



JANUARY 1990

WASHINGTON
STATISTICAL
SOCIETY

NEWSLETTER

January 11	Thursday	Deregulation and Airline Safety: Evidence from Count Data Models
January 16	Tuesday	Complex Survey Variance Estimation and Contingency Table Analysis Using Replication
January 17	Wednesday	"Stabilizing Maps of County Level Injury Mortality Rates: An Empirical Bayes Approach" and "Trends in Cocaine-Related Mortality"
January 17	Wednesday	NUREG-1150 and the Role of Expert Opinion
January 30	Tuesday	VPLX: Variance Estimation for Complex Samples
January 31	Wednesday	Medical Decision Making and the ROC Curve: A Nonparametric Perspective

ANNOUNCEMENTS

Senior Research Fellowship Program

The American Statistical Association Senior Research Program sponsored by the National Science Foundation seeks senior researchers, advanced graduate students, or recent Ph.D.'s for 1990-91 Fellowships and Associateships at the National Institute of Standards and Technology (NIST). In particular, the Program seeks Fellows with a strong interest in collaborative cross-disciplinary research in process modeling and optimization. Areas of research that fit NIST's research mission and facilities include:

- Statistical approaches in materials processing and bio-processing
- On-line quality control in automated flexible manufacturing
- Statistical methods for robust engineering design
- Analysis of lifetime data from multifactor experiments
- Feedback and feedforward process control
- Sources of variability in physical measurement procedure; calibration for manufacturing process control
- Multivariate modeling and analysis

- Time series analysis
- Variance components modeling and analysis
- Design of experiments
- Errors in variables regression
- Graphical analysis of data
- Statistical computing

The stipend of the Senior Research Fellows and Associates will be commensurate with qualifications and experience. Fringe benefits and a travel allowance will be provided. Appointments will be for four to nine months. Applications are due by January 15, 1990 for Fellow and February 15, 1990 for Associate. For application information, contact Dr. Barbara A. Bailar, ASA/NSF/NIST Research Program, 1429 Duke Street, Alexandria, VA 22314 (703/684-1221). For information on research topics and arrangements, contact Ms. Ruth Varner, Coordinator, ASA/NSF/NIST Research Program, NIST, Admin. Bldg., Room A337, Gaithersburg, MD 20899 (301/975-2839). Interested persons from industry are encouraged to apply.

WASHINGTON STATISTICAL SOCIETY PROGRAM CHAIRS

Agriculture & Natural Resources
Cynthia Clark 763-8558
Paul Gargiullo 586-1137

Social & Demographic Statistics
Harvey Schwartz 443-6990
John Czajka 484-8220

Short Courses
Glenn White 763-7524
Donald Gantz 764-6565
Brad Pafford 447-3623
Sid Schwartz 268-3490

Economics
John Ruser 523-1347
Neil Ericsson 452-3709

Methodology
Myron Katzoff 436-7047
Andrew White 436-7904

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

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

Statistical Computing
Khalid Aboura 994-6794
Sylvia Leaver 272-2350

Quality Assurance
Stanley R. Freedman 586-2038
John Galvin 272-5066

Newsletter Editor
Michael Cohen 454-6193

Employment
Bill Arends 447-6812

PROGRAM ABSTRACTS

TOPIC: DEREGULATION AND AIRLINE SAFETY: EVIDENCE FROM COUNT DATA MODELS

SPEAKER: Bill Evans, Department of Economics, University of Maryland

CHAIR: John Ruser, Office of Economic Research, Bureau of Labor Statistics

DISCUSSANT: John Mullahy, Department of Economics, Trinity College

DATE & TIME: Thursday, January 11, 1990; 12:30 to 2:00 p.m.

LOCATION: Room 2437, GAO Building, 441 G Street, N.W., Washington, D.C.
(Sign in at guard desk and state purpose and room number of visit.)

SPONSOR: Economics Section

ABSTRACT: Using firm level data for the years 1970-87, this paper tests whether accident levels of airlines that existed prior to deregulation (incumbent airlines) have changed since deregulation, and whether the accident experience of airlines that emerged after deregulation (newly certified carriers) are different from incumbent carriers. Modified count data models are used to account for the rarity of airline accidents. In contrast to the predictions made by many prior to deregulation, the results indicate that incumbents are, on average, safer after deregulation than before, and that new airlines are, on average, safer than incumbents.

TOPIC: COMPLEX SURVEY VARIANCE ESTIMATION AND CONTINGENCY TABLE ANALYSIS USING REPLICATION

SPEAKER: Keith Rust, Westat, Inc.

CHAIR: Sylvia Leaver, U.S. Bureau of Labor Statistics

DATE & TIME: Tuesday, January 16, 1990; 12:30 to 2:00 p.m.

LOCATION: Room 2736, GAO Building, 441 G Street, N.W., Washington, D.C. 20212
(In order to assure building entrance, please call 523-5192.)

SPONSOR: Statistical Computing Section

ABSTRACT: The estimation of sampling errors has become a standard requirement for most large scale surveys. Such surveys typically involve extensive stratification and multi-stage sampling. Additionally, estimation is frequently complicated by the use of both nonresponse adjustment and poststratification. Replication based methods provide great flexibility in reflecting both design and estimation complexity in the estimation of sampling errors. Furthermore, such methods can be used to estimate the variance of a broad class of statistics that are typically of interest in analyzing survey data: those statistics that can be represented as functions of estimated totals. Appropriate chi-square statistics for testing independence in two way contingency tables can also be derived readily using a replication approach. Westat has recently enhanced a Westat written SAS procedure, PROC WESVAR, to routinely conduct such analyses. In this presentation the program will be described, with emphasis on the new enhancements. Example analyses will be demonstrated.

PROGRAM ABSTRACTS (continued)

- TOPICS:** "STABILIZING MAPS OF COUNTY LEVEL INJURY MORTALITY RATES: AN EMPIRICAL BAYES APPROACH"
and "TRENDS IN COCAINE-RELATED MORTALITY"
- SPEAKERS:** Owen J. Devine and Daniel A. Pollock,
Center for Environmental Health and Injury Control, Centers for Disease Control
- CHAIR:** Myron J. Katzoff, Office of Research and Methodology,
National Center for Health Statistics
- DATE & TIME:** Wednesday, January 17, 1990; 12:30 to 2:00 p.m.
- LOCATION:** Room 2736, GAO Building, 441 G Street, N.W., Washington, D.C. 20212
(Sign in at guard desk and state purpose and room number of visit.)
- SPONSOR:** Methodology Section
- ABSTRACTS:** **Stabilizing Maps of County Level Injury Mortality Rates: An Empirical Bayes Approach.** Mapping of county level injury mortality rates is a simple means of identifying areas possibly in need of prevention services. Classical direct age-adjusted rates may not be reliable when population sizes are small. Conversely, indirect age-adjusted rates may mask true increases in specific counties. The Division of Injury Epidemiology and Control, CDC, has developed an empirical Bayes method for estimating age-adjusted suicide rates in California. Alternatively, Manton, et al. have recently presented a two-stage empirical Bayes procedure which is directly applicable to the injury mapping problem. In this presentation, these two empirical Bayes methodologies and their application to injury mapping will be discussed.

Trends in Cocaine-Related Mortality, United States, 1983-1987. Until recently, the study of cause-specific mortality based on data derived from death certificates has been accomplished mostly by use of the underlying causes of death. Now, with the availability of multiple cause-of-death data tapes from the National Center for Health Statistics, it is possible to consider other conditions mentioned on death certificates. The potential and limitations of multiple cause-of-death data are illustrated by an analysis of cocaine-related mortality in the U.S. from 1983 through 1987. Mapping of cocaine-related deaths helps to define the severity and scope of the ongoing cocaine epidemic. The reliability of deaths in major U.S. cities is evaluated by comparing the number of deaths reported to NCHS with the number reported to another federal agency, the National Institute on Drug Abuse.

PROGRAM ABSTRACTS (continued)

TOPIC: NUREG-1150 AND THE ROLE OF EXPERT OPINION

SPEAKER: James W. Johnson, U.S. Nuclear Regulatory Commission

DATE & TIME: Wednesday, January 17, 1990; 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 Sciences and Engineering and
the George Washington University Operations Research Department

ABSTRACT: This talk will provide a broad overview of a probabilistic risk assessment of five nuclear power plants (Draft NUREG-1150) and the role of expert opinion in the analysis. NUREG-1150 provides estimates of the actual risks of the five studied plants and quantitative and qualitative PRA information with respect to important severe accident sequences. Expert opinion is elicited for quantification of attributes associated with physical entities by panels of experts for the purpose of aiding the decisionmaking process. A distinctive feature of the process is that numerical values are assigned by people rather than by calculations based exclusively on theory or observed data.

TOPIC: VPLX: VARIANCE ESTIMATION FOR COMPLEX SAMPLES

SPEAKER: Robert E. Fay, U.S. Bureau of the Census

CHAIR: Randy Curtin, National Center for Health Statistics

DATE & TIME: Tuesday, January 30, 1990; 12:30 to 2:00 p.m.

LOCATION: Room 2736, GAO Building, 441 G Street, N.W., Washington, D.C. 20212
(In order to assure building entrance, please call 523-5192.)

SPONSOR: Statistical Computing Section

ABSTRACT: VPLX is a portable FORTRAN program to estimate variances through replication methods. The software has been designed particularly to address applications within the Census Bureau and other Federal agencies and other users of public-use data, including the simultaneous calculation of variances for a large number of variables, especially heavily cross-classified characteristics. The user-oriented command language is similar in many respects to those of SPSS and SAS. The system derives replicate samples on the basis of replicate weights included on the file or generates jackknife samples based on survey identifiers such as stratum, secondary sampling unit, and cluster. Provision for two levels of finite population corrections, including proper treatment of certainty units, should enable application to a variety of survey designs.

The seminar presents work in progress. Results from the first applications will be discussed as well as expected future enhancements.

PROGRAM ABSTRACTS (continued)

- TOPIC:** MEDICAL DECISION MAKING AND THE ROC CURVE: A NONPARAMETRIC PERSPECTIVE
- SPEAKER:** Gregory Campbell, Laboratory of Statistical and Mathematical Methodology, National Institutes of Health
- CHAIR:** Michael Proschan, Biostatistics Research Branch, NHLBI, National Institutes of Health
- DISCUSSANT:** Dean Follmann, Biostatistics Research Branch, NHLBI, National Institutes of Health
- DATE & TIME:** Wednesday, January 31, 1990; 12:00 p.m. (Note special time.)
- LOCATION:** Federal Building, 7550 Wisconsin Ave, Room B119, Bethesda Metro stop
- SPONSOR:** Laboratory of Statistical and Mathematical Methodology and Biostatistics and Public Health, WSS
- ABSTRACT:** The crucial role of nonparametric statistics in medical decision making is examined. For two well-defined populations, say normal and diseased patients, and for a test variable, called X in the normal population and Y in the diseased population, sensitivity $P(Y > t)$ and 1-specificity $P(X > t)$ are defined for each cutoff t . As t ranges over its possible values, the plot of sensitivity versus 1-specificity, called the Receiver Operation Characteristic (ROC) Curve, is obtained. The empirical ROC is merely a nonparametric graphical representation of the ranked data. Comparison of two estimated ROC's is discussed for paired and unpaired data. The advantages of the nonparametric approach are detailed. Ties for ratings data are considered. The serious issue of bias is examined and an approach using fuzzy data is proposed to reduce it. Numerous examples illustrate applications to biomedical decision making.
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ANNOUNCEMENTS (continued)
Fellowship Announcement

American Statistical Association/National Science Foundation/Census Bureau Research Fellowships and Associateships will again be offered to conduct research at the Census Bureau. These fellowships provide a unique opportunity to make major advances in methodological or subject matter research related to Census Bureau operations or data. General areas for research include statistical methodology and computing, social and demographic studies, and economic measurement and analysis. Requirements are: for Fellows, recognized research record in relevant field (e.g., Statistics, Demography, Sociology, Economics, Geography); for Associates, at least two years of

graduate study (or equivalent) in relevant field plus computer experience. Salaries are commensurate with qualifications and experience; also, fringe benefits and a travel allowance are provided. Length of term and starting date are flexible—usually six months to a year beginning September 1. Fellows and Associates can start as early as June 1, 1990, and terms can be split into two or more parts. Please apply by January 5, 1990 for Fellows and February 15, 1990 for Associates. For information on specific research topics and on how to apply, contact Dr. William Bell, Room 3000-4, Statistical Research Division, Bureau of the Census, Washington, D.C. 20233 (301/763-3957).

ANNOUNCEMENTS (continued)

JOS Call for Papers

The 1990 Special Issue on Quality in Official Statistics

In recent years, statistical process quality control and other quality improvements have attracted much attention in industry. Juran and Deming, among others, have noted that these techniques also apply to service and government organizations, and so to official statistics. For this special issue, JOS is looking for manuscripts on a broad range of quality related topics relevant to the production of official statistics and covering the areas of policy, management, methodology, and applications. Of most interest is how the concepts of statistical process quality control can be applied to the total process of producing official statistics from survey, census, or administrative data sources.

- Quality control and enhancement procedures used in surveys and other data collection activities.
- Developing and maintaining standards for computer software for processing data.
- Methodological development for quality assurance related to data collection and processing.
- Official policies and standards for data collection, processing, and presentation.
- Methods to improve quality awareness in statistical organizations and among users of statistics.
- The trade-offs inherent in meeting different quality goals.
- Experimental and other studies of the effect of quality control or enhancement procedures on the resulting official statistics.
- Analysis and discussion of components of error in data collection and processing systems, considering their relative importance, relationship, and combined effect on the resulting statistics.
- Applications of industrial process control procedures to data processing and analysis.
- Case studies of quality assurance projects in official statistics.

Manuscripts for the special issue should be sent in five copies to the Chief Editor, Lars Lyberg, preferably by February 15, 1990.

The Journal of Official Statistics is a refereed scholarly journal published quarterly. All enquiries should be directed to the Chief Editor at: Journal of Official Statistics, Statistics Sweden, S-11581 Stockholm, Sweden.

Tentative Schedule of SIGSTAT Meetings

SIGSTAT is the Special Interest Group in Statistics in the Capital PC User Group. The tentative schedule of events through next May is as follows:

1/17/90	Introductory demo of Rats 3.0 - complete time series analysis package
2/14/90	Advanced features in Rats 3.0
3/14/90	Introductory demo of Systat - powerful, general stat package
4/18/90	Advanced features in Systat
5/9/90	Demo of BASS - BASS programs "look like" SAS programs. A comparison with the much more comprehensive SAS system will be made.

All meetings are scheduled for Wednesdays from 12:30 to 1:30 p.m. in Room B-14, 1301 New York Avenue, N.W. The building is located midway between the Metro Center and McPherson Square Metro stops. If this is your first SIGSTAT meeting, call Charlie Hallahan, 786-1507, and leave your name in order to gain entry into the building.

Science Fairs 1990

Volunteers are still needed to serve as WSS judges for local area science fairs. If you would like to be a WSS science fair judge, or if you would like additional information about this activity, please contact Susan Ellenberg at (301) 496-0694; or send a note with your name, address, and daytime telephone number to: Susan Ellenberg, AIDS Program, NIAID, 6003 Executive Boulevard, Rockville, Maryland 20892.

ANNOUNCEMENTS (continued)

Census Bureau's 1990 Annual Research Conference Announced

The Census Bureau's 1990 Annual Research Conference (ARC 1990) will be held March 18-21, 1990, at the Holiday Inn Crowne Plaza in Arlington, Virginia, only 1/2 mile from National Airport and three blocks from Metro. ARC 1990 will comprise a mix of topics such as reconciling foreign trade estimates between countries, disclosure avoidance, imputation methodology, behavioral research on the census undercount and more. For further information contact Ms. Maxine Anderson-Brown, ARC Conference Coordinator, Office of the Director, Bureau of the Census, Washington, D.C. 20233, 301/763-1150.

AAAS to Meet in New Orleans, February 15-20, 1990

Washington, D.C. ... Today's headlines—global change, fraud and misconduct in science, substance abuse, perestroika, AIDS, scientific literacy, computer viruses—will be featured subjects at the 1990 Annual Meeting of the American Association for the Advancement of Science (AAAS).

The meeting will take place at the New Orleans Hilton Hotel and the Rivergate Exhibition Center February 15-20, 1990. Several thousand scientists, engineers, science policymakers, educators, science journalists, and others interested in science will attend.

Among some 250 meeting symposia will be those on oil contamination in Prudhoe Bay; recent developments in high temperature superconductors; effects of substance abuse on women; perestroika and scientific freedom in the Soviet Union; scientific and public perceptions of global change; the use of animals in biomedical research; verification of threshold test ban limits; assessing

scientific literacy; the law and misconduct in science; progress in AIDS treatment; chlorofluorocarbons and atmospheric chemistry; ethics and politics in the cold fusion case; scientific competition; emotions and the developing brain; and the threat of computer viruses.

Further information about the meeting is available from the AAAS Meetings Office, 1333 H Street, N.W., Washington, D.C. 20005, telephone (202) 326-6448. The preliminary program for the Meeting will appear in the November 10 issue of *Science*, the weekly journal of the AAAS.

Shiskin Award for Economic Statistics

Nominations are still invited for the eleventh annual Julius Shiskin Award in recognition of outstanding achievement in the field of economic statistics.

The Award is designed to honor an unusually original and important contribution in the development of economic statistics or in the use of economic statistics in interpreting the economy. The contribution could be in statistical research, in the development of statistical tools, in the application of computer techniques, in the use of economic statistical programs, or in developing public understanding of measurement issues, to all of which Mr. Shiskin contributed. Either individuals or groups can be nominated.

The Award will be presented with an honorarium of \$500 at the Washington Statistical Society Annual Dinner in June 1990. A nomination form may be obtained by writing to the Julius Shiskin Award Committee, c/o American Statistical Association, 1429 Duke Street, Alexandria, VA 22314-3402. Completed nomination forms must be received by April 1, 1990.

EMPLOYMENT COLUMN

The Washington Statistical Society Newsletter provides a service of notification of employment opportunities and descriptions of those seeking employment here in Washington. 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: Bill Arends, USDA-NASS, Room 4133 South Building, Washington, D.C. 20250-2000, Phone 447-6812.

JOB OPENINGS

SUPERVISORY STATISTICIAN

The Agriculture Division of the Census Bureau is currently recruiting for chief of the Program Research and Development Branch, GH14/1529 (\$48,592 - \$68,172). The incumbent supervises a staff of eleven senior mathematical and survey statisticians and subordinate staff. The branch is responsible for developing a list frame of all agricultural operations, evaluating census coverage, and designing and conducting evaluation surveys, test censuses, and survey processing research for the programs of the division. Demonstrated ability and/or training in sample design, experimental design, analysis of variance, and survey research methods is mandatory. Knowledge of agricultural statistics is desirable, but not necessary. Interested applicants should contact: **Cynthia Clark, Assistant Division Chief for Research and Methodology at (301) 763-8558 or by mail to Agriculture Division, Bureau of the Census, Washington, D.C. 20233.**

STATISTICIAN

Excellent opportunity for candidate with superior statistical and communication skills in the Department of Clinical Investigation at Walter Reed Hospital. Applicant will supervise the acquisition and application of statistical/computing resources and staff, and direct the design, review, and analysis of research addressing current problems in clinical medicine. Position is at the GS-13 level (salary range, \$41,121 to \$53,460) and offers great flexibility and a unique opportunity for career advancement. Candidate must have an advanced degree in statistics (Ph.D. or equivalent experience), extensive knowledge of statistical software, and superior communication skills. Send resume and/or SF-171 to: **Dr. S. Derderian, Department of Clinical Investigation, WRAMC, Washington, D.C. 20307-5001, or call (301) 576-1389 for additional information.**

SAMPLING SPECIALIST

(Consultant/Part-Time/Full-Time/Temporary)

We are seeking individuals with strong backgrounds in sampling design and implementation to develop detailed sampling procedures for unusual large scale sampling problems. Diverse experience in the practical problems of physical selection of unwieldy sample elements from extremely large populations is of primary importance. The ability to write for a nontechnical audience is also a requirement. This is neither a number crunching nor a formula manipulating project.

Charles R. Mann Associates is a small expanding firm specializing in providing statistical, data processing and quantitative management consulting services.

Please send a resume and salary or consulting fee requirements to: **Charles R. Mann, Ph.D., Charles R. Mann Associates, Inc., 1828 L Street, N.W., Suite 950, Washington, D.C. 20036-5104.**

JOB OPENINGS (continued)

COMPUTER-ASSISTED PERSONAL INTERVIEWING STATISTICIANS/SYSTEMS ANALYSTS/PROGRAMMERS GS-11/12 AND GS-13/14

The Office of Vital and Health Statistics of the National Center for Health Statistics (NCHS) has two positions for the development and implementation of computer-assisted personal interviewing (CAPI). One is at the GS-11/12 level (\$29,891-\$46,571) and one is at the GS-13/14 level (\$42,601-\$65,444). Responsibilities include: developing CAPI systems for NCHS population- and institution-based surveys; working with the organizations responsible for collecting the data to implement the CAPI programs; providing technical advice and assistance; and presenting and publishing research on CAPI. Responsibilities for the GS-13/14 position also include management of the CAPI project and supervision of NCHS and contract programmers. Both positions require the ability to develop system requirements and to evaluate languages and software for the implementation of CAPI on microcomputers. Knowledge of or experience with large national surveys, survey research, and public health are helpful and will be used in evaluating candidates. Interested candidates can call **Dr. Mary Grace Kovar (301) 436-7104** for information about the project or **Ms. Sally Hinkel (301) 436-6052** for information about the positions and how to apply for them. Applications (which must include Form SF-171) should be sent to Ms. Sally Hinkel, Room 2-11, NCHS, 3700 East-West Highway, Hyattsville, MD 20782. **The NCHS is an Equal Opportunity Employer.**

JOB APPLICANTS

Listed below is a brief description of the qualifications of an applicant seeking employment. Employers interested in interviewing this applicant should notify Mr. Arends 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 #90-03

Objective:	Position in the area of Statistics and Demography.
Research Experience:	Population research involving the study of pattern, causes and consequences of rural-to-urban migration in a large city in India. Important aspects of migration were studied using probabilistic models tested empirically with data collected from a multi-stage stratified random sample.
Teaching Experience:	More than six years experience teaching Statistics to undergraduate and post-graduate students. Supervising the statistical analysis and interpretation of a number of dissertations.
Interests:	In addition to population studies, other interests include: statistical methods, statistical inference, probability distributions, sample surveys, design of experiments, time series analysis, statistical quality control, theory of attributes, operations research, and econometrics.
Computers:	Training in and applications of computer programming in FORTRAN.
Education:	M.S. and Ph.D. in Statistics, and B.S. in Statistics, Mathematics, and Physics from Kanpur University

JOB APPLICANTS (continued)

CODE #90-04

Objective: Position as Applied Mathematician, specializing in Statistical Analysis
Preference: Private Industry in Northern Virginia or 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 Skills: 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. in Mathematics With Specialization In Statistics
Connecticut State University



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