

WSS NEWS

WASHINGTON STATISTICAL SOCIETY NOVEMBER 1991

Leadership Award to Dr. Deming

W. Edwards Deming was announced as the recipient of the 1991 Leadership Award by the USDA Graduate School. The award acknowledges Dr. Deming's individual contributions and tremendous positive leadership in public and private arenas over many years.

Dr. Deming became an employee of the USDA in 1927 and quickly developed a reputation for his expertise in sampling and his guidance in further developments in sampling theory and quality management. He served as a faculty member at the Graduate School for 21 years and chaired the Mathematics and Statistics Committee. During his tenure, many well-known statisticians were first introduced to the "new" ideas of sampling, which his famous seminars helped formulate. During World War II, Dr. Deming and his colleagues led seminars on quality control for wartime industries, which led to the formation of the American Society for Quality Control. Dr. Deming accepts the award with fond memories of his time with the USDA and the Graduate School.

Ist Morris Hansen Memorial Lecture Set

The Washington Statistical Society is pleased to announce that the first in an annual series of lectures to honor the memory of **Morris Hansen** will be held Wednesday, November 20, 1991. **T.M.F.** (Fred) Smith, from the University of Southampton, will provide a historical look at the development of survey sampling, focusing on both design-based and model-based approaches. To kick off this very special occasion, the National Academy of Sciences has agreed to co-sponsor the event. A special reception will follow in the Great Hall of the National Academy. For more information on registration, see the program abstract in this newsletter.

WSS Seminars		
(All events are open to any interested persons.)		
NOVEMBER		
7	Thurs.	Variance Estimation Seminar: Comparative Variance Estimation Research (2nd in Series)
12	Tues.	Applying the Total Design Method
13	Wed.	Survey Quality Assurance Using Modular Programming Techniques
14	Thurs.	History of Reinterview Studies at USDA's National Agricultural Statistics Service
19	Tues.	Adjusting the 1990 Census for Undercount
19	Tues.	Variance Estimation Seminar: Estimating Unconditional Variances for the U.S. Consumer Price Index for 1978-1986 (3rd in Series)
20	Wed.	1991 Morris Hansen Lecture: Sample Surveys 1975-1990: An Age of Reconciliation?
21	Thurs.	Statistical Methods for Computer Vision Problems
22	Fri.	Use of Videotapes as a Training Vehicle for Surveys
26	Tues.	Resampling as the Tool of First Recourse in Everyday Practice
DECEMBER		
5	Thurs.	Variance Estimation Seminar (4th in Series)
16	Mon.	The Effect of Government Programs on Financial Performance

Announcements

APDU's 16th Annual Conference Announced

The Association of Public Data Users' 16th Annual Conference will be held on November 4-6, 1991, at the Sheraton City Centre, Washington, DC. The theme of APDU91 is "A Nation Facing Change: What Does it Mean for Data?" Sessions will include such topics as an update on Federal statistical policy; changing goals and new directions; technological innovations; access and confidentiality issues; small area and international data products and services from the 1990 Census; and planning for Census 2000. For further information call APDU at (609) 258-6025 or (609) 258-6052 between 9:30 am and 4:30 pm, Mon.-Fri. The BITNET address is APDU@PUCC; the FAX number is (609) 258-3943.

Workshop on Record Linkage Methodology

The Canadian Centre for Health Information, Statistics Canada, will hold a one-day workshop on Friday, November 15, 1991, in Ottawa, Ontario, Canada. The workshop will include plenary sessions on: an introduction to the methodology and uses of record linkage; a description of the new generalized record linkage system recently developed at Statistics Canada for use on a PC or network workstation and enabling interactive or "batch" linkage; assigning geographic variables for file matching: and future directions for record linkage software and research applications. It will also include a round table network for exchange of information on current record linkage activities in Canada, the U.S. and the U.K. The workshop is free to participants but registration is limited. For further information contact Maureen Carpenter at the Canadian Centre for Health Information, Statistics Canada, R.H. Coats Bldg., 18th Floor, Tunney's Pasture, Ottawa, Ontario, K1A OT6, Canada. FAX: (613) 951-0792; Telephone: (613) 951-1760.

Science Fairs 1992

It's that time again.... Volunteers are being solicited to represent the WSS as judges in local area science fairs next spring. WSS provides special awards at these fairs to students whose projects demonstrate excellence in statistical theory or application. Those who have participated in this activity have found it very enjoyable to interact with these students and to observe the widely diverse projects that are presented. The WSS sponsors awards at fairs in Northern Virginia, suburban Maryland and the District of Columbia. The only time required is the Saturday morning of the judging (sometime in March or April, depending on the fair), plus one weekday

lunchtime meeting to discuss judging strategy and to distribute the books and certificates to be awarded.

To become a WSS science fair judge, or to obtain additional information about this activity, please contact Susan Ellenberg at (301) 496-0694; or send a note with your name, address and daytime phone number to Susan Ellenberg, Division of AIDS, 6003 Executive Blvd., Bethesda, MD 20892. (Or FAX: (301) 480-5703.)

Tentative Schedule of SIGSTAT Meetings

SIGSTAT is the Joint Special Interest Group in Statistics for the Capital PC User Group and WORMSC (Washington Operations Research/ Management Science Council). The tentative schedule of events for the next few months is as follows:

11/06/91 -- Forecast Master Plus: Menu-driven, short-term forecasting package. Features include graphics, Box-Jenkins, Dynamic Regression, ARCH models, State Space Regression and Variable Parameter Regression.

12/11/91 -- <u>Statistix 3.5</u>: Menu-driven, general stat package, *PC Magazine's* Editor's Choice. Half price coupons available at meeting (\$147.50).

01/08/92 -- S-Plus 2.0 Graphics: Interactive dynamic graphics, including 3D data spinning, scatterplot matrix brushing and point identification using a mouse.

All meetings are scheduled for Wednesdays from 12:30-1:30 pm in Room B-14, 1301 New York Ave., NW, Washington, DC. (The building is located midway between the Metro Center and McPherson Square Metro stops.) If this is your first SIGSTAT meeting, call Charlie Hallahan, (202) 219-0507, to gain entry into the building.

Quantitative Literacy Volunteers Wanted

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If you can spare as little as two hours a year to aid in the improvement of quantitative skills in grades K through 12, the WSS QL Committee would like to hear from you. Activities range from informal talks to students at career days to involvement with students, teacher training or projects. We're always looking for some new ideas, so here's a chance to get involved in the process of educational improvement. Be assured that you will not be pressured into more involvement than you feel comfortable with. A working group has formed in each local jurisdiction, so you will not need to travel far from home. For more information please call Ron Fecso (at 202-334-2295) or Easley Hoy (at 301-763 7800).

Program Abstracts

TOPIC:

Variance Estimation Seminar: Comparative Variance Estimation Research

(2nd in Series)

SPEAKERS:

Anne Peterson and Jenny Seltzer, Bureau of the Census

Chris Moriarity, Elizabeth Sweet and Miriam Rosenthal, Bureau of the Census

CHAIR:

Ron Fesco, National Agricultural Statistical Service

DISCUSSANT: Mike Cohen, National Center for Education Statistics

DATE/TIME:

Thursday, November 7, 1991, 12:30-2:00 pm

LOCATION:

Room 2437, GAO Building, 441 G Street, NW, Washington, DC

(Red Line -- Judiciary Square)

SPONSOR:

Methodology Section

ABSTRACT:

A Study of Variance Estimation: The 1989 Survey of Inmates of Local Jails

Anne Peterson and Jenny Seltzer

The 1989 Survey of Inmates of Local Jails (SILJ) was used to analyze properties of the characteristics of drug use and several variance estimators. Three estimates and their variances were considered: total female drug users, total male drug users, and the ratio of female drug users to male drug users. The goals of the study were to determine the overall distribution of the variable drug use, to evaluate the aptness of the stratification scheme for this variable, and to determine the efficiency of systematic sampling in achieving a representative sample. The focus on variance estimation was on the random group and jackknife methods. Many aspects of the implementation of these methods were investigated: differences in numbers of random groups, effects of reweighting the data by ratio estimation, the differences between the jackknife and random group method, and the variability of CV's and confidence intervals for all of the variance estimates. The talk will discuss the implementation of these methods to the SILJ and the variance results generated.

Comparative Variance Estimation Research Chris Moriarity, Elizabeth Sweet and Miriam Rosenthal

Comparative variance estimation research was conducted, using data from the 1988 Post-Enumeration Survey (PES). We applied the jackknife, random groups, balanced half samples, and bootstrap methods to obtain the variance of dual system estimates produced by the PES. We compare the results of these approaches to Taylor series linearization, the variance estimation method used during production. Our discussion will also include our experiences when we used Robert Fay's VPLX variance estimation software for several of these methods.

TOPIC:

Applying the Total Design Method

SPEAKERS:

Kenneth John, Luann Moy, William Eckert, and Jonathan Bachman,

General Accounting Office

CHAIR:

Fran Featherston, General Accounting Office

DISCUSSANT: Donald Dillman, Bureau of the Census

DATE/TIME:

Tuesday, November 12, 1991, 12:30-2:00 pm

LOCATION:

GAO Auditorium - 7th Floor, GAO Building, 441 G Street, NW, Washington, DC (Red Line -- Judiciary Square) Call Shandon Brown @ 202-272-2282 to put your

name on the guard's list for entry by COB, Thursday, November 7, 1991.

SPONSOR:

Data Collection Methods Section

ABSTRACT:

The U.S. General Accounting Office, an agency of Congress, has frequently obtained high response rates using mail surveys. The session discusses four case studies presented at the 1991 Annual Conference for the American Association for Public Opinion Research (AAPOR). The papers describe GAO surveys conducted using variations on GAO's standard mail survey methodology, which is similar to the Total Design Method. The respondents to the different surveys include cable TV system managers, directors of early childhood education centers, local government staff, and

health plan sponsors.

TOPIC:

Survey Quality Assurance Using Modular Programming Techniques

SPEAKER:

William Freund, National Center for Education Statistics

CHAIR:

Carrol Kindel, National Center for Education Statistics

DATE/TIME:

Wednesday, November 13, 1991, 12:30-2:00 pm

LOCATION:

NCES, 555 New Jersey Avenue, N.W., Room 326 (2 blocks from Union Station -- Take Red Line to Union Station; walk one block west to F St., N.W. -- Phoenix Park Hotel is on corner; walk down F St. to corner of F St. and New Jersey Ave.; enter building at left and

take elevator to third floor)

SPONSOR:

Quality Assurance Section

ABSTRACT:

This session will present a systematic approach to survey quality assurance, applying SASbased modular programming techniques at various stages of the data collection process. The approach is being used on the Integrated Postsecondary Education Data System, an

annual census of postsecondary institutions sponsored by NCES.

TOPIC:

History of Reinterview Studies at USDA's National Agricultural Statistics Service

SPEAKER:

Dale Atkinson, National Agricultural Statistics Service

CHAIR:

Cynthia Z.F. Clark, National Agricultural Statistics Service

DISCUSSANT: Ruth Ann Killion, Bureau of the Census

DATE/TIME:

Thursday, November 14, 1991, 12:30-1:30 pm

LOCATION:

USDA, Room 4302 - South Building, 14th & Independence Ave., S.W.,

Washington, DC (Blue or Orange Line -- Smithsonian Station)

SPONSOR:

Agriculture and Natural Resources Section

ABSTRACT:

An extensive reinterview survey program was initiated in 1986 by the National Agricultural Statistics Service to provide information on response bias and variance in agricultural surveys. This paper documents the history of reinterview surveys prior to 1986 and also the current reinterview survey program (1986-current). Reinterview survey procedures and results are summarized. In addition, recommendations for future reinterview survey programs are presented.

TOPIC:

Adjusting the 1990 Census for Undercount: Two Sides of a Controversy

SPEAKERS:

Mark Plant, Department of Commerce Eugene Ericksen, Temple University

CHAIR:

Jeffrey S. Passel, The Urban Institute

DATE/TIME:

Tuesday, November 19, 1991, 12:30-2:00 pm

LOCATION:

The Urban Institute, Fifth Floor, 2100 M Street, N.W., Washington, DC (Blue or Orange Line -- Farragut West)

SPONSOR:

Social and Demographic Section

ABSTRACT:

On July 15, 1991, Secretary of Commerce Robert Mosbacher announced that the results of the 1990 census would not be adjusted for persons missed in the census. Results from the Census Bureau's evaluation studies showed that more than 5 million persons, or about 2 percent of the population, were missed by the 1990 census. Undercounts were higher than average for Blacks, Hispanics, and American Indians (all about 5 percent) and Asian-Pacific Islanders (about 3 percent), while the undercount rate for non-Blacks was less than average. The Secretary's decision, announced in the Federal Register, was based on concerns about the statistical adequacy of the proposed adjustments.

Adjusting the 1990 Census for Undercount (cont'd)

The procedure for reaching a decision on census adjustment was the result of a lawsuit brought by the City of New York in 1987. The Secretary was advised in this process by a Special Advisory Panel of experts. This session reviews the results of the deliberation process and the basis for the Secretary's decision from two perspectives: the Administration's and that of a member of the Special Advisory Panel, who recommended that the census be adjusted.

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TOPIC:

Variance Estimation Seminar: Estimating Unconditional Variances for the U.S.

Consumer Price Index for 1978-1986 (3rd in Series)

SPEAKER:

Sylvia G. Leaver, Bureau of Labor Statistics

CHAIR:

Yahia Ahmed, Internal Revenue Service

DISCUSSANT: David Morganstein, Westat, Inc.

DATE/TIME:

Tuesday, November 19, 1991, 12:30-2:00 pm

LOCATION:

Room 2437, GAO Building, 441 G Street, N.W., Washington, DC

(Red Line -- Judiciary Square)

SPONSOR:

Methodology Section

ABSTRACT:

This seminar will present the final results of a project to compute estimates of the sampling variance of the Consumer Price Index, and variance estimates of price change reflected by the index, for the years 1978 through 1986. The project comprised three phases. The first phase entailed estimation of index and price change variances which are conditional on the December 1977 expenditure weights derived from the 1972-1974 Consumer Expenditure Surveys. The second phase consisted of estimation of the December 1977 expenditure weight variances, and the third phase consisted of estimation of unconditional variances for the index and price change incorporating variances of expenditure weights. Variances of expenditure weights were estimated using balanced repeated replication. Conditional variances for indexes were estimated via replication using random groups, and variance estimates for price change were estimated via linearization, using index variance component estimates. We will present the unconditional estimates of index and price change variance, which incorporate the sampling variance of the December 1977 expenditure weights, computed for national and regional level statistics for all items, seven major groups, and three housing subgroups, for the index and 1-, 2- and 12-month price changes.

SPECIAL

SESSION:

The 1991 Morris Hansen Lecture

TOPIC:

Sample Surveys 1975-1990: An Age of Reconciliation?

SPEAKER:

T. M. Fred Smith, University of Southampton

DISCUSSANTS:

Richard Royall, Johns Hopkins University Charles Alexander, Bureau of the Census

CHAIR:

Joseph Waksberg, Westat, Inc.

DATE/TIME:

Wednesday, November 20, 1991, 3:30-5:30 pm

LOCATION:

The Auditorium of the National Academy of Sciences, 2101 Constitution Ave., NW, Washington, DC. (A convenient entrance is on C St. Parking in this area is limited to

nonexistent. The Foggy Bottom Metro Station is about a 7 block walk.)

SPONSORS:

The Washington Statistical Society, the Commission on Behavioral, Social Sciences

and Education and the Committee on National Statistics.

RECEPTION:

The lecture will be followed by a reception from 5:30 to 6:30 pm in the Great Hall.

REGISTRATION:

Attendees must confirm their intention to attend the lecture and reception in advance. Please notify Nancy Kirkendall, in writing, no later than November 6, 1991 -- Nancy Kirkendall, El-70, 1000 Independence Ave., SW, Washington, DC 20585

ABSTRACT:

The first Morris Hansen Lecture will be presented by T.M.F. (Fred) Smith, a professor at the University of Southampton. Professor Smith is a Fellow of both the American Statistical Association and the Royal Statistical Society, and is currently the president of the Royal Statistical Society. He has many publications to his credit, many of which deal with issues important to sample surveys, such as the use of models in estimation and the role of randomization in inference. His 1976 paper, "The Foundations of Survey Sampling, a Review," which appeared in the Journal of the Royal Statistical Society, series A, provides the historical background for both design-based and model-based approaches to sampling. In this talk, Professor Smith will bring his earlier work up to date.

The first discussant is Richard M. Royall, a professor at the Johns Hopkins University and also a Fellow of the American Statistical Association. Professor Royall is wellknown for his work in model-based sampling. The second discussant is Dr. Charles (Chip) Alexander, a Branch Chief in the Statistical Methods Division at the U.S. Bureau of Census. Dr. Alexander has a wealth of practical experience in survey sampling.

This session was made possible by a grant from Westat, Inc., where Morris Hansen worked for 20 years as a senior statistician and served as Chairman of the Board of Directors.

TOPIC:

Statistical Methods for Computer Vision Problems

SPEAKER:

Rama Chellappa, University of Maryland, College Park

CHAIR:

Jon Sjogren, Air Force Office of Scientific Research

DATE/TIME:

Thursday, November 21, 1991, 11:00 am-12:00 noon

LOCATION:

Stoughton Hall, Room 301, George Washington University,

707 22nd Street, NW, Washington, DC (Blue or Orange Line--Foggy Bottom)

SPONSOR:

Physical Science and Engineering Section

ABSTRACT:

The field of Computer Vision is about extracting useful information from one or more images. Owing to the enormous amount of data that need to be processed, parametric model-based methods are often used for solving a number of vision problems. In this context, statistical models and methods provide a useful paradigm. This talk will illustrate the usefulness of statistics-based approaches for image segmentation, motion analysis,

illuminant direction estimation and robust feature extraction and smoothing.

TOPIC:

Use of Videotapes as a Training Vehicle for Surveys

SPEAKER:

Nancy Leach, Energy Information Administration

CHAIR:

John H. Herbert, Energy Information Administration

DISCUSSANT: Bill Mockovak, Bureau of the Census

DATE/TIME:

Friday, November 22, 1991, 12:00 noon-2:00 pm

LOCATION:

Room GJ-015, Forrestal Bidg., 1000 Independence Ave., SW, Washington , DC (Blue or Orange Line--L'Enfant Plaza) Government employees need a government ID to enter the building and should allow for time to sign in. Non-government employees should call John

Herbert (202-586-4360) for escort into the building.

SPONSORS: Agriculture and Natural Resources Section and Quality Assurance Section

ABSTRACT:

Videotapes were used to train personal interviewers for the 1990 Residential Energy Consumption Survey. This talk will be a brief description of the training method and a

review of its effectiveness.

TOPIC: Resampling as the Tool of First Recourse in Everyday Practice

SPEAKER: Peter C. Bruce, University of Maryland, College Park

CHAIR: Joe Fred Gonzalez, Jr., National Center for Health Statistics

DATE/TIME: Tuesday, November 26, 1991, 2:00-4:00 pm

LOCATION: National Center for Health Statistics, Auditorium, Presidential Building, 11th Floor, 6525

Beicrest Road, Hyattsville, MD

SPONSORS: Office of Research and Methodology, NCHS and the Washington Statistical Society

ABSTRACT: At the start, resampling, and especially the bootstrap, were most commonly used when

classical methods were not promising. Increasingly, however, there is recognition that resampling methods should be the "treatment of choice" in everyday practice. The basic principles can be easily learned and flexibly adapted to fit any situation. When the user is oriented to resampling, moreover, there is a lesser chance of an incorrect test than with classical procedures. These features are especially important for those hundreds of thousands who use statistics but are not professional, theoretical statisticians. They suggest that resampling has a high level of "statistical utility" -- the likelihood that a statistical procedure will be appropriately and correctly applied and understood both by the

practitioner and the consumer.

The statistical community has long warned against the unthinking use of parametric tests when foundations are poorly understood. Computer packages that place a myriad of such tests at the user's disposal with a single command exacerbate this problem. The resampling approach, by contrast, mitigates the problem. A physical process necessarily precedes any statistical procedure. Resampling methods stick close to the underlying physical process by simulating it, requiring less abstraction than classical methods.

The presentation will demonstrate the application of the program Resampling Stats to several concrete problems. Questions and discussion will be encouraged.

Employment Column

As a service to local statisticians, the *Washington Statistical Society News* provides notification of employment opportunities and descriptions of those seeking employment here in the Washington, DC area. Readers are encouraged to take advantage of this feature of the newsletter. The 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. Contact Mr. Arends at 202-447-6812.

Supervisory Statistician (Health or Mathematical)

The National Institute for Occupational Safety and Health, Division of Safety Research, Science and Policy Coordination Activity, has a career opportunity for a supervisory statistician (Health or Mathematical).

Incumbent serves as Associate Director of Biostatistical Science, providing technical and epidemiologic research services, plus coordination of biostatistical services for the Division. Serves as principal advisor to the Division Director and Deputy Director on matters of biostatistical science. Develops, plans, and supervises methodological development and statistical projects concerned with surveillance, epidemiology and worker protection research within the occupational environment. Reviews reports, scientific papers, memoranda, Congressional inquiries, and other similar material for the purpose of providing written recommendations concerning biostatistical science issues. Develops and writes technical documents based on the results of statistical and epidemiologic research and methods development. Provides traditional first level supervisory duties over the employees assigned to this endeaver.

Criteria varies according to position. For application procedures and additional information contact: Thomas R. Bender, M.D., M.P.H., NIOSH S-118A, Division of Safety Research, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505-2888, (304) 291-4595.

Statistician

The National Institute for Occupational Safety and Health, Division of Respiratory Disease Studies, Epidemiological Investigations Branch, has a career opportunity for a statistician.

Professionals in mathematical statistics, biostatistics, and health statistics combine to form a team which provides statistical support to the Epidemiological Investigations Branch. Statisticians may also collaborate with other researchers and scientists, and may conduct independent research relevant to the Division mission.

Ph.D. or equivalent in statistics or biostatistics is preferred. For application procedures and additional information contact: Ronda Smith, NIOSH, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505, (304) 291-4693.

Employment Column (Cont'd)

Statisticians

Westat is an employee-owned corporation headquartered in the suburbs of Washington, DC (Rockville, MD). We provide statistical consulting and survey research to the agencies of the U.S. Government and to a broad range of business and institutional clients. With a strong technical and managerial staff and a long record of quality research, our company has become one of the leading survey research and statistical consulting organizations in the United States.

Our company was founded 30 years ago by three statisticians. The current staff of more than 550 includes statisticians, survey researchers, psychologists, medical researchers, sociologists, economists, market research and behavioral analysts, computer systems analysts, programmers and support staff. The professional staff is supported by survey field supervisors, coders and interviewers. The atmosphere is open, progressive and highly conducive to professional growth.

Our statistical efforts continue to expand in areas such as the environment, energy, health education, human resources, and teaching courses in statistical methods. Several positions are currently available which require a graduate degree in statistics:

- <u>Biostatistician</u>.--Work in clinical trials, their design, analysis and management. Also work in survival analysis models and longitudinal studies. Substantial (but not exclusive) focus on HIVrelated issues. Ph.D. in biostatistics and relevant experience <u>required</u>.
- o <u>Environmental Statistics</u>.--Experience with environmental or energy problems essential. Skills in sample design, analysis, survey operations and project direction helpful.
- o <u>Survey Sampling</u>. Experience required in sample design and selection, frames development, weighting and variance estimation. Must have Master's degree or Ph.D. in statistics program.
- o <u>Industrial Consulting</u>. Teach statistical process control and consult with clients in industry. Must have consulting and teaching experience, willingness to travel.

To insure proper consideration, interested applicants should indicate one of the above areas and send resume with current salary requirements to: Personnel Director, Westat, Inc., Dept. DRM-2, 1650 Research Blvd., Rockville, MD 20850. An Equal Opportunity Employer M/F/V/H.

Survey Health Statisticians

The Agency for Health Care Policy and Research (AHCPR) is recruiting statisticians to join the Division of Statistics and Research Methodology within the Center for General Health Services Intramural Research (CGHSIR). Positions are available for a Ph.D. in statistics/biostatistics and a M.S. with experience in sample design, survey research, sampling, weights development, data analysis for complex surveys, imputation procedures and matching techniques. Familiarity with statistical software packages (particularly SAS) is required. Send SF-171 application forms and resume to: Dr. Steven B. Cohen, Director, Division of Statistics and Research Methodology, Agency for Health Care Policy and Research, Room 18A-55, 5600 Fishers Lane, Rockville, MD 20857. (Service Fellow positions are equivalent to GS 11-14.)

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