Multivariate Bonferroni Type Inequalities Theory And Applications

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Bonferroni Inequalities: Definition & Problems With Answers
Results from the Theory of Linear Programming 101 IV.2. Applications to Bonferroni-Type Inequalities 108. viii CONTENTS Chapter V. Multivariate Bonferroni-Type Inequalities V.I. Introduction and Notation 121 V.2. Multivariate Inequalities Which Are in Fact Univariate 123 V.3. The Multivariate Method of Polynomials 125

Permutational Multiple Testing Adjustments With ... For the univariate case, Dunn [6], [8] using the Bonferroni inequality, obtained shorter confidence bounds when the number of linear functions is not too large. We may note that Nair [12], David [5], Dunn [6], [7], [8] and Siotani [22], [24] have studied the closeness of the Bonferroni inequality while deriving the percentage points of certain statistics in univariate and multivariate normal ...

Boole's inequality – Wikipedia
where denotes the union. If and are disjoint sets for all and , then the inequality becomes an equality. A beautiful theorem that expresses the exact relationship between the probability of unions and probabilities of individual events is known as the inclusion-exclusion principle. A slightly wider class of inequalities are also known as "Bonferroni inequalities."


Multivariate Bonferroni-type inequalities: theory ... CORE
From this, we produce multivariate permutation hybrid upper bounds, and a multivariate Bonferroni-type upper bound which includes Galambos and Xu's [2] optimal result. The methodology generalizes that of Hoppe and Seneta [3, §5]. A numerical example is given.

Probability Inequalities in Multivariate Distributions ...
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Methods for Proving Bonferroni Type Inequalities ...
In probability theory, Boole's inequality, also known as the union bound, says that for any finite or countable set of events, the probability that at least one of the events happens is no greater than the sum of the probabilities of the individual events. Boole's inequality is named after George Boole. Formally, for a countable set of events $A_1, A_2, A_3, \ldots$, we have $P \leq \sum_i P_i$. In measure-theoretic terms, Boole's inequality is a special case of the union bound. It states that the probability of the union of an infinite sequence of events is no greater than the sum of their probabilities.

**Two Sets of Multivariate Bonferroni–type Inequalities**

Multivariate Bonferroni-Type Inequalities: Theory and Applications presents a systematic account of research discoveries on multivariate Bonferroni-type inequalities published in the past decade. The emergence of new bounding approaches pushes the conventional definitions of optimal inequalities and demands new insights into linear and Fréchet optimality.

**Probability Inequalities in Multivariate Distributions**

Probability Inequalities in Multivariate Distributions is a comprehensive treatment of probability inequalities in multivariate distributions, balancing the treatment between theory and applications. The book is concerned only with those inequalities that are of types T1-T5.

**Hypermultitrees and sharp Bonferroni inequalities**

Using the Bonferroni procedure, there does not appear to be a strong case against any of the null hypotheses. However, using a multivariate permutation adjustment yields more evidence against the null hypothesis that event # 1 has no treatment effect. This evidence is further increased if one uses the closure-based method, SDMP-C.

**Bonferroni-type Inequalities with Applications**

MULTIPLICATIVE INEQUALITIES 365 and/or if the $X_i$'s are divided by a common independently distributed r.v. (i.e., if the r.v. $Y_i = X_i$ have a multivariate t-distribution with $Y$ d.f. and associated correlation matrix $\{P_{ij}\}$). Some other Bonferroni-type inequalities are discussed in Tong (1980, Section 7.1).
Extension of Bonferroni and Bonferroni-type inequalities have also been studied in multivariate settings. Here, multivariate means that one faces several sequences of events, and one establishes linear bounds on the joint distribution of the numbers counting the occurrences in each sequence of events. Bounds are again in terms of binomial moments.

Multivariate Bonferroni-Type Inequalities: Theory and Applications presents a systematic account of research discoveries on multivariate Bonferroni-type inequalities published in the past decade. The emergence of new bounding approaches pushes the conventional definitions of optimal inequalities and demands new insights into linear and Frechet optimality.

Italian mathematician Carlo Emilio Bonferroni developed the correction for multiple comparisons for its use on Bonferroni inequalities. An extension of the method to confidence intervals was proposed by Olive Jean Dunn.

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