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*Frequentist Statistics and Inverse Probability: A Partial Rapprochement.*

The inverse fallacy undermines current applications of significance tests and confidence interval estimates. Via Bayes' rule, however, conventional p-values and power can be used to estimate the relative support from the data for each of two mutually exclusive hypotheses [i.e.,  $P(H_1 \text{ true} | \text{Data}) / P(H_0 \text{ true} | \text{Data}) = \text{power}/p \bullet P(H_1 \text{ true}) / P(H_0 \text{ true})$ ]. This approach obviates the inverse fallacy and quantifies the relative force of evidence concerning both hypotheses. At the same time, however, it underscores the necessity of prior probability estimates for inferring the posterior probabilities of those hypotheses, even when approached from a frequentist perspective. The tenacity of the inverse fallacy in statistical applications argues in favor of this approach, at least as a rhetorical and pedagogical tool, despite the philosophical objection that frequentist and Bayesian probability concepts are fundamentally noncomparable. (Received September 27, 2005)