

BIOMETRIKA

Volume 47, Parts 1 and 2

Contents

June 1960

Memoirs:

BARTLETT, M. S., GOWER, J. C. & LESLIE, P. H. A comparison of theoretical and empirical results for some stochastic population models. KENDALL, DAVID G. Birth-and-death processes, and the theory of carcinogenesis. ASHFORD, J. R., SMITH, C. S. & BROWN, SUSANNAH. The quantal response analysis of a series of biological assays on the same subject. WALKER, A. M. Some consequences of superimposed error in time series analysis. FINCH, P. D. Deterministic customer impatience in the queueing system GI/M/1. BARTON, D. E., DAVID, F. N. & FIX, EVELYN. The polykays of the natural numbers. SRIVASTAVA, A. B. L. The distribution of regression coefficients in samples from bivariate non-normal populations I. Theoretical investigation. KASTENBAUM, MARVIN A. The separation of molecular compounds by countercurrent dialysis: a stochastic process. SAW, J. G. A note on the error after a number of terms of the David-Johnson series for the expected values of normal order statistics. WATSON, G. S. More significance tests on the sphere. JOHNSON, N. L. An approximation to the multinomial distribution: some properties and applications. VAGHOLKAR, M. K. & WETHERILL, G. B. The most economical binomial sequential probability ratio test. MCGREGOR, J. R. An approximate test for serial correlation in polynomial regression. BERKSON, JOSEPH. Nomograms for fitting the logistic function by maximum likelihood. HAIGHT, FRANK A. & BREUER, MELVIN ALLEN. The Borel-Tanner distribution. BURR, E. J. The distribution of Kendall's score S for a pair of tied rankings.

Miscellanea: Contributions by D. H. BHATE, C. R. BLYTH & C. L. CURME, C. BURROWS, C. W. CLUNIES-ROSS & R. H. RIFFENBURGH, P. D. FINCH, R. G. LAHA & E. LUKACS, P. H. LESLIE, H. D. PATTERSON, B. R. RAO, G. L. TURIN, C. A. WILKINS, M. E. WISE.

Reviews:

Other Books Received:

The subscription, payable in advance, is 54/- (or \$8.00) per volume (including postage). Cheques should be made payable to *Biometrika*, crossed "A/c *Biometrika Trust*" and sent to the Secretary, *Biometrika Office*, University College, London, W.C.1. All foreign cheques must be drawn on a Bank having a London agency.

Issued by THE BIOMETRIKA OFFICE, University College, London

ESTADISTICA

Journal of the Inter American Statistical Institute

Volume XVII, No. 64

Contents

December 1959

Sobre los Dos Aspectos Diferentes del Método Representativo: El Método de Muestreo Estratificado y el Método de Selección Dirigida (traducción)

JERZY NEYMAN

El Muestreo y la Situación Actual de la Estadística... FRANCISCO AZORÍN POCH
Purposeful and Stratified Random Sampling Today... FREDERICK F. STEPHAN

Estadísticas y Parámetros... CARLOS E. DIEULEFAIT

La Théorie de l'Estimation et les Sondages... P. THIONET

Some Stratified Sampling Plans in Replicated Designs... W. EDWARDS DEMING

El Problema de la Estratificación Óptima (traducción)... TORE DALENIUS

El Muestreo Estratificado Multiparamétrico (traducción)... TORE DALENIUS

Recent Advances in Sampling Techniques... HARRY G. ROMIG

Levantamento por Amostragem da Safra de Trigo de 1958 no Rio Grande do Sul
THOMAS JABINE, AMARO DA COSTA MONTEIRO Y RUBENS JORGE DE CAMPO

Legal Provisions. Institute Affairs. Statistical News. Publications.

Published quarterly Annual subscription price \$3.00 (U. S.)

INTER AMERICAN STATISTICAL INSTITUTE

Pan American Union
Washington 6, D.C.

ECONOMETRICA

Journal of the Econometric Society

Contents of Vol. 28, No. 3 - July 1960

JAMES DUSENBERRY, OTTO ECKSTEIN, AND GARY FROMM: Stability and Instability in the American Economy.

A. H. LAND AND A. G. DOIG: An Automatic Method of Solving Discrete Programming Problems

RALPH E. GOMORY AND WILLIAM J. BAUMOL: Integer Programming and Pricing

I. RICHARD SAVAGE AND KARL W. DEUTCH: A Statistical Model for the Gross Analysis of Transaction Flows.

A. L. NAGAR: A Monte Carlo Study of Alternative Simultaneous Equation Estimators

GREGORY C. CHOW: Tests of Equality between Sets of Coefficients in Two Linear Regressions

LIONEL W. MCKENZIE: A Contribution to the Theory of Competitive Equilibrium

W. V. CANDLER: A Short-Cut Method for the Complete Solution of Game Theory and Feed-Mix Problems

CHARLES W. HOWE: An Alternative Proof of the Existence of General Equilibrium in a von Neumann Model

KENNETH J. ARROW AND LEONID HURWICZ: Some Remarks on the Equilibria of Economic Systems

REPORT OF THE AMSTERDAM MEETING

REPORT OF THE WASHINGTON MEETING

BOOK REVIEWS

ANNOUNCEMENTS AND NOTES

SANKHYĀ

The Indian Journal of Statistics

Edited by P. C. Mahalanobis

Vol. 22, Parts 1 & 2, 1960

Classification of natural and plantation teak (*tectona grandis*) grown at different localities of India and

Burma with respect to its physical and mechanical properties.....K. R. Nair and H. K. Mukherji

A brief history of the organisation of official statistics in India during the British period.....S. Subramanian

Calculation of sampling errors for index numbers.....K. S. Banerjee

Type-study on peak period in harvesting Aman paddy, West Bengal, December 1954-January 1955

R. K. Som, G. C. Bhattacharyya and N. K. Namboodiri

Next steps in planning P. C. Mahalanobis

Industrialization of underdeveloped countries—a means to peace.....P. C. Mahalanobis

Food resources and population of India—A historical study.....P. C. Bansil

Test scoring by the 602A calculating punch.....Ajit Haldar

Report: National sample survey number thirteen: Report of household transport operations

Corrigenda

ANNUAL SUBSCRIPTION: 30 rupees (\$10.00), 10 rupees (\$3.50) per issue.

BACK NUMBERS: 45 rupees (\$15.00) per volume; 12/8 rupees (\$4.50) per issue.

Subscriptions and orders for back numbers should be sent to

STATISTICAL PUBLISHING SOCIETY

204/1 Barrackpore Trunk Road

Calcutta 35, India

METRON

International Review of Statistics

Editor: CORRADO GINI, Rome (Italy)

Editorial Committee: E. P. BILLETER, Fribourg (Switzerland); F. P. CANTELLI, Rome (Italy); C. DAGUM, Cordoba (Argentine); M. P. GEPPERT, Frankfurt a. M. (Germany); B. GIL, Jerusalem (Israel); L. SAVAGE, Chicago (U.S.A.); H. VON SCHELLING, Schenectady, New York (U.S.A.); P. STERGIOTIS, Athens (Greece); P. WHITTLE, Wellington (New Zealand); S. WILKS, Princeton (U.S.A.); H. WOLD, Stockholm (Sweden); R. YÜCEBULUG, Ankara (Turkey).

Vol. XX - NN. 1-2, 3-4

Contents

1960

O. M. J. MITTMANN, *Eine Methode zur Auffindung ursachlicher Zusammenhänge mittels partierler Korrelationskoeffizienten*

C. DAGUM, *Teoria de la Transvariación. Sus aplicaciones a la Economía*

V. CASTELLANO, *Sull'insieme delle distribuzioni doppie e triple risultanti dall'associazione una ad una delle unità di due o tre distribuzioni semplici aventi lo stesso numero di unità*

D. P. BANERJEE, *On the forms of some invariants of probability distribution*

CARLO BENEDETTI, *Su alcune singolari questioni statistiche ed econometriche connesse con le medie*

CORRADO GINI, *Introduction to Statistics*

Bibliografia

Subscription price (per volume): \$6 or the equivalent in other currencies. Articles and reviews may be written in English, Italian, French, German or Spanish. Contributors will receive free of charge 25 copies of their publications. Manuscripts submitted for publication, as well as subscriptions, should be addressed to Prof. Corrado Gini, *Università di Roma (Italy), Via delle Terme di Diocleziano, 10*. The Editors will not be responsible for the safe return of the original.

JOURNAL OF THE ROYAL STATISTICAL SOCIETY

Series B (Methodological)

30s per part

Vol. 22, No. 1, 1960

Ann. Sub.
Post Free £32s
U.S. \$9

CONTENTS

On selecting the largest of k normal population means. BY C. W. DUNNETT (*With Discussion*).

Confidence regions in nonlinear estimation. BY E. M. L. BEALE (*with Discussion*).

The busy period in relation to the single-server queueing system with general independent arrivals and Erlangian service times. BY B. W. CONOLLY.

A note on prediction from an autoregressive process using fiducial probability. BY A. D. ROY.

Some results for the queue with Poisson arrivals. BY N. U. PRABHU.

A queueing problem in which the arrival times of the customers are scheduled. BY A. MERCER.

The two-pack matching problems. BY A. W. JOSEPH AND M. T. L. BIZLEY.

On the theory of classical regression and double sampling estimation. BY B. D. TIKKIWAL.

Estimation of parameters in time-series regression models. BY J. DURBIN.

Maximum-likelihood estimation procedures and associated tests of significance. BY J. AITCHISON AND S. D. SILVEY.

Regression analysis where there is prior information about supplementary variables. BY D. R. COX.

Tables of the integral of the binomial distribution function over an offset circle. BY J. R. LOWE.

On the distribution of the weighted difference of two independent Student variables. BY H. RUBEN.

The Royal Statistical Society, 21, Bentinck Street, London, W. 1

Announcing a New Journal

SOVIET MATHEMATICS

DOKLADY

A Translation of all the Pure Mathematics Sections of Doklady Akademii Nauk SSSR

The total number of pages of the Russian journal to be translated in 1960 will be about 1500. The first issue of this new publication of the American Mathematical Society will contain translations of the January and February issues of *Doklady*.

Six Issues a year

Domestic Subscriptions	\$17.50
Foreign Subscriptions	20.00
Single Issues	5.00

Send Orders to
American Mathematical Society
190 Hope Street
Providence 6, Rhode Island

TECHNOMETRICS

A Journal of Statistics

for the Physical, Chemical and Engineering Sciences

Vol. 2, No. 1 and 2, Contents, February/May 1960

Some Remarks on Wild Observations *W. H. Kruskal*; Statistical Estimation of the Gasoline Octane Number Requirement of New Model Automobiles *C. S. Brinegar and R. E. Miller*; The Effect of Sequential Batching for Acceptance-Rejection Sampling Upon Sample Assurance of Total Product Quality *M. Halperin and G. L. Burrows*; Elements of the Theory of Extreme Values *B. Epstein*; System Efficiency and Reliability *R. E. Barlow and L. C. Hunter*; Aids for Fitting the Gamma Distribution by Maximum Likelihood *J. A. Greenwood and D. Durand*; Experimental Designs to Adjust for Time Trends *Hubert M. Hill*; Tests for the Validity of the Assumption that the Underlying Distribution of Life is Exponential, Part I *B. Epstein*; Programming Fisher's Exact Method of Comparing Two Percentages *W. H. Robertson*; Misclassified Data from a Binomial Population *A. Clifford Cohen, Jr.*; Rejection of Outliers *F. J. Anscombe*; Locating Outliers in Factorial Experiments *C. Daniel*; Discussion of the Papers of Messrs. Anscombe and Daniel *W. H. Kruskal, T. S. Ferguson, J. W. Tukey and E. J. Gumbel*; Tests for the Validity of the Assumptions that the Underlying Distribution of Life is Exponential, Part II *B. Epstein*; The Partial Duplication of Response Surface Designs *O. Dykstra*; A Rank Sum Test for Comparing all Pairs of Treatments *R. G. D. Steel*; The Percentile Points of Distributions Having Known Cumulants *R. A. Fisher and E. A. Cornish*; An Approximation to the Negative Moments of the Positive Binomial Useful in Life Testing *W. Mendenhall and L. H. Lehmann*; Order Statistics from the Gamma Distribution *S. S. Gupta*; Parallel Fractional Replicates *C. Daniel*.

Technometrics is published quarterly in February, May, August, and November. The annual non-member subscription rate is \$8.00. To members of the American Statistical Association and the American Society for Quality Control the rate is \$6.00. Checks should be made payable to *Technometrics* and addressed to *Technometrics*, Post Office Box 587, Benjamin Franklin Station, Washington 6, D. C.

**JOURNAL OF
THE AMERICAN STATISTICAL ASSOCIATION**

Volume 55

June, 1960

Number 290

- Bechhofer, Robert*: A Multiplicative Model for Analyzing Variances which are Affected by Several Factors.
Cohen, A. Clifford, Jr.: Estimation in the Truncated Poisson Distribution when Zeros and Some Ones Are Missing.
Hays, William L.: A Note on Average Tau as a Measure of Concordance.
Hogg, Robert V.: Certain Uncorrelated Statistics.
Maisal, Sherman J.: Changes in the Rate and Components of Household Formation.
Lord, Fredric M.: Large-Sample Covariance Analysis When the Control Variable is Fallible.
Muth, John F.: Optimal Properties of Exponentially Weighted Forecasts.
Quandt, Richard E.: Tests of the Hypothesis that a Linear Regression System Obeys Two Separate Regimes.
Rider, Paul R.: Variance of the Median of Samples From a Cauchy Distribution.
Spiegelglas, Stephen: A Statistical Investigation of the Industrialization Controversy.

BOOK REVIEWS

AMERICAN STATISTICAL ASSOCIATION

1737 K Street, N.W.

Washington 6, D.C.

TRABAJOS DE ESTADISTICA

Review published by "Instituto de Investigaciones Estadísticas" of the "Consejo Superior de Investigaciones Científicas." Madrid, Spain.

Vol. X

CONTENTS

Cuaderno II

P. ZOROA	El teorema de la probabilidad producto.	
R. FORTET	Observations discretas periodiques.	
ED. FRANCKX	La loi forte des grands nombres des variables uniformement bornees.	
G. TINTNER	The application of decision theory of probability to a simple inventory problem.	
NOTAS.		
V. CASTRO SAN MARTIN.	Sobre posibilidad de empleo de la artillería para la apertura de brechas en los campos terrestres de minas.	
F. PEDRONI	Limiti alle possibilità di misurazione della produttività.	
CRONICAS	BIBLIOGRAFIA	CUESTIONES Y EJERCICIOS.

For everything in connection with works, exchanges and subscription write to Professor Sixto Ríos, Instituto de Investigaciones Estadísticas, Consejo Superior de Investigaciones Científicas (Serrano, 123), Madrid, Spain. The Review is composed of three fascicles published three times a year (about 350 pages), and its annual price is 100 pesetas for Spain and South America and \$4.00 U.S.A. for all other countries.

THE INSTITUTE OF MATHEMATICAL STATISTICS

(Organized September 12, 1935)

OFFICERS

President:

John W. Tukey, Department of Mathematics, Princeton University,
(mail to Box 708, Princeton, New Jersey), and Bell Telephone Labora-
tories, Inc., Murray Hill, New Jersey

President-Elect:

E. L. Lehmann, Department of Statistics, University of California, Berk-
eley 4, California

Secretary:

G. E. Nicholson, Jr., Department of Statistics, University of North Car-
olina, Chapel Hill, North Carolina

Treasurer:

A. H. Bowker, Department of Statistics, Stanford University, Stanford,
California

Editor:

William Kruskal, Department of Statistics, Eckhart Hall, University of
Chicago, Chicago 37, Illinois

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 \$10.00 per year for residents of the United States or Canada and \$5.00 per year for residents of other countries. There are special rates for students and for some other classes of members. Inquiries regarding membership in the Institute should be sent to the Secretary of the Institute.

Contents (continued)

A One-sided Inequality of the Chebyshev type	
ALBERT W. MARSHALL AND INGRAM OLKIN	488
On the Uniqueness of the Triangular Association Scheme	A. J. HOFFMAN 492
Proper Spaces Related to Triangular Partially Balanced Incomplete Block Designs	L. C. A. CORSTEN 498
Balanced Factorial Experiments	B. V. SHAH 502
Notes:	
The First-Passage Moments and the Invariant Measure of a Markov Chain	JOHN LAMPERTI 515
Note on the Distribution of Locally Maximal Elements in a Random Sample	MARSHALL FREIMER AND BERNARD GOLD 518
Contributions to the Theory of Rank Order Statistics: Computation Rules for Probabilities of Rank Orders	RICHARD SAVAGE 519
An Inequality for Balanced Incomplete Block Designs	WADIE F. MIKHAIL 520
Acknowledgment of Priority	523
Abstracts of Papers	524
News and Notices	540
Doctoral Dissertations in Statistics, 1959	549
Report of the President for 1959	552
Report of the Central Regional Meeting	553
Publications Received	556

**MEETINGS OF THE INSTITUTE
TENTATIVE SCHEDULE**

ANNUAL MEETING—Stanford, California, August 23-26, 1960.

Abstracts should be submitted in duplicate to the Editor, preferably on abstract blanks, which can be obtained from the IMS Secretary. Abstracts must be received at least 50 days before the first day of the meeting at which they are to be presented, indicating whether presented by title or in person. (Only one contributed paper may be given in person at any one meeting.) They may be printed prior to the publication of the report of the meeting. Those received by April 30 will appear in the September *Annals*, by July 31 in December, etc. Abstracts should be limited to 200 words or the equivalent, and should avoid displayed expressions and complicated formulae. They can be accepted from non-members of the IMS only if transmitted by members.