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Predictive power of statistical significance

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Abstract

A statistically significant research finding should not be defined as a p-value of 0.05 or less, because this definition does not take into account study power. Statistical significance was originally defined by R.A. Fisher as a p-value of 0.05 or less. According to Fisher, any finding that is likely to occur by random variation no more than 1 in 20 times is considered significant. J. Neyman and E.S. Pearson subsequently argued that Fisher's definition was incomplete. They proposed that statistical significance could only be determined by analyzing the chance of incorrectly considering a study finding was significant (a Type I error) or incorrectly considering a study finding was insignificant (a Type II error). Their definition of statistical significance is also incomplete because the error rates are considered separately, not together. A better

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many **differences** that arise in the process of modeling for an explanatory ver- ... eling, **predictive power**, **statistical** strategy, data mining, scientific research. 1