

## **Is Rationale of Frequentist Statistics a Means of Tracking the Truth?**

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Many philosophers are inclined to believe that rationality of scientifically justified claims results from the fact that a scientific method is a reliable way of reaching the aim of maximizing truth (realistically or pragmatically interpreted) and minimizing falsity in a body of beliefs/assumptions. Frequentist methods of statistical inference – a confidence interval and hypothesis test – are thought to indicate their own reliability in approaching the truth. This reliability is expressed as error rates reflecting how often one can end up with a false conclusion, using a given iterated use of method.

One problem with the alleged property of frequentist method is that it applies to an idealized and – except for a single observation at hand – counterfactual reference class of infinitely many observations made within the same population and in an identical way. Also, different error rates are linked to different statistical inferences. Despite of the above difficulties, Jerzy Neyman suggests that regardless of different contexts and different error rates associated with particular applications of frequentist methods, reaching the goal of diminishing the relative frequency of errors in a body of beliefs/assumptions is guaranteed by the central limit theorem. Nevertheless, the thesis that frequentist statistics seek the truth can raise urgent problems. The aim of this paper is to establish the extent to which frequentist methods of justification can be regarded as rational in the sense of being a means of uncovering the truth.