MAY 1989

WASHINGTON STATISTICAL SOCIETY

NEWSLETTER

May 3	Wednesday	World Agricultural Statistics—The Marriage of Art and Science
May 8	Monday	Rural Poverty: A Continuing Problem
May 10	Wednesday	The Asymptotic Correlation of the Mantel-Haenszel and Maximum Likelihood Estimators of a Common Odds Ratio in k 2x2 Tables
May 11	Thursday	Estimating the Total Number of Distinct Species Using Presence and Absence Data
May 15	Monday	Walsh-Fourier Analysis of Discrete-Valued and Categorical Time Series
May 22	Monday	The Congress' Use of Statistics **ASA-150 Series**
May 30	Tuesday	Applications of Superpopulation Models to Estimation in the Presence of Nonignorable Missing Data
June 13	Tuesday	Estimation of the Prevalence of Rare Diseases Preserving Anonymity of the Subjects Using Group Testing and with Application to AIDS
June 20	Tuesday	Statistical Applications to Acquired Immunodeficiency Syndrome **ASA-150 Series**

ANNOUNCEMENTS

Annual Dinner Plans

The WSS Annual Dinner June 14 will depart somewhat from recent years. The dinner will have a working theme of "WSS—Past, Present, and Future" and is intended to provide a very informal atmosphere for greeting old friends and meeting new ones.

In an effort to attract a wider range of members, this year's dinner will be held at 5:30 p.m. The menu is a "light buffet" at a lower cost ($11.00) than recent years. The dinner will be held in the George Washington University Club, 21st Street, N.W. between H and I Streets. This is close to the Foggy Bottom Metro stop.

Instead of one formal speaker for the evening, two members will be asked to speak informally on their perspective on changes in the Washington statistical community over time. As of this writing (March 30), those speakers had not been chosen from the large number suggested.

Please mark your calendar and join us June 14 to celebrate WSS—Past, Present, and Future.

WASHINGTON STATISTICAL SOCIETY PROGRAM CHAIRS

Agriculture & Natural Resources
Ron Bosecker 447-3895
W. Barnes Johnson 249-7388

Social & Demographic Statistics
Harvey Schwartz 535-0634
John Czajka 484-9220

Short Courses
Glenn White 763-4138
Donald Gantz 425-3931
Brad Pafford 447-2129
Sid Schwartz 268-3490
Virginia deWolf 366-5372

Economics
Francis X. Diebold 452-2461
Gerald Schluter 786-1785

Public Health & Biostatistics
Ed Lakatos 496-5905
Jai Choi 436-7047

Methodology
David Marker 251-4398
Myron Katzoff 436-7047

Employment
Evelyn R. Kay 337-8418

Physical Sciences & Engineering
Patricia Abel 883-6490
Refik Soyer 994-6794

Statistical Computing
Khalid Aboura 994-7534
Sylvia Leaver 272-2311

Quality Assurance
Stanley R. Freedman 586-2038
John M. Galvin 272-2385

Newsletter Editor
Michael Cohen 454-6193

PROGRAM ABSTRACTS

TOPIC: **WORLD AGRICULTURAL STATISTICS—THE MARRIAGE OF ART AND SCIENCE**

SPEAKERS: Gerald A. Bange, Deputy Chairperson, WAOB
Edwin I. Cissel, Director, Foreign Production Estimates Division, FAS
Frederic M. Surls, Leader, Trade Analysis Section, ERS

CHAIR: Don Bay, Director, Estimates Division, NASS

DATE & TIME: Wednesday, May 3, 1989, 12:30 to 2:00 p.m.

LOCATION: Rm. 5140, South Agriculture Bldg., 12th and Independence Ave., S.W., Washington, D.C.

SPONSOR: Agriculture and Natural Resources

ABSTRACT: The Foreign Agricultural Service (FAS), the World Agricultural Outlook Board (WAOB), and the Economic Research Service (ERS) of the United States Department of Agriculture work together to interpret and summarize foreign agricultural intelligence. Collective expert judgement is an important ingredient to provide global supply and demand statistics for agricultural commodities. The speakers will discuss each agency's role in the process and describe efforts to improve information collection, transmission, and analysis of foreign data.

TOPIC: **RURAL POVERTY: A CONTINUING PROBLEM**

SPEAKER: Robert A. Hoppe, Economic Research Service, USDA

CHAIR: Linda M. Ghelfi, Economic Research Service, USDA

DISCUSSANT: Patricia Ruggles, The Urban Institute

DATE & TIME: Monday, May 8, 1989, 11:45 a.m. to 1:15 p.m. (Note special time.)

LOCATION: 1301 New York Avenue, N.W., Lower Level Auditorium
(between Metro Center and McPherson Sq. subway stops—near 13th & H)

SPONSOR: Social and Demographic Statistics

ABSTRACT: Poverty is as much a rural problem as an urban one. The poverty rates for various population groups in rural areas are high, generally within a percentage point or so of the corresponding central city rates. The exception is the poverty rate for blacks, which actually is higher in rural areas than in central cities. The poor have different characteristics in rural and urban areas. For example, the rural poor are more likely to live in married-couple families than either the central city or suburban poor. The rural poor also show greater attachment to the labor market than the urban poor, particularly the central city poor. Thus, issues such as the minimum wage, taxes, the availability of jobs, job training, unemployment, and the strength of the economy are important in any discussion of rural poverty. Labor market strategies, however, are not effective ways to reach the rural poor who cannot work, such as the elderly. The most effective way to reach these people is through income transfers.

PROGRAM ABSTRACTS (continued)

TOPIC: **THE ASYMPTOTIC CORRELATION OF THE MANTEL-HAENSZEL AND MAXIMUM LIKELIHOOD ESTIMATORS OF A COMMON ODDS RATIO IN K 2X2 TABLES**

SPEAKERS: Samuel Greenhouse and Joseph Gastwirth, George Washington University

DISCUSSANT: Janet Wittes, Biostatistics Research Branch, NHLBI

CHAIR: Gordon Lan, Biostatistics Research Branch, NHLBI

DATE & TIME: Wednesday, May 10, 1989, 1:00 p.m. (Note special time.)

LOCATION: Wilson Hall, Building 1, National Institutes of Health

SPONSORS: Biostatistics Research Branch, NHLBI and Public Health and Biostatistics, WSS

ABSTRACT: In order to find the correlation between any two estimators, one has to have explicit expressions for each. Obviously, the maximum likelihood estimator of a common odds ratio is not obtainable in closed form and an alternative has to be found. This was accomplished by using a surrogate for the maximum likelihood estimator which is asymptotically efficient. Asymptotic representations are presented for both the Mantel-Haenszel estimator and the maximum likelihood surrogate estimator. It then is easy to obtain the joint asymptotic distribution.

TOPIC: **ESTIMATING THE TOTAL NUMBER OF DISTINCT SPECIES USING PRESENCE AND ABSENCE DATA**

SPEAKER: Glen Meeden, Iowa State University, BLS

DATE & TIME: Thursday, May 11, 1989, 12:00 to 1:00 p.m. (Note special time.)

LOCATION: Room 301, Staughton Hall, George Washington University, 707 22nd Street, N.W., Washington, D.C.

SPONSOR: WSS Physical Engineering

ABSTRACT: Consider the problem of estimating the total number of distinct species in some specified region under investigation. Suppose the region is divided into N disjoint subregions or quadrants. A sample of size n(<N) quadrants is chosen. Within each sampled quadrant the distinct species present are observed and an empirical Bayes estimator of the total number of species in the region is constructed. This estimator is based on a model which is an adaptation of the Efron and Thisted (1976) model to presence and absence data.

TOPIC: **WALSH-FOURIER ANALYSIS OF DISCRETE-VALUED AND CATEGORICAL TIME SERIES**

SPEAKER: David Stoffer

CHAIR: Myron Katzoff

DATE & TIME: Monday, May 15, 1989, 12:30 to 2:00 p.m.

LOCATION: National Center for Health Statistics, Center Building, Room 1-39, 3700 East-West Highway, Hyattsville, Maryland

SPONSORS: WSS Methodology Section and Office of Research and Methodology, NCHS

ABSTRACT: Many studies in the medical, behavioral, and epidemiological sciences produce discrete-valued and categorical time series data (which we may think of as square-waveforms) where spectral analysis is of interest. Although the spectral analysis of such data is

PROGRAM ABSTRACTS (continued)

typically handled via Fourier (trigonometric) methods, empirical evidence suggests that Walsh-Fourier analysis may be more appropriate. This approach enables investigators of discrete-valued and categorical processes to analyze their data in terms of square-waveforms and sequency (switches per unit time) rather than sine waves and frequency. After a brief account of the properties of the Walsh-Fourier transform is given, various statistical methods for analyzing discrete valued and categorical time series based on the transform will be discussed. The applicability of the methodologies will be verified using EEG sleep data from a study on the effects on offspring of moderate maternal substance use during pregnancy.

TOPIC: **THE CONGRESS' USE OF STATISTICS** **ASA-150 Series**

SPEAKERS: John J. Hamre, Senate Armed Services Committee
G. William Hoagland, Senate Budget Committee
Wendell Primus, House Ways and Means Committee
Bernard A. Schmitt, Joint Tax Committee

DATE & TIME: Monday, May 22, 1989, 2:30 to 4:00 p.m. (Note special time.)
Reception Immediately Following the Seminar

LOCATION: Room 2736 (Reception, Room 2734) , GAO Bldg., 441 G St., N.W., Washington, D.C. 20212
(Please call 523-5192 no later than Friday, May 19 to assure building entrance.)

ABSTRACT: Members of Congress and their staffs are bombarded with "information" when legislation is being developed. What role do economic and social statistics, especially statistical analyses based on survey data, play in this process? How could statisticians and other analysts be more effective in communicating with Congressional decision makers? These topics will be discussed by several key staff of influential Congressional committees.

John Hamre is currently a professional staff member of the Senate's Committee on Armed Services. He is involved primarily with issues concerning conventional (that is, nonnuclear) forces and the NATO alliance.

Bill Hoagland, currently Minority Staff Director of the Senate's Committee on the Budget, has been both a producer and user of statistical analyses. In recent years, he has dealt with policy issues concerning all parts of the federal budget, including defense, natural resources, and domestic programs.

Wendell Primus is Chief Economist for the Committee on Ways and Means of the House of Representatives. His involvement in domestic policy making has ranged across such diverse areas as welfare reform, the financing of Medicare, poverty among children, and Social Security, as well as the Balanced Budget Act (often known as Gramm-Rudman-Hollings).

Bernie Schmitt is currently the Associate Chief of Staff, Revenue Analysis, for the Joint Committee on Taxation. While with the Committee, his revenue estimating has dealt primarily with the individual income tax system, including the treatment of employees' fringe benefits, pensions, and individual retirement accounts (IRAs). He was also actively involved in development of the Tax Reform Act of 1986.

Refreshments will be served following the seminar.

PROGRAM ABSTRACTS (continued)

TOPIC: **APPLICATIONS OF SUPERPOPULATION MODELS TO ESTIMATION IN THE PRESENCE OF NONIGNORABLE MISSING DATA**

SPEAKER: Stephen Woodruff, Bureau of Labor Statistics

CHAIR: Phillip S. Kott, USDA

DATE & TIME: Tuesday, May 30, 1989, 12:30 to 2:00 p.m.

LOCATION: Room 2736, GAO Building, 441 G Street, N.W., Washington, D.C.

SPONSOR: Methodology Section

ABSTRACT: In this paper the problem of minimizing the mean square error (MSE) of estimates for the survey target parameters is solved by concurrently solving the problems of nonresponse adjustment and variance estimation. Efficient estimates of the target parameters are derived by efficiently dealing with the missing data problem and this, in turn, is accomplished through precise (small MSE) second moment estimates. These second moment estimates are obtained by the use of supplementary information expressed in the form of super population models. The second moment estimates are then used to construct a best linear unbiased estimate (BLUE) and an estimator of its variance. Precise estimates of target variables, precise estimates of their variances, and built-in nonresponse adjustment all contribute to substantial (often >50%) reductions in the MSE of the BLUE suggested by this paper compared to the MSE of the best of several popular competitors (Horvitz-Thompson, ratio, and composite estimators).

TOPIC: **ESTIMATION OF THE PREVALENCE OF RARE DISEASES PRESERVING ANONYMITY OF THE SUBJECTS USING GROUP TESTING AND WITH APPLICATION TO AIDS**

SPEAKERS: Patricia Hammick, Natural Gas Supply Association and
Joseph L. Gastwirth, George Washington University

DISCUSSANT: Robert Fay, U.S. Census Bureau

DATE & TIME: Tuesday, June 13, 1989, 12:00 p.m. (Note special time.)

LOCATION: Wilson Hall, Building 1, National Institutes of Health

SPONSOR: Public Health and Biostatistics, WSS

ABSTRACT: In order to preserve individual anonymity when estimating the prevalence of rare diseases or traits possessing a social stigma, such as AIDS, combining of individual samples into batches of size k for testing is proposed. Thus, no individual's blood is tested. The classifications of batches follow a multinomial model. The maximum likelihood and moment estimators of the prevalence are studied and shown to yield more accurate estimates, for a fixed cost, in situations of small prevalence than estimates made when testing samples individually. A restricted occupancy model (an extension of the multivariate hypergeometric distribution) is developed to allow comparison of the estimates obtained from data collected from testing individuals with the expected estimates obtained from the batch testing procedure. The batching procedure is extended to estimate the prevalences of two highly correlated and rare diseases.

PROGRAM ABSTRACTS (continued)

TOPIC: **STATISTICAL APPLICATIONS TO ACQUIRED IMMUNODEFICIENCY SYNDROME** **ASA-150 Series**

SPEAKERS: Ronald W. Wilson, NCHS
Alvaro Muñoz, Johns Hopkins University
Michael Stoto, Institute of Medicine, NAS

CHAIR: Susan S. Ellenberg, NIAID

DATE & TIME: Tuesday, June 20, 1989, 3:00 to 5:00 p.m. (Note special time.)
Refreshments will be served following the seminar.

LOCATION: Wilson Hall, Building 1, National Institutes of Health
(One block west of Medical Center Metro stop)

ABSTRACT: Ronald W. Wilson, Director of the Division of Epidemiology and Health Promotion, National Center for Health Statistics, will describe the recent HIV Sero-Prevalence Survey.

Alvaro Muñoz, Principal Investigator of the Center for the Analysis and Management of the Multicenter AIDS Cohort Study (CAMACS) will outline the MACS, a collaborative research effort designed to: elucidate the natural history of the infection causing AIDS; identify risk factors for occurrence and clinical expression of the infection; and establish a repository of biologic specimens for future study. Studies are being carried out in four major cities—Baltimore, Chicago, Pittsburgh, and Los Angeles—with the CAMACS located in Baltimore.

Michael A. Stoto will address two issues at the interface between AIDS and HIV statistics and policy decisions. One issue is the adequacy of current statistical and epidemiological data for tracking the epidemic, monitoring progress in prevention programs, and for targeting interventions. The other is the use of mathematical forecasting and simulation models for planning and policy analysis.

ANNOUNCEMENTS (continued)

Open Board Meeting

WSS will hold its annual "Open" Board of Directors meeting May 30 in Room 3000 at 400 Maryland Avenue, S.W. (This building is directly south of the Air and Space Museum and is close to the Maryland Avenue and 7th Street, S.W. exit of the L'Enfant Metro stop.) The meeting will start at 12:30 p.m. and should conclude by 2:00 p.m.

Members are invited to give their suggestions for changes and improvements to the activities of the society. As a special feature of this year's meeting, Kathryn Rowe, American Statistical Association Quantitative Literacy Project Coordinator, will give a short presentation on the ASA activities.

Because of the physical security in this building, members without a U.S. government photo identification are asked to call Marie Argana, 763-4595, by May 24 so we can enter your name on the expected visitors list. It also should be helpful to bring this Newsletter as verification of the purpose of your visit.

Meeting of the Washington Academy of Sciences

The annual awards program of the Washington Academy of Sciences will be held at the Thursday, May 18 meeting of the Academy. Six scientific achievement awards and one distinguished career in science award are slated to be given. The

ANNOUNCEMENTS (continued)

program will begin at 8:00 p.m. There will also be a wine and cheese reception at 6:30 p.m. and a four-course dinner at 7:00 p.m. The various events will be held at the Faculty Club in the Mary Graydon Center (first floor, southwest wing) at American University (Massachusetts and Nebraska Avenues, N.W., Washington, D.C.). There is no cost to those attending only the awards ceremony. The cost of the reception and dinner is $15.00. Please make dinner reservations by May 15. Call Robert McCracken at 301/320-3621 for reservations, information and directions. (If no answer, call 229-8321 to leave a brief message.) Make your check payable to "WAS Dinner" and mail to 5120 Newport Avenue, Bethesda, MD 20816.

Call for Volunteers

The 150th anniversary of the founding of the American Statistical Association (ASA) is in 1989. The celebration of the Sesquicentennial will culminate in the 1989 Joint Statistical Meetings which will be held in Washington, D.C. from August 6 through August 10 at the Washington Sheraton and Omni Shorham hotels.

The Local Arrangements Committee is a special Washington Statistical Society Committee which has been active throughout 1988-1989. Committee members (listed below) have been busy preparing articles for the AMSTAT News, preparing restaurant and city highlights guides, and coordinating with ASA on publicity requirements. They are also organizing the Information Desk, which must be staffed by volunteers throughout the meetings.

The committee needs volunteers for several tasks: assembling notebooks prior to the meetings, helping with publicity during the meetings, and most importantly, staffing the Information Desk. Volunteers who work at the Information desk will be scheduled in two-hour shifts.

Volunteering is a good way to meet other statisticians. Any WSS member is welcome to volunteer. As an enticement, any full-time student (WSS membership not required) will receive FREE REGISTRATION in exchange for volunteering to work at the Information Desk.

Those who want to volunteer should call Leslie Christovich at 547-0741 and leave your name, phone number, and area of interest (publicity, information desk, or general) on her answering machine.

Members of the 1989 Local Arrangements Committee:

Nancy Kirkendall	(Chair)
Dwight Brock	(ENAR Co-representative and restaurant guide)
Sherrie Emoto	(ENAR co-representative)
Nancy Flourney	(IMS representative)
Mary Garvin	(*Newsletter articles)
Mary Batcher	(Newsletter articles)
Virginia deWolf	(*Highlights guide)
Stan Freedman	(Highlights guide)
Stephanie Shipp	(Highlights guide and publicity)
Carolee Bush	(Highlights guide)
Julia Oliver	(*Restaurant guide)
Evelyn Kay	(Restaurant guide)
Yahia Ahmed	(Restaurant guide)
Pankaj Ghosh	(*Information desk)
Terri Shelton	(Information desk)
Robert Parker	(*Publicity)
Leslie Christovich	(Volunteer coordinator)

(*Indicates subcommittee chair)

New USDA Graduate School Course Offered

A new course, **Advanced Topics in Survey Theory** (ESTAT 525), is being offered by the USDA Graduate School in the Spring of 1989 and every other spring thereafter (alternating with Advanced Topics in Survey Methods - ESTAT 570).

This series of lectures and discussions is intended for anyone interested in the latest developments in survey sampling theory and in advanced topics not often covered by the standard sampling textbooks. Guest speakers from government will address topics such as: raking, analysis of data from complex samples, replication methods, composite estimation, capture-recapture, model-based sampling theory, and adjustments for nonresponse. The tuition is $209 and includes reading materials, which will be distributed at the first session. Prerequisite is knowledge of sampling survey at the level of Cochran's Sampling Techniques. For more information contact Phil Kott (475-3492) or Ron Fecso (475-3486).

ANNOUNCEMENTS (continued)

ASA Constitution

The ASA Board will vote April 14 on the proposed new ASA Constitution. This is an extremely important vote for the Association. The major features of that Constitution were outlined in the May 1988 issue of Amstat News. You can obtain a copy of the proposal from the ASA office (684-1221), if you wish.

The Executive Committee of the ASA Council of Chapters recently considered the new Constitution at length and prepared a statement of endorsement. The key points that the Executive Committee noted were:

1. The reduction in board size from 30 to 16 will result in a more manageable, flexible governing body as well as reduce cost to the Association.
2. Sections will benefit by having their own governing body, the Council of Sections, which can address specific section issues.
3. New sections can easily be created or inactive sections disbanded, thus representing shifts in the interest of the Association over time.
4. Chapters, which represent all ASA members, both geographically and across all special interest groups, will have a greater and fairer representation on the Board of Directors from the current 1 in 30 to 3 in 16.

Individual ASA members should review the proposed Constitution and provide their ASA Board representatives with recommendations to approve or not approve the Constitution. Keep in mind that you in Washington, D.C. are represented on the ASA Board by our Council of Chapters Governor Mary Foulkes and our District representative David Morganstein plus the representative of each Section to which you belong.

Short Course: Analysis of Binary Data

Sheila Edwards, ASA Manager of Continuing Education-Grants and Contracts, is pleased to announce that Sir David R. Cox and Joyce Snell will present a two-day short course on the "Analysis of Binary Data" at the August 1989 Sesquicentennial Annual Joint Statistical Meeting in Washington, D.C. The course will be based on the revised edition of Professor Cox's book which will be published in July 1989. Contact the ASA Continuing Education Program for registration details.

EMPLOYMENT COLUMN

The Washington Statistical Society Newsletter provides a service of notification of employment opportunities and descriptions of those seeking employment here in Washington. Evelyn Kay, who is in charge of this service, has achieved a high success rate. Readers are encouraged to take advantage of this feature of the newsletter. Deadline for inserting notices is 5 (five) weeks before the publication date. Those interested should write to: Evelyn R. Kay, 2510 Virginia Avenue, N.W., #709, Washington, D.C. 20037, Phone 337-8418.

JOB OPENINGS

SAMPLING STATISTICIAN

The Institute for Survey Research (ISR) of Temple University has an immediate job opening for a Sampling Statistician. Responsibilities are to provide statistical sampling designs, oversee execution and evaluation of designs, write sampling sections for proposals, supervise Sampling Department staff, and consult with staff members of ISR and clients. Also includes maintenance and implementation of ISR's 100 PSU National Sampling Frame.

Ph.D. in statistics in appropriate relevant field (e.g., sociology) or M.S. with equivalent experience in survey research required. Salary negotiable, commensurate with background and experience. Opportunity exists, but not necessarily, for dual role as Sampling Statistician and Study Director.

Send letter and resume to: **Dr. Leonard LoSciuto, Institute for Survey Research, Temple University, 1601 N. Broad Street, Philadelphia, PA 19122.** EOE

JOB OPENINGS (continued)

STATISTICIAN

The Biometry and Field Studies Branch, Division of Intramural Research, National Institute of Neurological Disorders and Stroke (NINDS), National Institutes of Health (NIH), Public Health Service (PHS), announces an opening for a Statistician. Candidates must be U.S. citizens and have education and experience in statistics of biostatistics, statistical software, and strong oral and written communication skills. Responsibilities include statistical analysis of data from large collaborative observational studies, selection of appropriate statistical software, and preparation of reports. Applicants must meet Office of Personnel Management (OPM), X-118 qualification standards for the Statistician-1529 or 1530 series, obtainable at Federal Job Information Centers or by calling Mr. Wallace Holland on (301) 496-6334. Depending on qualifications and experience, starting salary ranges between GS-09 ($23,846 per annum) and GS-11 ($31,123 per annum). At the GS-11 level a Master's Degree in statistics or a Bachelor's Degree with appropriate experience is required. At the GS-9 level, a Bachelor's Degree in statistics and appropriate experience is required. Applications from women and minorities are invited. Interested candidates should send a curriculum vitae, a brief statement of research interests, and the name of three references to: **Dr. Mary A. Foulkes, BFSB, DIR, NINDS, Federal Building, Room 7A08, National Institutes of Health, 7550 Wisconsin Avenue, Bethesda, MD 20892, Telephone: (301) 496-6818.** EOE.

INFORMATION SYSTEMS ANALYST

The Automation and Research Computing (ARC) Section of the Board of Governors of the Federal Reserve System in Washington is seeking candidates for the above position.

As part of the Division of Research and Statistics, analysts within ARC work closely with Board economists to develop and modify computer-based analysis tools used principally on a Sun network.

Candidates should possess the following qualifications:

- BA/BS or MA/MS background in Quantitative Economics, Applied Mathematics, or Statistics or equivalent work experience
- Experience with development of applications and use of commercially available software in the above mentioned areas of study
- Working knowledge of FORTRAN and C required, and knowledge of object oriented language(s) a real plus
- Experience with Unix in workstation environment extremely useful.

The operational environment consists of:

- Over 100 Sun workstations, access to personal computers and the Board's VM and MVS mainframe environments
- Development software - a full selection of compilers, Mathematica, S Language, other sophisticated analysis and database management systems.

United States citizenship is required. The Federal Reserve Board of Governors is an Equal Opportunity Employer. Salary is commensurate with experience. Send resume and salary requirements to the attention of: **Elizabeth Flanagan, M.S. 96; Board of Governors of the Federal Reserve System; 20th and Constitution Ave., N.W., Washington, D.C. 20551.**

JOB OPENINGS (continued)

MATHEMATICAL STATISTICIAN — GS-12 or GS-13

Position anticipated in the Bureau of Labor Statistics' Office of Employment and Unemployment Statistics for a qualified individual with experience in survey methods, sample design, estimation, and time series applications. Position requires a thorough knowledge of sampling techniques and the ability to work independently as well as to coordinate the work of junior level staff. Knowledge of SAS and use of a mainframe computer system and language is desirable. Incumbent will act as a team leader conducting research into establishment survey sample redesign, evaluating alternative estimation methodologies, and developing time series structural models for use in estimation. Duties will also include developing statistical procedures for new surveys. Salary depends on qualifications and experience. U.S. citizenship is required. Equal opportunity employer. Send SF-171 to: **Tom Grzesiak, 441 G St., N.W., Rm. 2821, Washington, D.C. 20212.**

MATHEMATICAL STATISTICIAN — GS-11

Position is at the Bureau of Labor Statistics' Office of Employment and Unemployment Statistics. Position requires application of mathematical statistical theory to economic surveys. Incumbent will be required to actively participate in the development and implementation of survey design, and in quality control and measurement research projects. Knowledge of SAS and use of mainframe computer systems is desirable. Abilities to communicate effectively and to work with others are essential. Salary depends on qualifications and experience. U.S. citizenship is required. Equal opportunity employer. Send SF-171 to: **Ms. Shail Butani, U.S. Bureau of Labor Statistics, 441 G Street, N.W., Rm. 2821, Washington, D.C. 20212.**

STATISTICIAN IN AN INTERNAL CONSULTING ORGANIZATION

Hughes Aircraft Company in the greater Los Angeles area has openings for two statisticians: no later than the end of June. The positions offer challenge and a broad variety of work in such areas as regression, design of experiments, analysis of satellite data, Monte Carlo simulations, trouble-shooting, cost analysis including analysis of cost uncertainty, and the design and conduct of employee surveys. Experience with consulting and SAS are required. Applicants must have an M.S. or Ph.D. in statistics. Other desired attributes include good communication skills, interest in working as a team member with statisticians and/or engineers, teaching ability, and an interest in engineering problems.

The positions are in the Systems Engineering and Operations Division of the Space and Communications Group located in El Segundo, California. Hughes, a subsidiary of General Motors Corporation, has salaries and benefits which are competitive with other aerospace companies.

Qualified applicants should send a resume and a letter indicating areas of interest and date available for employment. A transcript would also be appreciated. U.S. citizenship is required. Please direct this information to: **Joe Engleman, Hughes Aircraft Company, Building S40, M.S. T318, Post Office Box 92919, Los Angeles, CA 90009.**

JOB OPENINGS (continued)

STATISTICIAN

Westat, an employee-owned company, is looking for a Statistician to work on environmental applications. A Masters or Bachelors degree in Statistics and two or more years experience are required. Knowledge of survey sampling and experience in project management would be helpful. Please send your resume with current salary to: **Westat, Inc., Dept. JRM, 1650 Research Boulevard, Rockville, Maryland 20850,** An Equal Opportunity Employer M/F/V/H.

WESTAT

An Employee-Owned Research Corporation

Mathematical Statistician

GS-9/11/12

The Mathematics and Statistics Division of the Food Safety and Inspection Service, U.S. Department of Agriculture, is seeking a Mathematical Statistician for its Statistical Analysis Branch. The branch provides statistical support for USDA's Meat and Poultry Inspection Program. The branch assists in sample surveys, data analysis, quality control, laboratory methods development, statistical reporting, and in establishing the warranted limits of statistical inference. Candidates must have demonstrated education in the areas of applied statistics, data analysis, and statistical computing. Position has minimum educational requirements. U.S. citizenship and a critical-sensitive security clearance are required. Equal opportunity employer. Call Rhonda Carr at 447-6617 for a vacancy announcement and application information.

Supervisory Mathematical Statistican

GM-14

The Mathematics and Statistics Division of the Food Safety and Inspection Service, U.S. Department of Agriculture, is seeking is seeking candidates for Chief of its Statistical Analysis Branch. The branch provides statistical support for USDA's Meat and Poultry Inspection Program. The branch assists in sample surveys, data analysis, quality control, laboratory methods development, statistical reporting, and in establishing the warranted limits of statistical inference. The incumbent must have broad statistical knowledge and experience and be able to manage a large number of projects in an environment where priorities change frequently. Position has minimum education requirements. U.S. citizenship and a critical-sensitive security clearance are required. Equal opportunity employer. Call Rhonda Carr at 447-6617 for a vacancy announcement and application information.

JOB APPLICANTS

Listed below is a brief description of the qualifications of an applicant seeking employment. Employers interested in interviewing this applicant should notify Mrs. Kay of their interest by CODE NUMBER. The request should be by mail and should include the employer's name, organization, and telephone number. The applicant will be notified of the employer's interest and initiation of any further contact will be left to the applicant. All contacts will be confidential.

CODE #89-02

Position wanted:	**Government Technical Manager/Supervisor** at GM15 level, or GM14 level with strong promotion potential
Education:	B.A. in Physics and Ph.D. in Applied Mathematics
Experience:	Currently GM14 mathematical statistician. Strong background in managing technical projects involving statistics, mathematics, and computers. Just completed implementing a nationwide DBMS written in a 4GL. Extensive experience working with people in diverse disciplines.
Contact directly:	202/447-7042

CODE #89-03

Objective:	Position as **Applied Mathematician**, specializing in Statistical Analysis Desired Salary: $30,000/year with private industry Location preference: D.C. Metropolitan Area
Professional Experience:	Seasonal Adjustment of Time Series data (2 years) Econometric Forecasting (2 years) Mathematical Optimization Techniques (3 years) Reliability of Computer Systems (1 year)
Computer: Knowledge:	TSO, JCL, and WYLBUR on IBM mainframe Micro computer communication packages Crosstalk and PcLink SAS (5 years) on mainframe and micro computer
Education:	B.A. Mathematics With Specialization in Statistics Central Connecticut State University
Contact directly:	703/243-3959

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