

Odds Ratios in q-Binomial Distributions

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The odds ratio (OR) is the most fundamental association measure, quantifying the strength and direction of the association between two binary variables X and Y , cross-classified in a 2×2 contingency table. It is employed in various fields (e.g., epidemiology, medical and social sciences) to analyze the relationship between an exposure X (group 1/2) and a response Y (success/failure). Statistical inference for the OR commonly relies on the assumption that the responses in each group follow a binomial distribution, which implies that the observations within each group are independent and identically distributed (iid). We shall relax this assumption and investigate the case where the distribution within each group is a q-binomial of the first kind. In particular, we shall consider scenarios where the q-binomial distribution might naturally occur and discuss how it impacts statistical inference for the OR.

References

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