it.