

Hájek, Jaroslav; Šidák, Zbyněk; Sen, Pranab K.
Theory of rank tests. 2nd ed. (English) Zbl 0944.62045
Orlando, FL: Academic Press. xiv, 435 p. (1999).

[For the review of the first edition from 1967 see [Zbl 0161.38102](#)]

At last, the second edition of this famous Hájek-Šidák book has appeared! Now, after more than 30 years, substantially updated (from among 348 references in the Bibliography 148 came from the period after 1967 when the first edition was published) and with a new coauthor, Pranab K. Sen.

From the Preface to the second edition: Substantial material has been taken from the first edition. But, after some forty years of active research, certain approaches had changed, new results needed to be incorporated or given a stronger emphasis. This is why the book went through a substantial revision. The aim was two-fold: first, to refresh some well established methods (especially those related to contiguity), and, second, to develop many new topics that were not covered in the first edition. As a consequence, this edition might have lost its former compactness, but, on the other hand, it contains much more material of various kinds and of recent interest... Each chapter is also supplied with a paragraph presenting some problems and supplementary material that have been thoroughly updated.

Contents: 1. Introduction and coverage; 2. Preliminaries (Basic notation. Families of one-dimensional densities. Testing hypotheses. Auxiliary results for normal samples); 3. Elementary theory of rank tests (Ranks and order statistics. Permutation, invariance and rank tests. Expectations and variances of linear rank statistics. Locally most powerful rank tests. Statistical functionals); 4. Selected rank tests (Two-sample tests of location. Two-sample tests of scale. Regression. Three or more samples. Tests of symmetry. Tests of independence. Random blocks. Treatment of ties. Rank tests for censored data. Multivariate rank tests); 5. Computation of exact null distributions (Direct use of distribution of ranks. Explicit formulas for distributions. Recurrence formulas for distributions. Improvements of limiting distributions); 6. Limiting null distributions (Simple linear rank statistics. Rank statistics of χ^2 -type. Statistics of Kolmogorov-Smirnov type. Functional central limit theorems); 7. Limiting non-null distributions (Contiguity. Simple linear rank statistics. Families of simple linear rank statistics. Asymptotic power. Non-contiguous alternatives); 8. Asymptotic optimality and efficiency (Asymptotically optimum tests. Asymptotic efficiency of tests. Bahadur efficiency. Hodges-Lehmann deficiency. Adaptive rank tests); 9. Rank estimates and asymptotic linearity (R -estimates of location and regression. Asymptotic linearity of rank statistics in regression parameters. Rank estimation of regression parameters); 10. Miscellaneous topics in regression rank tests (Aligned rank tests. Regression rank scores. Rank versus other robust procedures).

Reviewer: [Ryszard Zielinski \(Warszawa\)](#)

MSC:

[62G10](#) Nonparametric hypothesis testing
[62-02](#) Research exposition (monographs, survey articles) pertaining to statistics

Cited in **3** Reviews
Cited in **115** Documents