



SEPTEMBER 1989

WASHINGTON
STATISTICAL
SOCIETY

NEWSLETTER

Sep. 18	Monday	Statistical Programming in the GAUSS Programming Language
Sep. 21	Thursday	Quality Measurement for Postsecondary Education Financial Aid Programs
Sep. 27	Wednesday	Mapping Hot Spots for Infrequent Health Outcomes
Oct. 18	Wednesday	Service Performance, Quality Assurance, and Customer Satisfaction at the U.S. Postal Service
Nov. 15	Wednesday	CPI Users Survey: Methodology and Results

ANNOUNCEMENTS

Note from the President

Cathryn Dipbo

ASA's Quantitative Literacy (QL) program was the subject of a presentation by Kathryn Rowe of ASA at the annual open meeting of the WSS Board of Directors. The major goal of the QL program is to put statistics and probability concepts into the pre-college classroom. The project is joint with the National Council of Teachers of Mathematics and has received funding from the National Science Foundation.

During the first three years of the program, curriculum materials and a program of inservice training for mathematics teachers were developed and field tested. The implementation phase of the program began in 1988 with a pilot project in the greater Chicago area. Five one-week workshops, designed to create a network of secondary classroom teachers and statisticians within a specific geographic area, were held this summer. At Towson State University, Lee Abramson, Barbara Bailar, Cliff Bailey, Greg Schemer, and I were the resource statisticians, providing the teachers with advice on

their group projects and meeting with them on an informal basis. Each of us has been asked to host a visit by the teachers at our place of business this fall.

I have asked the WSS Representatives-at-Large to develop a plan for how WSS as an organization can coordinate services to local schools. Several of the teachers I talked with at the workshop expressed an interest in having a statistician visit their classrooms to describe how statistics are used, what kinds of jobs are available that use statistics, etc. Susan Ellenberg, as WSS Science Fair Coordinator, has suggested we not limit our efforts to the mathematics classroom, but incorporate contacts with science teachers as well.

Are you concerned about the abilities of the statisticians you will be hiring in the future? the quantitative education your children are receiving? Here is your opportunity to do something. If you would like to be a member of the WSS QL Committee or have specific ideas you would like to suggest, please contact Dwight Brock (496-9795) or Ron Fecso (475-3486).

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 484-9220

Short Courses

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

Economics

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Jai Choi 436-7047

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

Newsletter Editor

Michael Cohen 454-6193

Employment

Bill Arends 447-6812

PROGRAM ABSTRACTS

TOPIC: STATISTICAL PROGRAMMING IN THE GAUSS PROGRAMMING LANGUAGE

SPEAKER: Ronald Schoenberg, Ph.D., Director of Software Applications,
Aptech Systems, Inc., Kent, WA

CHAIR: Jimmie D. Givens, Mathematical Statistician, Office of Research and Methodology

DATE & TIME: Monday, September 18, 1989, 1:30 to 3:30 p.m. (Note special time.)

LOCATION: National Center for Health Statistics, 3700 East-West Highway,
Hyattsville, Maryland 20782, Room 1-39 A & B

SPONSOR: Office of Research and Methodology, NCHS

ABSTRACT: GAUSS is a software language for professional researchers who want to solve a wide variety of computational problems. It is also designed for researchers who do not have expertise in FORTRAN or C. The latest version, GAUSS 2.0, is an update of GAUSS 1.49B. This upgrade has considerably improved the power and flexibility of the language. An advanced statistical applications package has also been added to the language to assist the researcher using GAUSS. This includes software for the analysis of limited variables (logit, probit, loglinear, poisson, negative binomial, for example), for general maximum likelihood estimation, and for optimization of arbitrary functions.

TOPIC: QUALITY MEASUREMENT FOR POSTSECONDARY EDUCATION FINANCIAL AID PROGRAMS

SPEAKERS: Karen Chauvin, U.S. Department of Education
Glenn Galfond, Price Waterhouse

CHAIR: John M. Galvin, Bureau of Labor Statistics

DATE & TIME: Thursday, September 21, 1989, 12:30 to 2:00 p.m.

LOCATION: Rm. 2736, GAO Building, 441 G Street, N.W., Washington, D.C.
(Sign in at guard desk and state purpose and room number of visit.)

SPONSOR: Quality Assurance Section

ABSTRACT: The U.S. Department of Education administers five programs as part of Title IV Student Financial Assistance. Together these programs delivered approximately \$20.4 billion in grants, loans, and work study aid to students in the 1988-89 award year. As part of its continuing effort to improve the delivery of financial aid, the Department is conducting the Integrated Quality Measurement Project. The objectives of this project are to: (1) measure the quality of the delivery of financial aid under the Title IV programs, (2) evaluate the effectiveness of prior efforts to improve the quality of these programs, and (3) identify steps that can be taken to further improve the quality of these programs.

Data for quality measurement is collected from a sample of postsecondary institutions, parents, and students. After extensive data verification, award amounts are re-estimated and compared to the actual award amounts. Sources of error are identified and potential corrective actions explored.

PROGRAM ABSTRACTS (continued)

- TOPIC:** MAPPING HOT SPOTS FOR INFREQUENT HEALTH OUTCOMES
- SPEAKERS:** Kevin B. Weiss, George Washington University
Diane K. Wagener, National Center for Health Statistics
- CHAIR:** Andrew A. White, Chief, Statistical Technology Staff,
Office of Research and Methodology, NCHS
- DATE & TIME:** Wednesday, September 27, 1989, 2:00 to 3:00 p.m. (Note special time.)
- LOCATION:** National Center for Health Statistics, Center Building, Room 1-39,
3700 East-West Highway, Hyattsville, MD 20782
- SPONSORS:** Office of Research and Methodology, NCHS, and the Methodology Section, WSS
- ABSTRACT:** Death among 5 to 34 year olds due to asthma has been increasing at an average rate of 8 percent per year. To help focus studies that might identify risk factors, geographic mapping of the mortality rates was used to identify high-risk populations. The presentation will describe the data and a variety of methods used to identify high-risk areas and estimate trends. The methods include single period and multiple period statistics, CUSUM, and adjustments based on prior assumptions regarding the distribution of rates.
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- TOPIC:** SERVICE PERFORMANCE, QUALITY ASSURANCE, AND CUSTOMER SATISFACTION AT THE U.S. POSTAL SERVICE
- SPEAKER:** Sidney Schwartz, U.S. Postal Service
- CHAIR:** Stan Freedman, Energy Information Administration
- DATE & TIME:** Wednesday, October 18, 1989, 12:30 to 2:00 p.m.
- LOCATION:** Rm. 1P619, USPS Headquarters, 475 L'Enfant Plaza, S.W. (All non-postal employees must present a photo ID and sign the register at the guards' station to gain entrance to the bldg.)
- ABSTRACT:** The basic task of the U.S. Postal Service is to provide mail delivery and window service that is accurate, timely, and courteous. The Postal Service conducts formal programs to (1) measure and monitor timeliness of mail delivery, (2) collect detailed information and provide immediate feedback about certain systematic mail processing problems, and (3) measure customer satisfaction about current postal services and facilities. Operational and statistical features of many of these programs will be presented.
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- TOPIC:** CPI USERS SURVEY: METHODOLOGY AND RESULTS
- SPEAKER:** Richard Kamalich, Bureau of Labor Statistics
- CHAIR:** Stanley R. Freedman, Energy Information Administration
- DATE & TIME:** Wednesday, November 15, 1989, 12:30 to 2:00 p.m.
- LOCATION:** Rm. 2736, GAO Building, 441 G Street, N.W., Washington, D.C.
(Sign in at guard desk and state purpose and room number of visit.)
- SPONSOR:** Quality Assurance Section
- ABSTRACT:** In the Fall of 1988 the Bureau of Labor Statistics surveyed a sample of users of the Consumer Price Index. Measurement objectives of the survey were: (1) to develop a CPI usage profile, or to identify which CPI data are used for what purposes; (2) to gain user feedback on the quality of CPI information services; and (3) to gain user opinions on the usefulness of a number of prospective CPI program and methodological changes. This paper presents results of the survey and discusses policy implications. Various aspects of the survey design are also discussed including questionnaire development, sample design, frame construction, data collection (mail survey with telephone follow-up), and nonresponse.
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ANNOUNCEMENTS (continued)

WSS Dues to Increase

At the annual meeting of the outgoing and incoming Boards of Directors in June, the decision was made to increase dues for the 1989-90 program year. This will be the first increase in dues in five years. The new dues structure is \$10 for ASA members, \$14 for local associate members, \$4 for ASA student members, and \$8 for local associate student members. The \$4 differential between regular memberships and local associate memberships accounts for the need to use first class postage for the local associate mailings.

The main factor in voting for a dues increase was the fact that dues collections in the past three years have not been enough to pay for the cost of the WSS Newsletter each year. This means that the operations of the society have been supplemented by reserves on hand and short course operations. The new dues structure should be sufficient to cover expected WSS expenses this next year.

In an effort to inform all present members before a dues increase became effective, the American Statistical Association business office has been requested to begin the new fees structure for renewals starting October 1, 1989.

Probability and Statistics Day

The Mid-Atlantic Probability and Statistics Day will be held at the National Institute of Standards and Technology, Gaithersburg, Maryland, on Saturday, October 21, 1989. For information call Charles Hagwood at 301/975-2846.

WSS Members Brave Storm

About 110 Washington Statistical Society members and guests were able to attend the WSS annual dinner in spite of the worst rain and wind storm in many years. Some other individuals could not physically make it through the downed trees and power lines to attend the function at George Washington University.

Most aspects of the dinner revolved around the theme of "WSS--Past, Present, and Future." All participants received a handout which highlighted key dates in the WSS history and listed all known officers and committee chairs. Some of

the local science fair winners symbolized the future as they displayed and discussed their projects. Mary Grace Kovar and Hal Nisselson used the past and present as the basis for their comments on changes in WSS and statistics in Washington in the past number of years.

The newly elected WSS officers (President Elect, Ed Wegman; Secretary, Marie Argana; Representatives-at-Large, Ron Fecso and Dwight Brock; and Methodology Program Chair, Andy White) were announced. Nancy Kirkendall was presented the traditional Past President certificate. The science fair winners assisted Rich Allen in presenting the Presidents' Service Award to Susan Ellenberg for her efforts in originating the judging of science fairs by WSS and for continuing to coordinate that successful activity. The Julius Shiskin Award for Economic Statistics was presented to Frank deLeeuw of the Bureau of Economic Analysis.

GAUSS Users' Group Meeting

Dr. Ronald Schoenberg, Director of Applications Software, at Aptech Systems, Inc., the manufacturer of GAUSS, will speak at the first fall meeting of GAUSS/Washington, the metropolitan area's GAUSS users' group. He will be speaking on new features in GAUSS that increase the maximum size of data structures GAUSS can process and that reduce the limitations of several other constraints. The hour-long meeting begins at 12:30 p.m., Friday, September 22, in Room B-14 of the Economic Research Service Building at 1301 New York Avenue, N.W. Call Jack Angle at 786-1505 beforehand to have your name put on the guard's admission list. This meeting will also see the election of officers for the '89 - '90 season. Jack Angle, the current GAUSS/Washington president, will speak at the October meeting on programming the LOWESS analogue of simple regression (Friday, October 20, from 12:30 to 1:30 p.m.). The October meeting is also at the Economic Research Service at 1301 New York Avenue, close to 13th and H, and conveniently located between the McPherson Square station of the Orange and Blue lines and Metro Center of the Red, Orange, and Blue lines.

ANNOUNCEMENTS (continued)

The Congress' Use of Statistics

As part of the Washington Statistical Society commemoration of ASA150, four experienced Congressional Committee staff members participated in a panel discussion on "The Congress' Use of Statistics." Some of the points raised in that session may be of wide interest to statisticians and taxpayers.

John Hamre of the Senate Armed Services Committee described the use of complicated statistical models in all aspects of the weapons acquisition process. Sophisticated models are used to predict the performance of new weapon designs, minimizing the dependence on expensive prototyping of weapons. Other models are used to predict the resistance to attack of weapons and their susceptibility to destruction. Since the cost of major weapon systems ranges from \$3 million for a tank to \$300 million for a bomber, our country cannot afford to collect data by destroying large numbers of production units, and must depend on selective "destructive testing" to validate computer projections. Yet other models predict the utilization rate for spare parts. Errors in sampling technique recently led the services to buy nearly \$30 billion of excess spare parts.

Mr. Hamre pointed out that these are just examples of extensive dependence on sophisticated statistical method and models. This dependence, however, creates a profound problem for senior managers in the Department of Defense and for the Congress. Invariably, the sophisticated models are built by the proponents of the weapon systems, and almost no one other than the model builders understand how they work. Mr. Hamre noted a "believability" problem, and urged mathematicians, statisticians, econometricians, and programmers to strive to improve the "transparency" of models so that major decisions involving billions of dollars do not depend on computer projections that no one but the proponents can validate.

G. William Hoagland of the Senate Budget Committee commented that members of Congress use many types of statistics, including election and opinion polls. He also noted that members'

decisions are affected by several important sources of information, such as staff members, constituents, other Members and opinions of their party, newspapers, newsletters, planned studies, and hearings. On the other hand, members are very busy and may make public statements before all sides of an issue are checked out. Time is usually not available for indepth statistical studies.

Mr. Hoagland pointed out that there is a need to tie social and business statistics together in order to address many of the issues facing Congress. Because the collection of statistics has gotten more difficult and costly in the past 20 years, he is concerned that the quality of statistics has not kept up with data needs. Nonpublic organizations have filled many of the gaps in information.

Wendell Primus of the House Ways and Means Committee emphasized that three types of data are important: data to describe the world, data to define accounting relationships, and data to describe behavioral relationships. Members of Congress are very familiar with cost estimates, but may be less aware of statistical analyses. Primus also observed that the United States could spend more money wisely to improve surveys and increase sample sizes.

The final member of the panel was Bernie Schmitt of the Joint Tax Committee. Mr. Schmitt described the sample of 75,000 tax returns that his committee obtains in conjunction with the Statistics of Income Division of the Internal Revenue Service. That sample is used, along with Social Security Administration data, to model the effects of proposed new tax legislation. That modelling approach works very well for predicting the results of economic effects such as changing withholding allowances from \$2,000 to \$2,200. However, it is much more difficult to predict the effect of changes in the tax code that would cause people's behavior to change. He noted how difficult it was to predict how many people would take advantage of Individual Retirement Accounts (IRA's) provisions. The only data available were from Canada and IRA's turned out to be four times more popular in the United States than predicted.

ANNOUNCEMENTS (continued)

Science Fairs 1989

The Washington Statistical Society presented awards to 41 Washington-area students at regional science fairs this spring. Awards were made to students whose projects demonstrated excellence in investigation of statistical methods or in application of statistical methods to a particular scientific problem. First award winners at each of the six regional fairs received one of three books (Statistics: A Guide to the Unknown, by Tanur et al; How to Take a Chance, by Huff; or Statistics: Concepts and Controversies, by Moore) and were invited to display their projects at the WSS annual dinner on June 14. Certificates of Honorable Mention were also awarded.

Awardees, their schools, and their projects are as follows:

Arlington-Alexandria-Falls Church

First Awards

Ly-Cheng Lim, Washington-Lee High School, "The Effect of Pesticide on the Growth of Elodea"

Charles Zedlewski, Williamsburg Intermediate School, "Light Bulb Life"

Honorable Mention

Kurt Fichte, Swanson Intermediate School, "Do Today's Young Adults Like Classical Music?"

Andrew Lavin, Williamsburg Intermediate School, "Technically Most Valuable Player"

Jenny Martinez, Yorktown High School, "A Computerized Mathematical Model of Aircraft Landing Gear"

Colleen Ruff, Swanson Intermediate School, "Which Commercially Prepared Fruit Juice has the Highest Vitamin C Concentration?"

Evan Wamsley, Wakefield High School, "The Fibonacci Series in Astronomy"

District of Columbia

First Awards

Joshua Greenberg, Wilson High School, "Learned Helplessness in Teenagers and Adults"

Deborah Hirschmann, Capitol Hill Day School, "Do You Know How Long Time Really is?"

Claire Tilton, Deal Jr. High School, "Difference between Horsepower, Heart Work and Pulse Rate"

Darius Van Arman, Gonzaga High School, "Comparison of Alternative Approximations for the Binomial Distribution Function"

Honorable Mention

Matthew Oetgen, Gonzaga High School, "Cigarette Smoking and Exercise-Induced Bronchospasm"

Alexis Rice, Jefferson Jr. High School, "Random Sampling"

Ling Yun Shao, Lafayette Elementary School, "Do Crickets Learn?"

Fairfax County, Grades 7-8

First Awards

Martin Buta, Longfellow Intermediate School, "Rubber Band Quality Control Determined by Elasticity and Hooke's Law"

Jacques de Beaufort, Hughes Intermediate School, "Which Variable of a Disease is Most Sensitive?"

Honorable Mention

David Adamiec, Lake Braddock Intermediate School, "Are Dice Fair?"

Suzanne Chatelier, Key Intermediate School, "7th and 8th Grade Attitudes: What Are They?"

Tieule Lau, Kilmer Intermediate School, "Figures Don't Lie... Wanna Bet?"

Michael Monemerlo, Lake Braddock Intermediate School, "The Science of Bubbles"

Fairfax County, Grades 9-12

First Awards

John Bremer, Lee High School, "A Mathematical Analysis of the Game of 'Life'"

Charles Choi, West Springfield High School, "The Effect of Foliar Feeding on Plants"

Linus Upson, Thomas Jefferson High School, "A Nuclear Magnetic Resonance Study of Proton/Halide Solvation by Hydroxyl Groups"

Honorable Mention

Elizabeth Coggeshall, Madison High School, "Temperature Effects on Fermentation of Saccharides"

Todd Faxon, Fairfax High School, "Viruses: The Effects of Electromagnetism on Viruses"

Erika Harmon, West Potomac High School, Karen Loew, West Potomac High School, "AIDS: What do Teenagers Know?"

Stephen Lefton, Langley High School, "Normal Values of Back and Abdominal Strength in Adolescent Males"

Nathan Vitan, West Springfield High School, "Antimicrobials: The Kirby-Bauer Method and Penicillium Notatum"

ANNOUNCEMENTS (continued)

Science Fairs 1989 (ctd.)

Montgomery County

First Awards

Matthew Hertz, Takoma Park Intermediate School, "Does Age Affect the Sense of Taste and Smell?"

Mary Johnson, Montgomery Blair High School, "Sickle Cell Disease: Cellular and Molecular Determinants of Severity"

Daniel Mall, Montgomery Blair High School, "Impact of Surface Structure on Drag Coefficients in Turbulent Fluid Flows"

Honorable Mention

Jordan Greenbaum, Hoover Jr. High School, "Which Soaps Really Get You Clean?"

Kirk Waibel, Montgomery Blair High School, "Allelochemicals in Biochemical Interactions between Weeds and Common Plants"

Prince George's County

First Award

Sharon Buckland, Oxon Hill High School, "Vitamin E's Effects on Mutagenicity"

Stephen Metz, Lackey High School, "Drosophila and the Laws of Heredity"

Jean Wang, Eleanor Roosevelt High School, "Mechanism of Browning in Apple Tissue"

Honorable Mention

Nathan Harvey, High Point High School, "Roll 'Em: Computer vs. Real-Life Probability"

Jim Nelson, Our Lady Star of the Sea, "Random Numbers"

Ken Wang, Martin Luther King Middle School, "Preventing Yellowing of Broccoli"

The WSS is grateful to all those who volunteered to judge the fairs this year. Many of these individuals have been judging fairs every year since we began this activity in 1986. This year's judges were Paul Cook, Brenda Edwards, Deagelia Pena, Brian Taylor, Frank Dorsey, Jeff Miller, Wylie Wilson, Michael Stoto, Bill Cleveland, Mary Foulkes, Lisa Kammerman, John Schwemberger, Ann Crosby, Pam Getson, Gene

Heyman, David Kao, Lawrence Rudner, Stephen Schneider, Howard Hogan, Vince Matthews, Bob O'Neill, Don Stablein, Glenn White, Robert Clickner, Hyder Lakhani, Susan Ellenberg, and Sid Schwartz.

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.

Demo of PC/BMDP at SIGSTAT Meeting

SIGSTAT is the Special Interest Group in Statistics in the Capital PC User Group. The first meeting this Fall of SIGSTAT will feature a demo of the PC version of BMDP by Kevin Fiotakis of BMDP Statistical Software. The meeting is scheduled for Wednesday, September 20 from 12:30 to 1:30 p.m. in Room B-10, 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. The October SIGSTAT meeting will be on the 18th when we'll look at SOLO, another product from BMDP.

ANNOUNCEMENTS (continued)

1989 Winter Simulation Conference

The 1989 Winter Simulation Conference will be held on December 4-6, 1989 at the Capital Hilton Hotel in Washington, D.C. The conference will feature tutorials, papers on applications and methodology, panel discussions, state-of-the-art reviews, software tutorials and demonstrations, and vendor exhibits of simulation products.

Discrete-event simulation, which is the focus of the conference, is used to model manufacturing, transportation, distribution, computer, communication, military, health care, and many other types of systems. WSC typically includes papers in all of these areas, with special emphasis on manufacturing systems. Papers on methodology present current research in modeling, design, analysis, and execution of simulation experiments.

A special feature of WSC is an extensive schedule of tutorials on simulation methodology and software presented by leading researchers and software developers. There are tutorials targeted for audiences with no previous background in simulation, for simulation users who want to increase their knowledge of simulation, and for researchers who want to learn about advanced and emerging topics. The software tutorials are backed up by an extensive vendor exhibits area for demonstrations and further discussion.

For additional information contact General Chair Kenneth J. Musselman, Pritsker Corporation, 1305 Cumberland Avenue, P.O. Box 2415, West Lafayette, IN 47906, (317) 463-5557. For registration information contact Registration Chair William R. Lilegdon at the same address and phone number.

Second Annual Federal Forecasters Conference (FFC 89)

FFC 89 will be held on September 6-7, 1989 at the Omni Shoreham Hotel, 2500 Calvert Street, N.W. in Washington, D.C.

FFC 89 is sponsored by the National Center for Education Statistics. It will provide a forum for forecasters from different Federal agencies to meet and discuss various aspects of forecasting in the United States Government. The theme of FFC 89 is "Forecasting and Public Policy" and it will highlight our roles as developers of a wide variety of forecasts used for policy planning. The conference will bring together these Federal forecasters to exchange information on forecasting methods, improve forecasting techniques, and expand information networks.

Presentations are requested. Invited/contributed discussion sessions are planned on a variety of topics such as: Forecasting Methods; Forecasting Software; Forecast Evaluation; and Communicating Forecasts in the areas of Economics, Energy, the Environment, Manpower Planning and Employment, Agriculture and Natural Resources, Population, Education, Regional Sciences, Strategic Planning, the Federal Budget, Social Security, Veterans Affairs, and Health and Human Services.

The number of participants will be limited. For additional information contact William C. Sonnenberg, CoChairperson, Second Annual Federal Forecasters Conference, National Center for Education Statistics, 555 New Jersey Avenue, N.W., Room 314, Washington, D.C. 20208-5650.



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