

NEBRASKA SAS® USERS GROUP

nebsug.org

2017 ONE-DAY CONFERENCE



TUESDAY, MAY 23, 2017

8:00am – 4:30pm

Scott Conference Center

6450 Pine St, Omaha NE 68106



Conference Chairs:

Robin High --- University of Nebraska Medical Center

Anne O'Keefe --- Douglas County Health Department

schedule on page 5



Sponsors:



Message from Co-Chairs

Dear Nebraska SAS® Users,

The Nebraska SAS Users Group 2017 One-Day Conference will be held on Tuesday, May 23 in Omaha at the Scott Conference Center. Choose from 3 concurrent presentation sessions that cover a diverse set of presentations which will help to grow your SAS skills and will cover a wide variety of topics and interests. Presentation sessions are scheduled in 50 minute time slots throughout the day. SAS® will have some of their experts presenting the most recently developed methods on how to use SAS.

As in the past, this conference is the day following the annual conference hosted by the Iowa SAS Users. We have joined with them to invite several regional SAS experts to demonstrate their innovative techniques with SAS. Hopefully you have the time participate and learn something new! Check the conference schedule for details.

In addition to the presentations and hands-on workshops, the conference registration will provide a continental breakfast and lunch, door prizes, and the important opportunity to network with fellow SAS users. Take advantage of early registration. If you register by May 16 the conference fee is only \$80. After May 16th, the registration fee will increase to \$110. This conference is an excellent value at either price, however, we strongly encourage early registrations. Refunds are not given, but can be transferred to another person with advance notice.

Many thanks go to SAS for their support of Nebraska SAS Users. SAS has been a big part of this conference from “day one” by providing speakers, door prizes, and a lot of “behind the scenes” support. Our conference simply would not exist if not for the support we’ve received from SAS. Also, 1st Consulting, of Des Moines, deserves the credit of jumpstarting the Nebraska SAS Users Group and making these conferences possible.

Come join us and your fellow SAS users for a fun, informative, and educational experience which will provide many valuable opportunities for networking and developing of your SAS skills.

Robin High & Anne O’Keefe

NEBSUG 2017 Conference Co-chairs



- *Network with Fellow SAS® Users*
- *Learn from the SAS® Pro’s*
- *Learn more about SAS® 9.4*
- *Three Concurrent Sessions with 15 Presentations*
- *Scholarship for students*
- *Including Two Hands-On Workshops*

Conference Information

This one-day conference will provide an opportunity to enhance your SAS® skills and improve your understanding of the SAS® System. There will be 3 concurrent sessions throughout the day -- all for a registration fee of only \$80, with breakfast and lunch included! Registration and Scholarship Form are at the end of this announcement. It is recommended that you use the online registration system.

Date: Tuesday, May 23, 2017

Location: Scott Conference Center (See map and direction on next page)
6450 Pine St., Omaha NE 68106

Registration Fee: \$80 for Early Registration by Tuesday, May 16, 2017
(Only \$10 for student early registration. Please contact rhigh@unmc.edu before registering.)
\$110 for Late and On-site Registration after May 16, 2017
Group discount: If 5 or more people register together, then you will receive a discount of \$10 off for all people in the group. One person must register for the group.

Online Registration: <https://www.regonline.com/NEBSUG2017>

Cancellation Policy: No refund but substitution is accepted with advance notice to omaha1day@yahoo.com.

SAS Classes Not offered at this conference. Contact johnxu@1st-consulting.com for information on SAS classes at Iowa SAS Users Group on 5/23/17 - 5/25/17 in Des Moines.



Check in: Starting at 8:00 AM on May 23, 2017.

Schedule: The Opening Session will begin at 8:45 AM. 3 concurrent sessions will start at 9:00 AM. Lunch will be served at 12:00 PM. The afternoon sessions will start at 1:00 PM. The closing session will start at 4:00 PM and the conference will conclude at 4:30 PM. Each presentation will last for about 50 minutes.

Lunch: Lunch on site is included in your registration fee.

Hotel: Courtyard Omaha Aksarben Village
1625 South 67th Street
Omaha, NE 68106
(402) 951-4300
* Only one block away. Ask for Scott Conference Center contract rate.
You may use other nearby hotels.

Conference Schedule

| 5/23/17 | Session 1 | Session 2 | Session 3 Hands-On Workshop |
|------------------|--|---|--|
| 8:00– 8:45 | Check In & Networking -- Breakfast Sponsored by  | | |
| 8:45 – 9:00 | Opening Session | | |
| 9:00 – 9:50 | Teradata Basics For SAS Programmers (1) Delayne Stokke, Wells Fargo | SAS® and Hadoop: The 5th Annual State of the Union (2) Paul Kent, SAS | Fitting Statistical Models with PROCs NLMIXED and MCMC (3) Robin High, UNMC |
| 10:00 – 10:50 | Using SAS Macro Functions to Manipulate Data (4) Ben Cochran, The Bedford Group | Proven Practices for Predictive Modeling (5) Mary-Elizabeth Eddlestone, SAS | Hands-On Workshop: New for SAS® 9.4: A Technique for Including Text and Graphics in Your Microsoft Excel Workbooks, Part 2 (6) Vince DelGobbo, SAS |
| 11:00 – 11:50 | Logistic Regression for Prediction, a Tutorial (Part I) (7) Bruce Lund | An Overview of SAS Visual Data Mining and Machine Learning on SAS Viya (8) Ralph Abbey, SAS | |
| 12:00 – 1:00 | Lunch Sponsored by  | | |
| 1:00 – 1:50 | An Introduction to the Mighty DATASETS Procedure (9) Ben Cochran, Bedford | Introduction to Data Mining (10) Mary-Elizabeth Eddlestone, SAS | Logistic Regression for Prediction, a Tutorial (Part II) (11) Bruce Lund |
| 2:00 – 2:50 | You Want ME To Use SAS® Enterprise Guide®?? (12) Vince DelGobbo, SAS | A Look Into Tree Based Models and Automated Model Tuning in SAS® Visual Data Mining and Machine Learning on SAS Viya™ (13) Ralph Abbey, SAS | Hands-On Workshop: A Technique for Using a Handful of SAS Functions to Clean Data (14) Ben Cochran |
| 2:50– 3:10 | Afternoon Break | | |
| 3:10 – 4:00 | The SAS Hash Table Object – Still the Greatest! (15) Delayne Stokke, Wells Fargo | Working with the LASR Analytic Server (16) Simon Geletta | |
| 4:00 – 4:30 | Closing Session/Door Prizes | | |

[number in () is the index in abstract section]

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- Fritz Lehman, Executive Vice President and Chief Customer Officer, SAS

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Presentation Abstracts

(1) Teradata Basics for SAS Programmers

Delayne Stokke, Wells Fargo Home Mortgage

For a SAS programmer to effectively work with a Teradata database, it is extremely important to have a good understanding of what differentiates Teradata from other relational database management systems. This talk will cover the following topics that I've found to be extremely helpful. My experience and this presentation is limited to SAS/Access to Teradata. I will not be covering techniques that utilize tools such as the SAS Scoring Accelerator for Teradata.

- Basic explanation of Teradata architecture, mainly for the purpose of explaining the Primary Index and how it is used to distribute data across the AMPs.
 - Knowledge of the unique nature of the primary index in Teradata is a key to understanding.
- Connecting to Teradata using SAS/Access to Teradata
 - Difference between Explicit SQL Pass through (PROC SQL with the "connect to Teradata" syntax) and Implicit SQL Pass through (any Teradata access via a library that uses the Teradata engine)
 - Cautions to observe if using Implicit SQL Pass through
 - How the SAS option SQL_FUNCTIONS=ALL changes which SAS functions are passed to Teradata when using Implicit SQL Pass through
- Difference between Teradata mode and ANSI mode and how to control it for Teradata sessions started by SAS
- Use of Teradata SQL Assistant to aid in query development and testing
- How to create a permanent table in Teradata and populate it with data from SAS.
 - Always specify a load option because the default is single row inserts
 - Always specify a primary index because the default for a table created by SAS Access to Teradata is to create a NOPI table
- Types of temporary tables that can be created in Teradata (Derived, Volatile and Global), and the differences between them.
 - An explanation of the terms used to describe the different types of temporary tables
 - Examples of how each are created and used.
- Effect of SAS OBS=10 (why doesn't obs=10 cause my query to run faster?)
 - Comparison of the SAS option OBS= with Teradata TOP and SAMPLE
- Questions to ask to help in debugging a problem query
 - Recommendation to minimize data movement in order to improve overall performance.
 - Sometimes it is easy to forget that our data sources may be stored in physically different systems, or even geographically different locations.
 - Recognizing that certain processes may be moving data from one system to another is an important step in building understanding.
 - Moving data may be the most time consuming part of a given process.
 - Limiting data movement may require that we learn to do more in Teradata SQL, but may result in surprising performance gains.

(2) SAS® and Hadoop: The 5th Annual State of the Union

Paul Kent, SAS

The third maintenance release of SAS 9.4 was a huge release with respect to the interoperability between SAS and Hadoop, the industry standard for big data. This talk brings you up-to-date with where we are: more distributions, more data types, more options. Come and learn about the exciting new developments for blending your SAS processing with your shared Hadoop cluster. Grid processing. Check. SAS data sets on HDFS. Check.

Presentation Abstracts

(3) Fitting Statistical Models with PROCs NL MIXED and MCMC

Robin High, University of Nebraska Medical Center

SAS®/Stat software has several procedures which estimate parameters from generalized linear models designed for both continuous and discrete response data (including proportions and counts). Procedures such as PROCs GENMOD, GLIMMIX, and FMM, among others, offer a flexible range of analysis options to analyze data from a variety of distributions and also with correlated or clustered data. SAS procedures GENMOD and FMM can also model zero-inflated and truncated distributions. This paper demonstrates how statements from PROC NL MIXED can be written to match the output results from these procedures. Situations arise where the flexible programming statements of PROC NL MIXED are needed for situations such as zero inflated, hurdle models, truncated counts and continuous data (including proportions) which have random effects and for probability distributions not available elsewhere. A useful application of these coding techniques is that programming statements from NL MIXED can often be directly transferred into PROC MCMC with little or no modification to perform analyses from a Bayesian perspective with these various types of complex models.

(4) Using SAS Macro Functions to Manipulate Data

Ben Cochran, The Bedford Group

The SAS DATA step has the reputation for being one of the best data manipulators in the IT world. While the author of this paper agrees with this statement, it is possible to go beyond the capabilities of the DATA step by using SAS Macro functions. It would be difficult to show the full power of these Macro Functions in an hour presentation, so, this paper will look at a few commonly used Macro Functions and compare and contrast them to DATA step functions. These functions can be used not only to manipulate data, but to manipulate entire programs as well.

(5) Proven Practices for Predictive Modeling

Mary-Elizabeth Eddlestone, SAS

In our ongoing quest for “analytics excellence”, what are some of the strategies and tactics that we, as analytics practitioners, can consider not only for individual predictive modeling projects, but for increasing the value and importance of analytics in our organizations? This presentation will share some of the common strategies, attributes, processes and best practices of the most successful organizations. Best Practices will include considerations for an overall analytics process as well as the discrete steps of building a predictive model, such as: data preparation and sampling; input (variable) examination, selection, and transformation; model selection and validation; and more.

(6) New for SAS® 9.4: A Technique for Including Text and Graphics in Your Microsoft Excel Workbooks, Part II (Hands-On Workshop)

Vince DelGobbo, SAS

A new ODS destination for creating Microsoft Excel workbooks is available starting in the third maintenance release of SAS® 9.4. This destination creates native Microsoft Excel XLSX files, supports graphic images, and offers other advantages over the older ExcelXP tagset. In this presentation you learn step-by-step techniques for quickly and easily creating attractive multi-sheet Excel workbooks that contain your SAS® output. The techniques can be used regardless of the platform on which SAS software is installed. You can even use them on a mainframe! Creating and delivering your workbooks on-demand and in real time using SAS server technology is discussed. Although the title is similar to previous presentations by this author, this presentation contains new and revised material not previously presented. Using earlier versions of SAS to create multi-sheet workbooks is also discussed.

Presentation Abstracts

(7) Logistic Regression for Prediction, a Tutorial (Part I: Lecture)

Bruce Lund

Binary logistic regression models are commonly used in direct marketing and consumer finance applications. In this context this paper presents topics in fitting and validation of logistic regression models with an emphasis on predictive accuracy. The first topic is the screening and preparation of predictor variables including binning, transformations, and interactions. The second topic is a presentation of automated methods for finding multiple candidate models of high quality. The third topic is a discussion of criteria for selecting a final model from among the multiple candidate models. To conclude, an extension of binning and weight-of-evidence coding from the binary case is made for the cumulative logit model (an ordinal logistic model). The talk uses Base SAS® and SAS/STAT. The audience should have working knowledge of the SAS DATA Step and PROC LOGISTIC.

(8) An Overview of SAS Visual Data Mining and Machine Learning on SAS Viya™

Ralph Abbey, SAS

Machine learning is in high demand. Whether you are a citizen data scientist who wants to work interactively or a hands-on data scientist who wants to code, you have access to the latest analytic techniques with SAS Visual Data Mining and Machine Learning on SAS Viya. This offering surfaces in-memory machine learning techniques such as gradient boosting, factorization machines, neural networks and much more through its interactive visual interface, SAS Studio tasks, procedures, and a Python client. Learn about this multi-faceted new product and see it in action.

(9) An Introduction to the Mighty DATASETS Procedure

Ben Cochran, The Bedford Group

On occasions, a SAS user might find themselves in the position where they need to do a number of things to a SAS dataset, like copying it or renaming it or even deleting it. All of these tasks, and many more can be done with the incredible DATASETS procedure. The purpose of this paper is to show a step by step approach to accomplishing these tasks.

(10) Introduction to Data Mining

Mary-Elizabeth Eddlestone, SAS

What exactly is data mining and how can it help your organization more confidently predict the future? This presentation will introduce you to the essential aspects of data mining and give you a guided tour of SAS® Enterprise Miner™, the powerful data mining workbench from SAS.

Presentation Abstracts

(11) Logistic Regression for Prediction, a Tutorial (Part II: Hands-on Workshop)

Bruce Lund

This is a hands-on workshop for running SAS macros and SAS programs that were described in Part I. Attendees will run test cases using the following SAS macros:

- (1) %IV_X_C_Stat screens out weak predictors;
- (2) %BIN bins nominal or discrete predictors while maintaining predictive power. %BIN also finds interactions between two predictors;
- (3) %FSP finds the best transform for a continuous predictor;
- (4) SAS code for running PROC LOGISTIC with SELECTION=SCORE is provided. When weight-of-evidence predictors are included, the ranking of models from SELECTION=SCORE is adjusted for degrees of freedom;
- (5) Using PROC HPLOGISTIC a comparison made of fitting models by FORWARD with SELECT=SBC and by LASSO;
- (6) Lastly, %CANDIDATE_STATS compares and ranks multiple candidate models on a validation data set;
- (7) Time permitting, other examples will be added.

(12) You Want ME to Use SAS® Enterprise Guide®?

Vince DelGobbo, SAS

Starting with SAS® 9, one copy of SAS Enterprise Guide is included with each PC SAS license. At some sites, desktop PC SAS licenses are being replaced with a single server-based SAS license and desktop versions of Enterprise Guide. This presentation will introduce you to the Enterprise Guide product, and provide you with some good reasons why you should consider using it.

(13) A Look Into Tree Based Models and Automated Model Tuning in SAS® Visual Data Mining and Machine Learning on SAS Viya™.

Ralph Abbey, SAS

Learn the details and options associated with the Treesplit, Forest, and Gradboost procedures in the new SAS® Visual Data Mining and Machine Learning offering on SAS Viya™. This presentation also covers the details behind automated tuning process, and how to use automated model tuning in the three tree based procedures.

(14) A Technique for Using a Handful of SAS Functions to Clean Data - Hands-on Workshop

Ben Cochran, The Bedford Group

Manipulating Data can be a big part of what SAS programmers do. A big part of data manipulation is cleaning dirty data. SAS has a number functions that can be used to make this task a little easier.

Presentation Abstracts

(15) The SAS Hash Table Object – Still the Greatest!

Delayne Stokke, Wells Fargo Home Mortgage

The Hash Table object was introduced into the SAS language with the release of SAS 9. At the time I said “In my opinion, the hash table object is the greatest addition to the DATA step language in the last 25 years. It’s a revolutionary advancement which extends true object oriented programming capabilities to the DATA step programmer.”

The hash table object allows the programmer to place data into an in-memory table that has fast lookup capabilities. In many situations, it provides superior performance to many other lookup techniques. Many times, long running processes that require sorting of a large dataset in order to append values from one or more smaller datasets can be re-written to use a hash table object (or objects) and see dramatically reduced run times. In addition to lookups, the hash table object has a few other tricks that it can perform. And recent updates to the SAS language have added features and functionality that make hash objects even more powerful.

In this talk, I will introduce you to the basics of hash table usage, and show you some of my favorite techniques through the use of examples. If you are currently using hash table objects, I’d hope that I’d be able to show you one or two new tricks that you can use. If you’ve never used hash table objects, my hope would be that you’d come away with enough knowledge and curiosity to start.

(16) Working with the LASR Analytic Server

Simon Geletta, Knowledge Delivery Services, LLC

This presentation demonstrates how to take advantage of “in memory” analytics afforded by the SAS LASR analytic server – which is shipped with the SAS Visual Analytics and/or Visual Statistics server packages. Attendees will learn how to start the LASR server, how to load data and how to write and submit code to the server using either Enterprise Guide or SAS Studio sessions.

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Biographies



Ralph Abbey is a Senior Research Statistician Developer in the Enterprise Miner Research and Development group at SAS. Aside from supporting Enterprise Miner, he is involved with the development of SAS Visual Data Mining and Machine Learning on SAS Vya. He has a PhD in mathematics from North Carolina State University.



Ben Cochran, After more than 11 years with SAS in the Professional Services (as an Instructor) and Marketing Departments (as Marketing Manager for the SAS/EIS product), Ben Cochran left to start his own consulting and SAS Training business in the fall of 1996 - The Bedford Group. As an affiliate member of SAS Alliance Partner Program, Ben has been involved in many teaching and consulting projects over the last 10 years. Ben has authored and presented several papers at SUGI, SGF, and regional user groups on a variety of topics since 1988.



Vince DelGobbo is a Senior Software Developer in the Metadata and Execution Services group at SAS. This group's responsibilities include the SAS/IntrNet Application Dispatcher and SAS Stored Processes. He is involved in the development of new Web- and server-based technologies, bringing 3rd-party metadata into SAS, and integrating SAS output with Microsoft Office. He was also involved in the early development of the ExcelXP ODS tagset. Vince has been a SAS Software user since 1982, and joined SAS in 1992.



Mary-Elizabeth Eddlestone, is Principal Systems Engineer for the SAS Customer Loyalty Team. Having studied Economics and Quantitative Methods at Mount Holyoke College and Cornell University, M-E has used SAS analytics to study, model, forecast, and predict a wide range of subjects in a variety of industries. M-E began programming in SAS as an undergraduate and has used SAS in every job since. She has spent the last several years at SAS helping customers discover the power of SAS analytics and has presented at, and served as section chair for SUGI/SAS Global Forum, Analytics, as well as several regional, local and in-house SAS user groups. Certification: Predictive Modeler Using SAS® Enterprise Miner™



Simon Geletta is an associate professor in the Master of Public Health (MPH) program at Des Moines University in Des Moines, Iowa, where he teaches courses in healthcare research and statistics, community research methods and geographic information systems for healthcare professionals. Dr. Geletta is also the founder of Knowledge Delivery Services, LLC Principal Systems Engineer - a systems consulting and service business and a Silver Partner member of the SAS Alliance Network.



Paul Kent is Vice President of Big Data initiatives at SAS. He spends his time between Customers, Partners and the Research & Development teams discussing, evangelizing and developing software at the confluence of big data and high performance computing. He is an active participant in the Hadoop community, speaking at Strata and Hadoop world.



Bruce Lund is a data miner and predictive modeler with 30 years of experience in direct marketing in the automotive industry including the development of in-market models, long-term value models, and loyalty/defector models for automotive clients. For the past 15 years, Bruce has been a consultant for Magnify Analytic Solutions, a division of Marketing Associates of Detroit MI, Wilmington DE, and Charlotte NC. Before Magnify, he was the customer database manager at Ford Motor Company and a mathematics professor at the University of New Brunswick in Canada. He has a PhD in mathematics from Stanford University. During the past 10 years he has been a frequent contributor to SAS user groups.



Delayne Stokke has been a SAS programmer and analyst since 1986. He has presented papers at local, regional and international users group meetings, and has been co-chair of the Midwest SAS Users Group annual meeting on two occasions (2003 and 2007). Delayne is a Certified Advanced Programmer for SAS9. He works for Wells Fargo Home Mortgage in West Des Moines, IA, where he provides support and consultative services to SAS users.



John Xu is the Director of Consulting of 1ST Consulting LLC, a West Des Moines based consulting company specialized in SAS related services. He has over 20 years of SAS experience in Financial, Insurance, Marketing, Government, Education, and Pharmaceutical industries. John is Vice President of MidWest SAS Users Group. He is currently leading the activities of Iowa SAS Users Group and also supporting Nebraska SAS Users Group.

Biographies



Robin High, Conference Co-Chair has been a biostatistician at the University of Nebraska Medical Center in Omaha, NE since 2008. His prior experience includes statistical consulting with a civil engineering firm in Austin, Tx, researchers at Oregon State University, and for nearly 15 years assisted graduate students and faculty at The University of Oregon. He has over 25 years' experience with the SAS System.



Anne O'Keefe, Conference Co-Chair, is the Senior Epidemiologist with the Douglas County Health Department, in Omaha, Nebraska. She has over 20 years of SAS experience in federal, state, and local public health agencies.



We invite you to come to the 2017 MidWest SAS® Users Group (MWSUG) Conference on October 8th - 10th at the Hyatt Regency St. Louis at the Arch located in downtown St. Louis, Missouri, just steps from the famous Gateway Arch and the Mississippi River waterfront .

This year's conference will be our 28th and we have a lot in store for you. Our conference committee is busy planning two full days of paper presentations from other SAS users, hands-on workshops, live demonstrations, and opportunities to network with other SAS users. We will also be offering a full menu of pre-conference training workshops. You'll also have access to our popular Code Clinic where SAS programming gurus can help you solve your sticky coding problems. In addition, staff from SAS Institute will be there to provide their unique expertise and insight.

MWSUG 2017 Conference co-chairs: Misty Johnson & Jerry Kagan



Photo courtesy of U.S. Air Force

Volunteer Signup Form

This conference is made possible by volunteers like you. If you would like to help with this conference, please complete the form below and email it to Anne O'Keefe at omaha1day@yahoo.com with subject line: NEBSUG Volunteer. Thanks!

Name _____

Phone _____

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Please rank the volunteer work in which you are interested:

() Registration Coordinator.

Need to come early at 7:15 am on May 23 (Conference day) to conference site to set up registration table and check attendees in.

() Session Coordinator.

Direct attendees to the proper conference room. Distribute handouts if available. Remind speaker about time left.

Introduce speaker if asked by Section Chair. Minimum of half day in a session required.

In Hand-On Workshop, help attendees resolve any technical issues.

() Liaison

Promoting the conference within your own company by distributing conference announcements, coordinating group registrations etc.

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