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NEWSLETTER OF THE ALASKA CHAPTER
OF THE
AMERICAN STATISTICAL ASSOCIATION

The annual meeting was held Friday, September 17, in conjunction with the 1982 Alaska Science Conference in Fairbanks. The business meeting and technical presentations were well attended and enjoyed by all. The following topics were discussed at the business meeting:

Membership Committee

A membership committee (Kit Rawson, Chairperson) was appointed to encourage chapter growth and participation. Current members (1982 dues paid) number 25! We are trying to develop a comprehensive list of statisticians living and/or working in Alaska. If someone you know would like to be a member of our group or would just like to be included on this list, please send in the attached form. Members are automatically listed. A list of current members, addresses, and UACN userids is attached. Any corrections should be brought to the attention of Steve Thompson, Secretary/Treasurer.

Employment Opportunities

The following position vacancies were announced at the annual meeting:

Health Statistician - Anchorage

A position for a statistician will soon be advertised by the Alaska Area Native Health Service. Pay scale is G512 ($28,245 to $36,723). The statistician produces statistical reports on utilization of AANHS facilities and health status of Alaska Natives. Provides consultation in demography and health statistics for management, health professionals, and tribal organizations. For further information contact Richard Hall (265-3377).

Biometrician II - Juneau

The Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development is currently recruiting for a permanent, full-time Biometrician II position, located in Juneau.

This is a regional position, with the primary function being the design of experiments and analysis of experimental data dealing with the evaluation of salmon-culture techniques and research of wild salmon stocks. Designing, writing, and documenting computer programs for research and management applications is required, as well as supervising regional production data management and reporting. A limited amount of field work is considered necessary in order to cultivate proper interaction between biometrics and research personnel.

Interested parties may contact Dr. J.S. Holland, 230 S. Franklin St., Room 301, Juneau, Alaska 99801, or phone (907) 465-4230.

Please contact Dana Thomas to place job announcements in the Newsletter.

Program Committee

A program committee (Bob Sutherland, Chairperson) was formed to aid in the scheduling and content selection of chapter meetings. Members attending the recent meetings decided that holding our 1983 annual meeting in conjunction with the Alaska Science Conference (scheduled in Whitehorse, B.C.) was not in the best interest of the chapter. The location and scheduling of our next meeting can be associated with meetings of other organizations, for example, the American Fisheries Society, Data Processing Managers Association, or the American Society for Circumpolar Health. A questionnaire is attached to help this committee determine membership preference as to location, timing, content, and association with other groups for our next meeting. The following films are available to our chapter for viewing at the next meeting. Please indicate your first, second, and third choices on the questionnaire.

> Mathematical Probability and Statistical Inference. Some Recollections from an Important Phase of Scientific Development. By Harold Cramér. (A Pfizer Colloquium talk sponsored by ASA) 1980; 75 minutes.

> The Status of Statistics in 1940 as Viewed from Iowa State College and Early Years of the Ph.D. Program at Ames. By William Cochran. (1978) primarily historical.

> P = .05 and All That - Statistics and Science in Medical Research. By David S. Moore. A review of P-values, hypothesis testing concepts, nonstatisticians encouraged to attend.

Please send completed questionnaires to Bob Sutherland.

If you know of any "outside" statisticians visiting our state that could give a seminar during their visit, please contact Bob Sutherland or David Hall. Giving such a seminar can be used for a tax write off for the trip!

The following abstracts of papers presented at this year's meetings are included for the benefit of chapter members that could not attend.

Statistical Aspects of Arctic Research

Organized by the
Alaska Chapter
American Statistical Association

Dana Thomas
Robert Sutherland

DRAWING FOR ALASKA AGRICULTURAL LAND DISPOSAL LOTTERIES BY COMPUTER

A. L. Brundage
Agricultural Experiment Station, University of Alaska, Palmer 99645

As Alaska seeks to convey ownership of agricultural lands from the public to the private sector, lotteries are used often to determine winners of specific parcels in development projects. To be truly equitable, lotteries must provide every applicant an equal opportunity for selection.

Traditionally, lottery results are determined by drawing tickets or numbers by chance from a lottery wheel. Lottery results also may be simulated by *Monte Carlo method* on computers, using mathematical, FUNCTION subprograms to create a table of random digits within the main program. Computer simulation removes the potential for non-random lottery results caused by physical imperfections associated with lotteries; such as static electricity precluding adequate mixing and sampling of lottery tickets and failure to obtain a set of numbered balls which are truly unbiased. On the other hand, computer simulation is dependent on the capacity of the computer to generate an adequate sample of random digits within the program to meet the criteria of *Monte Carlo method*.

A FORTRAN program has been written to simulate lottery results from the Spring 1981 Point MacKenzie land disposal lottery, using the data set of applicants and applications from that lottery. A mutually exclusive set of winners and alternates has been determined. In addition, all applicants for each parcel were ranked by selection. This assured that each applicant within a set of applicants for a specific parcel was considered and had opportunity for selection.

CLUSTER ANALYSIS OF THE MARINE BENTHOS

Robert Sutherland
Institute of Marine Science, University of Alaska, Fairbanks 99701

Cluster analysis of the marine benthic community is a multivariate classification method used to sort attributes of benthic organisms at sampling locations into groups to describe patterns in the data.

In this review, we examine the basic steps involved in this technique: 1) calculation of distance or similarity matrices, 2) hierarchial clustering methods, 3) two-way coincidence methods, and 4) a check for misclassification. Also, some suggestions for utilizing cluster techniques in practice are given. The system of programs developed at the Institute of Marine Science is used to illustrate this presentation.

SIMULTANEOUS CONFIDENCE BANDS FOR PERCENTILES OF LINEAR MODELS

Dana Thomas
Department of Mathematical Sciences, University of Alaska, Fairbanks 99701

One and two-sided simultaneous confidence bands for the 100 p^{th} percentile, $X'\beta + K_p\sigma$, of the normal population with mean $X'\beta$ and variance σ^2 are derived, (where K_p is the 100 p^{th} percentile of the standard normal distribution). These bands are simultaneous in X or in X and p. The efficiency of these bands is compared to those given by Steinhorst and Bowden (J. Am. Stat. Assoc. 1971). The use of these bands under censoring is examined.

STATISTICAL SAMPLING STRATEGIES FOR FISH POPULATIONS

Steve Thompson
Alaska Department of Fish and Game, P.O. Box 686, Kodiak 99615

Most fish and shellfish populations have distinct spatial tendencies such as schooling and have characteristic ways of interacting with sampling gear. Sampling designs and estimation procedures can take these characteristics into account and use them to advantage.

The situation is modelled statistically with a stochastic point process giving rise to the spatial patterns of the population and with a collection of detectability functions describing the sampling locations and methods. Both design-based and model-based survey inference concepts are utilized in constructing effective sampling strategies.

Data from Kodiak region surveys show how the survey designs are adapted to spatial correlation and conditional variance structures arising from schooling tendencies and nonstationarity.

Election of Officers

The officers (David Hall - President; Dana Thomas - Vice President; Steve Thompson - Secretary/Treasurer; and Executive Board Members Dan Reed and Art Brundage) elected at the March 1982 meeting were unanimously reelected to the same offices for a full-year term.

By-Laws and Constitution

The proposed By-Laws and Constitution were modified and adopted by attending members. If you desire a copy of these documents, please call or write Dana Thomas.

Annual Dues - 1983 Dues are Due!

At the organizational meeting in March, interim chapter dues were set at $3.00 until the fall meeting. At our recent meeting, members adopted calendar year dues of $5.00 for members or $1.00 for student members. Please send dues to Steve Thompson.

If you are thinking of joining the national ASA, please join through the chapter; this procedure reduces the cost of films and videotapes to our group. Call or write Steve Thompson for details.