

STATISTICAL THEORY AND METHOD ABSTRACTS

A Journal of the International Statistical Institute

The object of this abstracting service is to cover published papers concerned with statistical theory, including relevant aspects of probability and mathematical methods, and new contributions to statistical method. These abstracts provide valuable information on new developments for studying problems in many fields: such as frequency distributions, estimating and testing problems, sampling and experimental designs, variance analysis, spectral theory and other methods in time-series analysis, queueing theory, reliability and acceptance inspection. Journals appearing in all parts of the world, on mathematics and statistics, or on other fields and possible contribution of interest are regularly scanned for suitable papers. Abstracts are also prepared from collections of papers such as reports of conferences, symposia and seminars; technical reports of experiment and research stations are covered.

The abstracts do not exceed 400 words, with occasional "double abstracts" for papers where this size is not sufficient to represent the paper. The language is English; the language of the original paper is indicated. The headings give the name and address of the author together with the Journal in which the paper is published; moreover, a note is added on the number of references, tables and figures.

The classification scheme which is used in this Journal supplies a division of all abstracts in twelve main sections. The pages of the Journal are colour-tinted in accordance with these main sections. Each section is further sub-divided to indicate the main topic of the paper; a secondary number denotes the most important additional topic referred to by the author. A special index in each part links together these two classifications. This scheme is arranged to facilitate transfer to punch cards. Papers containing new statistical tables are listed in a separate index.

The abstracts are numbered serially, the volume number being inserted as a prefix. The Journal is published four times a year and contains approximately 1,000 abstracts. An author index, the secondary classification index and the new statistical tables index are published in each issue and combined in a yearly supplement which also contains a list of all Journals represented in the volume by one or more abstracts.

<i>Annual Subscription</i>	£10.00 (U.S. \$30.00)
<i>Single Number</i>	£ 3.50 (U.S. \$ 9.00)
<i>Loose Leaf Binders for</i>	£ 1.00 including postage
<i>Single Abstract Sheets</i>	and packing.

OLIVER AND BOYD

33 Montgomery Street, Edinburgh, EH 75. JX. Scotland

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

Volume 66

March 1971

Number 333

The American Statistical Associations: A Single Scientific and Educational Community . . . *T. A. Bancroft*

Applications

A Condition for Independence of Permanent and Transitory Components of a Series . . . *James M. Holmes*

A Canonical Correlation Analysis of Occupational Mobility . . . *S. R. Klatky and Robert W. Hodge*

A Price Index for Nonfarm One-Family Houses, 1947-64 . . . *Kul B. Bhatia*

The Problem of Accounting for Productivity Change in the Construction Price Index
 Kunio Yoshihara, Kenichi Furuya and Takao Suzuki

Process Variables in the Mixture Problem for Categorized Components . . . *John A. Cornell*

Usefulness of the Two-Compartment Open Model in Pharmacokinetics . . . *Carl M. Metzler*

Comment on Article on Pharmacokinetics . . . *J. D. Haynes*

Rejoinder . . . *Carl M. Metzler*

Theory and Methods

On the Analysis of Multidimensional Contingency Tables . . . *H. H. Ku, R. Varner and S. Kullback*

Maximum Likelihood Estimation with Incomplete Multinomial Data
 R. R. Hocking and H. H. Oxspring

New Estimates of Disturbances in Regression Analysis . . . *A. P. J. Abrahamse and J. Koerts*

On a Two-Stage Estimate of the Mean . . . *Vasant B. Waikar and S. K. Katti*

Pooling Mean Squares . . . *J. Singh*

Estimation of the Mean by Shrinkage to a Point . . . *R. Srinivasan*

Combining Overlapping Information . . . *Richard Zeckhauser*

Further Suggestions Concerning the Utilization of Incomplete Observations and Regression Analysis
 Marcel G. Dagenais

Adjustment of Monthly or Quarterly Series to Annual Totals: An Approach Based on Quadratic Minimization
 Frank T. Denton

Bivariate Failure Rate . . . *A. P. Basu*

The Logarithm of the Sum of Two Correlated Log-Normal Variates . . . *M. A. Hamdan*

The Economic Design of \bar{X} -Charts When There is a Multiplicity of Assignable Causes
 Acheson J. Duncan

A Note on the Exact Sample Density Functions of GCL Estimators of Structural Coefficients in a Leading
 Exactly-Identifiable Case
 R. L. Basmann, Franklin Lee Brown, William S. Dawes and Gregory K. Schoepfle

Efficiency of Simple-Order Statistic Estimates When Losses Are Piecewise Linear . . . *Robert H. Hayes*

Finding Sampling Distributions by a Recognition Method . . . *Gordon Antelman and Harry V. Roberts*

On the Distribution of a Linear Combination of Independent Chi Squares . . . *Joseph Fleiss*

Exact χ^2 Criterion Tables with Cell Expectations One: An Application to Coleman's Measure of Consensus
 Douglas A. Zahn and Gail C. Roberts

Small Sample Power Functions for Nonparametric Tests of Location in the Double Exponential Family
 Fred L. Ramsey

A Nonparametric Selection Procedure's Efficiency: Largest Location Parameter Case
 Edward J. Dudewicz

Estimation of the Probability that $Y < X$. . . *Peter Enis*

Small Sample Performance of Some Estimators of Truncated Binomial Distribution
 Donald G. Thomas and John J. Gart

Asymptotic Distribution of the Sample Size for a Sequential Probability Ratio Test . . . *K. C. Chanda*

A Note on Representations of the Doubly Non-Central F Distribution . . . *W. G. Bulgren*

Percentage Points of H -Distribution of Computing Confidence Limits or Performing t -Tests by Way of the
 Mean Absolute Deviation
 Erna M. J. Herrey

Incomplete Beta-Integral $B(x; \frac{1}{2}, \frac{1}{2})$ and $[p(1-p)]^{-1/2}$ for the Use with Borges' Approximation of the Binomial
 Distribution
 Friedrich Gebhardt

Invited Papers

Economics of Information Systems . . . *Jacob Marschak*

BOOK REVIEWS

For further information, please contact:

AMERICAN STATISTICAL ASSOCIATION

806 15th Street, N.W.

Washington, D. C. 20005

TECHNOMETRICS

*A Journal of Statistics
for the Physical, Chemical and Engineering Sciences*

CONTENTS

TECHNOMETRICS, Vol. 13, No. 2, MAY 1971

- Determination of A.R.L. and a Contour Nomogram for Cusum Charts to Control Normal Mean
A. L. Goel and S. M. Wu
- On Lack of Fit *N. R. Draper and Agnes H. Herzberg*
- Small Incomplete Factorial Experiment Designs for Two and Three Level Factors *S. R. Webb*
- Balanced Optimal 2^m Fractional Factorial Designs of Resolution V, $m \leq 6$
J. N. Srivastava and D. V. Chopra
- Combining Component and System Information *R. G. Easterling and R. R. Prairie*
- On the Distribution of the Ratio of Two Random Variables Having Generalized Life Distributions
A. P. Basu and R. H. Lochner
- An Estimation Problem in Life Testing *P. J. Kendell and R. L. Anderson*
- Unmodeled Error Analysis on Trajectory and Orbital Estimation *N. Bush*
- An Application of Numerical Integration Techniques to Statistical Tolerancing II—A Note on the Error
D. H. Evans
- A Test for the Homogeneity of a Mixture *R. L. Scheaffer*
- Estimating the Conditional Probability of Misclassification *M. J. Sornum*
- Some Expected Values for Probabilities of Correct Classification in Discriminant Analysis
Olive Jean Dunn
- Some Selection Problems Involving Folded Normal Distribution *M. H. Rizvi*
- Multiple Sampling Plans Viewed as Finite Markov Chains *A. R. Burgess and E. B. Wilson*
- Maximum Likelihood Estimation for Multi-risk Model *R. J. Herman and R. K. N. Patel*
- Inequalities for Some Multivariate f -Distributions with Applications *J. E. Hewett and W. G. Bulgren*
- All Possible Regressions with Less Computation *G. M. Furniva*
- Series Estimation of a Probability Density Function *D. F. Specht*
- Notes
- A Note on Conjecture of Mantel Concerning Quadratic Programming . . *C. E. Antle and L. A. Klimko*
- Addendum to 'Linear Estimation of the Weibull Parameters'. *R. B. D'Agostino*
- A Note on the Use of Residuals for Examining the Assumptions of Covariance Analysis . . *R. D. Snee*
- A Note on the Weighted Least Squares Analysis of the Ries-Smith Contingency Table Data
W. D. Johnson and G. G. Koch

BOOK REVIEWS

LETTER TO THE EDITOR

NOTICES

The purpose of TECHNOMETRICS is to contribute to the development and use of statistical methods in the physical, chemical and engineering sciences. This objective places a high premium on succinct communication among the physicist, chemist, engineer, statistician and mathematician. The journal will accept for publication papers describing statistical techniques expected to be useful in these sciences, papers illustrating the application of statistical methods to new or novel environments, expository or tutorial papers on particular statistical methods, and papers dealing with the philosophy and problems of applying statistical methods to research, development, design and performance. Brief descriptions of problems requiring solution and short technical notes will also be accepted for publication.

For further information please contact TECHNOMETRICS Post Office Box 587 Benjamin Franklin Station Washington, D. C. 20004.

BIOMETRICS

Journal of the Biometric Society

Vol. 27, No. 2

CONTENTS

June 1971

- On some desirable patterns in block design (with discussion) *T. Calinski*
Design and efficiency of selection experiments for estimating genetic parameters. *W. G. Hill*
Designs having fruit trees as blocks and incorporating analysis of covariance *N. A. Goodchild*
A model for studying birth rates given time dependent changes in reproductive parameters
..... *Mindel C. Sheps and Jane A. Menken*
A stochastic model of human fertility *C. L. Chiang*
Mathematical models for the control of pest populations *S. H. Mann*
Estimation of survival parameters when one of two organs must function for survival
..... *A. J. Gross, Virginia A. Clark and Vinnie Liu*
Effects of collapsing multidimensional contingency tables *Yvonne M. M. Bishop*
Estimation and interaction in a censored $2 \times 2 \times 2$ contingency table *J. E. Cohen*
Clustering methods based on likelihood ratio criteria *A. J. Scott and M. J. Symons*
A direct method for fitting linear combinations of exponentials *M. Agha*
A simulation study of Jolly's method for analysing capture-recapture data *B. J. F. Manly*
Query
Tests not catered for by the design of an experiment. *S. C. Pearce*
Notes
Some new balanced row-and-column designs for two non-interacting sets of treatments ... *D. A. Preece*
Change-over designs for testing different treatment factors at several levels
..... *J. M. Mason and K. Hinkelmann*
Some aspects of 2^n factorials with dummy treatments *Isabelle M. Gravett*
Parallelism and concurrence in linear regression *P. Sprent*
On Green's test for dependence *N. Mantel*
Drift in the random component of isonymy *P. Holgate*
The homogeneity of the sex ratio of adjacent sibs in human families *S. Kullback*
Estimation of class boundaries in fitting a normal distribution to a qualitative multinomial distribution
..... *M. A. Hamdan*

Correspondence

Biometrics is published quarterly. Its objects are to describe and exemplify the use of mathematical and statistical methods in biological and related sciences in a form assimilable by experimenters. The annual non-member subscription rate is \$15.00. Inquiries, non-member subscriptions, and orders for back issues, should be addressed to: Biometrics Business Office, Department of Experimental Statistics, North Carolina State University, Raleigh, North Carolina 27607 U.S.A. Editorial correspondence should be directed to: Biometrics Editorial Office, Department of Biostatistics, School of Public Health, University of North Carolina, Chapel Hill, North Carolina 27514 U.S.A.

TRABAJOS DE ESTADISTICA y de INVESTIGACION OPERATIVA

Review published by the "Instituto de Investigación Operativa y Estadística",
Serrano, 123.-Madrid-6. Spain.

VOL. XXI

CONTENTS

CUAD. 3

- FRANCISCO AZORIN POCH.—Comparación de supuestos y di seños en la estimación de patrones por muestreo sistemático pluridimensional.
F. J. CANO SEVILLA.—Sobre una aplicación de los procesos de renovación markovianos a los juegos estocásticos no terminativos.
F. J. CANO SEVILLA.—Programación secuencial en concurrencia con factor descuento continuo.
A. F. TROCONIZ.—Distribución de Wibull. Métodos prácticos de estimación y contraste.
R. INFANTE MACIAS.—Nota sobre teoría de la utilidad: Relación entre las axiomáticas de Von Neumann—Morgenstern y L. J. Savage.
S. D. ARORA.—A one-sided stochastic model of search problem.
A. K. GOVIL.—Operational readiness of a complex system under priority repair disciplines.
J. P. SAKSANA AND SANTOSH KUMAR.—Irreversible operations—A network analysis.
J. TIAGO DE OLIVEIRA.—Biextremal distributions: Statistical decision.

Cronica

Bibliografia

Cuestiones

Ejercicios

TRABAJOS DE ESTADISTICA Y DE INVESTIGACION OPERATIVA is published three issues a year.
Annual subscription price is U.S. \$6; each part U.S. \$2.50.

All correspondence should be addressed to Prof. Sixto Ríos, Serrano 123, Madrid-6. Spain.

THE INSTITUTE OF MATHEMATICAL STATISTICS

(Organized September 12, 1935)

OFFICERS

President:

William Kruskal, Department of Statistics, University of Chicago, Chicago, Illinois 60637

President-Elect:

R. C. Bose, Department of Statistics, University of North Carolina, Chapel Hill, North Carolina 27514

Executive Secretary:

Leo Katz, Statistical Laboratory, Michigan State University, East Lansing, Michigan 48823

Program Secretary:

R. V. Hogg, Department of Statistics, University of Iowa, Iowa City, Iowa 52240

Treasurer:

George J. Resnikoff, Department of Statistics, California State College, Hayward, California 94542

Editor:

Ingram Olkin, Department of Statistics, Stanford University, Stanford, California 94305

Managing Editor:

K. J. C. Smith, Department of Statistics, University of North Carolina, Chapel Hill, North Carolina 27514

The purpose of the Institute of Mathematical Statistics is to encourage the development, dissemination, and application of mathematical statistics.

Membership dues including a subscription to the *ANNALS of MATHEMATICAL STATISTICS* are \$20.00 per year for residents of the United States or Canada and \$12.00 per year for residents of other countries. Special student rates of \$10.00 per year are available to students. Inquiries regarding membership in the Institute should be sent to the Treasurer of the Institute.

(Membership in the Institute of Mathematical Statistics is not required of author of papers in the *Annals of Mathematical Statistics* and the fact of membership or non-membership is given no weight in the consideration of submitted manuscripts.)

(Instructions for authors—continued)

Authors are asked to keep in mind the typographical difficulties and high cost of printing complicated mathematical formulas. The difference between capital and lower-case letters should be clearly shown; care should be taken to avoid confusion between such pairs as zero and the letter O, the numeral 1 and the letter l, numeral 1 used as superscript and prime ('), alpha and α , kappa and k , mu and μ , nu and ν , eta and η , etc. Bars above groups of letters (e.g., $\overline{\log x}$) and underlined letters (e.g., \underline{x}) are difficult to print and should be avoided; \liminf and \limsup are preferable to $\underline{\lim}$ and $\overline{\lim}$. Symbols are automatically italicized by the printer and should not be underlined on manuscripts. Boldface letters may be indicated by underlining with a wavy line on the manuscript; boldface subscripts and superscripts are not available. Unusual accents on letters should be avoided or replaced by superscripts or subscripts. Complicated exponentials should be represented with the symbol \exp . In writing square roots the fractional exponent is preferable to the radical sign. Fractions are preferably written with the solidus or negative exponent; thus $(a+b)/(c+d)$ rather than $\frac{a+b}{c+d}$, and $(2\pi)^{-1}$ rather than $\frac{1}{2\pi}$. In addition to decreasing the printing costs, a simple notation greatly improves the readability and appearance of a manuscript.

Authors will ordinarily receive only galley proofs. Fifty reprints without covers will be furnished free. Additional reprints and covers may be ordered at cost on forms which will be provided by the printer.

Contents (Continued)

On the characteristic roots of the information matrix of 2^m balanced factorial designs of resolution V , with applications.....	J. N. SRIVASTAVA AND D. V. CHOPRA	722
Approachability in a two-person game.....	TIEN-FANG HOU	735
A moment problem for order statistics.....	JOSEPH B. KADANE	745
Short Communications		
A note on the reparametrization of an exponential family.....	MICHAEL S. WATERMAN	752
On the multiple autoregressive series.....	JIRÍ ANDĚL	755
An iterated logarithm theorem for some weighted averages of independent random variables.....	JAMES R. TOMKINS	760
On the distribution of the sphericity test criterion in classical and complex normal populations having unknown covariance matrices.....	K. C. S. PILLAI AND B. N. NAGARSENKER	764
Note on some formulas for weighted sums of zonal polynomials.....	NARIAKI SUGIURA	768
Discrimination of Poisson processes.....	MARK BROWN	773
A note on convergence moments.....	B. M. BROWN	777
Semi-stable laws as limit distributions.....	R. N. PILLAI	780
Local theorems in strengthened form for lattice random variables.....	J. DAVID MASON	784
Independent sequences with the Carefoot-Flett property.....	A. AL-HUSSAINI	789
A pseudo-metric space of probability measures and the existence of measurable utility.....	J. O. LEDYARD	794
Inadmissibility of the best invariant test in three or more dimensions.....	STEPHEN PORTNOY AND CHARLES STEIN	799
Infinite divisibility and variance mixtures of the normal distribution.....	DOUGLAS KELKER	802
On the distribution of linear combinations of non-central chi-squares.....	DAVID A. HARVILLE	809
On the zeros of infinitely divisible densities.....	F. W. STEUTEL	812
Use of truncated estimator of variance ratio in recovery of inter-block information.....	K. R. SHAH	816
Constant coefficient linear differential equations driven by white noise.....	R. V. ERICKSON	820
A characterization of the multivariate normal distribution.....	MARY R. ANDERSON	824
Optimal designs for multivariate polynomial extrapolation.....	W. J. STUDDEN	828
Note on Bayes-fiducial intervals for problems of location and scale.....	DONALD A. PIERCE AND DAVID A. BOGDANOFF	833
A characterization of the exponential distribution by order statistics.....	M. M. DESU	837
Admissibility of arbitrary estimates as unbiased estimates of their expectations in a finite population.....	V. M. JOSHI	839
Correction Note		
Correction to "On relationship algebras of incomplete block designs".....	J. ROBINSON	842
Abstracts.....		843
News and Notices.....		847
Publications Received.....		854