CIS CUMULATIVE DATA BASE 1992 Edition

A Computer-Readable Bibliography of the Literature of Statistics and Probability, 1975–1991

Based on the Current Index to Statistics
A joint venture of the Institute of Mathematical Statistics
and the American Statistical Association

The 1991 Edition (1978–90) is currently in use at more than 70 university libraries, statistics and mathematics departments, government agencies, and corporations.

With appropriate retrieval software, the 1992 edition offers students, faculty, and staff at your site . . .

- Fast and easy literature searches based on author, title, and key words and phrases.
- Access to over 130,000 articles on probability and statistics published during the past 17 years.
- Printed lists of references retrieved.
- No long distance, connection time, or item retrieval charges.
- ◆ Also includes articles from IMS journals published in 1960—1974 as contained in the Cumulative Index to IMS Scientific Journals.

Total file length for the 1992 edition is approximately 18 MB, supplied on 3.5" high density microdiskettes in MS-DOS format. No retrieval software is supplied by CIS, but "shareware" for a variety of installations is available from current users. For copies of license agreements and technical information, contact the IMS Business Office at the address below, telephone (510) 783-8141, FAX 783-4131, or e-mail IMS@UCDAVIS.BITNET or IMS@UCDAVIS.EDU.

PRICES

GENERAL LICENSE: First Year, \$600. Update from 1991 Edition, \$150.

You may make the data base available to users at your site through an unlimited number of stations (computers or terminals).

"SMALL SITE" LICENSE: First Year, \$290. Update from 1991 Edition, \$90. No more than four stations at an academic department or corporate research group. (No federal agency orders.)

"PERSONAL" LICENSE: First Year or Any Update, \$90.

Personal use by an individual IMS or ASA member on one computer. (Paid from personal funds; shipped to home address.)

Deadline Date: Orders must be received at the IMS Business Office by July 15, 1992; shipment is scheduled for late July. (Orders must include signed license agreements and full payment in U.S. funds through a U.S. bank; institutions, please allow time for local processing.) Any copies ordered after the deadline date will be manufactured in small lots, will incur an additional \$50 charge, and will be shipped when available.

Direct all orders to: IMS Business Office 3401 Investment Boulevard, Suite 7, Hayward, CA 94545, USA

Story, Strick of Serick of Sold of Sol

Current Issues in Statistical Inference: Essays in Honor of D. Basu

edited by M. Ghosh & P. K. Pathak

D. Basu's emphasis has always been on foundations and underlying concepts rather than on technicalities. In keeping with his philosophy, essays in this festschrift volume, dedicated to Basu on the occasion of his 65th birthday, place the major emphasis on the foundational issues of statistical inference. Most of the papers in this volume are review articles written by his friends and colleagues in those areas of statistics that have interested Basu most during his active research career—information, likelihood, ancillarity, randomization, fiducial probabilities, logical foundations of survey sampling, and many related concepts. These papers are also written in a narrative style which has typified so much of Basu's own writings in statistics.

Contents

Conditional inference from confidence sets by G. Casella; Intervention experiments, randomization and inference by O. Kempthorne; Ancillarity by E. L. Lehmann & F. W. Scholz; The Pitman closeness of statistical estimators: Latent years and the renaissance by P. K. Sen; Unbiased sequential binomial estimation by Bimal K. Sinha & Bikas K. Sinha; Sufficiency by S. Yamada & H. Morimoto; Foundations of statistical quality control by R. E. Barlow & T. Z. Irony; Prequential data analysis by A. P. Dawid; Bayesian nonparametric inference by T. S. Ferguson, E. G. Phadia, & R. C. Tiwari; Hierarchical and empirical Bayes multivariate estimation by M. Ghosh; Basu's contributions to the foundations of sample survey by G. Meeden; Survey sampling—As I understand it by V. P. Godambe; Two basic partial orderings for distributions derived from Schur functions and majorization by K. Joag-Dev & J. Sethuraman; Optimal integration of surveys by P. K. Pathak & M. Fahimi; The model based (prediction) approach to finite population sampling theory by R. M. Royall; Sampling theory using experimental design concepts by J. Srivastava & Z. Ouyang

Pagesviii+264 List price \$25 IMS member price \$15

Order prepaid from:
Institute of Mathematical Statistics
3401 Investment Boulevard, Suite 7
Hayward, California 94545 (USA)

Titles in Statistics from SIAM

Nonparametric Function Estimation, Modeling, and Simulation

James R. Thompson and Richard A. Tapia

Emphasizes nonparametric density estimation as an exploratory device plus the deeper models to which the exploratory analysis points, multi-dimensional data analysis, and analysis of remote sensing data, cancer progression, chaos theory, epidemiological modeling, and parallel based algorithms, among other topics. New methods discussed are quick nonparametric density estimation based techniques for resampling and simulation based estimation techniques not requiring closed form solutions.

Professionals in statistics, computer science, and operations research will find this book useful, as will graduate students in the areas of statistics, engineering, data analysis and modeling, and density estimation. Engineers in all fields—particularly biomedicine—will be interested in this book and should find its contents quite applicable.

Contents. Chapter 1: Historical Background; Chapter 2: Some Approaches to Nonparametric Density Estimation; Chapter 3: Maximum Likelihood Density Estimation; Chapter 4: Maximum Penalized Likelihood Density Estimation; Chapter 5: Discrete Maximum Penalized Likelihood Estimation; Chapter 6: Nonparametric Density of Estimation in Higher Dimensions; Chapter 7: Nonparametric Regression and Intensity Function Estimation; Chapter 8: Model Building and Speculative Data Analysis; Appendix I: An Introduction to Mathematical Optimization Theory; Appendix II: Numerical Solution of Constrained Optimization Problems; Appendix III: Optimization Algorithms for Noisy Problems; Appendix IV: A Brief Primer in Simulation; Index.

1990 / xvi + 304 pages / Softcover / ISBN 0-89871-261-0 List Price \$32.50 / SIAM Member Price \$26.00 / Order Code OT21

Spline Models for Observational Data

Grace Wahba

"This is a thorough account of non-parametric regression using splines, eschewing other approaches, and approaching splines themselves via the technology of reproducing kernel Hilbert spaces. The result is an impressively unified, consistent, treatment of a wide variety of problems, some really quite hard...This is an impressive record of research, offering stimulation for further investigation."

—P.J. Green, University of Bristol, *Short Book Reviews*, Publication of the International Statistical Institute, December 1990.

This book serves well as an introduction into the more theoretical aspects of the use of spline models. It develops a theory and practice for the estimation of functions from noisy data on functionals. The simplest example is the estimation of a smooth curve, given noisy observations on a finite number of its values.

Contents. Foreword; Chapter 1: Background; Chapter 2: More Splines; Chapter 3: Equivalence and Perpendicularity, or, What's So Special About Splines?; Chapter 4: Estimating the Smoothing Parameter; Chapter 5: "Confidence Intervals"; Chapter 6: Partial Spline Models; Chapter 7: Finite-Dimensional Approximating Subspaces: Chapter 8: Fredholm Integral Equations of the First Kind; Chapter 9: Further Nonlinear Generalizations; Chapter 10: Additive and Interaction Splines; Chapter 11: Numerical Methods; Chapter 12: Special Topics; Bibliography; Author Index.

1990 / xii + 169 pages / Softcover / ISBN 0-89871-244-0 List Price \$24.75 / SIAM Member Price \$19.80 / Order Code CB59

The Total Least Squares Problem: Computational Aspects and Analysis

Sabine Van Huffel and Joos Vandewalle

"...TLS (Total Least Squares) represents a technique that synthesizes statistical and numerical methodologies for solving problems arising in many application areas. The authors of this monograph have been leaders in showing how to use TLS for solving a variety of problems, especially those arising in a signal processing context. They give an elegant presentation of the various aspects of the TLS problem. Their survey encompasses the many elements required to understand the problem. It is a pleasure to read such a clear account, which is presented using standard mathematical ideas and nomenclature."

—Gene H. Golub, Department of Computer Science, Stanford University

Contents. Introduction; Basic Principles of the Total Least Squares Problem; Extensions of the Basic Total Least Squares Problem; Direct Speed Improvement of the Total Least Squares Computations; Iterative Speed Improvement for Solving Slowly Varying Total Least Squares Problems; Algebraic Connections Between Total Least Squares and Least Squares Problems; Sensitivity Analysis of Total Least Squares and Least Squares Problems in the Presence of Errors in all Data; Statistical Properties of the Total Least Squares Problem; Algebraic Connections Between Total Least Squares Estimation and Classical Linear Regression in Multicollinearity Problems; Conclusions.

1991 / xiii + 300 pages / Softcover ISBN 0-89871-275-0 List Price \$28.50 SIAM Member Price \$22.80 Order Code FR09



To order, contact:

SIAM Customer Service, Dept. BKIM92 3600 University City Science Center Philadelphia, PA 19104-2688

Call toll free in U.S.: 800-447-SIAM Phone: 215-382-9800 / Fax: 386-7999

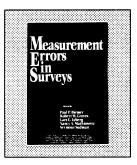
E-mail: service@siam.org

Prices subject to change 12/31/92.

STATISTICS

New and Bestselling Titles from WILEY

Examine any title FREE for 15 days!



Statistical Intervals: A Guide for Practitioners

Gerald J. Hahn and

William Q. Meeker

A comprehensive treatment combining tried and true methods with some published for the first time in book form, this guide explains how to use different types of statistical intervals to express and quantify uncertainty in data. Emphasizes practical considerations and illustrates these throughout with a wide variety of examples.

416 pp. 1-88769-2 Aug. 1991 \$54.95

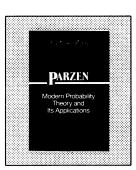


Introduction to Linear Regression Analysis Second Edition

Douglas C. Montgomery and Elizabeth A. Peck

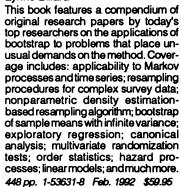
Offering a complete introduction to the subject, this revised Second Edition provides a thorough understanding of the basic principles required for the application of regression methods in a wide variety of practical settings. It features new material on regression diagnostics, as well as discussion on the handling of generalized linear models and nonlinear regression, plus sample computer output with expanded interpretations.

544 pp. 1-53387-4 Jan. 1992 \$49.95



Exploring the Limits of Bootstrap

Edited by Raoul LePage and Lynne Billard





Measurement Errors in Surveys

Edited by Paul Biemer, Robert Groves, Lars Lyberg, Nancy Mathiowetz, and Seymour Sudman Offering a thorough account of the current state of the field, this collection features reports on the findings of new research, as well as interdisciplinary approaches in modeling, assessing, and reducing measurement errors. Examines questionnaires, the respondentinterviewer relationship, and modeling measurement errors.

800 pp. 1-53405-6 Dec. 1991 \$75.00

Discriminant Analysis and Statistical Pattern Recognition

Geoffrey McLachlan

New advances are reported against the background of existing literature, and include: regularized discriminant analysis, boot-strapped-based assessment of the performance of a sample based discriminant rule, and an account of extensions of discriminant analysis motived by problems in statistical image analysis.

544 pp. 1-61531-5 Mar. 1992 \$64.95

Bayesian Inference in Statistical Analysis

George E.P. Box and George C. Tiao

Originally published in 1973, the core of this *Wiley Classics Library* paper reprint is an investigation of questions with appropriate analysis of mathematical results, illustrated with numerical examples. No changes have been made to the original text.

608 pp. 1-57428-7 Apr. 1992 \$39.95

Modern Probability and its Applications

Emanuel Parzen

First published in 1960, this is a complete introductoon to the theory for statisticians, mathematicians, computer scientists and engineers. Includes over 500 exerices. Now a *Wiley Classics Library* paper reprint.

480 pp. 1-57278-0 Feb. 1992 \$32.95

Statistics for Spatial Data

Noel Cressie

An examination of the analysis of spatial data by way of statistical models, this reference offers a balanced blend of theory and applications. Presenting a unified treatment of many areas in consistent notation and delineating geostatistical data, lattice data, and point patterns--the three most rigorous areas of growth--it brings together material largely excluded from the statistical literature.

944 pp. 1-84376-9 Sept. 1991 \$89.95

Variance Components

Shayle R. Searle, George Cassella, and Charles E. McCulloch

This valuable text deals with the estimation of variance components and the prediction of realized but unobservable values of random variables in analysis of variance models and in binary and discrete data. All the major methods of estimating components are discussed at length, including ANOVA, ML, REML, and Bayes. Includes end-of-chapter exercises. 528 pp. 1-62162-5 Mar. 1992 \$69.95

Regression Analysis by Example Second Edition

Samprit Chatterjee and Bertram Price

Bridging the gap between theory and practice, this revised edition presents concepts for use in a wide variety of problemsituations. Realistic examples emphasize data analysis and irregularities often encountered in practice. 304 pp. 1-88479-0 Aug. 1991 \$39.95

A Dictionary of Statistical Terms Fifth Edition

F.H.C. Marriott

This new edition features over 400 new terms, including those related to modern computer packages. Coverage illustrates current applications, and reflects the increasing importance of medical statistics and computing.

223 pp. 1-21349-3 Jan. 1990 \$62.95

To order, circle your selection(s) and return entire ad to:

JOHN WILEY & SONS, INC. Attn: L.L. Hockstein 605 Third Avenue, New York, NY 10158

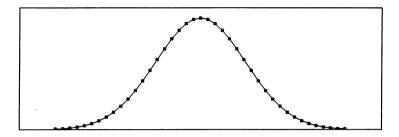
To order by phone, call Toll-Free 1-800-526-5368 For other inquiries, call 212-850-6418

Prices subject to change without notice & higher outside the U.S.A.

2.92

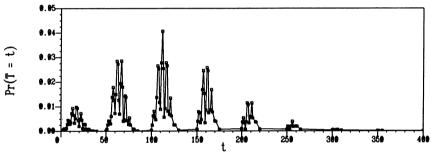


In a perfect world, all your data would be normally distributed, like this:



In the <u>real</u> world, normal distributions rarely occur for sparse, imbalanced or small data sets. And, only *StatXact* can tell you when your test statistic is multimodal, like this:

Probability Density for FDA Data*



* Animal toxicology data from the US Food & Drug Administration. See Mehta et. al. J. Comp. Graph. Statist. 1992, Vol 1.

Get *StatXact*. Your data were expensive to gather. Don't they deserve the most accurate analysis current technology can provide? Call us today.

StatXact Features:

Exact One-Sample Procedures

- Binomial confidence interval
- Wilcoxon signed rank test
- Permutation test with general scores
- Exact permutational distributions

Exact Stratified 2 x 2 Contingency Tables

- Tests of homogeneity for odds ratios
- Tests of unity for the common odds ratio
- Confidence interval for common odds

Exact Stratified 2 x C Contingency Tables

- All two-sample tests with stratification
- Confidence interval for trend parameter
- Exact permutational distributions

Exact Two-Sample Procedures

- Wilcoxon-Mann-Whitney test
- Normal scores test
- Savage test
- Logrank test for censored survival data
- Gehan test for censored survival data
- Cochran-Armitage trend test

- Permutation test with general scores
- Exact permutational distributions

Exact R x C Contingency Tables

- Fisher's exact test
- Pearson's chi-squared test
- Likelihood ratio test
- Kruskal-Wallis test
- Jonckheere-Terpstra test
- Linear-by-linear association test
- McNemar's test
- Marginal homogeneity test for matched pairs



For more information or to place an order, contact: CYTEL Software Corporation, 137 Erie Street, Cambridge, MA 02139, USA • (617) 661-2011 • Fax (617) 661-4405

INSTITUTE OF MATHEMATICAL STATISTICS

(Organized September 12, 1935)

The purpose of the Institute is to foster the development and dissemination of the theory and applications of statistics and probability.

OFFICERS AND EDITORS

President:

Willem R. van Zwet, Department of Mathematics, University of Leiden, P.O. Box 9512, 2300 RA Leiden, The Netherlands **President-Elect:**

Lawrence D. Brown, Department of Mathematics, White Hall, Cornell University, Ithaca, New York 14853-7901

Past President:

David O. Siegmund, Department of Statistics, Sequoia Hall, Stanford University, Stanford, California 94305-4065 **Executive Secretary:**

Diane M. Lambert, AT&T Bell Laboratories, 600 Mountain Avenue, Room 2C-256, Murray Hill, New Jersey 07974 **Treasurer:**

Jessica Utts, Division of Statistics, University of California, Davis. *Please send correspondence to:* IMS Business Office, 3401 Investment Boulevard #7, Hayward, California 94545

Program Secretary:

Iain M. Johnstone, Division of Biostatistics, HRP Building, Room 10, Stanford University, Stanford, California 94305-5092

Editor: The Annals of Statistics

Michael Woodroofe, Department of Statistics, Mason Hall, University of Michigan, Ann Arbor, Michigan 48109-1027

Editor: The Annals of Probability

Burgess Davis, Departments of Mathematics and Statistics, Purdue University, West Lafayette, Indiana 47907

Editor: The Annals of Applied Probability

J. Michael Steele, Department of Statistics, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6302

Executive Editor: Statistical Science

Robert E. Kass, Department of Statistics, Carnegie Mellon University, Pittsburgh, Pennsylvania 15213

Editor: The IMS Bulletin

George P. H. Styan, Department of Mathematics and Statistics, Burnside Hall, McGill University, 805 Sherbrooke Street West, Montreal PQ, Canada H3A 2K6

Editor: The IMS Lecture Notes—Monograph Series

Robert J. Serfling, Department of Mathematical Sciences, Johns Hopkins University, Baltimore, Maryland 21218

Managing Editor:

Roger L. Berger, Department of Statistics, Box 8203, North Carolina State University, Raleigh, North Carolina 27695

Managing Editor:

Robert Smythe, Department of Statistics, George Washington University, 2201 G Street N.W., Washington, D.C. 20052

Journals. The scientific journals of the Institute are *The Annals of Applied Probability, The Annals of Probability, The Annals of Statistics* and *Statistical Science*. The news organ of the Institute is *The Institute of Mathematical Statistics Bulletin*.

Individual and Organizational Memberships. All individual members pay basic membership dues of \$40 plus \$10 for The IMS Bulletin. Each regular member must elect to receive at least one scientific journal for an additional amount, as follows: The Annals of Applied Probability (\$10), The Annals of Probability (\$20), The Annals of Statistics (\$20) or Statistical Science (\$10). Of the total dues paid, \$24 is allocated to The IMS Bulletin and the remaining amount is allocated equally among the scientific journal(s) received. Reduced membership dues are available to full-time students, permanent residents of countries designated by the IMS Council and retired members. Retired members may elect to receive The IMS Bulletin only for \$20. Organizational memberships are available to nonprofit organizations at \$425 per year and to for-profit organizations at \$700 per year. Organizational memberships include two multiple-readership copies of all IMS journals in addition to other benefits specified for each category (details available from the IMS Business Office).

Individual and General Subscriptions. Subscriptions are available on a calendar-year basis. Individual subscriptions are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 1992 are available to The Annals of Applied Probability (\$70), The Annals of Probability (\$80), The Annals of Statistics (\$80), The IMS Bulletin (\$45) and Statistical Science (\$70). General subscriptions are for libraries, institutions, and any multiple-readership use. General subscriptions for 1992 are available for The Annals of Applied Probability (\$70), The Annals of Probability and The Annals of Applied Probability (\$180), The Annals of Statistics (\$130), The IMS Bulletin (\$50) and Statistical Science (\$75). Air mail rates for delivery outside North America are \$80 per title (excluding The IMS Bulletin).

Permissions policy. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by the Institute of Mathematical Statistics, provided that the base fee of \$7.50 per copy, plus \$.00 per page is paid directly to the Copyright Clearance Center, 27 Congress Street, Salem, Massachusetts 01970. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is 0883-4237/92 \$7.50 + .00.

Correspondence. Mail to IMS should be sent to the IMS Business Office (membership, subscriptions, claims, copyright permissions, advertising, back issues), the Editor of the appropriate journal (submissions, editorial content) or the Production Editor, Patrick Kelly, Department of Statistics, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6302.

Springer for Statistical Science

M.A. Berger, Georgia Institute of Technology, Atlanta, GA An Introduction to Probability and Stochastic Processes

This textbook provides students with a straightforward introduction to the mathematical theory of probability. It presents the central results and techniques of the subject in a complete and self-contained account. As a result, the emphasis is on giving results in simple forms with clear proofs and to eschew more powerful forms of theorems which require technically involved proofs. Any student who has a familiarity with calculus and basic algebra will be able to use this text. Throughout there are a wide variety of exercises to illustrate and develop ideas in the text. One highlight of the book is an account of random iterated function systems.

1992/app. 208 pp./Hardcover/\$39.00/ISBN 0-387-97784-8 Springer Texts in Statistics

C.-E. Särndal, Université de Montreal, Canada; B. Swensson, University of Örebro, Sweden; J. Wretman, University of Stockholm, Sweden

Model Assisted Survey Sampling

Features the model assisted approach to estimation stressing important general principles for estimation and analysis in surveys. Covers some basic material: survey operations and standard survey methods but also includes more advanced material: use of modelling in sampling, stating the precision in survey estimates, use of supplementary information (from census or administrative files, nonresponsive and missing data, survey errors and error models, and estimation for subpopulations and small areas). Includes real data sets for exercises in an appendix. The book is intended for statistics students, survey methodologists and those engaged in survey research in a variety of disciplines.

1992/694 pp., 8 illus./\$49.00/ISBN 0-387-97528-4 Springer Series in Statistics

P. Todorovic, University of California, Santa Barbara, CA

An Introduction to Stochastic Processes and Their Applications

Presents an introduction to the theory of continuous parameter stochastic processes at the graduate-level. It is designed to provide a systematic account of the basic concepts and methods from a modern point of view and emphasizes the study of the sample paths of the processes. In addition to six principal classes of stochastic processes (independent increments, stationary, strictly stationary, second order processes, Markov processes and discrete parameter martingales) there are also separate chapters on point processes, Brownian motion processes and $\rm L_2$ spaces. Numerous examples and applications are presented and over 200 exercises are included to illustrate and explain the concepts discussed in the text.

1992/app. 280 pp./Hardcover/\$49.95/ISBN 0-387-97783-X Springer Series in Statistics Probability and its Applications New from the series - Lecture Notes in Statistics

M.A. Tanner, University of Rochester Medical Center, NY

Tools for Statistical Inference

Observed Data Augmentation Methods 1991/110 pp., 39 illus./Softcover/\$20.00 ISBN 0-387-97525-X

Lecture Notes in Statistics, Volume 67

N.J.D. Nagelkerke, International Statistical Institute, Voorburg, The Netherlands

Maximum Likelihood Estimation of Functional Relationships

1992/110 pp./Softcover/\$25.00/ISBN 0-387-97721-X Lecture Notes in Statistics, Volume 69

K. Iida, National Defense Academy, Yokosuka, Japan Studies on the Optimal Search Plan

1992/130 pp./Softcover/\$25.00/ISBN 0-387-97739-2
Lecture Notes in Statistics, Volume 70

E.M.R.A. Engel, University of Massachusetts, Amherst, MA

A Road to Randomness in Physical Systems

1992/155 pp., 32 illus/Softcover/\$30.00 ISBN 0-387-97740-6 Lecture Notes in Statistics, Volume 71

J.K. Lindsey, University of Liege, Belgium

The Analysis of Stochastic Processes Using GLIM

1992/app. 294 pp./Softcover/\$33.00(tent.) ISBN 0-387-97761-9 Lecture Notes in Statistics, Volume 72

Order Today!

- Call: Toll-Free 1-800-SPRINGE(R): 1-800-777-4643. In NJ call 201-348-4033 (8:30 AM 4:30 PM EST). Your reference number is S215.
- •Write: Send payment plus \$2.50 postage and handling for first book and \$1.00 for each additional book to: Springer Verlag New York Inc., Dept. #S215, PO Box 2485, Secaucus, NJ 07096-2491. Residents of CA, MA, NY, NJ, and VT, please add sales tax. Residents of Canada please add 7% GST.
- Visit: Your local technical bookstore.

Instructors: Call or Write for information on textbook examination copies!



