

Review Report of “Agnotology: learning from mistakes”

Being skeptical is always a good quality, but the critiques need to be well supported by sufficient arguments. Also we need to be aware that in statistical analysis, it is often rare that the data exactly follow the strict math assumptions of a model. For example, the linear regression requires the residuals to be normal. However, for a large size real data, it is almost impossible that they would exactly follow a normal distribution. But in practice, a slight deviation from normality is acceptable for a linear regression analysis.

The authors mainly criticized two paper after trying to redo their analysis. I have no time to redo all the analysis to judge which side is right, but based on what I read I found there might be some critiques for which the authors did not provide enough justification. For example, based on what fact, the authors claimed that the data in Humlum et al. (2011a) violates the Dirichlet condition? From the definition, a function $f(x)$ satisfies Dirichlet condition if

1. $f(x)$ is absolutely integrable over a period.
2. $f(x)$ has a finite number of extrema in any given interval, i.e. there must be a finite number of maxima and minima in the interval.
3. $f(x)$ has a finite number of discontinuities in any given interval, however the discontinuity cannot be infinite.
4. $f(x)$ is bounded

It is not obvious to me which one of those four conditions is violated, and I am curious how the authors verified those conditions and found at least one of the four is not true.

The paper has a too long philosophical Introduction for a scientific paper, and I do not think it is necessary. In my point of view, the authors just need to present critiques based on the results, and not need to be so philosophical. I would prefer

the papers just focus more on science. The title of the paper should be accordingly changed. Some published papers may not use the mostly appropriate methods, but they became the basis for the development of the most precise results, so I feel the tone in the paper is a bit too strong.