

An algorithm for awarding medals at wine competitions

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In a typical scenario for awarding medals at wine competitions, the scores of the several judges who rate the wines are averaged. Implicit in this algorithm is the notion that each judge's opinion should be weighed equally. However, when the judges are served replicate samples of wines, as discussed by Hodgson (2008), an alternative algorithm might be employed to improve the confidence of the group's award.

The proposed algorithm is based on the theory of linear combinations of random variables. If the judges are unbiased, but have varying abilities to score an identical wine with the same score, an optimum estimator of the wine's intrinsic merit requires the judges' scores to be weighted unequally; the scores of consistent judges carrying more weight than inconsistent ones. In statistical parlance, if s_j^2 represents the variance associated with the j th judge's scores given to identical wines, the weighted mean score is given by $[\sum \text{over } j, j=1 \text{ to } n, k/s_j^2 \times j]$, where k is a normalizing constant, such that the sum of the weights = 1.

Awards based on this proposed algorithm are compared to actual awards at the California State Fair.

References

Hodgson, R.T. (2008) Evaluation of wine judges at a major US wine competition, *Journal of Wine Economics*, 3:2 105-113