

Three new Wiley Books summarize important progress made in recent years. Examine them now, on approval.

ECONOMETRIC THEORY by Arthur A. Goldberger, Professor, Department of Economics and Social Systems Research Institute, University of Wisconsin. A systematic development of the theory and technique of statistical inference appropriate to the estimation and testing of relationships among economic variables. Stressing the need for a statistical framework that captures the main features of the process generating the data, the book enables the reader to use the advanced tools of statistical inference in empirical economic investigations. Included among the special features: Development of alternative statistical models by successive relaxation of the specifications of classical regression. ••• Detailed derivation and discussion of properties of estimators in many alternative models. •••• Early introduction of topics such as multivariate regression and prior information. 1964. 399 pages. \$10.95

THE ELEMENTS OF STOCHASTIC PROCESSES: With Applications To The Natural Sciences, by Norman T. J. Bailey, Oxford University. A lucid introduction to the theory and application of the evolutionary type of stochastic process, this book supplies the mathematical tools needed to deal with birth, death, transformation, evolution and other time-linked phenomena. 1964. 261 pages. Approx. \$7.00

Proceedings of the Symposium on **TIME SERIES ANALYSIS**, Brown University, June 1962. Edited by Murray Rosenblatt. Reports on the Symposium which was sponsored jointly by Brown University and the Office of Naval Research. Prominent workers in the field discussed the present state of knowledge and considered current basic problems in theory and applications. Topics include: STRUCTURAL QUESTIONS—STATISTICAL QUESTIONS—APPLICATIONS. A publication in the SIAM Series in Applied Mathematics. 1963. 497 pages. \$16.50

JOHN WILEY & SONS, Inc., 605 Third Avenue, New York, N. Y. 10016

Now available! The long-awaited, completed edition of . . .

BASIC CONCEPTS OF PROBABILITY AND STATISTICS

by J. L. Hodges, Jr. and E. L. Lehmann

It is the purpose of this book to explain the basic concepts of probability and statistics, assuming only a knowledge of high-school algebra, and to illustrate them with a number of simple but important statistical techniques.

The first part of the book, which is devoted to the basic concepts of probability, is centered on the notion of probability model. An effort is made not only to develop the mathematical theory but also to give a feeling for the relation between the model and the real world which it represents. In the second, statistical, part the basic concepts of estimation and hypothesis testing are explained, and are illustrated on topics such as sampling design, combination of measurements and nonparametric testing. Essentially, only material is included that can be treated rigorously without calculus. However, normal, Poisson and chi-square approximations are discussed for probabilities whose calculation has been explained in principle but whose actual computation would be too laborious. 375 pp. \$6.95

Contents:

Part I-Probability: Probability models. Sampling. Product models. Conditional probability. Random variables. Special distributions. Multivariate distributions.

Part II-Statistics: Estimation. Estimation in measurement and sampling models. Optimum methods of estimation. Tests of significance. Tests for comparative experiments. The concept of power.



HOLDEN-DAY

728 Montgomery Street, San Francisco, California

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

Volume 59

March 1964

Number 305

TABLE OF CONTENTS

Herman H. Fasteau, J. Jack Ingram and George Minton

Book Reviews

For further information, please contact:

AMERICAN STATISTICAL ASSOCIATION

810 18th Street, N.W.

Washington, D. C. 20006

TECHNOMETRICS

A Journal of Statistics

for the Physical, Chemical and Engineering Sciences

CONTENTS

TECHNOMETRICS, Vol. 5, No. 4, November 1963

| A Comparison of Three Different Procedures for Estimating Variance Components Norman Bush and R. L. Anderson |
|---|
| Non-Negative Estimates of Variance Components |
| Estimation of the Probability of Defective Failure from Destructive Tests |
| A. C. Nelson, Jr., J. S. Williams and N. T. Fletcher |
| "Ridge Analysis" of Response Surfaces |
| The Design of Screening Tests O. L. Davies |
| |
| Tables for a Precedence Life Test |
| Tables for Testing Significance in a 2 x 3 Contingency Table |
| Notes: |
| |
| Convergence in Non-Linear Regression |
| Relations Among Moments of Order Statistics in Samples From Two Related Populations |
| |
| Z. Govindarajulu |
| Distribution Free Tolerance Limits: Elimination of Requirement that Cumulative Functions be Continuous |
| Book Reviews: J. Pfanzagl, H. D. Miller, Richard E. Barlow, W. Fleming, Marvin Zelen and Ben Noble. Letter to the Editor, Notices. |

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

ECONOMETRICA

Contents of Vol. 31, No. 3 - July, 1963

| TA-CHUNG Liu: An Exploratory Quarterly Econometric Model of Effective Demand in the Postwar U. S. Economy |
|---|
| O. H. BROWNLEE AND I. O. SCOTT: Utility, Liquidity, and Debt Management |
| J. KMENTA AND M. E. JOSEPH: A Monte Carlo Study of Alternative Estimates of the Cobb-Douglas |
| Production Function |
| IRVING HOCH: Reply |
| J. KMENTA: A Monte Carlo Study of Alternative Estimates of the Cobb-Douglas Production Function: |
| A Rejoinder |
| YORAM BARZEL: Some Observations on the Index Number Problem |
| EDWARD FOSTER: Sales Forecasts and the Inventory Cycle |
| CLIFFORD HILDRETH: Bayesian Statisticians and Remote Clients |
| R. L. Basmann: The Causal Interpretation of Non-Triangular Systems of Economic Relations |
| ROBERT H. STROTZ AND H. O. A. WOLD: The Causal Interpretability of Structural Parameters: A Reply |
| R. L. Basmann: On the Causal Interpretation of Non-Triangular Systems of Economic Relations: A |
| |
| GUIDO REY AND C. B. TILANUS: Input-Output Forecasts for the Netherlands, 1949–1958. |
| J. C. G. Boot: Binding Constraint Procedures of Quadratic Programming. |
| G. S. Tolley and R. W. Gieseman: Consumer Demand Explained by Measurable Utility Changes. |
| G. S. Tolley and R. W. Gieseman: Consumer Demand Explained by Measurable Utility Changes. D. V. T. Bears: The Matrix Multiplier and Distributed Lags. |
| |
| NOTES AND COMMENTS |
| Robert Eisner: Another Look at Liquidity Preference. |
| M. Bronfenbrenner and Thomas Mayer: Rejoinder to Professor Eisner |
| Allan H. Meltzer: Yet Another Look at the Low Level Liquidity Trap |
| Robert Eisner: Reply |
| Subramanian Swamy: Notes on Factile Graphical Analysis |
| T. R. Saving: Note on Factor Demand Elasticity: The Competitive Case |
| Ira Horowitz: Some Comments on "Brand Loyalty" |
| Harold Demsetz: Reply |
| Richard Kosobud: A Note on a Problem Caused by Assignment of Missing Data in Sample Surveys |
| Report of the Ann Arbor Meeting, September 9-11, 1962. |
| Book Reviews |
| |

REVIEW OF THE INTERNATIONAL STATISTICAL INSTITUTE

Contents of Vol. 31, No. 1

Articles

A. Sauvy-L'estimation sans rigueur.

G. Bramness, D. B. Jochems & H. Theil—On the presentation of aggregative business test results and the improvement of business test forecasts.

G. Ekman—On the sum $\sum_{i=1}^{n} p_{h}^{i} \sigma_{h}^{i}$.

Communications

Statistical organization and administration. Statistical research. Statistical societies.

Calendar of meetings

International Statistical Bibliography

Book Reviews

The REVIEW OF THE ISI is published three times per year. The annual subscription is \$5.50 (single copies \$2.10), post free. Orders should be sent to: International Statistical Institute, 2 Oostduinlaan, The Hague, Netherlands.

ESTADÍSTICA

Journal of the Inter American Statistical Institute

| Vol. XXI, No. 80 | CONTENTS | September 1963 |
|---|--|---|
| | for Research Workers en el Desarrollo de la | r. rates |
| La Revolución Fisheriana en los Métodos Estadísticos para Investig Some Sampling Techniques Appliec Techniques of Sampling and Statis Um Indice de Alugueis para o Rio Dos Publicaciones de la Dirección de Company de la Company | la Estadística étodos de Experimentación. adores por R. A. Fisher: Una Apreciación by the Dominion Bureau of Statistics stical Evaluation for Census Work de Janeiro. el Censo de los Estados Unidos sobre la En Coordinación Estadística del Istmo Cen solutions Relating to Statistics. Publications. | n Kenneth Mather Ivan P. Fellegi Eli S. Marks Jorge Kingston cuesta Continua de Población |

Annual subscription price \$3.00 (U.S.) Published quarterly INTER AMERICAN STATISTICAL INSTITUTE Pan American Union Washington 6, D. C.

THE INSTITUTE OF MATHEMATICAL STATISTICS

(Organized September 12, 1935)

OFFICERS

President:

Z. W. Birnbaum, Department of Mathematics, University of Washington, Seattle 5, Washington

President-Elect:

Herbert Solomon, Department of Statistics, Stanford University, Stanford, California

Executive Secretary:

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

Program Secretary:

Dorothy Gilford, Office of Naval Research, Washington 25, D.C.

Treasurer:

Gerald Lieberman, Institute of Mathematical Statistics, Sequoia Hall, Stanford University, Stanford, California

Editor:

J. L. Hodges, Jr., Department of Statistics, University of California, Berkeley 4, California

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 MATHE-MATICAL STATISTICS are \$15.00 per year for residents of the United States or Canada and \$7.00 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 Treasurer of the Institute.

Membership in the Institute of Mathematical Statistics is not required of authors 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.

Contents (Continued)

| The Moments of a Variate Related to the Non-Central t | |
|---|-----|
| D. Hogben, R. S. Pinkham and M. B. Wilk An Approximation to the Distribution of Q (A Variate Related to the Non-Central t) | 298 |
| D. HOGBEN, R. S. PINKHAM AND M. B. WILK | 315 |
| Limiting Distribution of the Maximum of a Diffusion ProcessSIMEON M. BERMAN | |
| On Continuous Singular Infinitely Divisible Distribution Functions | 020 |
| Howard G. Tucker | 330 |
| An Evaluation of a Functional on Infinitely Divisible Stochastic Processes | - |
| V maranemer D mare | 336 |
| On Sequential Control Processes | 341 |
| Multivariate Competition Processes | 350 |
| Lower Bounds for Minimum Covariance Matrices in Time Series Regression Problems | |
| N. Donald Ylvisaker | 362 |
| The Enumeration of Election Returns by Number of Lead Positions. John Riordan | 369 |
| On the Traffic-Light QueueJ. N. Darroch | 380 |
| Cubic Designs | 389 |
| On the Traffic-Light Queue | |
| S. M. Shah | 398 |
| On a Bound Useful in the Theory of Factorial Designs and Error Correcting Codes | |
| R. C. Bose and J. N. Srivastava On the Axioms of Information Theory | 408 |
| On the Axioms of Information TheoryP. M. Lee | 415 |
| Notes | |
| A Local Limit TheoremL. A. SHEPP | 419 |
| A Limit Law Concerning Moving Averages | 424 |
| Exchangeable Processes Which Are Functions of Stationary Markov Chains | |
| S. W. Dharmadhikari | 429 |
| Generating Functions for Markov Renewal Processes MARCEL F. NEUTS | 431 |
| A Property of the Method of Steepest Ascent | 405 |
| CHARLES HENRY JOHNSON AND JOHN LEROY FOLKS | 435 |
| Sample Size Required for Estimating the Variance Within d Units of the True Value | 400 |
| FRANKLIN A. GRAYBILL AND TERRENCE L. CONNELL | 438 |
| A Note on the Maximization of a Non-Central Chi-Square Probability Dennis C. Gilliland | 441 |
| | |
| The Spectral Theorem for Finite Matrices and Cochran's Theorem. M. F. SMILEY | 440 |
| Two Third Order Rotatable Designs in Four Dimensions. Agnes M. Herzberg | 440 |
| Book Reviews | 441 |
| News and Notices. | |
| Publications Received. | |
| 1 HDHUAHIUHS 16661764 | 717 |

MEETINGS OF THE INSTITUTE

TENTATIVE SCHEDULE

CENTRAL REGIONAL—Manhattan, Kansas—May 7-9, 1964. ANNUAL MEETING—Amherst, Mass., Aug. 26-29, 1964. EUROPEAN REGIONAL—Bern, Switzerland—September 14-16, 1964.

Abstracts should be submitted in duplicate to the Editor, on abstract blanks which can be found in the back of every Annals, beginning with the March 1961 issue, or 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 March 15 should appear in the June Annals, by June 15 in September, 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 introduced by members. Abstracts must follow the stylistic requests on the abstract blank, or they may be returned.