

13. Optimum Estimates for Location and Scale Parameters. RAYMOND P. PETERSON, University of California and National Bureau of Standards, Los Angeles.

Let $h_i(W | E, \theta) = W(\theta_i^*, \theta)p(E | \theta)$, where $p(E | \theta)$ is the joint probability density function of the n (not necessarily independent) sample values x_1, \dots, x_n which may be represented as a point $E = (x_1, \dots, x_n)$ in the n -dimensional Euclidean sample space M . The unknown parameters, $\theta_1, \dots, \theta_s$, may be represented as a point $\theta = (\theta_1, \dots, \theta_s)$ in the s -dimensional Euclidean parameter space Ω . $W(\theta_i^*, \theta)$ is a real-valued, nonnegative, measurable weight function, defined for all E in M and θ in Ω , which represents the relative seriousness of taking the estimate $\theta_i^*(E)$ as the value of θ_i for any particular sample point E . Let $G(\theta)$ be the unknown cumulative distribution function of θ . Then $\theta_i^*(E)$ is defined to be a best estimate of θ_i , provided that, if $\hat{\theta}_i(E)$ is any other estimate of θ_i in the class under consideration, $I - I^* \geq 0$, where

$$I = \int_{\Omega} \int_M h_i(W | E, \theta) dE dG(\theta).$$

Let

$$r_i(\theta) = \int_M h_i(W | E, \theta) dE, \quad \varphi_i(E) = \int_{\Omega} h_i(W | E, \theta) d\theta.$$

A general theorem is proved to the effect that if $h_i(W | E, \theta)$ is measurable over the product space $M \times \Omega$ and if $r_i(\theta)$ and $\varphi_i(E)$ are uniformly convergent integrals, then a best estimate $\theta_i^*(E)$ of θ_i exists provided that $r_i(\theta)$ is constant and that $\theta_i^*(E)$ minimizes $\varphi_i(E)$ for all points E in M . General methods are obtained for constructing best estimates for location and scale parameters, separately or jointly, and for functions of location and scale parameters from several populations. As special cases, results are derived which are analogous to converses of Theorems 1 and 2 in Kallianpur's, "Minimax Estimates of Location and Scale Parameters", Abstract, (*Annals of Math. Stat.*, Vol. 21 (1950), pp. 310-311).

NEWS AND NOTICES

Readers are invited to submit to the Secretary of the Institute news items of interest.

Personal Items

Professor William Feller of Cornell University has been appointed Eugene Higgins Professor of Mathematics at Princeton University.

Dr. Leonard Kent, formerly on the staff at the University of Chicago in the School of Business, is now with the firm of Alderson and Sessions, 1905 Walnut Street, Philadelphia 3, Pennsylvania.

Dr. G. B. Oakland has resigned an associate professorship of statistics at the University of Manitoba to accept the position as Head of Biometrics Unit, Division of Administration, Department of Agriculture, Ottawa.

Dr. Norman Rudy has accepted an appointment as Assistant Professor at Sacramento State College, Sacramento, California.

Professor G. R. Seth has returned to India to accept the position of Professor of Statistics and Deputy Statistical Advisor to the Indian Council of Agricultural Research, New Delhi.

Mr. Eric Weyl, textile engineering consultant, formerly of Manchester, New Hampshire, has moved his office to 2509 Vail Avenue, Charlotte, North Carolina. Mr. Weyl, a specialist in cotton spinning, serves as regular consultant to many leading textile mills.

The completion and successful operation of SEAC—the National Bureau of Standards Eastern Automatic Computer—has been achieved by electronic scientists of the National Bureau of Standards. SEAC is a high-speed, general-purpose, automatically-sequenced electronic computer. It was developed and constructed, in a period of 20 months, by the staff of the National Bureau of Standards under the sponsorship of the Department of the Air Force to provide a high-speed computing service for Air Force Project SCOOP (Scientific Computation of Optimum Programs), a pioneering effort in the application of scientific principles to the large-scale problems of military management and administration. SEAC will also be available for solving important NBS problems of general scientific and engineering interest.

New Members

The following persons have been elected to membership in the Institute

(June 1, 1950 to August 31, 1950)

- Aven, Russell E.**, M.A. (Univ. of Miss.), Graduate student, University of Mississippi, 1511 North Main St., Water Valley, Mississippi.
- Bamberger, Gunter**, Dip.-Math. (Univ. Göttingen), Division head in the Statistical Office of the City of Cologne, Manderscheider Platz 12, Cologne-Sulz, Germany.
- Bangdiwala, Ishver S.**, M.S. (Univ. N. C.), Graduate student, University of North Carolina, 210 A. Phillips Hall, University of North Carolina, Chapel Hill.
- Borch, Karl Henrik**, M.Sc. (Oslo Univ.), Field Science Officer for Middle East, UNESCO, 19 Avenue Kieber, Paris 16e, France.
- Buch, Kai R.**, M.Sc., Assistant Professor, Technical University of Denmark, Eigaardsvej 14 A², Charlottenlund, Denmark.
- Carranza, Roque G.**, Ingeniero Industrial (Univ. Buenos Aires), Consultant Industrial Engineer, Parana 56, Buenos Aires, Argentina.
- Dominguez, Alberto G.**, Ph.D. (Univ. Buenos Aires), Professor of Mathematics, Facultad de Ciencias Exactas, Fisicas y Naturales, University of Buenos Aires, Paraguay 1327, Buenos Aires, Argentina.
- Dunaway, William L.**, B.S. (Univ. of Calif.), Graduate student, Dept. of Mathematical Statistics, University of California, 4320 Cahuenga Boulevard, North Hollywood, California.
- Fernandez, Jose J.**, Professor, University of Costa Rica, Ap. 1313, San Jose, Costa Rica.
- Fortet, Robert**, Ph.D. (Paris), Professor, Department of Science de Caen, 168 Rue Caponiere, Caen (Caloados), France.
- Geppert, Maria-Pia**, Ph.D. (Univ. of Giessen), Lecturer, University of Frankfurt; Head of Statistical Laboratory, Kerckhoff-Institute, Bad Nauheim; Lecturer, Technical High School, Darmstadt, Germany.
- Gortler, J. Henry**, Ph.D. (Univ. of Göttingen and Univ. of Giessen), Professor of Applied Mathematics and Dean of the Faculty of Natural Sciences and Mathematics, University

- of Freiburg i. Br.; Manager of "Gesellschaft fur angewandt Mathematik und Mechanik"; *Stadtstrasse 57, Freiburg i. Br., Germany.*
- Guilbaud, George T.**, Agrege de l Univ. (Paris), Chief, Section a l'Institute of Science Economique Appliquee, Paris, and Professor, Institute of Statistics, University of Paris, *35 Boulevard des Capucines, Paris 2, France.*
- Holloway, Clark, Jr.**, M.S. (Univ. of Ill.), Process Research Engineer, Gulf Research and Development Co., *P.O. 2038, Pittsburgh 30, Pennsylvania.*
- Lieberman, Gilbert**, M.A. (Columbia Univ.), Mathematician, U. S. Naval Research Laboratory, *220 Newcomb St., S.E., Washington 20, D. C.*
- Lomax, K. S.**, M.A. (Manchester Univ.), Lecturer in Economic Statistics, Economics Department, The University, Manchester, England.
- Lorenz, Paul**, Ph.D., Professor, University of Berlin, *Kaiserstuhlstrasse 21, Berlin-Schlachtensee, Germany.*
- Lunger, George F.**, M.B.A. (Univ. of Mich.), Statistician, Great Lakes Investigations, Fish and Wildlife Service, Department of the Interior, *2110 Arbor View Blvd., Ann Arbor, Michigan.*
- Maggy, Robert K.**, M.A. (Univ. of Calif.), Graduate student, University of California, *1685 Euclid Avenue, Berkeley 9, California.*
- McElrath, Gayle W.**, M.S. (Univ. of Mich.), Assistant Professor, Department of Engineering, 208 Main Engineering Building, University of Minnesota, Minneapolis, Minnesota.
- Neisius, W. Vincent**, M.S. (Emory Univ.), Mathematics Instructor, Georgia Institute of Technology, *597 St. Charles Avenue, N.E., Atlanta 5, Georgia.*
- Perloff, Robert**, M.A. (Ohio State Univ.), Graduate student and Research Assistant, Research Foundation, Ohio State University, *1281 Bryden Road, Columbus 5, Ohio.*
- Peter, Hans**, Dr. rer. pol., Professor of Economics, University of Tübingen, *Tübingen-Waldhausen 29, Germany.*
- Putter, Joseph**, M.Sc. (Hebrew Univ., Jerusalem), *International House, Berkeley 4, California.*
- Rankin, Bayard**, A.B. (Univ. of Calif.), Graduate student, University of California, *International House, Berkeley 4, California.*
- Reid, Albert T.**, B.S. (Iowa State College), Research Assistant in Mathematical Biology, Committee on Mathematical Biology, University of Chicago, *5741 Drexel Avenue, Chicago 37, Illinois.*
- Shaw, Albert**, B.S. (Univ. of Alberta), Lecturer, University of Alberta, Department of Mathematics, University of Alberta, Edmonton, Alberta, Canada.
- Shuhany, Elizabeth**, A.M. (Boston Univ.), Assistant Instructor in Statistics and Assistant in Statistical Laboratory of Mathematics, Boston University, *725 Commonwealth Avenue, Boston 15, Massachusetts.*
- Stewart, John N.**, B.A. (Univ. of Michigan), Graduate student, University of Michigan, *4834 Chatsworth, Detroit 24, Michigan.*
- Strecker, Heinrich**, Doctor der Naturwissenschaften (Univ. Munchen), Mathematical Statistician in the Bavarian Statistical Office, *Rosenheimerstrasse 130, Munich 8, Germany.*
- Vaswani, Sundri** (Miss) Ph.D. (Univ. of London), Research Associate in Statistics, c/o Ahmedabad Textile Industry's Research Association, *P.O. Box 170, Ahmedabad, India.*

REPORT OF THE BERKELEY MEETING OF THE INSTITUTE

The forty-fourth meeting of the Institute of Mathematical Statistics was held on August 5, 1950, on the Berkeley campus of the University of California, in conjunction with the Second Berkeley Symposium on Mathematical Statistics