

Weighted Empiricals and Linear Models

by Hira L. Koul

An empirical process that assigns possible different non-random (random) weights to different observations is called a *weighted (randomly weighted) empirical process*. These processes are as basic to linear regression and autoregression models as the ordinary process is to one sample models. However, their usefulness in studying linear regression and autoregression models has not been fully exploited. This monograph addresses this question to a large extent.

Contents

Introduction

Weighted empirical processes; M-, R-, and scale estimators; Minimum distance estimators and goodness-of-fit tests; Randomly weighted empirical processes

Asymptotic Properties of Weighted Empiricals

Introduction; Weak convergence; Asymptotic uniform linearity (A.U.L.) of residual w.e.p.'s; Some further probabilistic results for w.e.p.'s

Linear Rank and Signed Rank Statistics

Introduction; AUL of linear rank statistics; AUL of linear signed rank statistics; Weak convergence of rank and signed rank w.e.p.'s

M, R, and Some Scale Estimators

Introduction; M-estimators; Distribution of some scale estimators; R-estimators; Estimation of $Q(f)$

Minimum Distance Estimators

Introduction; Definitions of M. D. estimators; Finite sample properties and existence; Asymptotics of minimum dispersion estimators: A general case; Asymptotic uniform quadraticity; Asymptotic distributions, efficiencies, and robustness

Goodness-of-Fit Tests for the Errors

Introduction; The supremum distance tests; L_2 -distance tests; Testing with unknown scale; Testing for symmetry of the errors

Autoregression

Introduction; Asymptotic uniform linearity of W_h and F_n ; GM- and R-estimators; M.D. Estimation; Goodness-of-fit testing

Appendix

Bibliography

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Stochastic Inequalities

Moshe Shaked and Y. L. Tong, Editors

Proceedings of the Joint AMS-IMS-SIAM Summer Research Conference on Stochastic Inequalities, Seattle, Washington, July 1991. The conference focused on the recent developments in the theory and applications of stochastic inequalities with special emphasis on convexity-related, majorization-related inequalities and stochastic convexity; dependence-related probability and moment inequalities; inequalities in multivariate distributions and multivariate analysis; inequalities in reliability theory and queuing theory; and, applications in business and economics, operations research, and other related fields. This volume is a collection of papers based on the lectures given at the conference.

Contents

Inequalities for rare events in time-reversible Markov chains I by D. J. Aldous & M. Brown; *Skewness and kurtosis orderings: An introduction* by B. C. Arnold & R. A. Groeneveld; *Stochastic inequalities for a redundancy enhancement to a series or parallel system* by P. J. Boland; *Some remarks on a notion of positive dependence, association, and unbiased testing* by A. Cohen & H. B. Sackrowitz; *Further aspects of the comparison of two groups of ranked objects by matching in pairs* by H. A. David & J. Liu; *Inequalities for the parameters $\lambda(F)$, $\mu(F)$ with applications in nonparametric statistics* by C. Dorado & M. Hollander; *Orderings arising from expected extremes, with an application* by P. J. Downey & R. S. Maier; *A group action on covariances with applications to the comparison of linear normal experiments* by M. L. Eaton; *The role of a module in the failure of a system* by E. El-Newehi & J. Sethuraman; *Extreme order statistics for a sequence of dependent random variables* by J. Glaz; *Partitioning inequalities in probability and statistics* by T. P. Hill; *Matrix extremes and related stochastic bounds* by D. R. Jensen; *Generalized majorization orderings and applications* by H. Joe; *Multivariate majorization by positive combinations* by H. Joe & J. Verducci; *Covariance spaces for measures on polyhedral sets* by J. H. B. Kemperman & M. Skibinsky; *Hyperbolic-concave functions and Hardy-Littlewood maximal functions* by R. P. Kertz & U. Rosler; *Lower bounds on multivariate distributions with preassigned marginals* by S. Kotz & J. P. Seeger; *Dependence of stable random variables* by M.-L. Ting Lee, S. T. Rachev, & G. Samorodnitsky; *A multivariate stochastic ordering by the mixed descending factorial moments with applications* by C. Lefevre & P. Picard; *Allocation through stochastic Schur convexity and stochastic transposition increasingness* by L. Liyanage & J. George Shanthikumar; *Extremal problems for probability distributions: A general method and some examples* by L. Mattner; *Concentration inequalities for multivariate distributions II: Elliptically contoured distributions* by M. D. Perlman; *Inequalities on expectations based on the knowledge of multivariate moments* by A. Prekopa; *On FKG-type and permanental inequalities* by Y. Rinott & M. Saks; *Optimal stopping values and prophet inequalities for some dependent random variables* by Y. Rinott & E. Samuel-Cahn; *Some applications of monotone transformations in statistics* by A. R. Sampson; *Secretary problems as a source of benchmark bounds* by S. M. Samuels; *Comparison of experiments of some multivariate distributions with a common marginal* by M. Shaked & Y. L. Tong; *On the bias of the jackknife estimate of variance* by R. A. Vitale

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