SESUG 2011
SouthEast SAS®Users Group
Conference Program

SESUG
Established 1993

October 23-25, 2011
Official SESUG Meeting House
Hilton Alexandria Mark Center
Alexandria, VA

Barbara Okerson
Academic Chair

Marje Fecht
Operations Team Lead

www.sesug.org

Letter from the Conference Chairs

On behalf of the entire SESUG 2011 team, we would like to welcome you to the 19th annual SouthEast SAS Users Group Conference at the Hilton Alexandria Mark Center in historic Alexandria, VA where we will share 'New Ideas in Olde Alexandria'. We are excited that the conference is in Alexandria and hope you will take advantage of the history and attractions of the area while networking with and learning from fellow SAS users.

We have introduced new ideas for the SESUG conference format this year. Rather than a Sunday opening session and a Tuesday noon closing, we are beginning each day with general sessions filled with fun, speakers, and valuable information. If you arrive on Sunday, we are providing an opportunity to get to know and share ideas with fellow attendees at the Sunday networking reception. We continue to have multiple concurrent sessions offering over 100 presentations, and this year, Tuesday is a full day of presentations. Additionally, we are offering three sections new to SESUG: Government and Healthcare Applications, JMP, and Step by Step.

The SAS Demo Room once again features the latest and greatest in SAS software. It's a great place to meet SAS staff--including Research and Development, Education and Tech Support--and attend Super Demo presentations, presentations that demonstrate the latest developments by SAS.

In addition to the Sunday networking reception, you will have many opportunities to network and meet with other SAS users during breaks, between sessions, at lunches, and at the SAS Appreciation Reception on Monday.

Thank you for attending SESUG 2011. We hope you find the conference to be educational and enjoyable. Please let us know if you have any questions or there is anything that we can do to help you get the most out of the conference.
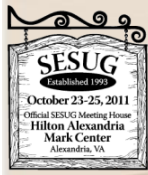

Barbara Okerson, Academic Chair

Marje Fecht, Operations Team Lead

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Post Conference: Downloadable zip file of conference papers available at http://www.sesug.org/SESUG2011

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OPERATIONS TEAM LEAD

Marje Fecht

ACADEMIC

Barbara Okerson

Operations Team

A/V Coordinator

Peter Eberhardt

Budget/Finance

Deborah Skinner

Charitable Events

Deborah Skinner

Food & Beverage

Deborah Skinner

Graphic Artist

Kimberly Riddell

Hotel

Jennifer Waller

Marketing

Denise Kruse

Publications

Bob Bolen

Publications Review

Stephanie Thompson

Venita DePuy

Andrea Wainwright-Zimmerman

Imelda Go

Registration & Volunteers

Maribeth Johnson

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Scholarships & Grants

Joy Smith

Maribeth Johnson

Sarah Woodruff

Webmaster

Mimi Lou
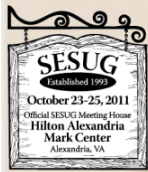
Academic Section Chairs

Beyond the Basics

Harry Droogendyk

Erik Larsen

Code Doctors

Stephanie Thompson

Coders' Corner

Claudine Lougee

Andrea Wainwright-Zimmerman

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Stephanie Thompson

Denise Kruse

Ilene Brill

Panel Presentations

Howard Schreier

SESUG Executive Council

Jennifer Waller, *President*

Stephanie Thompson, *Secretary*

Denise Kruse

Mira Shapiro

Bob Bolen, *Vice President*

Peter Eberhardt

Carol Martell

Joy Smith

Sarah Woodruff

Deborah Skinner, *Treasurer*

Marje Fecht

Barbara Okerson

Andrea Wainwright-Zimmerman

Special Thanks to the Following

SAS Liaison	**Student Scholarships**	**Academic Chair Mentor**
Nancy Moser	Elizabeth Ceranowski	Bob Bolen

Ribbons

Some attendees have ribbons attached to their name badges. These indicate their type of participation in the conference. The ribbon colors and their meanings are

Ribbon Color	Meaning
Jewel Blue	**Conference Chair**
Maroon	**SESUG Executive Council** Past and future conference chairs
Black	**Section Chairs** Organizers of facilities and presentations
Red	**Speakers** Presentation and Poster authors
Violet	**Registration** Registrars and Volunteers
Pale Blue	**SAS Institute Participants** Presenters and Demo room support staff
Gold	**Session Coordinators**
Peach	**Sponsors**
Jade	**Scholarship Recipient** Students
Caramel	**Award Recipient** Jr. Professionals
White	**Guests**

The Conference Planners and SESUG Executive Council members have been intimately involved with the planning of the conference. If you have any questions or comments about SESUG 2011, look for the people with the Maroon ribbons and talk with them!

Remember: your input is essential to the continued success of the conference!
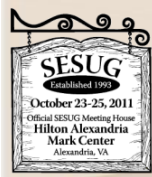
Conference Information and Special Events

Registration and Information

Location: Plaza Ballroom Foyer
Time: Sunday   12:30 pm—6:30 pm
    Monday   7:00 am—5:00 pm
    Tuesday   7:30 am—2:00 pm

Your first stop at SESUG 2011 should be the Registration Desk. Registration staff will be there to greet you, provide you with all your conference materials, and answer any questions you might have about the conference.

First Timer's Session - Getting the Most Out of Your SESUG

Location: Plaza I
Time: Sunday   3:00 pm—4:00 pm
Presenter: Peter Eberhardt

SESUG ... There is nothing like the first time

It's really simple ..... There are two days of papers. Over 100 papers and the Demo room too. Just clone yourself five times and you got it all covered. No problem.

What, you don't have a cloning machine? The **First Timer's** session will help you navigate through your first SESUG. Learn some strategies to make the most of your SESUG experience. Meet some new friends. Win a million dollars -- well maybe not the million dollars, but you will make friends and learn to make the most of SESUG.

You don't have to be a newcomer to attend! There is information and fun for SESUG veterans too.

Peter Eberhardt has been a SAS consultant for more years than he has hair on his head - which at this point is not saying much!!

Welcome Networking Reception

Location: Plaza Ballroom Foyer
Time: Sunday   5:00 pm—6:30 pm

Join us for a Networking Reception and help us kick off the conference. Food and beverages will be provided. Wear your conference badge and bring your drink tickets. Guest program participants are invited to this event.

Continental Breakfasts

Location: Plaza B & C
Breakfast: Monday & Tuesday   7:30 am—9:00 am

Opening Session and Keynote Address

Location:	Plaza B & C
Time:	Monday 8:00 pm—9:00 pm
Opening Session:	Barbara Okerson & Marje Fecht
Keynote:	Rick Langston

Enjoy a preview of SESUG 2011 and then Rick Langston, Manager of the Core System Department will deliver the keynote address, *Take a Trip Down Memory Lane*. Over 34 years, Rick Langston has collected quite a few stories as a SAS user and presenter, including the presentation Never Trust a Programmer in a Suit from SESUG 1994 (an all-time favorite). He'll share an entertaining perspective on the history of SAS users groups.

SESUG Collaboration Area

Location:	Plaza Ballroom Foyer	
Time:	Monday	9:00 am—noon & 1:00 pm—5:00 pm
	Tuesday	9:00 am—noon & 1:00 pm—4:00pm

Network with other conference attendees in the SESUG Collaboration Area. Tables will be set up during the conference to allow you and your fellow SAS users to exchange names, notes or just take a break. Complimentary wireless internet access is available as well.

Breaks (Complimentary)

Location:	Plaza Ballroom Foyer, Hallway outside of Aspen / Birch	
Breaks:	Monday & Tuesday	10:15 am—11:00 am
	Monday & Tuesday	3:00 pm—3:45 pm

Lunch (Complimentary)

Location:	Plaza B & C	
Lunch:	Monday & Tuesday	11:45—1:15 pm

SAS User Appreciation Reception

Location:	Terrace
Time:	Monday 5:00 pm—6:30 pm

Early Monday evening SAS will host a User Appreciation Reception. All conference attendees and guest program participants are invited to attend. Hors d'oeuvres and beverages will be provided. This will be a wonderful opportunity to network with SAS employees and other conference attendees. Wear your conference badge and bring your drink tickets.

SESUG Charity Event

SESUG 2011 continues the tradition of holding fundraising activities to benefit Donors Choose, Inc. Donors Choose (www.donorschoose.org) is a unique educational charity that provides a way to donate to specific projects in public schools. As we have done for the past several years, projects in the area of the country near the conference will be selected for funding.

SESUG will be providing two opportunities for attendees to participate in this rewarding activity:

- **Koffee For Kids**
  SESUG will provide coffee all day at a special Koffee For Kids kiosk. Please consider throwing a dollar or two into the jar at that kiosk. It is totally voluntary, but keep in mind that 100% of your donation will go to Donors Choose.
- **Raffle Opportunity**
  SESUG will be conducting a raffle on a limited number of specially selected items. Each item will have its own raffle bin, so you can select the items you are most interested in winning. Tickets will be available at the registration desk – and the more tickets you buy, the greater your chances of winning your favorite item!!

The lucky winners will be drawn Tuesday morning at the General Session.

Tuesday General Session

Location: Plaza B & C
Time: Tuesday   8:00—9:00 am

Tuesday will begin with a general session designed to get you energized for SESUG Day Two. Kirk Paul Lafler will give the following keynote presentation;

You Could Be A SAS® Nerd If…
 Are you a SAS® nerd? The Wiktionary (a wiki-based Open Content dictionary) definition of "nerd" is a person who has good technical or scientific skills, but is generally introspective or introverted. Another definition is a person who is intelligent but socially and physically awkward. Obviously there are many other definitions for "nerd", many of which are associated with derogatory terms or stereotypes. This presentation intentionally focuses not on the negative descriptions, but on the positive aspects and traits many SAS users possess. So let's see how nerdy you actually are using the mostly unscientific, but fun, "Nerd" detector.

Kirk is a consultant and founder of Software Intelligence Corporation and a SAS® user since 1979. He is a SAS Certified Professional, SAS Institute Alliance Member (1996 – 2002), provider of IT consulting services and training to SAS users around the world, the author of four SAS books and numerous papers and reviews.

Be sure to stick around following the keynote! There will be drawings for prizes and information about SESUG 2012 before the morning paper sessions begin.

Student Scholarship Winners

In early spring, SESUG accepted applications from college students for scholarships to attend the conference. Students using SAS in their academic studies were encouraged to apply and submit a paper for presentation at the conference. The scholarships include a waived registration, limited funding to assist with hotel accommodation expenses, and a special luncheon.

From the list of well qualified students who applied, we selected 12 students to receive the scholarships. Several students are presenting papers at the conference. Look for the Student Scholarship Winner icon next to their names in the Presentations section of the program. Also, visit the Poster Area to view the scholarship winners' profiles.

Student	University
Parwen Parhat	George Mason University
Julie A. Gloudemans	University of South Florida
Thanh Pham	University of South Florida
Menolly Hart	George Washington University
Kelly Lockeman	Virginia Commonwealth University
Jorida Papakroni	West Virginia University
James Byrd	East Carolina University
Andrea Villanes	North Carolina State University
Ashwin Devudigari	NC A&T State University
Moses Degife	Kennesaw State
Abel O. Oji	University of Maryland Eastern Shore
Alexandra Tsvetkova	University of North Carolina - Charlotte

Junior Professional Grants

SESUG, with support from SAS Institute, is providing 14 Junior Professionals with grants to attend this conference. SAS professionals, who have been using SAS in their jobs for less than 3 years, were encouraged to apply. Papers presentations were encouraged, but not required. These grants include waived registration and one workshop at the conference.

From the list of well-qualified applicants, the following 14 professionals were selected to receive these grants. Three recipients, marked with an *, are presenting papers at the conference. Look for their names in the Presentations section of the program. Also, visit the Poster Area to view their profiles.

Name	Job Title	Company
Autumn Whitcomb	District Epidemiologist	Virginia Department of Health, Roanoke City Health Department
Berwyn Gonzalvo*	Program Analyst	US Office of Personnel Management
Brittany Bodie	Research Statistician	Georgia Health Sciences University
Cassandra Germain	Postdoctoral Scholar	Duke Aging Center
Daniel M Levitt*	Research Assistant	Highway Safety Research Center, UNC Chapel Hill
Josephine Huang	Program Analyst	US Dept of HUD
Kimberly Filbert	Epidemiologist	Virginia Department of Health
Michael Jacobsen	Mathematical Statistician	NASS Statistical Methods Branch
Oscar Gomez	Capitation Analyst	WellCare
Rachel Patzer	Assistant Professor	Emory University School of Medicine, Emory Transplant Center; Joint appointment with Emory University Department of Epidemiology
Ravi Kumar Gawalapu	SAS Programmer	Jackson State University
Sarah Buoncristiani	Business Intelligence Analyst	Health Net Federal Services
Sheetal Nisal *	Consultant	Self Employed
Suzanne Corn	SAS Programmer Specialist	Winston Salem Forsyth County School Main Office

Other Helpful Information

Position Referrals

We are aware that some of our attendees are looking for employment opportunities and others are looking for employees. While SESUG does not condone active recruiting at the conference, we do provide a way for employers and prospective employees to connect. At the Registration Desk, you will find two 3-ring binders where job-seekers can post a resume or a fact sheet for prospective employers in one and employers can post positions that are open in the other. The notebooks are simply a service provided by the conference organizers. SESUG does not and cannot vouch for the accuracy of resumes or position descriptions.

Promotional Activities

Sales literature or product descriptions of a sales nature may not be displayed on bulletin boards or other public areas at the conference unless permission is received from the conference planning team. Some papers and poster presentations deal with a vendor's products or services. We have emphasized to these presenters that they should not discuss pricing or other sales-related issues in the presentation. These promotional activities as well as Marketing and Recruiting by any vendor are covered in the SESUG Policy and Procedures on page 78 of this program.

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Sunday, October 23

8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00

Workshop Check-In 7:30 – 8:00
Conference Workshops 8:00 – 12:00 (extra fee event)
Birch / Aspen / Juniper

Schedule At a Glance Sponsored By:

Westat®

Workshop Check-In 12:30 – 1:00
Conference Workshops 1:00 – 5:00 (extra fee event)
Birch / Aspen / Juniper

Speaker Rehearsal *Plaza III*

Registration *Plaza Ballroom Foyer*

Getting The Most Out of SESUG *Plaza I*

4:15-5:00 Volunteer/ Presenters Meeting *Plaza I*

Welcome Networking Reception *Plaza Ballroom Foyer*

Hit the town in Olde Town Alexandria ...... (on your own)

Monday, October 24

8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00

Registration *Second Floor*

7:30-9:00 Breakfast *Plaza Ballroom Foyer*

Concurrent Paper Sessions *Various Rooms*

Posters *Plaza Ballroom Foyer*

Opening Session & Keynote *Plaza B & C*

SAS Demo Room & Theater Sponsor Exhibit Area Code Doctors *Terrace*

Collaboration Area *Plaza Ballroom Foyer*

Break

Speaker Rehearsal *Birch*

11:45-1:15 Lunch *Plaza B & C*

Registration *Plaza Ballroom Foyer*

Concurrent Sessions *Various Rooms*

Posters *Plaza Ballroom Foyer*

SAS Demo Room & Theater / Sponsor Exhibit Area / Code Doctors *Terrace*

Collaboration Area *Plaza Ballroom Foyer*

Meet the Poster Authors *Plaza Ballroom Foyer*

Break

Speaker Rehearsal *Birch*

SAS User Appreciation Mixer *Terrace*

Hit the town in Olde Town Alexandria ...... (on your own)

Tuesday, October 25

8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00

Information Desk *Plaza Ballroom Foyer*

7:30-9:00 Breakfast *Plaza Ballroom Foyer*

Concurrent Paper Sessions *Various*

Posters *Plaza Ballroom Foyer*

General Session & Raffle Giveaways *Plaza B & C*

SAS Demo Room & Theater Sponsor Exhibit Area Code Doctors *Terrace*

Break

Collaboration Area *Plaza Ballroom Foyer*

11:45-1:15 Lunch *Plaza B & C*

Concurrent Paper Sessions *Plaza II & III*

Panel Discussions *Plaza I*

Workshop Check-In 12:45 – 1:00
Conference Workshops 1:00 – 5:00 *Aspen / Juniper* (extra fee event)

SAS Certification Testing *Beech* (extra fee event)

CODE DOCTORS

Post Conference: Downloadable zip file of conference papers available at www.sesug.org/SESUG2011   12

Papers

Location:	Main Tower Lower Level, Various Rooms	
Time:	Monday	9:00 am—12:00 noon & 1:00 pm—5:00 pm
	Tuesday	9:00 am—12:00 noon & 1:00 pm—4:00 pm

SESUG has always been about education, and the main focus of our conferences is the paper presentations. Presentations are 10, 20, and 50 minutes followed by a few minutes to transition to the next speaker. Speakers usually request that questions be held until the end of the presentation. Presentations are grouped into Academic Sections and each section is assigned to a specific room each day. Feel free to switch rooms as needed; no advance sign-up is required. Most papers can be found in the Conference Proceedings that can be downloaded at http://www.sesug.org/SESUG2011.

Refer to the Conference Program, pages 23-76, for a complete list of paper abstracts and author biographies.

Hands-On Workshops

Locations:	Beech	
Time:	Monday	9:00 am—noon & 1:00 pm—5:15 pm
	Tuesday	9:00 am—noon

This year, SESUG will have seven Hands-On Workshops. Workshops will run for 60 or 75 minutes and are taught by well-known experts in the SAS community. Due to a limited number of computers, admission to Hands-On Workshops will be on a first-come, first-serve basis.

Refer to pages 47-49 for a complete list of workshop abstracts and times.

Code Doctors

Locations:	Terrace	
Time:	Drop-ins welcome during office hours	
	Monday	10:00 am—11:30 am & 3:00 pm—4:30 pm
	Tuesday	9:00 am—10:30 am

Are you feeling puzzled or perplexed about your SAS code? Does your SAS process run great except for one trouble spot that you can't figure out? Would your SAS task benefit from an expert's opinion? The Code Doctors can identify the symptoms, diagnose the problems, and prescribe the treatments!

This unique section provides SAS users the opportunity to bring their problematic SAS code and SAS processes for a one-on-one consultation with experts from the SAS user community! The Code Doctors staffing the clinic have expertise in syntax, best-practices, and concepts across a broad range of SAS topics including Base SAS, Macros, Report Writing, ODS, SQL, SAS Enterprise Guide®, Statistics, and more.

Be sure to bring a hard copy and/or electronic file with your code, processes, and/or logs for the Code Doctor to examine the symptoms, diagnose the problems, and suggest the remedies. You will enjoy and benefit from the personalized learning experience.

Please refer to your Schedule at a Glance for the Code Doctors schedule.

Posters

Locations:	Plaza Ballroom Foyer
Time:	All day Monday and Tuesday Morning
	Monday 3:00-4:00 pm "Meet the Authors"

People with more visually oriented presentations sometimes opt to present a poster. Most posters also have a paper in the Conference Proceedings. Refer to pages 53-63 for a complete list of poster abstracts.

SESUG Exhibit and Demo Room

Location:	Terrace	
Times:	Sunday	4:00 pm—6:30 pm (PREVIEW)
	Monday	9:00 am—Noon & 1:30 pm—6:30 pm
	Tuesday	9:00 am—11:00 am

Join us in the SESUG Exhibit and Demo room, where you can learn about the latest products and solutions and meet SAS staff from service areas such as Education and Certification, Publications, Technical Support and support.sas.com. Please refer to page 15 for schedule.

Returning by popular demand are 20 percent discounts on SAS publications ordered at the conference (certain restrictions apply), and the 15 to 30 minute high-level, theater-style "Super Demos." Please refer to pages 16-18 for the Super Demos schedule or find them in your Schedule at a Glance, and make sure to arrive early due to limited seating.

On Monday October 24th from 5:00 pm- 6:30 pm, SAS invites you to attend the SAS User Appreciation Mixer. Enjoy food, drinks, fun, and networking.
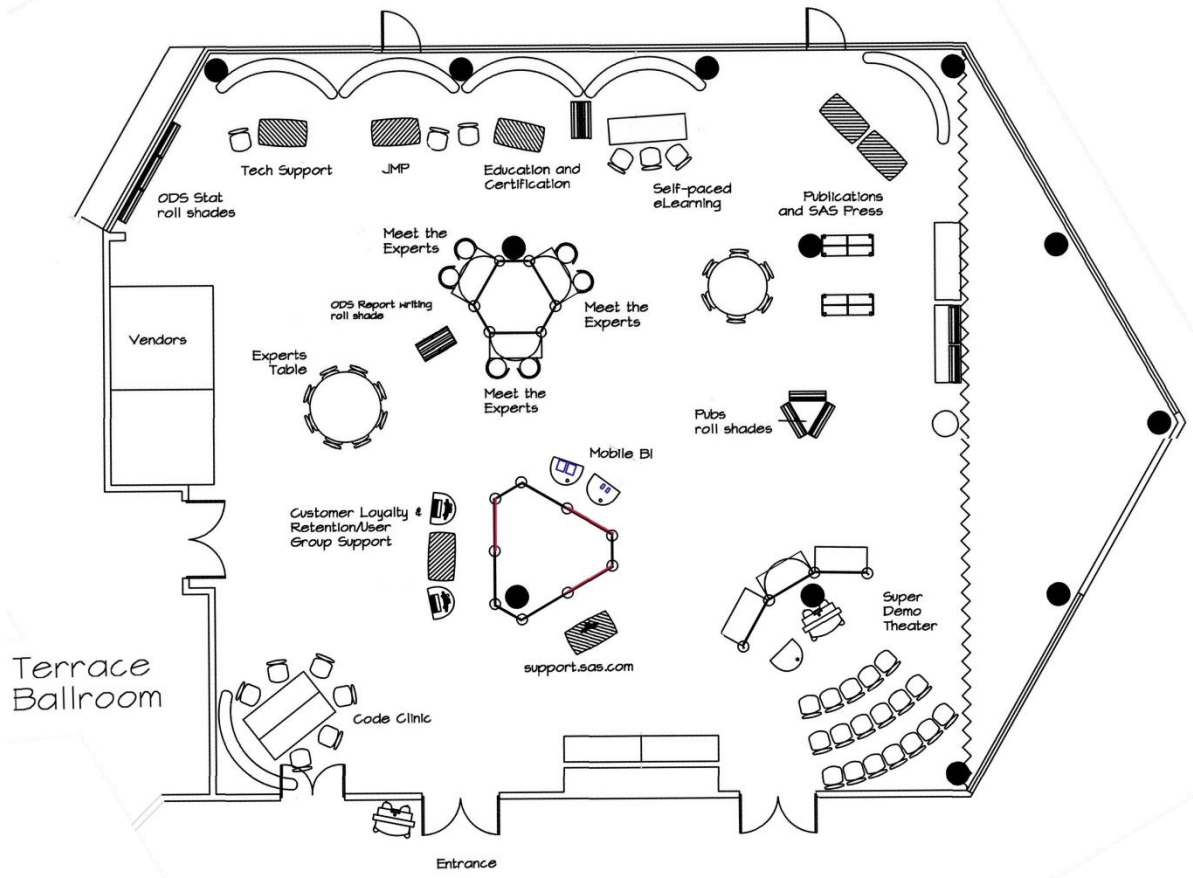
Meet the SAS Experts		
Monday October 24		
Time	**Station 1**	**Station 2**
9:00 AM		Bob Rodriguez
9:30 AM		Bob Rodriguez
10:00 AM	Erin Lynch	
10:30 AM	Erin Lynch	Vince DelGobbo
11:00 AM	Erin Lynch	Vince DelGobbo
11:30 AM	Erin Lynch	Vince DelGobbo
Noon	Closed for lunch	
1:30 PM	Greg Henderson	Kate Schwarz
2:00 PM	Greg Henderson	Kate Schwarz
2:30 PM	Greg Henderson	Kate Schwarz
3:00 PM	Greg Henderson	Kate Schwarz
3:30 PM	Rick Langston	Mike Kalt
4:00 PM	Rick Langston	Mike Kalt
4:30 PM	Rick Langston	Mike Kalt
5:00 PM	Vince DelGobbo	Mike Kalt
5:30 PM	Vince DelGobbo	Jeff Perkinson
6:00 PM	Vince DelGobbo	Jeff Perkinson
6:30 PM	Closed	

Tuesday October 25		
Time	**Station 1**	**Station 2**
9:00 AM		Mike Kalt
9:30 AM	Vince DelGobbo	Mike Kalt
10:00 AM	Vince DelGobbo	Mike Kalt
10:30 AM	Vince DelGobbo	Mike Kalt
11:00 AM	Bari Lawhorn	Rick Wicklin
11:30 AM	Bari Lawhorn	Rick Wicklin
Noon	Closed	

SESUG 2011 Super Demo Schedule

Monday 9:30	**What's New in SAS® Enterprise Guide®** **Erin Lynch**, SAS

Learn what's new and exciting in SAS Enterprise Guide.

Erin Lynch joined SAS in 2006 in Financial Solutions and is currently Development Test Manager for Education Practice. Prior to joining SAS, Erin was a SAS user and customer.

Monday 10:30	**500 Control Charts or 5? The Power of Multivariate Process Monitoring** **Bob Rodriquez**, SAS

Learn how new procedures in SAS/QC® 9.3 can help you uncover variation in complex process data that is hidden from Shewhart charts.

Bob Rodriguez joined SAS in 1983 and is a senior director in SAS Research & Development with responsibility for the development of statistical software, including SAS/STAT and SAS/QC. He received his PhD in statistics from the University of North Carolina at Chapel Hill and worked as a research statistician at General Motors Research Laboratories before joining SAS. Bob is a Fellow of the American Statistical Association and is the President-elect of the ASA in 2011.

Monday 11:30	**A Different Point of View with ODS PDF 9.3** **Bari Lawhorn**, SAS

ODS PDF 9.3 is giving you new ways to change how you view and display your output. Several enhancements in ODS PDF 9.3 are sure to be crowd pleasers. Topics in this paper will include: how to change orientation mid-file, how to drill down from your PDF file, how a stronger use of vector-based graphics will save memory and time, and much more. Be the first to find out how to change your output and get the different point of view you've been wanting.

Bari Lawhorn has been a Technical Support consultant in the BASE Product group at SAS since 1996. Three years ago her team added SAS/GRAPH support. Bari has supported ODS since its inception and has been using SAS for 15 years.

Monday 2:00	**ODS Graphics Designer for Pain Free Graphics** **Mike Kalt**, SAS

Do you need to create great-looking graphs, but don't have the time or the inclination to learn the syntax needed to do so? Are you in the camp that believes "it is just wrong" to use a "type->compile->run->repeat" process to build a graph? Welcome to the ODS Graphics Designer application. With this intuitive, interactive graph builder, you can create modern, sophisticated graphs without cracking the book or breaking a sweat. You can focus on your analysis and still get great graphs. Sounds too good to be true? Come by and see for yourself.

Mike Kalt is a Technical Training Specialist in the Education Division at SAS, and teaches courses covering Base SAS, SAS/GRAPH, and the SAS Macro Language. He has been with SAS since 1981. Prior to joining the Education Division in 2003 he was a manager in the Technical Support Division and was responsible for customer support for SAS graphics products.   Mike has a BA from the University of Michigan and a PhD from the University of North Carolina in Political Science.

Monday 3:00	**What's New in PROC FORMAT in 9.3** **Rick Langston**, SAS

Several new features in PROC FORMAT that have been requested have been implemented in SAS 9.3 and will be described. Among the new features are functions-as-labels, Perl regular expressions for informats, duration specifications in picture formats and locale-specific format catalogs.

Rick Langston is the manager of the Core Systems Department at SAS Institute. His department is responsible for core features of the SAS System, such as formats, functions, macro, access methods, setinit, options and the core supervisor. Rick has been a SAS user for 34 years, and has been working at SAS for 31 years.

Monday 4:00	**SAS® Fraud Framework** **Greg Henderson**, SAS

Learn how SAS Fraud Framework helps organizations detect, prevent and manage financial crimes across health care, government and financial services organizations.

Greg Henderson is Government Practice Director for the Fraud and Financial Crimes Global Practice at SAS. In his current role, Greg is responsible for field support and product direction in applying SAS' fraud detection and prevention capabilities within the government market. During his 13 years at SAS, Greg has worked in various sales, marketing and technical roles applying SAS's data integration and analytical capabilities to solve real-world business problems. He led the development of SAS' market leading anti-money laundering solution, and for the past 6 years has focused exclusively on applying his knowledge and skills in the government space. He has authored several papers and presented at industry events on these topics. Greg holds a Bachelor of Science degree from Bowling Green State University, and resides in Raleigh, NC.

Tuesday 9:00	**You Want ME to use Enterprise Guide??** **Vince DelGobbo**, SAS

Starting with SAS 9, one copy of 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.

Vince DelGobbo is a Senior Systems Developer in the Web Tools group at SAS. This group is responsible for developing the SAS/IntrNet Application Dispatcher and SAS Stored Processes. He is the developer for the HTML Formatting Tools and the SAS Design-Time Controls, and is developing other new Web- and server-based technologies, as well as integrating SAS output with Microsoft Office. He is also involved in the development of the ExcelXP ODS tagset. Vince has been a SAS Software user since 1982, and joined SAS in 1992.

Tuesday 10:00	**Calling SAS Procedure from the SAS/IML Matrix Language** **Rick Wicklin**, SAS

Learn a simple statement that enables you call any SAS procedure or DATA step while in the middle of your PROC IML program. This feature enables you to access any analysis and statistic from within the SAS/IML language.

Rick Wicklin is a senior researcher in computational statistics at SAS Institute and is a principal developer of SAS/IML and SAS/IML Studio. His areas of expertise include numerical analysis, statistical graphics, and modern methods in statistical data analysis. Rick received a Ph.D. in Applied Mathematics from Cornell University in 1993. Prior to joining SAS in 1997, Rick was a professor of mathematics at the University of Minnesota.

Tuesday 11:00	sas.Community.org Super Demo **Howard Schreier**, Independent Consultant

From around the world, the community of SAS users, programmers, developers, as well as others interested in the broader application of SAS software, are increasingly making use of the sasCommunity.org wiki site. Fast becoming the clearing house for all information that is related to SAS, sasCommunity.org is operated and run by SAS users. It is free, and it is open to contributions from everyone. Learn how you can make use of this site. Find out how you can contribute. Discover how you too can quickly make a difference in the world wide community of SAS users. Join the thousands of other SAS users that are a part of the creation of a site that is greater than the sum of its parts.

Howard Schreier , an independent consultant and trainer, has been a SAS user since 1981. He has presented numerous papers at various SAS user group meetings, and has served as a section chair at several SAS conferences. He has contributed nearly 8,000 posts to the SAS-L mailing list over 20 years, and is a member of the SAS-L Hall of Fame.

SAS e-Learning

Location:	Terrace	
Times:	Monday	9:00 am—Noon & 1:30 pm—4:30 pm
	Tuesday	9:00 am—11:00 am

You can try e-Learning for free while at the conference! Reserve your space for up to one hour and try an e-Course or e-Lecture. You may also try your hand at the Certification Preparation Exam and see if you are ready to become a SAS Certified professional.

e-Courses: Try the award-winning multimedia e-Courses which offer interactive training with demos, quizzes & practices.

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- Concise: 20-60 minute discussions
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View demos and try the e-Learning of your choice in the Education booth. You can sign-up for one-hour time-slots. Sign up early as this is a popular feature of the conference!

SAS Certification Testing

Location:	Beech	
Time:	Tuesday	1:00 pm—4:00 pm

So, you've been studying with a goal of becoming SAS Certified, but your schedule has not allowed you any freedom to take an exam. Wouldn't it be great if SAS scheduled a time to take a certification exam at the SESUG conference hotel during the SESUG conference? Well guess what? SAS is holding a certification testing event at the SESUG conference hotel on Tuesday from 1:00-4:00 pm. If you did not register, it's ok, stop by the SAS Education booth in the SESUG Exhibit and Demo Room to find out how you can still register and take your exam here. Just think! You can attend the conference, gain valuable education and become SAS Certified all in one fell swoop!

Panel Presentations

Location: Plaza I
Time: Tuesday   1:00 pm—4:00 pm

The Panel Presentation section includes topics of general interest to the SAS community. Panelists are selected to provide a variety of perspectives. Audience participation and discussion are encouraged.

Tuesday 1:00	**SAS® Enterprise Business Intelligence** **Harry Droogendyk, Brian Varney, Migdalen Eley**

In recent years the SAS toolkit has expanded in new directions with the emergence of EBI. Panelists will examine issues such as the role of EBI, the integration of the new tools with the old, and strategies for getting the most value from the software.

Tuesday 2:00	**In-House SAS® User Groups** **Rick Andrews, David Chapman, Manuel Figallo-Monge, David Wilson**

Site-specific user groups can be convenient and time-saving. Panelists will discuss their experiences in organizing and leading groups, share program ideas, and identify their discovered best practices.

Tuesday 3:00	**Online Communities and Social Media** **Peter Flom, Joe Kelley, Howard Schreier, Lainie Hoverstad (SAS)**

SAS users have been communicating electronically on a worldwide basis for a quarter century. In recent years the emergence of social media has led to a proliferation of channels. Panelists will discuss their experiences from a variety of perspectives and perhaps speculate about what's to come.

Conference Courtesies

Recording, taping or photographing any portion of any presentation is not allowed without the express permission of the presenter.

Turn off the ringers of cell phones, beepers and watch alarms, and keep conversation low and to a minimum during presentations.

Finally, when you leave the room, please take your glass, cup or plate with you and place it in an appropriate location.

Thank you for your help!

Papers and Presentations

This section lists the abstracts and author biographies for over 100 presentations and posters for SESUG 2011. The abstracts are grouped by Academic Section and ordered within each section by the day and time of the presentation. The Poster section is ordered by paper number.

Along the left side of each entry you will find the day and time of the paper, the paper number and key words. The SAS Institute logo identifies the author as a SAS presenter. The mortarboard icon identifies the author as a Student Scholarship winner.

Also note the following:
- Papers are arranged in order of presentation by day and time within each Academic Section
- An overall layout of the presentation times and locations is found in the Schedule At A Glance (SAAG) on page 12.

Below is a brief description of each Academic Section. The section abbreviation is used as the first part of the paper number. The paper numbers are used in this program and in the Conference Proceedings that can be downloaded at http://www.sesug.org/SESUG2011.

Academic Section Descriptions

Beyond the Basics (BB)

Beyond the Basics papers articulate advanced programming concepts and SAS functionality. Papers accepted to this section address a broad spectrum of advanced SAS® Foundation topics including ODS, Macro, and sophisticated, efficient PROC and DATA Step programming, SAS® Enterprise Guide®, RDBMS data and the reporting and analytics provided by the SAS Business Intelligence suite.

These papers will provide the knowledge needed to implement enhanced techniques and take advantage of the many possibilities afforded by SAS software.

Coders' Corner (CC)

Coders' Corner is the place to be for quick tune-ups of your SAS savvy. Whether you are a novice, a seasoned programmer or somewhere in between, we have clever tips, tricks and novel ways of solving programming problems for you. In Coders' Corner most presentations are 10 minutes in length, so the talks are short, sweet and "to the point", covering useful nuggets of programming. The rapid-fire format of this section is great for presenting a little bit about a wide diversity of SAS solutions, so come, take your seat, and get ready to learn!

Government & Healthcare Apps (GH)

With SESUG in the Washington, DC area, Government and Health Care Applications will focus on the specific needs of those industries, featuring not only particular technical innovations but

also the features that uniquely suit those industries. Whether your focus is on mandatory reporting or diagnosing patient conditions, monitoring regulatory compliance or analyzing treatment outcomes, the presentations will discuss new ways to use SAS to accomplish your mission. This section will pull from a dynamic range of agencies and institutions.

Hands-On Workshops (HW)

It's all in the name. The common name for Hands-on Workshops, HOW, describes the goal: Attendees will learn how to use the aspect of SAS® thru real hands-on experience in a directed workshop environment. Attendees will learn how to use the aspect of SAS® being presented. Workshops cover topics from ODS, to creating Microsoft Excel workbooks with SAS® to SAS® Enterprise Guide® and more. There is something for everyone!

JMP (JP)

SESUG includes, for the first time, an exciting new focus–presentations demonstrating the interactive data visualization capabilities of JMP®, the statistical discovery suite developed by SAS. Topics include:

- Data Visualization using JMP
- Predictive modeling techniques, including decision trees and neural networks
- Customized reports, graphics, and maps
- JMP to Excel and other Microsoft products
- Tips and tricks for JMP users

Posters (PO)

The Poster Section covers any and all uses of SAS® software.   While there will be a time slot when authors are available to discuss their posters with conference attendees ("Meet the Presenter" session), posters are on display throughout the entire conference, allowing attendees to review the ideas in a quiet, self-paced environment. Please note "One picture is worth more than a thousand words".

Reporting and Information Visualization (RV)

SAS can help you draw that picture worth a thousand words. Learn how to make your data reveal itself through the graphs, maps, reporting tools and ODS tricks. Topics appropriate to this section include, but are not limited to:

- Customized reports, graphics, and maps
- Business intelligence dashboards/balanced scorecards
- SAS® to Excel and other Microsoft products
- Customization of ODS output including ODS statistical graphics output
- SAS Visual Data Discovery tools for visual analytics, visual querying and data filtering
- SAS integration with Google Earth and GPS data

Statistics and Data Analysis (ST)

MIXED up about analyses? REGretting not paying attention in that stats class in college? Want to feel emPOWERed? From ACECLUS to VARIOGRAM procedures, there's a presentation in this session that's suited for everyone. We've FREQuently heard that DISCRIMinating people enjoy attending ... so be sure to PLAN your conference LOGISTICs around being here!

Step by Step (SS)

According to the ancient Chinese, "A journey of a thousand miles begins with a single step."

According to modern reckoning, there are many steps along the journey as well. The Step by Step section gives you the opportunity to share your journey with SAS® detailing the steps taken along the way, providing attendees the practical knowledge required to implement solutions immediately. Just as there are easy and arduous journeys, some of the papers will cover introductory topics while others will cover more advanced problems. This section is about the process; each paper includes all steps required to arrive at your solution.

Welcome to Alexandria

Enjoy the Conference
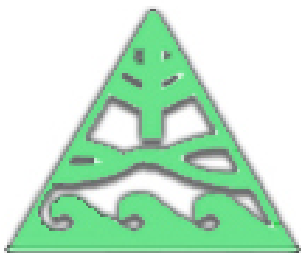
SouthEast SAS® Users Group

Join us at these future conferences:

October 14-16, 2012:
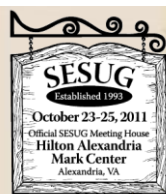
- **Sheraton Imperial Hotel Raleigh/Durham, NC**

October 20-23, 2013:

- **TradeWinds Island Resorts St. Pete Beach, FL**

October 19-21, 2014:

- **Embassy Suites Oceanfront Myrtle Beach, SC**

Visit www.sesug.org to stay updated!

Section Chairs:	Harry Droogendyk *Stratia Consulting, Inc.*	Erik Larsen *Independent Consultant*

Monday Morning – Plaza II

Monday 9:00 - 9:50 BB-01	**Becoming a Better Programmer with SAS® Enterprise Guide® 4.3** **Kate Schwarz, Andy Ravenna** , SAS

Both existing and new users of SAS® are turning to SAS Enterprise Guide® to write and run their code. Long-time users are accustomed to typing all their code into the Program Editor window and simply hitting the Submit key. New users do not have this same set of expectations and are more willing to point and click on occasion. But the truth is becoming clear; the winning programmer will be the one who has the expertise to create the best of both worlds--either coding or clicking, depending upon which is more efficient for a given task.

SAS Enterprise Guide 4.3 contains new functionality that can help anyone become a better programmer. These pages address the all-important question: when is it appropriate to code, and when to click? The aim here is to expose new users—as well as those familiar with SAS-- to tips and best practices that will allow them to return to the office as better programmers.

Kate Schwarz is a systems engineer on SAS' customer loyalty and retention team. She specializes in data quality, data integration, business intelligence, and model management. Kate has over 15 years of experience in software vendor environments, including pre and post-sales support, customer retention and product management.

Monday 10:00 - 10:20 BB-02	**Loading Metadata to the IRS Research Compliance Data Warehouse (CDW) Website: From Excel Spreadsheet to SQL Server Relational Database Using SAS® Macro and PROC SQL** **Robin Rappaport, Jeff Butler**, IRS

Providing metadata for the largest database in the IRS, the Compliance Data Warehouse (CDW), lets researchers quickly search for and understand the meaning of data available for analysis. With more than 25,000 unique columns and over 500,000 separate attributes, CDW delivers large-scale metadata as part of a broader data quality initiative. In addition to standardized column definitions that are searchable through the CDW website, metadata also include lookup reference tables, data types, legacy source information and other attributes. Most metadata are initially created or updated in Excel, after which they are imported into SAS® data sets for additional processing. SAS macros are implemented to iteratively read, process, format, and perform other operations one column at a time for each table being updated. Using the ODBC engine type via the LIBNAME statement, PROC SQL executes INSERT, UPDATE, or DELETE statements in Microsoft SQL Server, which stores the final metadata published to the CDW website. SAS logs are monitored to ensure the integrity of database transactions, and a staging web site is analyzed to validate results. By leveraging the power of SAS to import source data, iteratively process data with macros, and update external databases, hundreds of IRS researchers can reliably access metadata on a regular basis to support their analytical needs.

Robin Rappaport is the Data Quality Team Leader responsible for delivery of the Data Quality Initiative for Research Databases at the Internal Revenue Service (IRS). Her work and that of her team contributed to the IRS being awarded a Computerworld Honor and a Government Computer News (GCN) Gala Award. She has 25 years of experience as a Data Quality practitioner. Her undergraduate degree was in Economics with Computer Science. Her graduate work was in Operations Research with a concentration in Mathematical Modeling in Information Systems. She has worked in both private (6 years) and public sectors (20 years). Her positions include Computer Programmer Systems Analyst and Operations Research Analyst. In addition to the International Association for Information & Data Quality (IAIDQ) she is a member of the Institute for Operations Research and Management Science (INFORMS). She was Chairman Individual Membership for the Washington D.C. chapter from 1987- 1990. She was elected Secretary and serv

Monday 10:30 - 10:50	**PIPE Dreams: Yet Another Tool for Dynamic Programming**
BB-03	**Scott Burroughs**, GlaxoSmithKline

Statisticians are often divided into Bayesians and Frequentists when it comes to study design and analysis beliefs. As a SAS® programmer, you could put me in the Dynamic camp. This is my 5th presentation at a SUG, and all have had something to do with dynamic programming. Dynamic programming is letting the ever-changing and often unknown data drive the results....no hardcoding! There is a dynamic tool that I've used when I needed to read in data sets from a certain directory where I didn't necessarily know the names of the data sets nor how many there were. The PIPE command in SAS is a tool to read in data sets from a directory when the names and quantity are unknown and changing.

Scott Burroughs was a statistician for GlaxoSmithKline for almost 12 years until switching to a full-time programmer role over 5 years ago. He has worked in Research Triangle Park NC since 1994. He has programmed in SAS extensively since 1992 while at a previous pharmaceutical company. He has a B.S. and an M.S. in Statistics from Virginia Tech.

Monday 11:00 - 11:20	**Using Recursion for More Convenient Macros**
BB-04	**Nate Derby**, Stakana Analytics

There are times when a macro needs to alternatively be applied to either one value or a list of values. In this case, adding a recursive definition to a macro can make it easily accommodate both situations. This can be particularly useful for testing and investigative purposes, as explained in this paper.

Nate Derby is a statistician specializing in time series analysis and forecasting who got his MS in statistics in 2004 from the University of Washington. He has worked for the German Institute for Economic Research Princeton Brand Econometrics T-Mobile and Washington Mutual. He is now the owner of Stakana Analytics specializing in business forecasting.

Monday 11:30 - 11:50	**Using SAS® Variable Lists Effectively**
BB-05	**Howard Schreier**, Independent Consultant

"SAS® variable lists" are a SAS language feature which provides shortcuts for declaring and referencing variables. Instead of enumerating the variables, SAS variable lists allow the specification of rules to implicitly generate the needed variable names. The feature is useful, but there are nuances and non-intuitive aspects to be considered. This paper outlines the capabilities of SAS variable lists, then goes on to consider issues including timing (compilation vs. execution), differences between DATA step and PROC step usage, variable ordering,

behavior of numeric suffixes, use of SAS variable lists in function calls, and contexts which do not support SAS variable lists.

Howard Schreier is an independent consultant and trainer has been a SAS® user since 1981. He has presented numerous papers at various SAS user group meetings and has served as a section chair at several SAS conferences. He has contributed nearly 8 000 posts to the SAS-L mailing list over 20 years and is a member of the SAS-L Hall of Fame.

Monday Afternoon – Plaza II

| Monday 1:00 - 1:50 BB-06 | **SAS® Programming Tips and Techniques** |
| | **Kirk Paul Lafler**, Software Intelligence Corporation |

The base-SAS® System offers users with a comprehensive DATA step programming language, an assortment of powerful PROCs, a macro language that extends the capabilities of the SAS System, and user-friendly interfaces including SAS Display Manager and Enterprise Guide®. This presentation explores a collection of proven tips and techniques related to effectively using the SAS System and its many features. Attendees will examine keyboard shortcuts to aid in improved productivity; the use of subroutines and copy libraries to standardize and manage code inventories; data summarization techniques; the application of simple reusable coding techniques using the macro language; troubleshooting and code debugging techniques; along with other topics.

Kirk Paul Lafler is consultant and founder of Software Intelligence Corporation and has been programming in SAS since 1979. He is a SAS Certified Professional and provider of IT consulting services and training to SAS users around the world. As an author of four books including PROC SQL: Beyond the Basics Using SAS (SAS Institute. 2004) he has written nearly five hundred peer-reviewed papers been an Invited speaker at more than three hundred SAS International regional local and special-interest user group conferences/meetings and is the recipient of 17 "Best" contributed paper awards.

| Monday 2:00 - 2:50 BB-07 | **From Obscurity to Utility: ADDR, PEEK, and POKE as DATA Step Programming Tools** |
| | **Paul Dorfman**, Dorfman Consulting; **Lessia S. Shajenko**, Bank of America |

APP functions is an (unofficial) collective abbreviation for the SAS® functions ADDR, PEEK, PEEKC, the CALL POKE routine, and their so-called LONG 64-bit counterparts - SAS tools designed to directly read from and write to the physical memory in the Data step and SQL Procedure. APP functions have long been a SAS user dark horse. Firstly, the examples of APP usage in SAS documentation boil down to a few tidbits in a technical report, all intended for system programming tasks, with no hint how the functions could be used in plain data management SAS programming. Secondly, the note about the CALL POKE routine in the SAS documentation is so intimidating in tone that many a folk may have decided to avoid the potentially precarious route altogether. However, nothing can stand on the way of a curious SAS programmer daring to take a closer look; and it turns out that APP functions are very simple and useful tools! They can be used to explore how things "really work", make code more concise, implement "en masse" (group) data moves, and, oftentimes, significantly improve execution efficiency. The author and other SAS-L activists, notably Peter Crawford, have been exploring the APP world since 1998, occasionally letting the SAS-L community to peek at their findings. This tutorial is an attempt to the results in a systematic way. Welcome

to the APP world! You are in for a number of not unpleasant surprises.

Paul Dorfman started using SAS while pursuing a Ph.D. in computational physics and went on to work as a SAS consultant in telecommunication financial insurance engineering and pharma industries. Paul's personal SAS interests lie in custom-coded DATA step implementations of high-performance programming algorithms and sophisticated high-volume data management. For his activities in the realm of SAS he received such awards as being nicknamed Sashole" by a team of COBOL bigots "Most Valuable SAS-Ler" and Hall-of-Famer by SAS-L and "The Hash-Man" by Paul Kent from SAS R&D. "

Lessia S. Shajenko started using SAS while pursuing her Ph.D. in Slavic linguistics. Then she focused her attention on the financial industry and has used SAS day in and day out for the last 10 years as a business and quantitative analyst with Bank of America. Lessia has presented in tandem with Paul Dorfman at SUGI, NESUG, SESUG, and PhilaSUG.

Monday 3:00 - 3:50	**An Introduction to SAS® Hash Programming Techniques**
BB-08	**Kirk Paul Lafler**, Software Intelligence Corporation

SAS® users are always interested in learning techniques that will help them improve the performance of table lookup, search, and sort operations. Beginning in Version 9, SAS software supports a DATA step programming technique known as hash to allow a data structure to associate a key with one or more values. This presentation introduces what a hash object is, how it works, and the syntax required. Essential programming techniques will be illustrated to sort data, search memory-resident data using a simple key to find a single value, as well as more complex programming techniques that use a composite key to search for multiple values.

Kirk Paul Lafler is consultant and founder of Software Intelligence Corporation and has been programming in SAS since 1979. He is a SAS Certified Professional and provider of IT consulting services and training to SAS users around the world. As an author of four books including PROC SQL: Beyond the Basics Using SAS (SAS Institute. 2004) he has written nearly five hundred peer-reviewed papers been an Invited speaker at more than three hundred SAS International regional local and special-interest user group conferences/meetings and is the recipient of 17 "Best" contributed paper awards.

Monday 4:00 - 4:20	**The SAS® Magical Dictionary Tour**
BB-09	**Linda Libeg**, Westat

There are many instances when a large number of variables in a SAS® dataset need to be renamed, ordered, dropped, or just identified. If variable names are not assigned in chronological or positional order, the task of programming these names into your code can be laborious. A simple Proc SQL statement can be used to access the read-only SAS® data dictionary tables and save you programming steps. This paper presents numerous ways you can modify a Proc SQL statement that reads the SAS® data dictionary tables and produce macro output to be use in later programming steps. So, "Roll-up" to the SAS® magical dictionary tour and learn how to extract various characteristics from your SAS dataset.

Linda Libeg is a senior systems analyst with 25 years of experience in designing and developing software systems. For the past 20 years she has used SAS to create numerous applications and perform statistical analysis. She holds both a B.S. and M.S. degree in Education from Youngstown State University and a M.S. degree in Computer Science from the Whiting School of Engineering at the Johns Hopkins University.

Monday 4:30 - 4:50 BB-10	**Paperless Report Generation and Distribution** **George Sharrard**, GPS Corp

All over the world, business units are looking for ways to be more "Green". What better way to enhance the "Green-ness" of your projects then by offering paperless solutions for the reports you generate. Using a web server, reports can be generated in .pdf and .html format for anyone in your organization to access. Need more security? Then don't use the web server - generate the same .pdf and .html reports as email attachments. If your reports take the form of daily notifications then maybe you should consider sending emails where the body of the email is nicely formatted html. We will examine the filename statement's options as they apply to the email engine; specifically the 'to', 'subject', 'attach', and 'type' options. For web based reports we will highlight the use of ODS PDF and ODS HTML for creating very flexible output.

George Sharrard has been using SAS since the late 1970's - originally as a graduate student at NYU - now as a corporate Data Mining consultant. Currently George is working in the hospitality industry supporting customer acquisition projects and guest loyalty programs.

Tuesday Morning – Plaza II

Tuesday 9:00 - 9:50 BB-11	**Creating Stored Processes with Dynamic, Cascading Prompts** **Harry Droogendyk**, Stratia Consulting Inc

SAS® Stored Processes are an important component of the SAS® Enterprise Business Intelligence suite. Served-based SAS® Stored Processes (STP) allow the encapsulation of common business rules to generate consistent results, the elusive "single version of the truth". STPs can be created a number ways, including from Enterprise Guide projects, and invoked from various interfaces including Excel, the STP web interface, Information Maps and the Portal. User specified parameters increase the flexibility and utility of this useful facility. In the latest release of SAS®, STP parameters can be both dynamic and cascading, providing the ability to generate relational, data-driven prompts to customize STP results.

Harry Droogendyk has been an independent IT consultant since 1995 creating business solutions in a wide range of industries including banking insurance financial services manufacturing telecommunications and education. Since 2000 he has specialized in SAS with a particular interest in EBI products. Recognizing that user groups are the back-bone of the SAS community Harry is involved in organizing and speaking at local regional and international SAS user group conferences.

Tuesday 10:00 - 10:50 BB-12	**PROC COMPARE -- Worth Another Look!** **Christianna Williams**, Independent Consultant

PROC COMPARE is one of those workhorse procedures in the Base SAS® closet that deserves to be dusted off, tuned up and pressed into service again! With well-chosen PROC COMPARE options and statements, you can compare pairs of SAS datasets at multiple levels without the need for DATA step MERGEs or SQL JOINs. Specifically, you can identify differences and similarities across SAS data sets with respect to: data set attributes; variable existence and attributes; existence of matching observations; and variable values (at user-specified levels of precision). This handy PROC can even be used to compare values of one variable to another within a dataset. Additionally, several different reporting options are available and can be customized to project needs. This flexibility makes PROC COMPARE an extremely useful tool for a variety of purposes, including data cleaning and validation, ensuring that new data is

consistent with "legacy" data (or differs in expected ways), and even for some simple longitudinal analysis! This tutorial-style paper will teach you how to harness some of the power of this under-appreciated procedure!

Christianna Williams PhD is an independent consultant based in Chapel Hill North Carolina focusing on study design and statistical analyses and reporting in epidemiology and health services research. She started using SAS as a graduate student in 1985 and is still learning! She is a frequent presenter at local and regional user group conferences as well as SAS Global Forum. A member of the NESUG Executive Committee Christianna was co-chair of NESUG 2007.

| Tuesday 11:00 - 11:20 BB-13 | **Analyst Beware: Five Dangerous Data Step Coding Traps** |
| | **David Abbott**, US Dept. Veterans Affairs |

The SAS® data step is a powerful data processing language with many features and abundant flexibility. However, it is complex and the results obtained from a data step can easily differ from what is intended and in some cases SAS provides no indication of anything amiss. This talk examines five dangerous traps in data step programming. These traps/pitfalls are dangerous because they: 1) produce no ERRORs or WARNINGs in the SAS log, 2) generate erroneous results, and 3) are likely to be encountered in common data step programming tasks. The five traps occur in four different areas of data step programming: Missing value handling, FIRST/LAST variable related, Merging datasets, and Character string handling. These five traps do not comprise a comprehensive list of the dangerous traps in data step coding, but they are perhaps the most interesting and the most likely to lead to erroneous material in final reports. Let the analyst beware.

David H. Abbott is a statistician and computer scientist currently working primarily on health services research projects. He first used SAS in 1976 and has been a intensive user since late 2006. Interests include SAS Base language behavior exploiting the macro language frameworks for data analysis and data cleaning. He has made the rounds in the ACC: Duke (undergrad) UNC (MS stat) and Clemson (Computer Science).

| Tuesday 11:30 - 11:50 BB-17 | **SAS® Macro Dynamics: from Simple Basics to Powerful Invocations** |
| | **Rick Andrews**, CMS |

The SAS® Macro Facility offers a mechanism for expanding and customizing the functionality of the SAS System. It allows for the abbreviation of a large amount of program code conveniently and makes textual substitutions easy. The facility contains a programming language that will enable the execution of small sections of a program or entire steps conditionally. This paper assumes a basic knowledge of the DATA STEP and the use of programming logic and will provide simple to dynamics views of the powerful capabilities of SAS macros.

Rick Andrews has been using SAS software for nearly 20 years and has presented papers at the SAS Globla Forum and the North East SAS User Groups. He won best contributes paper at the 30th annual SAS conference.

Tuesday Afternoon – Plaza II

| Tuesday 1:00 - 1:20 BB-15 | **Combining External PDF Files by Integrating SAS® and Adobe® Acrobat** |
| | **Brandon Welch, Ryan Burns**, Rho, Inc |

As SAS® programmers of various disciplines, we often utilize additional software to complete a programming task. One popular approach is integrating SAS and Microsoft® Excel and/or

Microsoft Word via Visual Basic for Applications (VBA). Using similar techniques, one may establish a link between SAS and Adobe Acrobat via Inter-application Communication (IAC). This linkage provides programmers the ability to automate processes by embedding Adobe specific language in their VB scripts. In this article, we illustrate the construction of a SAS program that outputs a Visual Basic Scripting (VBS) file, which is then submitted to combine PDF files. We demonstrate the approach in three steps. We first scan a folder using SAS File I/O functions to identify the PDF files to combine. Then we construct the VB code in a DATA STEP centered on the files residing in the folder. Finally we output the contents of our DATA STEP into a VBS file which is submitted within the same SAS program. The techniques we present offer a good overview of basic data step programming that will educate SAS programmers at all levels.

Brandon Welch MS is a senior statistical programmer at Rho Inc. and has over 9 years experience in statistical analysis and data management. His experience spans a variety of areas including biostatistics social science and survey statistics. He has experience using many statistical programming languages including S-plus Stata and SPSS but focuses primarily on SAS® software.
Ryan Burns is a Solutions Architect at Rho Inc. and has over 8 years experience in the clinical computing industry. In addition to SAS® programming he is proficient in Visual Basic scripting and an expert in Study Data Tabulation Model (SDTM) deliverables.

Tuesday 1:30 - 2:20 BB-16	Condensed and Sparse Indexes for Sorted SAS® Datasets
	Mark Keintz, University of Pennsylvania

This paper shows two types of user-created compressed indexes that realize both significant disk space savings and improved retrieval performance vs. the ordinary SAS® index for large sorted datasets. For datasets in which the sort variable has low cardinality (i.e. a large number of observations for each value of the sort key), a compressed index takes less than 1% of the disk space of the SAS index, and almost doubles subset retrieval speed. For datasets with high sort variable cardinality, a sparse index provided similar disk space savings and improved retrieval speed by a factor of four in our data (about a half trillion stock trades and quotes since 1993 from major US exchanges). The paper will show how to create and use both the condensed and sparse indices, along with some rules on when to apply them.

After over a decade as director of research computing for the demography group at the University of Pennsylvania Mark Keintz joined Wharton Research Data Services in 2001. Mark has been a research "enabler" for several years having served on NIH grant review panels for small business innovation and as a research computing consultant on numerous projects. His current interests are in efficient use of large data sets and development of financial research applications. Mark has been using SAS since it was documented in one book.

Tuesday 2:30 - 2:50 BB-14	Build Excel-Like Pivot Table Using PROC SQL and PROC TRANSPOSE
	Mai Nguyen, Shane Trahan, Inga Allred, Nick Kinsey, RTI International

The enormity of data used and collected in all levels of research is overwhelming; to many data analysts this deluge poses not only opportunities but can be a significant hindrance to figuring out "what does my data tell me?". Tools abound but many analysts just need something to get them started and many turn to one simple yet effective tool, Microsoft Excel's PivotTable utility. The Excel's PivotTable is a versatile function allowing users to view data in a variety of different ways. Large datasets can be easily manipulated by filtering, transforming and aggregating information providing valuable insights including difficult to detect trend identification. Our paper will provide code and illustrate a method of using this data mining technique from Excel and firmly places this unique and simple to understand tool

into the hands of SAS® developers. We will step users through the use of PROC SQL and PROC TRANSPOSE to create a robust pivot table utility easily applied to a variety of SAS based applications. Our goal is to give users a tool that not only can be used across many types of data but also help identify important information to begin analysis.

Mr. Mai Nguyen has more than 15 years of experience in developing large-scale optimization applications and business systems. Since joining RTI in 2005 he has been working in the areas of development and management of survey research data systems. He has extensive programming experience in Microsoft .NET Framework Java platform SAS and website development.

Mr. Shane Trahan has been with RTI International for over 10 years and is familiar with a variety of programming languages including Microsoft based languages and java. Shane primarily works with data management and web based development where he has worked extensively on large national based surveys that use a variety of platforms including laptops and mobile devices for data collection. Over the past few years he has worked with SAS and other development environments to create robust and flexible solutions that complement the powerful SAS platform.

Mrs. Inga Allred a Research Programmer/Analyst for RTI International serves as the Database Manager for a National Household Survey. Her primary responsibilities include data file creation documentation and delivery. In her 17 years at RTI she has specialized in the manipulation of large data files using SAS.

Mr. Nick Kinsey has been with RTI since 1986. Mr. Kinsey has experience with all aspects of database design implementation and maintenance for clinical trials and large surveys. He has extensive experience in setting up data entry and control system applications as well as analysis file preparation on a number of projects.

Tuesday 3:00 - 3:50	**ExcelXP on Steroids: Adding Custom Options to the ExcelXP Tagset**
BB-18	**Michael Molter**, d-Wise Technologies

The multitude of options available with ODS's ExcelXP tagset has allowed users access to dozens of Excel features when creating spreadsheets from SAS®, but not all of them. ExcelXP is a SAS-made tool, but because it is a tagset, users have the ability to modify it. In this paper we'll discuss strategies for adding simple functionality to ExcelXP. Users of all levels will not only see the brief, intuitive tagset code used to produce the required XML for these specific examples, but will also realize the power over their output that this and other tagsets give them. Those with more experience with XML and tagset coding will learn a little more about the inner workings of ExcelXP as well as general strategies for adding any functionality to any tagset.

Mike Molter is a Senior Life Sciences Consultant for D-Wise Technologies and lives in Cary NC. With a Bachelors and Masters degree in mathematics from Western Michigan he began learning SAS in 1999 moving to clinical trials in 2003. Mike is a member of the NESUG executive committee and is writing his first book with SAS Press entitled "SAS's ODS Tagsets: Mastering the Markup Destination." Personal interests include science and history cycling triathlon and the Detroit Tigers.

Coders Corner

Section Chairs: Claudine Lougee   Andrea Wainwright-Zimmerman
                 Dualenic, LLC   *Capital One*

Monday Morning – Juniper

Monday 9:00 - 9:10 CC-14	**Counting the Ways to Count in SAS®** **Imelda Go**, SC Department of Education

This paper first takes the reader through a progression of ways to count in SAS. A new programmer might not be able to resist the urge to hard code counters in the DATA step, but SAS does offer a number of tools that can facilitate the counting process and simplify code. The elements discussed include: _N_, PROC FREQ, PROC FORMAT, BY-group processing, and PROC MEANS. The need to count records according to certain groups is related to the need to generate statistics according to groups. The paper ends with a macro example that uses a single PROC MEANS statement to easily count the number of records and calculate statistics according to several categories.

Imelda "Mel" C. Go Ph.D. *is an Education Associate at the South Carolina Department of Education's Office of Assessment (Columbia SC). She has been using SAS since 1989 in the university and public K-12 setting to analyze student test data and to perform high-stakes calculations.*

Monday 9:15 - 9:25 CC-06	**SAS® Formats: Effective and Efficient** **Harry Droogendyk**, Stratia Consulting Inc

SAS® formats, whether they be the vanilla variety supplied with the SAS® system, or fancy ones you create yourself, will increase your coding and program efficiency. (In)Formats can be used effectively for data conversion, data presentation and data summarization, resulting in efficient, data-driven code that's less work to maintain. Creation and use of user-defined formats, including picture formats, are included in this paper.

Harry Droogendyk *has been an independent IT consultant since 1995 creating business solutions in a wide range of industries including banking insurance financial services manufacturing telecommunications and education. Since 2000 he has specialized in SAS with a particular interest in EBI products. Recognizing that user groups are the back-bone of the SAS community Harry is involved in organizing and speaking at local regional and international SAS user group conferences.*

Monday 9:30 - 9:40 CC-07	**Locally Visible, Remote Data and Format!** **Hsiwei Yu**, Papertree Inc; **Kamau Njuguna,** Lockheed Martin

Problem Statements: 1) Say you have SAS® data on Unix or mainframe; do you have to be on Unix or mainframe and invoke SAS there to use or view the data? Answer 1: No, you don't have to; you can use PC SAS to view Unix SAS data. 2) So how can you view Unix or mainframe data in a PC SAS session? The prerequisite is SAS/Connect® or SAS/Share® then remote data and format becomes visible just like local data and format.

Hsiwei Yu *programmed in SAS for many years and has published papers in SGF and NESUG.*

He is currently working on-site at the FDIC in DC.
Kamau Njuguna *is a project manager and SAS developer with Lockheed Martin. He has over 16 years of SAS experience and has presented and published papers at NESUG.*

Monday 9:45 - 9:55	**Arrays - Data Step Efficiency**
CC-17	**Harry Droogendyk**, Stratia Consulting Inc

Arrays are a facility common to many programming languages, useful for programming efficiency. SAS® data step arrays have a number of unique characteristics that make them especially useful in enhancing your productivity. This presentation will provide a useful tutorial on the rationale for arrays and their definition and use.

Harry Droogendyk *has been an independent IT consultant since 1995 creating business solutions in a wide range of industries including banking insurance financial services manufacturing telecommunications and education. Since 2000 he has specialized in SAS with a particular interest in EBI products. Recognizing that user groups are the back-bone of the SAS community Harry is involved in organizing and speaking at local regional and international SAS user group conferences.*

Monday 10:00 - 10:10	**Smoothing Scaled Score Distributions from a Standardized Test using PROC GENMOD**
CC-01	**Jonathan Steinberg, Tim Moses**, Educational Testing Service

The estimation of a scale score distribution for an educational assessment is usually done with respect to a sample of the complete testing population. The scale score range is typically broad enough to allow for a normal distribution of scores to occur within the testing population. However, the frequency distribution of scores obtained from the sample can often appear skewed and can exhibit large sampling fluctuations, particularly if the sample is not completely representative of the entire population. This can have significant implications if test-takers' scores are reported along with the corresponding percentile ranks. A potential solution to this issue is to employ loglinear smoothing of the observed frequency counts. Through this process, important statistical features of the underlying observed data (e.g. mean, variance, and skewness), known as moments, can be preserved using only a small number of parameters while ensuring that the resulting frequency distribution and percentile ranks are smooth and free of sampling fluctuations (Moses & von Davier, 2004). SAS® can employ loglinear smoothing using PROC GENMOD where the observed frequency is a function of the score, its square, and its cube. This paper will demonstrate how PROC GENMOD can be used in an applied educational setting to smooth the univariate observed frequency distributions of the three distinct sub-scales for a test within different sub-groups. These transformations allow for the reporting of the resulting percentile ranks in a reliable and meaningful way for the groups of interest. This paper is intended for those with a good working knowledge of loglinear smoothing models and a moderate level of SAS programming experience.

Jonathan Steinberg *received his M.A. in Statistics from Columbia University. He joined Educational Testing Service in 2005. His recent work has been focused in two areas. The first is exploring the dimensionality of state-based exams in different content areas and grades assessing the structural similarities for different groups. The second is helping to develop noncognitive assessments as products for middle school and community college students. Additionally his interests include longitudinal analysis and segmentation techniques. He has presented at NESUG in 2007 and 2010.*
Tim Moses *is a Senior Psychometrician at Educational Testing Service. Tim works on several testing programs at ETS and also conducts research to develop and evaluate statistical applications for educational test data.*

Monday 10:15 - 10:25 CC-05	**Identifying, Tracking, and Analyzing Patterns in Finite Concurrent and Sequential Events using SAS®**
	Vijayalakshmi Sampath, National Student Clearinghouse

Two or more events are considered to be concurrent (simultaneous) if they happen at the same time. Historically, concurrent events have fascinated as well as posed challenges to researchers in the form of defining, interpreting, and measuring them. Be it in the field of Physics and the treatment of concurrent events as Objective (Newtonian classical physics and reference frame independent simultaneity) or subjective (Einstein's Special Theory of Relativity and reference frame dependent simultaneity), in the field of distributed computing where identifying simultaneous message communications between the systems is crucial for resource management, or even in the field of Education and Healthcare where tracking concurrent enrollments or eligibilities becomes essential for planning and policy analyses. Depending on the application area, the treatment of the source and the event may vary in terms of evaluating the concurrent events. This paper discusses, in general, the common factors to consider while attempting to identify a finite number of concurrent and sequential event patterns. It further presents generic SAS coding tips to track these patterns to quantify and analyze them. The paper concludes by presenting an example from an application area and how the concepts discussed apply to the particular example.

Ms. Sampath is a Senior Programmer and Research Associate at the Research Center of the National Student Clearinghouse in Virginia. She collaborates with the research teams to design research projects and conduct statistical analyses of postsecondary student outcomes. She previously worked as a Policy Manager at the Office of Institutional Research in Northern Virginia Community College and as a Data Analyst in the Office of Admissions at George Mason University. She has over 8 years of experience conducting research and programming in SAS. She is a SAS Certified Advanced programmer.

Monday 10:30 - 10:40 CC-15	**Our Adverse Event Review Reports Generated All in ODS Report Writing Interface**
	David Maddox, Regions Bank; **Sijian Zhang**, University of Alabama at Birmingham

It is a common practice that third party software is used for generating complex reports. Usually, the data or some report components are prepared in SAS®, and then other reporting jobs are outsourced to other software, such as MS Word. This situation has been changed since SAS 9.2. Taking one of our routine reports as an example, this paper will illustrate what the ODS report writing interface can do, how syntaxes are applied and completed reporting features are coded with ease. With this new tool, our complex reports are all done in SAS in a smoother and more efficient way.

Garland D. (David) Maddox is a Business Banking Reporting Analyst for Regions Bank and has been a SAS user for approximately twenty – five years. David has been active in SAS user groups for almost twenty years, including the Birmingham Users Group for SAS (BUGS) and the SouthEast SAS Users Group (SESUG). In 2002, he served as conference co-chair for SESUG 2002 in Savannah, GA.

Monday 10:45 - 10:55 CC-20	**Macros for Two-Sample Hypothesis Tests**
	Jinson Erinjeri, D.K. Shifflet and Associates

Statistical Hypothesis Testing is performed to determine whether enough statistical evidence exists to conclude that a hypothesis about a parameter is supported by the data. This paper deals with the macro codes for 2-sample hypothesis testing for proportions and means which are the commonly used statistical tests across all industries. The application was mainly developed to determine whether or not there existed significant difference (mean/proportion)

between the important travel variables from year to year in the raw data. In this paper, we have presented the generalized macros for the Two-Sample hypothesis tests.

Jinson Erinjeri *is currently employed as Senior Information Processing Analyst at D.K. Shifflet and Associates Ltd. His responsibilities include processing generation and analysis of travel volume estimates data checking and ad-hoc programming/analysis. He is a SAS certified programmer with a strong background in various Operations Research /Statistical tools. Jinson holds a PhD in Engineering and a MS in Industrial Engineering from Louisiana Tech University.*

| Monday 11:00 - 11:10 CC-18 | **Windows PowerShell Commands and Scripts for SAS® Programmers** |
| | **Adeline Wilcox**, Department of Veterans Affairs |

With Windows PowerShell, power users can gain at least some of the productivity at the hands of UNIX/Linux/Mac OS X command-line programmers. While PowerShell is designed for system administrators, SAS® programmers, particularly those with command line experience, can work more productively by learning even a few PowerShell commands. I will give examples of both commands and scripts. Among commands that can be quickly executed without reaching for the mouse, I will show how to move groups of similarly named files from one folder or server to another and use the select-string cmdlet, similar to the UNIX grep command, to find all SAS programs within a folder that contain a SAS data set name of interest. I will describe the PowerShell script I wrote to create a file containing names of all specifications documents stored within a directory tree. Another script will show how a SAS program may be executed iteratively by passing environment variable values assigned within the PowerShell script to the SAS program. Object-oriented, PowerShell is hard to learn. But if you learn even a couple of commands, you'll be a more powerful computer user.

Adeline Wilcox *has been writing SAS programs since Version 5.16.*

| Monday 11:15 - 11:25 CC-08 | **Be Bold with Proc Compare and %RTFTable** |
| | **Patricia Guldin**, Merck & Co, Inc. |

Comparing datasets and reviewing data are quite common tasks. New data comes in, data points get updated and people need and want to know about it. When reviewing new or modified data, it is often desirable to see all of the data. This often results in repeatedly running the same programs, looking for changes in ever growing reports. What an achievement it would be if the new and modified data popped out at us; life would be easier and programmers would become heroes in the eyes of those who review the data. This paper will spark ideas of ways to make this happen using the stylevar parameter of %RTFTable in conjunction with Proc Compare and will provide a specific example of one use of this technique.

Patricia Guldin *is a Statistical Programming Analyst with Merck and Co. Inc. She completed a degree in Biomathematics from Hahnemann University in 1989 and began her career in the pharmaceutical industry. After several years of data management Patricia decided to advance her career by taking a course in SAS programming. Since 2007 she has been using SAS for both data management and statistical analysis.*

| Monday 11:30 - 11:50 CC-11 | **SAS® Programming Guidelines** |
| | **Lois Levin**, LSL Consulting |

This paper presents a set of programming guidelines and conventions that can be considered in developing code to ensure that it is clear, efficient, transferable and maintainable. These are not hard and fast rules but they are generally accepted good programming practices.

These techniques can be used in all types of SAS® programs, on all platforms, by beginners and experts alike.

Lois Levin has been using SAS for over 20 years on the mainframe Unix and PC platforms. She has a Master's degree in mathematics from Purdue University and is currently working as an independent consultant. She has presented at SESUG NESUG SUGI and SAS Global Forum.

Tuesday Afternoon – Plaza III

Tuesday 1:00 - 1:10 CC-04	**The Last Line**
	Brandon Barrett, Binoy Varghese, Human Genome Sciences

Summary tables and listings form an integral part of a clinical study report. These reports are created using raw/analysis datasets. An essential practice in the Life Sciences industry is to create/re-create analysis datasets and reports in a sequential order at every extraction of raw data. This rule ensures data consistency. Although, almost all organizations have various checks to safeguard this policy, a simple solution is to reserve the last line (footnote10) of each report to list input datasets and corresponding date-time stamps, along with date-time of report creation. Having this footnote on the report increases the chances of an inconsistency being detected, not only by the programming team but by every other team that is involved in writing and reviewing the clinical study report. It also provides a trail to reviewers in case they are interested in examining the input datasets. The purpose of this paper is to present a technique that will automatically produce the last line of the report with data dependency and the date-time stamps. Additionally, it will list the report name and the program that created the report.

Brandon Barrett is a Database Programmer at Human Genome Sciences Inc. in Rockville MD. He has been a SAS programmer in the Life Sciences Industry for 6 years and has SAS 9 Base certification.
Binoy Varghese is a Principal Statistical Analyst with over 8 years of experience working in the Life Sciences industry. He is an advanced SAS certified programmer and has a Master's in Computer Science.

Tuesday 1:15 - 1:25 CC-02	**RDPLOT: A SAS® Macro for Generating Regression Discontinuity Plots**
	Jason Schoeneberger, University of South Carolina

Applied social science and education researchers often face less than ideal research design conditions for understanding interventions or programs. A lack of willingness on the part of policymakers to utilize random assignment in these fields prevents researchers from capitalizing on the high levels of internal validity offered by such a design. One research design that offers a palatable alternative to all stakeholders is the regression discontinuity design, where a pre-intervention measure is used to determine what research subjects receive the intervention. Typically all subjects below (or above) some cut-point on the pre-intervention measure continuum are assigned to receive the intervention, while all other subjects serve as the control. In this design, the interest is centered on the post-intervention measure for those students just on either side of the cut-point on the pre-intervention measure. A regression model is used to determine whether a significant difference exists between the intervention and control groups on the post-intervention measure. A treatment effect creates a discontinuity in the regression line, depicting the advantage (or disadvantage) associated with the intervention. Interpretation of these designs is aided by examination of a graphical depiction of the discontinuity in the regression line. The macro described herein was designed to facilitate the generation of regression discontinuity plots under homogenous or heterogenous conditions through the entry of eight parameters into the RDPLOT SAS®

macro.

Jason Schoeneberger is a doctoral candidate in the Education Research & Measurement program at the University of South Carolina. Jason previously served as a SAS Student Ambassador at the 2010 SAS Global Forum. He has developed other SAS macros for examining diagnostics for multilevel models and generating side-by-side boxplots and has also been involved in a number of simulation studies using SAS to explore the performance of statistical methods under various conditions.

Tuesday 1:30 - 1:40 CC-03	**Show Me The Folder** **Brandon Barrett, Binoy Varghese**, Human Genome Sciences

Within Base SAS®, there are a lot of tools and readily accessible information that can assist programmers in creating flexible and robust programs. In many industries, SAS programmers work on similar tasks across multiple studies or projects. The less changes SAS programs require from one study to the next, the more efficiently programmers can get their work done. Also, the less input a program needs, the less sources of human error there are to be introduced. This paper shows how to convert multiple MS Excel spreadsheets into SAS datasets without specifying the folder location or a single file name. We describe the SAS code needed for this task, and show how a user can move the program to a different directory location and convert a different set of files to SAS datasets without making any changes to the code.

Brandon Barrett is a Database Programmer at Human Genome Sciences Inc. in Rockville MD. He has been a SAS programmer in the Life Sciences Industry for 6 years and has SAS 9 Base certification.
Binoy Varghese is a Principal Statistical Analyst with over 8 years of experience working in the Life Sciences industry. He is an advanced SAS certified programmer and has a Master's in Computer Science.

Tuesday 1:45 - 1:55 CC-23	**How variable-dependent macros can help you** **Mindy Wang**, CDM Group

In clinical trials and many other research fields, repetitive statements happen very often. This paper illustrates how to deal with the same task with three different approaches. The first approach uses simple copy and paste any SAS® beginner can do. The second approach uses a simple macro program to make the task more efficient, and reduce the length of the program. To further improve the program and to make the program more adaptable to other projects, the third approach uses variable-dependent macros which minimize tedious typing, eliminate possible human errors, and ensure the accuracy of data.

Mindy Wang is a SAS certified advanced programmer.   She has been using SAS for more than 10 years. She has been teaching workshop and presenting papers pertinent to SAS at various conferences. She is interested in making repetitive tasks easier. She is especially interested in clinical trials and Pharmaceutical application of SAS.

Tuesday 2:00 - 2:10 CC-24	**Intelligent Proc Sort Nodupkey** **Andrea Wainwright-Zimmerman**, Capital One

Have you ever had a dataset that you were updating records in and needed to eliminate the old records and replace them with new? Proc sort with the nodupkey option will eliminate rows that duplicate your key fields, but it randomly chooses which field to keep and that may not be the one you want. This paper will show how to combine a proc sort and a datastep to get the sorted dataset with the exact records you want.

Andrea Wainwright-Zimmerman has been writing computer programs since the 2nd grade and has been programming in SAS for almost 15 years. She graduated from Sam Houston State University with a BS in Mathematics and a MS in Statistics. She has been working for Capital One for just over 11 years now. In her spare time she is an animal lover and trainer working with 4 cats 1 dog 3 horses and one husband.

Tuesday 2:15 - 2:25 CC-09	**Using SAS® to Report Data in XML Format**
	Qin Wang, District of Columbia Courts

XML (Extensible Markup Language) has become increasingly important as a required format for data reporting because of its textual nature and Unicode support. However, converting data into XML format is quite challenging for many data analysts. We are familiar with data in rectangular row and column format created via programs such as Excel, SQL, or SAS®. Converting a big sum of data from the row and column structure to a hierarchical or tree structure which XML accepts can be difficult conceptually and technologically to us. In addition, XML reporting often comes with very strict format requirements for data elements. This paper introduces methods to use SAS software (SAS®8.2 or SAS ®9.1 on Windows@ platform) to perform the following tasks. 1. Use put command to write an output data file in XML format; 2. Use WHERE statement and VERIFY, SUBSTR, RXPARSE, RXCHANGE functions to scan data elements and make necessary corrections.

Qin Wang is a long time SAS user with a research background.
Education: Ph.D of Political Science Southern Illinois University at Carbondale
Professional Experience: Statistical Associate District of Columbia Courts 2009 to Present; Project Analyst National Institute of Health 2008-2009; Product Manager Arbitron Corp 2007 – 2008; Senior Marketing Analyst Optimization Specialist J.P. Morgan Chase Bank 2005-2007; MIS Specialist Citigroup 1998-2005

Tuesday 2:30 - 2:40 CC-25	**Creating a Stored Macro Facility in 10 Minutes**
	Erik S. Larsen, Independent Consultant

Every SAS® macro developer from time to time has spent countless hours writing, testing and perfecting code so that it can be used over and over by different users on different platforms. There are certain situations where one needs to enhance the speed of the processing of SAS code, such as in a production environment or if there is a need to process large volumes of data. A SAS Stored Macro Facility consists of a library of SAS macros which are already compiled, that are available to users or processes at any time. These pre-compiled macros run immediately when called and do not use valuable CPU time while waiting for compilation. Some examples of where a stored macro facility would be useful are in production environments, where jobs may be scheduled to run on a certain day of the day, week, or month. Another would be a standard report which is being used for an FDA submission and needs to be in an exact format. Creating a stored macro facility can be a beneficial tool for a developer or end-user and it is fairly easy to set up on any platform. There are also options to store the source code along with the compiled macro. This paper will give a brief introduction to the SAS Stored Macro Facility and explain how to set it up and use it to its full potential.

Erik Larsen has over 20 years of experience working as an independent economist and SAS Business Intelligence developer in the financial, healthcare, and pharmaceutical industries. He has presented several papers at local, regional and national SAS conferences and was the conference chair of the NorthEast SAS Users Group (NESUG) conference in 2000. He holds a masters degree in applied statistics from Villanova University and a bachelors degree in computer science from Penn State University. He also serves on the advisory board for the computer science department at Charleston Southern University.

Tuesday 2:45 - 2:55 CC-19	**Three Easy Ways around Nonexistent or Empty Datasets** **Spencer Childress, Brandon Welch**, Rho, Inc.

Nothing derails a program quite like a nonexistent dataset. Statistical programmers often merge summary statistics with p-values, but if the data aren't present, the p-value and its dataset won't generate. We present three simple methods in a macro that check the existence of a dataset and return an observation count. The first method combines SAS® File I/O code with data from the SASHELP library. The second needs only SAS File I/O code. The third also makes use of SAS File I/O code with PROC SQL. If the existence-check returns false or the observation count returns 0, then the macro creates a dummy dataset with one observation, ready to merge. Regardless of the method, any programmer can tackle those nonexistent datasets. The techniques we present offer a good overview of basic data step programming and macro processing appropriate for all levels of SAS capability. While this article targets a clinical computing audience, the techniques apply to a broad range of computing scenarios.

Spencer Childress BS is a statistical research associate at Rho Inc and holds a degree in Statistics from the University of South Carolina. A new addition to the clinical trials industry he has experience using R and Minitab but focuses primarily on SAS® software.

Brandon Welch MS is a senior statistical programmer at Rho Inc. and has over 9 years experience in statistical analysis and data management. His experience spans a variety of areas including biostatistics social science and survey statistics. He has experience using many statistical programming languages including S-plus Stata and SPSS but focuses primarily on SAS® software.

Tuesday 3:00 - 3:10 CC-13	**The Little Engine That Could: Using LIBNAME Engine Options to Enhance Data Transfers Between SAS® and Microsoft Excel Files** **William Benjamin Jr**, Owl Computer Consultancy

Many people are not aware that the SAS/Access® for PC Files product will allow SAS® Programmers to access an Excel spreadsheet in much the same way as any other SAS file. There are of course some restrictions, but there are also a lot of options that help remove some of the bumps in the road. The LIBNAME statement allows the user to define an Excel file in SAS terms and gives the programmer access to LIBNAME and data set options to control how the Excel file is defined, accessed, and yes even how the data will be formatted. This paper will describe some of those options.

William E. Benjamin Jr. is a consultant and founder of OWL Computer Consultancy LLC in Phoenix AZ his expertise includes Base SAS Software SAS Macros SQL and SAS/AF®. He provides consulting and training services has been programming since 1973 and has used SAS software since 1983. He has written and presented papers at local regional and national SAS conferences and authored a SAS Observation's online article. His programming experience spans from vacuum tube mainframes to current PC computers using languages from assembly language to fourth generation programming languages.

Tuesday 3:15 - 3:25 CC-12	**Proc Format, a Speedy Alternative to Sort/Merge** **Claudine Lougee,** Dualenic, LLC; **Jenine Milum**, Wells Fargo

Many users of SAS® System software, especially those working with large datasets, are often confronted with processing time challenges. How can one reduce the amount of CPU required to retrieve specific data? In this paper, an "outside the box" approach using a matching method utilizing Proc Format replaces the CPU heavy Sort/Sort/Merge. It is ideal for situations when a key from one file is needed to extract data from another file. It is more apparently

useful when at least one of the files is quite large. This method has been proven time and again to decrease CPU by 70%-80% and is effective on all platforms utilizing Base SAS.

Jenine Milum *has been a SAS software developer for over 21 years across multiple industries. She is currently with Wells Fargo Bank as a SAS Systems Engineer. Jenine is president of the Charlotte SAS Users Group head of the steering committee for the Wells Fargo SAS Users Group and a Distinguished Toastmaster.*

Claudine Lougee *has been programming in SAS since the Y2K. She learned to use SAS as a method to avoid COBOL for reporting purposes. She enjoys finding ways to improve programs and processes using the many tips and techniques learned from colleagues and conference papers. She has volunteered at several SAS regional conferences in various roles including session coordinator, presenter, and section chair as well as other volunteer capacities.*

Tuesday 3:30 - 3:40 CC-21	**Can you decipher the code? If you can, maybe you can break it.**
	Jay Iyengar, Harris Corporation/NCHS

You would think that training as a code breaker, similar to those employed during the Second World War, wouldn't be necessary to perform routine SAS® programming duties of your job, such as debugging code. However, if the author of the code doesn't incorporate good elements of style in their program, the task of reviewing their code becomes arduous and tedious. Style touches upon very specific aspects of writing code; indentation for code and comments, case for keywords, variables, and dataset names, and spacing between PROC and DATA steps. Paying attention to these specific issues will enhance the reusability and lifespan of your code. By using style to make your code readable, you'll impress your superiors and grow as a programmer!

Mr. Iyengar *is a Senior Computer Systems Analyst with the Harris Corporation. He has approximately 10 years of Experience programming in SAS. This includes experiencewith many SAS tools and products including Base SAS SAS Macros SAS/Stat SAS/Access and SAS/Connect. In his current position he works on a contract that Harris has with the Center for Disease Control National Center for Health Statistics. Here he provides SAS programming to support quality control and data production for the National Health and Nutrition Examination Survey.*

Tuesday 3:45 - 3:55 CC-16	**Use Your Cores! An Introduction to Multi-core Processing with SAS®**
	Erik Dilts, INC Research

Computing power has changed direction over the past few years. In the past, chip manufacturers designed faster and faster processors, but they reached the theoretical limit of that method. This is how the multiple-core processors in today's computers came to be. A multi-core processor is essentially the same as having multiple processors, the difference being they all reside on one chip. SAS® 9 can take advantage of these multiple cores in several different ways. This paper will explain how to use multi-core processing to your speed up your programs. In addition it will demonstrate the pros and cons of the various techniques available under Windows, and when to use them.

Erik Dilts *has been using SAS for clinical trials for almost 20 years.*
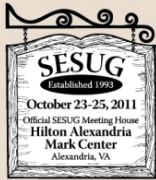
Government & Healthcare Apps

Section Chairs: Heidi Markovitz   Sarah Woodruff
                   Simply Systems   *Westat*

Monday Morning – Plaza I

Monday 9:00 - 9:20 GH-16	**Tips for Merging SAS/GRAPH® Output into Microsoft PowerPoint**
	Ferrell Drewry, PharmaProSource Corp.

SAS/GRAPH® software can be used to quickly produce hundreds of graphs in a variety of display and print formats, but SAS/GRAPH output is not easily integrated into Microsoft PowerPoint presentations. If only a few SAS/GRAPH slides are needed, the manual cut-and-paste method might be sufficient. If several hundred slides are needed, then a more efficient method is needed for inserting the SAS/GRAPH output into PowerPoint. This paper describes a process to merge SAS/GRAPH output into PowerPoint slides in a manner similar to the mail-merge process in Microsoft Word. The techniques presented were used to insert several hundred SAS/GRAPH displays into PowerPoint as backup slides for an FDA advisory committee meeting. Using the advisory committee meeting scenario as a case study, this paper also provides tips for making SAS/GRAPH output blend with the other slides in the PowerPoint presentation and for ensuring high-quality results.

__Ferrell Drewry__ is the founder of PharmaProSource®, a small consulting firm specializing in technology applications for clinical trial data. Ferrell has over 20 years of experience in leadership roles in the pharmaceutical industry, including extensive experience in pharmaceutical consulting and contract services at the executive level. In addition, Ferrell has direct, hands-on experience working with clinical information systems, SAS® programming, and biostatistics and is an expert at programming tables, listings, figures and graphs (TLFGs) using SAS. Ferrell holds a BS in accounting from the University of Northern Colorado and an MSBA with a concentration in Management Information Sciences from Colorado State University.

Monday 9:30 - 9:50 GH-02	**A General-Purpose SAS® Report Portal for the Web**
	Craig Ray, Westat

In order to meet the demands of today's information consumers, SAS® report programmers frequently need to make their content available interactively to end users. Web technology provides an excellent method for users to request on-demand reports and supply any necessary parameters, but setting up the necessary web infrastructure can be a complex task, requiring a skill set very different from that needed for SAS report programming. Recognizing these needs, we developed and implemented the Westat Automated Report Portal (WARP), which utilizes SAS/IntrNet® software to provide a generalized and secure environment for SAS programmers to make their reports web-accessible without requiring any web programming. Since its launch in late 2003, WARP has provided a cost-effective mechanism for dozens of Westat projects with interactive reporting needs to leverage the power of SAS to develop sophisticated, parameterized reports. This paper describes the overall architecture of the system and summarizes its capabilities in areas such as output format (HTML, Excel, PDF, RTF), administration, customization, and project integration.

Craig Ray is a senior systems analyst with Westat where he has led the development of integrated web-based research systems for the past 14 years. He has over 25 years of SAS experience and was previously an instructor of SAS Basics and SAS Macro classes for the SAS Institute.

Monday 10:00 - 10:50	**Fighting Fraud in a Pre-Payment Environment**
GH-14	**Greg Henderson, Julie Malida**, SAS

In the U.S. Health Care industry, dollars lost to fraud each year are 3-10% of total U.S. Health Care spending. In Europe, the fraud estimate is 6% of health care spending, in Canada, 2% of health care spending. Health care fraud is a lucrative business and organized crime. Cross-border schemes and multi-party collusion have moved full force into health care.
Most payers of health care claims are still detecting and investigating fraud after the claim is paid ("pay and chase".) However, there is a growing recognition that detecting and stopping fraud before the claim is paid ("pre-payment") is the way of the future.
Fighting fraud pre-payment by having the right detection tools in place to identify leads and prioritize them quickly is a key.   Private payers were the first to embrace the concept of moving the screening process further up in the transaction life cycle, and government entities are now recognizing the benefits of this approach as well.

Greg Henderson is Government Practice Director for the Fraud and Financial Crimes Global Practice at SAS. In his current role, Greg is responsible for field support and product direction in applying SAS' fraud detection and prevention capabilities within the government market. During his 13 years at SAS, Greg has worked in various sales, marketing and technical roles applying SAS's data integration and analytical capabilities to solve real-world business problems. He led the development of SAS' market leading anti-money laundering solution, and for the past 6 years has focused exclusively on applying his knowledge and skills in the government space. He has authored several papers and presented at industry events on these topics. Greg holds a Bachelor of Science degree from Bowling Green State University, and resides in Raleigh, NC

Monday 11:00 - 11:20	**Automatization of Patient Characteristics Report**
GH-04	**Mirjana Stojanovic**, Duke University

This paper describes a standardized and presentable patient characteristics report. In an effort to standardize the appearance of the patient characteristics' report our team decided to create one macro that will produce patient characteristics tables for all studies. This macro provides an easy method for producing standardized and nicely formatted tables. It uses the same logic and structure across all studies. In addition the macro automatically computes all stratification parameters based on number of strata and number of levels within each strata. This paper will outline the features of the macro including examples of code and output. This paper is intended for programmers with a sound foundation in SAS macro programming.

Mirjana Stojanovic is an IT Analyst for the Biostatistics Department of DUMC. She is responsible for developing and maintaining a SAS macro library and SAS format library editing databases preparing reports for clinical studies and creating analysis files and patient summary reports. Working for RTI Parexel International and UNC CH she gained experience in different areas (Survey Clinical trials and Education). Ms. Stojanovic has BS in Statistics and Computer Science from University of Belgrade Yugoslavia.

Monday **11:30 - 11:50** **GH-05**	**Macro Design and Usage in a Multi-Tier Architecture for ETL and Google Visualization API Integration** **Manuel Figallo-Monge**, DevTech Systems

A multi-tier application architecture separates data management, application processing, and presentation. This paper shows how to facilitate this separation of concerns by producing loosely coupled macro components with specified purposes that also interact with one another. It examines an ETL batch file written so that one macro extracts spreadsheets from a web server, a second macro transforms the spreadsheets, and yet another loads them into datasets. This data processing is extended with a presentation layer macro which integrates SAS® with the Google Visualization API to produce a highly interactive motion or bubble chart that "plays" a dynamic "movie" to explore several U.S. federal government indicators over time. Ultimately, all of these SAS components can be housed in a repository in order to be reused by developers in an organization. This paper explores how good macro design includes: 1) utilizing a naming convention with nouns for objects or variables and action verbs for macro functions to reveal system decomposition; 2) using parameters beyond the standard numeric and character data types--for example, arrays and dataset parameter objects; 3) and, finally, choosing the appropriate input parameters for a macro interface and clearly understanding its output. Macros, as this paper shows, can also call other macros to output data from a permanent data store, such as a dataset, to its most natural form -i.e., persistent memory objects. Expanding SAS macro developers' understanding on how to set persistent macro objects and then retrieve them in a multi-tier architecture is arguably one of this paper's more important contributions. In conclusion, the SAS community will realize the many advantages of a multi-tier architecture: code that is easier to maintain, extend, and even reuse. If designed correctly, any application using SAS will be nothing more than a black box for an end user, configurable by XML files. Architects, moreover, will be better able to understand and communicate how SAS systems are used in their organizations, since a multi-tier design provides an intuitive and standard means of describing a system implementation. And, finally, developers will be able to extend and reuse existing macro code to add new behaviors, as needed, through the introduction of additional macros; this will ultimately allow SAS developers to more readily respond to new requirements and incorporate enhancements.

Manuel Figallo is a Data Architect at DevTech Systems. Previously he was a Software Architect with Hewlett-Packard's Business Intelligence Solutions Practice and has delivered high-value solutions to a variety of clients in the United States Latin America and Africa— particularly in finance government and health. He specializes in integrating SAS with Internet technologies through industry best practices. He holds two masters degrees from Carnegie Mellon University and U.C. Berkeley and he was awarded an IBM Ph.D. Fellowship and KPMG Fellowship.

Monday Afternoon – Plaza I

Monday **1:00 - 1:20** **GH-06**	**Let SAS® Do the Downloading: Using Macros to Generate FTP Script Files** **Arthur Furnia**, Federal Aviation Administration

Analysts often need to obtain data generated by an office outside of their organization. Ideally, the analyst would have access to the database of that office, but sometimes security rules require that the data must be obtained in some intermediate format to be processed later. Downloading this intermediate data can be labor-intensive, and not only wasteful of time but also prone to human error resulting in bad or incomplete data downloads. Imagine

changing a few macro parameters in a SAS program, that when executed creates its own code to download all required files, waiting for one set of files to download before writing more code to download the next set of files, until it reaches a pre-determined point at which processing stops. This paper shows an example of how to use a series of macros to construct an individual script file containing FTP commands that when executed downloads a specific group of files for a given month from a specific location on the FTP site to a specific directory on a local computer or network. As many script files are created as there are directories requiring data. After each script file is run, it is then deleted. Since only a few parameters at the beginning of the program need to be changed each month, even non-SAS users can easily run the program. Therefore an analyst can run a SAS program overnight, and spend no more time painstakingly downloading data from an FTP site.

Arthur Furnia is an operations research analyst in the Workforce Planning group of the Air Traffic Organization Office of the Senior Vice President for Finance. He has been using SAS since graduate school in the mid 1990's and is always looking for new ways to use SAS to automate repetitive tasks.

Monday 1:30 - 1:50 GH-07	**Categorizing the Degradation State of Aircraft Generators using Rank Order Statistics and SAS CLUSTER Procedure**
	Tsung-hsun Tsai, Global Strategic Solutions, LLC

Maintaining an aircraft's electrical generator in operable condition is critical as failures in the power generator system can lead to catastrophic results. With a renewed emphasis on performing maintenance and repair before the problem arises, there is a strong push toward developing stringent health management technologies that can be realized in practice. This paper uses SAS® CLUSTER procedure and rank order statistics of symbolic sequence to assess the health state of Navy P-3 aircraft generators. By mapping the complex time series signal to binary sequence for encoding into abstract symbolic representation, the rank-frequency distribution is obtained by simple occurrence counting. The symbolic approach originated as a technique for analyzing hidden temporal structures in human cardiac dynamics. Two time series with similar patterns of fluctuations have similar probabilities and ranks of symbols. The objective of the study is to use the test data collected from Electrical Signature Analysis on five P-3 electrical power generators to estimate the differences of degradation state. Using a similarity measure and CLUSTER procedure, a hierarchical clustering tree can be constructed by using the TREE procedure from pair-wise measurements. The results uncover the difference of signal patterns of electrical power generators with quantitative information. Furthermore, the clustering tree not only discriminates patterns generated from different aging of the generators, but also reveals one of the generators that was used differently. A discussion of the potential for advancing health management techniques for aircraft generators is given.

Tsung-hsun Tsai is a research scientist with Global Strategic Solutions. He holds a Ph.D. in physics with major in the field of complex systems from the University of Arizona.

Monday 2:00 - 2:50 GH-08	**Healthcare Provider Cost Reporting Information System**
	Kim Andrews, Rick Andrews, CMS

Medicare-certified institutional providers are required to submit an annual cost report to a Fiscal Intermediary (FI). The cost report contains provider information such as facility characteristics, utilization data, cost and charges by cost center (in total and for Medicare), Medicare settlement data, and financial statement data. CMS maintains the cost report data in the Healthcare Provider Cost Reporting Information System (HCRIS). HCRIS includes subsystems for the Hospital, Skilled Nursing Facility, Home Health Agency, Renal Facility and

Hospice Cost Report. This paper will describe characteristics of the files, how to interpret them, and program code to analysis the data within.

Rick Andrews has been using SAS software for nearly 20 years and has presented papers at the SAS Global Forum and the North East SAS User Groups. He won best contributes paper at the 30th annual SAS conference.
Kim Andrews has been using SAS for over 20 years and has worked with Healthcare Provider Cost Reporting Information System data for more than 10 year.

Monday 3:00 - 3:50 GH-09	**Analysis of a Binary Outcome Variable Using the FREQ and LOGISTIC Procedures** **Arthur Li**, City of Hope Comprehensive Cancer Center

A common application in the healthcare industry is to investigate the association between a response variable that has dichotomous outcome, such as having or not having a certain disease, with one or more variables. This type of study can be analyzed by using the FREQ procedure if there are only one or two explanatory categorical variables. A more general approach to study a binary outcome variable would be to build a logistic regression model by using the LOGISTIC procedure, which can handle one or more categorical or continuous independent variables. In this talk, in addition to reviewing both PROC FREQ and PROC LOGISTIC, other model-building issues, including detecting confounding variables and identifying effect modifiers, will also be addressed.

*After graduating from USC with an MS in Biostatistics in 2006 **Arthur Li** started working at the City of Hope Comprehensive Cancer Center as a biostatistician. In addition Arthur developed and taught an introductory SAS course in the Department of Preventive Medicine at USC for the past four years.*

Monday 4:00 - 4:20 GH-10	**ODS PDF and RTF application development** **Benno Kurch**, Trading and Software Development, Inc.; **Shirish Nalavade,** eClinical Solutions, Inc.

For an ODS developer at a beginning or advanced level, creation of tailor-made ODS PDF or RTF reports is not an out-of-the-box, turnkey operation. Creation of such reports may require out-of-the-box thinking. Implementing a larger font size, for example when converting a listing report to an ODS report may require report re-design and consultation with business review personnel. This paper will present an overview of report design techniques and coding approach based on the use of DATA step, macro programming and PROC REPORT. The paper will mainly be oriented to the production of ODS PDF reports for the pharmaceutical industry. Taking time up front to think thru potential issues can significantly reduce development time and produce properly designed ODS reports that will impress users with their professional look.

Mr. Kurch has developed numerous SAS applications for various pharmaceutical companies for the last 11 years and overall has over 25 years experience developing software.
Mr. Shirish P Nalavade has 6 years of experience as a SAS software developer in the pharmaceutical industry and 9 years of overall experience in developing software.

Monday 4:30 - 4:50 GH-11	**Creating Correlated Variable Tables Dynamically**
	John Barrow, Aref Dajani, US Census Bureau

Certain survey imputation methods rely on a correlated variable. In this instance, it is advantageous to have a summary of the correlation matrix. During a recent imputation study of the Annual Survey of Local Government Finances, a two column static table was generated containing a column of all variables and a column of their highest correlated variables. To generate this table, PROC SQL and PROC CORR were used as well as MACRO coding. The table was used together with the %SCAN macro function to impute variables using their highest correlated variable. The power of this macro is that the table is generated dynamically with each imputation implementation. Thus, if variables are added to a survey or study, an updated table will be created without additional effort. The authors present two solutions: one using PROC ODS, one using arrays.

Mr. John Barrow is a mathematical statistician for the US Census Bureau. He has been in that position for 10 months but has been with the Census Bureau for 2 1/2 years. Mr. Barrow has a Masters in Mathematics from Bowling Green State University. Mr. Barrow has been using SAS for 5 years.

Tuesday Morning – Plaza I

Tuesday 9:00 - 9:20 GH-12	**Development of a SAS® Macro for Automated Data Cleaning of Major Outcomes of Interest in Hematopoietic Cell Transplantation**
	Peigang Li, **Min Chen, Zhiwei Wang,** Medical College of Wisconsin

Previously we have developed a set of SAS® macros to run against clean outcomes data so that univariate summary statistics can be automatically generated for major ouRTItcomes of interest, such as relapse, treatment related mortality, progression/disease free survival and overall survival (Li, Zhu and Chen, MWSUG Paper 177-2010). Among the outcomes, the data cleaning of relapse is the most time-consuming due to (a) evolving definitions of relapse; (b) applicable monitoring methodologies for acute or chronic hematological diseases (National Cancer Institute Relapse Workshop November 2009); (c) multiple sources of relapse information from comprehensive report forms (CRFs), transplant essential data (TED) forms, and legacy forms; (d) insufficient reporting by the transplant centers. We have designed and developed a SAS macro to automate and standardize the process of relapse cleaning for Acute Lymphoblastic Leukemia (ALL), Acute Myelogenous Leukemia (AML), Chronic Myelogenous Leukemia (CML), and Myelodysplastic Syndrome (MDS). We validated relapse status against clean outcomes data from early studies. Both sensitivity and specificity have achieved 99% from the most recent test, and a few misclassified non-relapse cases are likely due to hardcoding in early studies. The initial design required input data to include relapse-related key variables in addition to the patient unique identifiers. The final version only requires patient unique identifiers. The macro will greatly speed up CIBMTR studies from protocol development to creation of statistical analysis datasets.

Peigang Li is a Biostatistician at the Center for International Blood and Marrow Transplant Research (CIBMTR) of Froedtert and the Medical College of Wisconsin Clinical Cancer Center. Before joining the CIBMTR last year he was a Lead Programmer Analyst at the Biotechnology and Bioengineering Center of MCW where he started using SAS in 2004 and did extensive statistical analysis of mixed-effects models using both PROC MIXED in SAS and lme/nlme library in R.

Tuesday 9:30 - 9:50 GH-13	**Assign Overpayment to Insurance Data with Adjustments**
	Qiling Shi, NCI Information Systems, Inc

The purpose of this study is to assign overpayment to insurance data with adjustments using SAS®. Suppose we have an algorithm to calculate the overpayment for each insurance ID, we need to join back with the original data to get the adjustments and assign the overpayments to the insurance claims with adjustments. Since the overpayments are calculated by rolling up the original dataset, we need to join back to get the adjustments by the same insurance ID. There are some rules we need to consider to assign the values of overpayments after this join back. A SAS macro with procedures such as PROC SQL and DATA STEPS is employed to do the data analysis.

Qiling Shi is a statistician at NCI Information Systems in Nashville TN.

Tuesday 10:00 - 10:50 GH-03	**My annual reporting is requiring a full staff - Help!**
	Erin Lynch, Daniel O'Connor, Himesh Patel, SAS

With cost cutting and reduced staff everyone is feeling the pressure to finish their job. Preparing reports of any kind can be very time consuming. Not to worry SAS® is here to rescue. This presentation goes over a real world example of generating complex reports for charter schools. You will see how data from various sources (enrollment, attendance, assessment) is consolidated. Customization by school produces multiple instances of the same basic report. You will see how SAS software can create polished, detail rich, academic charts and graphs that can be automatically customized by school. Using the power of ODS and SAS/GRAPH procedures you can easily display data in a custom report that has never looked so good.
Examples and code in this presentation will help you generalize the usage. These same techniques can be applied to any industry. Going from data to displaying graphs is much easier.

Erin Lynch joined SAS in 2006 in Financial Solutions and is currently Development Test Manager for Education Practice. Prior to joining SAS, Erin was a SAS user and customer.

Tuesday 11:00 - 11:50 GH-17	**Using SAS® to Create Custom Healthcare Graphics**
	Barbara Okerson, WellPoint

SAS® graphics products can be used to create and deliver high-impact visuals, both as presentation-ready graphics and as data exploration displays. Using these graphics, users can explore, examine, and present data in an understandable manner while distributing their findings in a variety of formats to decision makers who can gain a quick, visual understanding of critical issues. Although SAS provides many ready-to-use graphics and graphic formats through SAS/GRAPH® software and Output Delivery System (ODS) graphics, sometimes other graphics displays are needed. SAS provides the tools to create almost any desired graphic. This paper shows how SAS can be used to create graphics that are not directly available. Examples are from the healthcare industry.

Results included in this paper were created with SAS® 9.1.3 or SAS® 9.2 on a Windows XP platform, using Base SAS®, SAS/STAT® software, and SAS/GRAPH. SAS® 9.1 or later is required for ODS graphics extensions.

Barbara Okerson Ph.D. is a Senior Health Information Consultant at WellPoint at their Richmond VA location where she supports client reporting. She is also the academic chair for SESUG 2011. She is a SAS Certified Professional a Certified Professional in Healthcare Quality and a Fellow Academy for Healthcare Management.
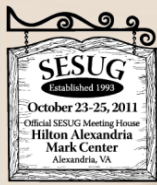
Hands on Workshops

Section Chairs: Bob Bolen Mira Shapiro
Southern Company *Analytic Designers LLC*

Monday Morning – Beech

Monday 9:00 - 10:15 HW-01	**Output Delivery System (ODS) - Simply the Basics**
	Kirk Paul Lafler, Software Intelligence Corporation

Are you looking for ways to improve the way your SAS® output appears? Output Delivery System (ODS) can help turn tired-looking output into great looking information with a purpose. Gone are the days when the only available formatting choice is boring output listings containing lifeless monospace fonts. ODS introduces exciting new features for your output. Using built-in format engines, ODS provides SAS users with a powerhouse of exciting capabilities to produce "quality" and publishable output. This hands-on workshop shows users how to select the output of interest using selection (and exclusion) lists; and how ODS is used to send selected data and output to output destinations including RTF, MS Excel spreadsheets, PDF, HTML, and SAS data sets.

Kirk Paul Lafler is consultant and founder of Software Intelligence Corporation and has been programming using SAS software since 1979. As an author of four books including PROC SQL: Beyond the Basics Using SAS (SAS Institute. 2004) he has written nearly five hundred peer-reviewed papers been an Invited speaker at more than three hundred SAS International regional local and special-interest user group conferences/meetings and is the recipient of 17 "Best" contributed paper awards.

Monday 10:30 - 11:45 HW-02	**SAS® Enterprise Guide® 4.3: Finally a Programmer's Tool**
	Marje Fecht, Prowerk Consulting; **Rupinder Dhillon,** Dhillon Consulting

Have you been programming in SAS® for a while and just aren't sure how Enterprise Guide® can help you? It isn't just a pretty face! This presentation demonstrates how SAS programmers can use SAS Enterprise Guide 4.3 as their primary interface to SAS while maintaining the flexibility of writing their own customized code.
We explore:
-navigating the views and menus
-using Enterprise Guide to access your existing programs and enhance processing
-utilizing Code Analyzer, Report Builder, and Document Builder
-exploiting the enhanced development environment including syntax completion and built-in function help
-adding Project Parameters and dynamic parameters to generalize the usability of programs and processes
-leveraging built-in capabilities available in SAS Enterprise Guide to further enhance the information you deliver.
Audience: SAS users who understand the basics of SAS programming and want to learn how to use Enterprise Guide. It is also appropriate for users of earlier versions of Enterprise Guide who would like to try out the enhanced features available in Enterprise Guide 4.3.

Marje Fecht is a Senior Partner with Prowerk Consulting and has been a SAS software user and instructor since 1979. Her recent consulting work has focused on developing efficient

"hands-free" systems for reporting analysis and Business Intelligence at major financial organizations. Marje enjoys active participation in SAS Users Groups and is serving as Operations Team Lead for SESUG 2011 and SAS Global Forum 2014 Conference Chair.

Monday Afternoon – Beech

Monday 1:00 - 2:15 HW-03	**Easier than You Think: Creating Maps with SAS® Enterprise Guide®** **Stephanie Thompson**, Datamum

Have you ever wanted to display data on a map to add more punch to your analysis? Sometimes seeing things geographically can put things into a completely new perspective. Letting your data tell a story on a map is easier than you might think. A two-step approach with SAS® Enterprise Guide® is all you need. From using supplied shape files right through customizing your graph, this hands-on workshop walks you through the process. Some best practices are also included to make sure your customers are impressed. They will never know how easy it really was.

__Stephanie Thompson__ has over twenty years experience in applying statistical and modeling techniques to solve business problems in various commercial and academic environments. Strong understanding of data structures proficient in a variety of analytical tools and familiar with multiple operating systems. Demonstrated skill at communicating and working across multiple functional areas and all organizational levels. Has made thirty presentations at local regional and international meetings and conferences to technical and non-technical audiences.

Monday 2:30 - 4:15 HW-04	**Creating Stylish Multi-Sheet Microsoft Excel Workbooks the Easy Way with SAS®** **Vince DelGobbo**, SAS

Transferring SAS® data and analytical results between SAS and Microsoft Excel can be difficult, especially when SAS is not installed on a Windows platform. This paper explains how to use Base SAS®9 software to create multi-sheet Microsoft Excel workbooks (for Excel versions 2002 and later). You learn step-by-step techniques for quickly and easily creating attractive multi-sheet Excel workbooks that contain your SAS output, and also methods for working with ODS styles and the ExcelXP ODS tagset. Most importantly, the techniques that are presented in this paper can be used regardless of the platform on which SAS software is installed. You can even use them on a mainframe! The use of SAS server technology is also discussed. Although the title is similar to previous papers by this author, this paper contains new and revised material not previously presented.

__Vince DelGobbo__ is a Senior Systems Developer in the Web Tools group at SAS. This group is responsible for developing the SAS/IntrNet Application Dispatcher and SAS Stored Processes. He is the developer for the HTML Formatting Tools and the SAS Design-Time Controls, and is developing other new Web- and server-based technologies, as well as integrating SAS output with Microsoft Office. He is also involved in the development of the ExcelXP ODS tagset. Vince has been a SAS Software user since 1982, and joined SAS in 1992.

Tuesday Morning – Beech

Tuesday 9:00 - 10:15 HW-06	**Ready to Become Really Productive Using PROC SQL?**
	Sunil Gupta, Gupta Programming

Using PROC SQL, can you identify at least four ways to:
- select and create variables
- create macro variables
- create or modify table structure
- change table content

Learn how to apply multiple PROC SQL programming options through task-based examples. This hands-on workshop reviews topics in table access, retrieval, structure and content, as well as creating macro variables. References are provided for key PROC SQL books, relevant webinars, podcasts as well as key SAS® technical papers.

Sunil Gupta *is the Senior Consultant at Gupta Programming. He has been using SAS® software for over 18 years and is a SAS Base Certified Professional. He is also the author of Quick Results with the Output Delivery System, Data Management and Reporting Made Easy with SAS Learning Edition 2.0, and Sharpening Your SAS Skills. Most recently, he is teaching his latest popular course, Best Practices in SAS Statistical Programming in Regulatory Submission.*

Tuesday 10:30 - 11:45 HW-07	**Two Guys On Hash**
	Paul M. Dorfman, Dorfman Consulting; **Peter Eberhardt,** Fernwood Consulting Group Inc.

The SAS® hash object is no longer new, yet its use is still not widespread. Where it is used, often the strengths and capabilities of the hash object are underutilized. In this workshop we will quickly step through some introductory steps to ensure everyone is 'on the same page'; however, it does assume workshop attendees have some knowledge of the hash object - if not from practical experience, at least from attendance at an introductory workshop. Once we lay some introductory groundwork we will work through some more interesting and challenging examples of the hash object in action. Take a deep breath (but don't inhale) as we start our journey into the world of hash.

Paul Dorfman *started using SAS while pursuing a Ph.D. in computational physics and went on to work as a SAS consultant in telecommunication financial insurance engineering and pharma industries. Paul's personal SAS interests lie in custom-coded DATA step implementations of high-performance programming algorithms and sophisticated high-volume data management. For his activities in the realm of SAS he received such awards as being nicknamed Sashole" by a team of COBOL bigots "Most Valuable SAS-Ler" and Hall-of-Famer by SAS-L and "The Hash-Man" by Paul Kent from SAS R&D. "*
Peter Eberhardt *is a long time SAS consultant and his company, Fernwood Consulting Group Inc, is a SAS Alliance Partner. Peter is a regular participant in his local user group as well as local user groups across Canada. In addition, he is actively involved in SESUG and SAS Global Forum.*

JMP

Section Chair: Carol Martell
UNC Highway Safety Research Center, Chapel Hill, NC

Brian Adams
Dominion Virginia Power

Monday Afternoon – Plaza III

Monday 1:00 - 1:50 JP-01	**JMP® Analytics Applied in Diagnostic Radiology and Neurosurgery Trauma Research** **Melvin Alexander**, University of Maryland

JMP® analytics helped trauma neurosurgeons and radiologists, diagnosing brain and spinal-cord injured patients, identify key factors affecting patient outcomes. A study in Neurosurgical Focus (June, 2009, 26, E8) showed how JMP discovered risk factors associated with subdural hygroma (SDG). SDG is the collection of cerebrospinal fluids over the brain following surgery that can result in delayed head-trauma complications. Sixty-eight patients were followed 36-weeks longitudinally, 39 patients had SDG, 29 patients without SDG. Likelihood Ratio and Fisher's exact test results indicated that motor vehicle accidents ($p < 0.007$) and falls ($p<0.005$) were most often linked with SDG development. Diffuse brain injuries were more prone to SDG complications ($p < 0.0299$).

JMP was used in another study by published in the American Journal of Roentgenology (2009, 192, 52-58) to identify quantitative, anatomic measurements of head and neck images that distinguished patients with and without Craniocervical Distraction injuries (CCDIs). CCDIs are often fatal head-neck injuries that have been associated with survival to the hospital. Improved emergent patient retrieval systems have increased survival to the hospital. However, CCDIs tend to be missed in physical examination and diagnostic imaging. Logistic regression and recursive partitioning determined that measures such as the midline occiput-C1 spinolaminar distance ($p=0.0016$), midline C1-C2 spinolaminar distance ($p<0.0001$), basion-dens distance ($p<0.0001$), sum of condylar displacement ($p=0.0002$), and basion-posterior axial line distance ($p<0.0001$) differentiated patients with CCDIs from patients without CCDIs.

This presentation examines the role JMP® software (version 7 or higher) plays in advancing follow-on investigations.

__Melvin Alexander__ is a Statistical Consultant in the Departments of Diagnostic Radiology and Neurosurgery at the University of Maryland's Medical Center. He has presented papers at SAS NESUG and JMP Users Group meetings. He earned a masters degree in Biostatistics from the University of North Carolina. He is an American Society for Quality (ASQ) Fellow and Certified Quality Engineer.

Monday 2:00 - 2:50	Making Your SAS® Data JMP® Through Hoops
JP-02	**Mira Shapiro**, Analytic Designers LLC

Longtime SAS® users can benefit by adding JMP to their repertoire. JMP provides an easy-to-use and robust environment for data exploration, graphics and analytics. This paper will provide an introduction to JMP 9 with an emphasis on features that SAS users will find useful. During this presentation, users will learn how to read their SAS data, import Excel spreadsheets, transform their data, explore distributions, create reports and create sophisticated graphics all in the JMP environment. Users will be introduced to the tools within the JMP 9 environment that provide a pathway to quickly learn how to use the product and some of its unique features.

Mira Shapiro is the Founder and Principal Consultant for Analytic Designers LLC. She has used SAS throughout her career as a Capacity Planner Consultant and Biostatistician. She holds a BA in Statistics / Computer Science and an MS in Public Health / Biostatistics and works on SAS training analytics and pre-sales projects across multiple industries.

Monday 3:00 - 3:20	JMP®ing in: A SAS® Programmer's look at JMP.
JP-03	**Barbara Okerson**, WellPoint

JMP® software provides a variety of ways of understanding, visualizing and communicating what your data is telling you, but until recently has been used mainly as a stand-alone product. This paper shows the advantages of adding JMP software and its functionality to a SAS® programming environment. Topics covered emphasize the connectivity with SAS, including: previewing SAS data, running SAS procedures from within JMP, using JMP for further exploration of SAS results, and using SAS geographic data with JMP. Through these features and others in a point-and-click environment, JMP can increase the power and functionality of SAS analytics.

Barbara Okerson Ph.D. is a Senior Health Information Consultant at WellPoint at their Richmond VA location where she supports client reporting. She is also the academic chair for SESUG 2011. She is a SAS Certified Professional a Certified Professional in Healthcare Quality and a Fellow Academy for Healthcare Management.

Monday 3:30 - 4:20	Create compelling visualizations with geographic data and JMP® 9
JP-04	**Jeff Perkinson**, SAS

JMP® 9 introduces exciting graphical support for geographic data. In this presentation, you will learn how to use the built-in background maps in any plot of geographic data. You will also see how to connect to a Web mapping service to display specialty maps like satellite images, radar images or roadways. Because JMP 9 can plot geographic shapes based on place names, we'll demonstrate how to use the flexible architecture to create your own shape files to plot any location, like a floor plan or campus. Lastly, we'll show how to convert SAS map data sets for use in JMP.

Jeff Perkinson is a Product Manager for JMP statistical discovery software from SAS. He began working with the first version of JMP in 1989, when he joined SAS. Before assuming his current role, he worked in SAS Technical Support and at SouthPeak Interactive, a SAS subsidiary that produced video games.

Monday 4:30 - 4:50	**Evaluating Consumer Price Behavior Using JMP®**
JP-05	**Josh Klick**, Bureau of Labor Statistics

The Consumer Price Index for the urban population (CPI-U) represents the month-to-month inflation experience of the average urban consumer within the United States. The CPI-U is based on expenditure weights and price changes for a defined market basket of goods and services. The expenditure weights are derived from the Consumer Expenditure Survey (CES) and are updated biennially. The change in prices is based on the Bureau of Labor Statistics (BLS) price survey, which accounts for nearly 90,000 price quotes collected each month. The purpose of this paper is to demonstrate an interactive analysis of the impact of hypothetical component inflation on overall inflation using JMP® Prediction Profiler. First, we will set up our CPI-U model in Microsoft Excel based on data queried from the BLS website. Next, we will define the model using the JMP® application within Excel. Last, we will interactively analyze how the change in a component group index impacts the All-Items aggregate index.

Josh Klick *is an economist for the Consumer Price Index in the Office of Prices and Living Conditions at the Bureau of Labor Statistics.*

Posters
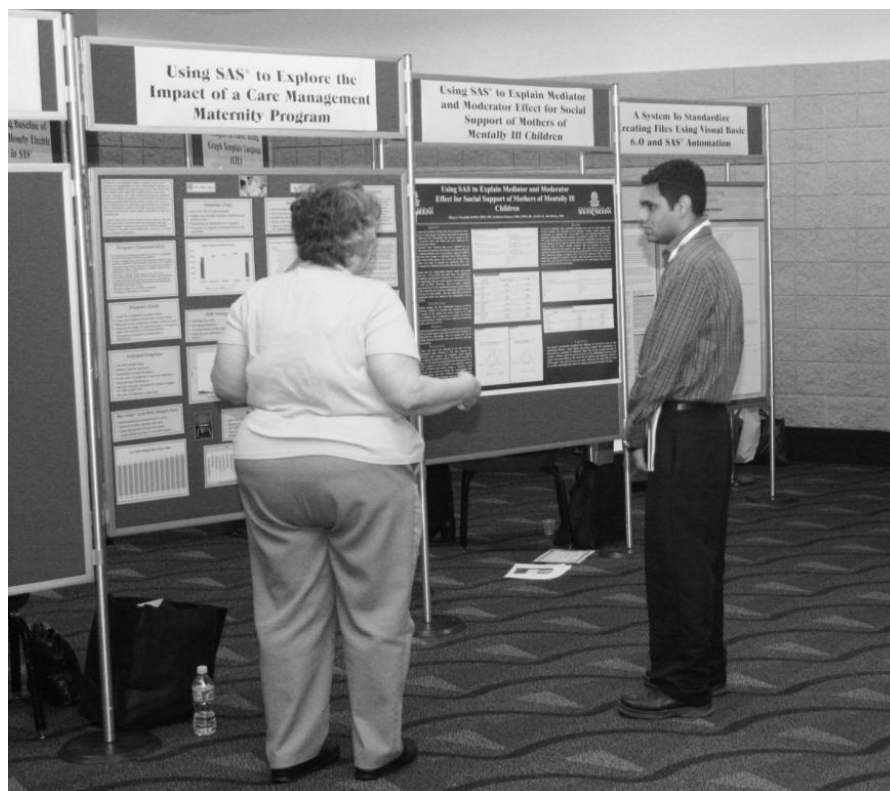
Section Chair: Milorad Stojanovic   Mirjana Stojanovic
                   RTI   *Duke University*

Monday Afternoon – Plaza Foyer

Monday 2:00 - 3:00 PO-01	**Coping with Job Loss** **Dianne Rhodes**, Connect, Int'l

Over the course of your career, the likelihood that you will lose your job due to unforeseen circumstances increases as you age. It may be a forced retirement, a layoff, being downsized or fired; odds are it will happen to you. This paper presents some coping strategies garnered from my experience with being laid off with one day's notice in January 2008.

Dianne Rhodes *first programmed in SAS on a Silent Seven Hundred using Wylbur. She currently is working on site at the US Bureau of the Census where she supports a rusty AF Application.*

Monday 2:00 - 3:00 PO-03	**Using SAS® to Ease the Proofing of Messy Text** **Richard La Valley**, Strategic Technology; **Nat Wooding**, Consultant

The SAS® Global Users Group has had a recent initiative to scan and OCR the older paper proceedings from the SAS User's Group International (SUGI) conference (SAS.One to SUGI 21) and make these available in machine readable form on sasCommunity.org. These are now available for SAS Users. Part of this project involved digitizing the attendance lists for use for future planning and analysis for the SAS Global Forum. The proofing of these lists proved to be a challenge due to misinterpretations in the optical character recognition process. The misinterpretations were due both to very minor printing variations in the text as well as the difficulty that the OCR software had in recognizing seeming clearly printed text. As an example, lower case ells were often rendered as upper case "I"s so that the name Bill was seen as BiII or Bi II. Methods used in recognizing misspellings included viewing the text with MicroSoft Word ® so that the spell check would flag problems and also SAS routines were written that pointed out some generic types of errors such as misspelled state names. This paper will provide a overview of the entire process and specifically detail the SAS routines which were used to get the data ready for analysis.

Richard La Valley *has been a SAS users for over 35 years. He was one of the first people in the US Census Bureau and MCI Telecommunications to use SAS and has been a member of the SAS Global Users Group Executive Board for over 25 years. Richard has been active with SUGI and SAS Global Forum for over 28 years.*
Nat Wooding *has been a SAS user for nearly 40 years with the majority of this time working with water quality and fisheries data for an electric utility. He is now an independent consultant and is active is his local SAS users' group VASUG as well as being a regular contributor to SAS-L.*

Monday 2:00 - 3:00 PO-04	**Scatter Plots Using PROC SGPLOT for that Thursday Presentation**
	Sharon Hirabayashi, Westat

It always starts with "I have a simple request." This time, it was a request for a scatter plot of two variables by a third variable in a listing. The PROC PLOT was nice, but, could we overlay the plots instead of having a separate plot for each by-group? Could we label the points in the plot with the by-group values? Could we group the points using the categories of another variable, using different symbols and colors to distinguish the groups? Could we add a 45-degree reference line? Could we do this for twelve other plots, maintaining the same legend across all thirteen plots? And, since the presentation is on Thursday, can we have the plots ready by Tuesday? Egads. Thank goodness for SAS® online documentation and that our company had migrated to SAS 9.2! This paper details how SAS ODS Graphics, PROC SGPLOT, and the %MODSTYLE macro were used to quickly and painlessly generate not just nice graphics, but really nice graphics for that Thursday presentation.

Sharon Hirabayashi has been an avid SAS programmer for more than 25! years.

Monday 2:00 - 3:00 PO-05	**A Macro to Change Windows Filenames**
	Daniel Levitt, HSRC

I was recently asked to change all the file names in a series of folders by adding a numeric sequence number to each filename. The files were to be ordered by creation date and numbered independently of other folders. Renaming one file at a time can be extremely tedious especially when there could possibly be hundreds of files in a project folder. The program I wrote allowed me to rename all the project folder files in place using a data step, PROC SQL, and a simple Macro. This SAS® program eliminated the need to look at the files and avoided having to copy the entire folder while they were renamed. This program has saved me an enormous amount of time and energy which I then used for other projects.

Dan Levitt has been working at HSRC for a little over a year now. His work has required him to learn a variety of data management and manipulation skills.

Monday 2:00 - 3:00 PO-06	**CI_MEDIATE: A SAS® Macro for Computing Point and Interval Estimates of Effect Sizes Associated with Mediation Analysis**
	Thanh Pham, Eun Kyeng Baek, Merlande Petit-Bois, Jeffrey Kromrey, University of South Florida
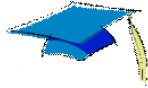
Measures of effect size are recommended to communicate information on the strength of relationships. Such information supplements the reject/fail-to-reject decision obtained in statistical hypothesis testing. Because sample effect sizes are subject to sampling error, as is any sample statistic, computing confidence intervals for these statistics is a useful strategy to represent the magnitude of uncertainty about the corresponding population effect sizes. This paper provides a SAS® macro that uses bootstrapping to compute confidence intervals for an effect size associated with mediation analysis models. Using SAS/IML®, the macro produces point and interval estimates of an R-squared effect size that represents the proportion of variance accounted for by the mediated effect. This paper provides the macro programming language, as well as an example of the macro call and output. Finally, the results from a simulation study investigating the accuracy and precision of the estimates are presented.

Thanh Pham is currently pursuing his Ph.D in Curriculum and Instruction with an emphasis in Measurement and Evaluation and is a graduate research assistant in the Department of Educational Measurement and Research at the University of South Florida. He had six years experience working in computer programming and has been studying and working with SAS for two years. He has been assisting graduate students and professors on their statistical

analysis for educational research classes as well as on their research projects. He holds a M.A. in Applied Economics, and a B.S. in Economic Mathematics.

Eun Kyeng Baek *is pursuing her Ph.D in Educational Measurement and Research at the University of South Florida. She is currently a graduate assistant at the Center for Research Evaluation Assessment & Measurement and at the Consulting Office in Research and Education. She earned her B.A in Psychology and her M.A in Industrial & Organizational Psychology specialization on Psychometrics. Her work focuses on evaluation educational research and quantitative data analysis methods. She has been used SAS for her work such as single case study hierarchical level modeling and simulation study*

Merlande Petit-Bois *is pursuing her Ph.D in Measurement Research and Evaluation (MRE) at the University of South Florida. She is currently a graduate assistant for the Center for Research Evaluation Assessment and Measurement (CREAM) where she works extensively on several educational program evaluation projects. Merlande also works for the Consulting Office in Research and Education (CORE) assisting graduate students and professors on their research projects. Merlande utilizes SAS daily as a student an evaluator and as a quantitative data analyst.*

Jeffrey D. Kromrey *is a Professor in the Department of Educational Measurement and Research at the University of South Florida. His specializations are applied statistics and data analysis. His work has been published in Communications in Statistics Educational and Psychological Measurement Multivariate Behavioral Research Psychometrika Journal of Educational Measurement and Educational Researcher. He has been a SAS programmer for 25 years and uses SAS for simulation studies as well as for applied data analysis.*

Monday 2:00 - 3:00 PO-08	**MISSING_ITEMS: A SAS® Macro for Missing Data Imputation in Summative Response Scales** **Patricia Rodriguez de Gil, Jeffrey Kromery**, University of South Florida

Missing data are usually not the focus of any given study but researchers frequently encounter missing data when conducting empirical research. Missing data for Likert-type response scales, whose items are often combined to make summative scales, are particularly problematic because of the nature of the constructs typically measured, such as attitudes and opinions. This paper provides a SAS® macro, written in SAS/IML® and SAS/STAT®, for imputation of missing item responses that allows estimation of person-level means or sums across items in the scale. Imputations are obtained using multiple imputation (MI), single regression substitution (SRS), relative mean substitution (RMS), and person mean substitution (PMS). In addition, the results of a simulation study comparing the accuracy and precision of the imputation methods are summarized.

Patricia Rodríguez de Gil *is a doctoral candidate in Social Studies and Educational Measurement. She received her B.A in Elementary Education from the National Normal School of Mexico, and specialized in History at the Higher Normal School of Mexico. Upon relocating to Tampa, she enrolled at the University of South Florida and earned her M.A.T. in Secondary Social Studies. Patricia was the recipient of the Successful Graduate Latina Student 2007, and the recipient of the OLE Award in 2009, both at the College of Education. She also received the Best Overall Graduate Poster Award at FERA 2008. Patricia's research interests are: The study of the effects of class, race, and school context associated with the dropout problem, as well as the ongoing struggles around culture and power that presently define daily life in schools. State standards, the politics of testing and student resilience are also research interests.*

Dr. Kromrey's *specializations are applied statistics and data analysis. He has a general interest in the behavior of numbers and summaries of numbers in the context of research. His work has been published in Communications in Statistics Educational and Psychological Measurement Journal of Experimental Education Multivariate Behavioral Research Journal of Educational Measurement Psychometrika and Educational Researcher. He was the associate*

editor for Review of Educational Research and is currently editor of the Florida Journal of Educational Research and executive editor of Journal of Experimental Education.

Monday 2:00 - 3:00 PO-09	**Using SAS® to Streamline Periodic Reporting of Summary Statistics: Proc Format, Proc Freq, Proc Means,and Output Delivery System** **Berwyn Gonzalvo**, Office of Personnel Management

With the need to analyze and report survey results periodically, SAS can be used to streamline and record the steps, from formatting to performing statistics to producing report-ready summary statistics of survey data. This paper shows how to extract and format raw survey data from Excel, produce the means for each of the participating organizations, and report using the Output Delivery System. By saving the steps and procedures used in producing the summary statistics report, not only is the process streamlined in each iteration but the statistics are also produced in a consistent manner allowing for reliable comparability in the trend analyses of the sequence of data points.

Berwyn Gonzalvo *is a program analyst at OPM. He has a PhD in Organizational Psychology. He is involved in analyzing various survey data related to HR and organizational development. He has been using SAS since 2008.*

Monday 2:00 - 3:00 PO-10	**Using SAS® to Examine Aging Expectation (ERA-38) for Older Adults** **Abbas Tavakoli**, University of South Carolina; **Julie Freelove-Charton**, California State University

Background: Our population is getting older every day. The numbers of older adults (aged 65 years or older) will increase to 72 million by 2030 [CDC &MCF 2007]. Participation in healthy aging behaviors, such as physical activity and a healthful diet, is one of the few known ways to prevent the onset of chronic disease and stem the rising costs of health care.
Objectives: To test a multidimensional aging-expectation scale for older adults.
Method: This exploratory correlation study used a cross-sectional survey design. Participants were 459 older adults (65 or older) from the Greater Columbia metropolitan area of South Carolina. The 38-item Expectations Regarding Aging (ERA-38) survey was used to measure aging-expectations (Sarkisian, Hays, & Mangione, 2002). Instrument testing consisted of a series of factor analysis procedures including maximum likelihood, using squared multiple correlation and Promax rotation. Reliability was assessed using coefficient alpha estimates. Multiple imputations (MI) were used to replace the missing data for item.

Results: The missing data for the 38 items ranges from 1-30. MI method used to replace the missing value for each item. Thirty-eight items loaded on three factors of ageing expectation. The weighted variance explained by each factor was: 1) aging process (35%), 2) being isolated (33%), and 3) physical function (31%), for a total of 99% explained variance for all three factors. Factor loadings ranged from 0.32 to 0.75. Coefficient alpha estimates were 0.87 - 0.92 across the three subscales and 0.95 for the total scale. Examination of Pearson's correlation indicated each subscale was positively correlated with every other subscale and the total scale. The range of the Pearson's correlation coefficients were from 0.60 to 0.89.

Conclusion: Factor analysis showed three factor for aging- expectation (ERA-38) and excellent reliability for total scales and subscales.

Abbas S. Tavakoli DrPH MPH ME is a Director of Statistical Laboratory in the College of Nursing University of South Carolina. He received a Bachelor of Science in Animal Husbandry from Tehran University Tehran Iran 1985 a Master of Public Health in Biostatistics at the University of South Carolina in 1989 a Doctor of Public Health in Biostatistics at the University of South Carolina in 1998 and a Master of Engineering in Computer Engineering at the University of South Carolina in 2003. Dr. Abbas Tavakoli currently works as Director of Statistical Laboratory with college of Nursing at the University of South Carolina. Dr Tavakoli has worked with office of research College of Nursing since 1992. He worked with Health Statistics at Raleigh (NC) from 1990 to 1992. His job entails teaching involves with research and using many statistical procedures. He teaches Statistics courses for nursing students.

Julie Freelove-Charton is a fellow with the Institute of Gerontology at California State University Fullerton a senior research associate at the Center for Behavioral Epidemiology and Community Health and an adjunct professor at the School of Exercise Science and Nutrition at San Diego State University. She received her PhD in health behavior from the Arnold School of Public Health at the University of South Carolina and holds an MS in kinesiology a professional certificate in gerontology and a BA in psychology. Her research focuses on promoting healthy aging behaviors and well-being the role of self-perceptions of aging on health caregiver health and evidence-based programming for the prevention and self-management of chronic conditions across the life span. She has worked extensively with community and state-level organizations on establishing productive multiprofessional collaborations for the development and implementation of evidence-based community health programs. She is also a published author contributing to academic papers and books and has presented at national and international scientific and industry conferences. Recently she was elected to the board of directors for the California Council of Gerontology and Geriatrics. Her current project is the development of the Travel Fit Club™ a wellness program to promote social support for participation in lifestyle behaviors that are essential for healthy aging including physical activity lifelong learning cognitive health and social engagement.

Monday 2:00 - 3:00	**Resolving OpenCDISC Error Messages Using SAS®**
PO-11	**John Gerlach**, Independent Consultant; **Virginia Redner**, Merck & Company

The Clinical Data Interchange Standards Consortium (CDISC) Study Data Tabulation Model (SDTM) defines the required standard for the submission of human clinical trial data to a regulatory agency. OpenCDISC Validator is a free, open-source tool that is embraced by many pharmaceutical and biotechnology companies and used to assist in validating clinical data in accordance with the ever-evolving CDISC standards. Although OpenCDISC does a thorough job of validating CDISC domains, the application produces error messages that can be difficult to understand, let alone resolve. Interpreting the output and determining the necessary course of action is not always straightforward. Certainly, creating and validating clinical data requires a multi-faceted approach that includes having knowledge of the CDISC standard, experience with Base SAS®, as well as an und777erstanding of clinical data. OpenCDISC introduces another factor to that endeavor. This paper gives an overview of the OpenCDISC application and discusses examples of programming techniques for resolving data issues.

John Gerlach has been using the SAS System for 25 years specializing in the health and finance industries. John has written over 35 papers including SAS solutions for Sudoku and Kenken puzzles. John holds a BA in Italian literature.
Virginia Redner has been working with SAS software for the past 23 years and has experience working in a variety of industries including insurance banking and pharmaceuticals. For the past 10 years she's been at Merck & Company and is currently a Senior Scientific Programming Analyst working in the Scientific Programming Standards group.

| Monday 2:00 - 3:00 PO-12 | **Time Series Regression: Using Proc GPLOT and Proc REG Together to Make One Great Graph** |
| | **William Zupko**, US Census Bureau |

Time series regression is a helpful statistical tool to show relationships between two variables over a period of time. However, many users can find the barrage of numbers at best unhelpful, and at worst, undecipherable. Using the shipments and inventories' historical data from the US Census Bureau's office of Manufacturer's Shipments, Inventories, and Orders (M3), we can create a graphical representation of two time series with proc gplot and map out reported and expected results. By combining this output with results from proc reg, we are able to highlight problem areas that may need a second look. The resulting graph shows which dates have abnormal relationships between our two variables and presents the data in an easy to use format which even users unfamiliar to SAS can interpret. This graph is ideal for analysts finding problematic areas such as outliers and trend-breakers or for managers to quickly discern complications and the affect they have on overall results.

William Zupko is a survey statistician with the US Census Bureau. He graduated as an economics major from BYU. He uses SAS as a data analyst to program edits imputations and finds other possible problems.

| Monday 2:00 - 3:00 PO-14 | **Using SAS® GTL to Visualize Your Data when there is Too Much of it to Visualize** |
| | **Perry Watts, Nate Derby**, Stakana Analytics |

In many of the SAS® Institute publications about the new ODS statistical graphics, there is an introductory statement that defines an "effective" graph as one that reveals "patterns, differences and uncertainty that are not readily apparent in tabular output" (Kuhfeld, 2010; Rodriguez, 2008; Rodriguez and Cartier, 2009). Good graphs are also said to "provoke questions that stimulate deeper investigation, and ... add visual clarity and rich content to reports and presentations." Developing a good graph becomes a challenge, however, when input data map to crowded displays with overlapping points or lines. Such is the case with the Framingham Heart Study of 5209 subjects captured in the sashelp.heart data set and a series of 100 cumulative booking curves for the airline industry. In addition, interleaving time series plots can be difficult to interpret, and patterns can be missed when lattice plot panels are charted out-of-order. In the paper, transparency, layering, data point rounding, median calculation, and color coding are among the techniques that are evaluated for their effectiveness to add visual clarity to graphics output. The following Graph Template Language (GTL) statements are referenced in the paper: ENTRY, HISTOGRAM, SCATTERPLOT, LINEPARM, REFERENCELINE, BANDPLOT, and SERIESPLOT plus layouts OVERLAY, DATAPANEL, LATTICE, and GRIDDED. GTL is chosen over SG PROCEDURES because of its greater graphics capability.

Perry Watts uses SAS software for information visualization. Currently she is migrating from traditional SAS/GRAPH to ODS statistical graphics. To make the transition, she has been learning all she can about ODS styles that have replaced GOPTIONS in formatting graphics output. Two user-group papers are the by-product of her research. Perry's knowledge about color and axes configurations as well as on-the-job experience solving graphics problems has also enabled her to come up to speed in ODS statistical graphics. While she is a veteran presenter, this is her first appearance at SESUG.

Nate Derby is President of Stakana Analytics a statistical consulting company. He has been programming in SAS since 2004 specializing in time series forecasting and Excel applications. Nate has presented award-winning papers at local regional and global SAS conferences. He

co-chaired the PNWSUG '09 Conference and serves on the executive committees for the Puget Sound SAS Users Group (PUGSUG) and the Vancouver SAS Users Group (VanSUG). Nate has worked as a statistician and consultant at such organizations as the Bureau of Labor Statistics Looking Glass Analytics and Intel.

Monday 2:00 - 3:00 PO-15	**Practical Approaches to Counting in SAS®: How to Get Started When You Don't Know Where to Begin** **Sharon Avrunin-Becker**, Westat

One of the wonderful things about SAS® is that there are several ways to approach a programming problem with no one way being right or wrong. Some ways take more time to keyboard out all the steps and some ways take up less lines of programming but take up more of your brain energy trying not to type a few extra lines of code. One of the things SAS is frequently used for is to create reports which have calculations of numbers. The biggest question is how do I get my number totals. This paper will show you two different scenarios and how the same answer can be derived in totally different ways.

Sharon Avrunin-Becker has been using SAS for over 15 years.

Monday 2:00 - 3:00 PO-17	**Using Dictionary Tables to Profile SAS® Datasets** **Phillip Julian**, Bank of America

Data profiling is an essential task for data management, data warehousing, and exploring SAS® datasets. TDWI (http://tdwi.org) extends the usual definition of data profiling to include data exploration. This paper presents two SAS programs, Data_Explorer and Data_Profiler, that implement the TDWI definition. These SAS programs are low-cost, free solutions for data exploration and data profiling. Data_Explorer searchs for all SAS datasets, and gathers essential dataset and file attributes into a single report. Data_Profiler summarizes the values of any SAS dataset in a generic manner, which eliminates the need for custom SQL queries and custome programs to summarize what a dataset contains. These programs have been used in banking and state government. They should also be useful in the pharmaceutical industry for validating SAS datasets and managing data repositories.

Phillip Julian *has almost 30 years of SAS programming experience in many industries including state government SAS Institute telecommunications pharmaceuticals and now banking. Phillip loves the challenge of a complex technical problem and can usually find an excellent solution in SAS.*

Monday 2:00 - 3:00 PO-19	**MV_META: A SAS® Macro for Multivariate Meta-Analysis** **Julie Gloudemans, Corina Owens, Jeffery Kromery**, University of South Florida

Meta-analysis of multiple outcomes and multiple treatments from a single study require more sophisticated models than the typical meta-analytic models that assume independence of effect sizes. Three different approaches have been suggested to accommodate dependent effect sizes: a multivariate multi-level approach (Kalaian & Raudenbush, 1996), a robust variance estimation strategy (Hedges, Tipton, & Johnson, 2010), and the traditional univariate random effects approach (Hedges & Olkin, 1985). This paper presents a SAS® macro that calculates multivariate meta-analysis confidence intervals, mean effect sizes, and estimated effect size variances for each outcome variable given a sample of effect sizes and sample sizes. This paper includes a demonstration of the macro, sample inputs and output, and an examination of the accuracy and precision of the three approaches based on a simulation study.

Julie A. Gloudemans is a doctoral candidate in Educational Measurement and Research at the University of South Florida. She is an active member of American Educational Research Association and has presented at several conferences. She is also a senior program analyst for a federal contractor providing evaluation and technical support. In the course of her work and school she uses SAS for large database management, applied data analysis, and simulation studies.

Corina M. Owens is pursuing her Ph.D. in Educational Measurement and Evaluation at the University of South Florida. Corina is an active member of Phi Kappa Phi Honor Society American Evaluation Association American Statistical Association and American Educational Research Association. She has also been published in academic journals such as Computer Applications in Engineering Education Behavioral Research Methods and the Journal of Experimental Education. Her work focuses on evaluation educational research and quantitative data analysis methods.

Jeffrey D. Kromrey is a Professor in the Department of Educational Measurement and Research at the University of South Florida. His specializations are applied statistics and data analysis. His work has been published in Communications in Statistics Educational and Psychological Measurement Multivariate Behavioral Research Psychometrika Journal of Educational Measurement and Educational Researcher. He has been a SAS programmer for 20 years and uses SAS for simulation studies as well as for applied data analysis.

Monday 2:00 - 3:00	**Proc CDISC: Implementation and Assessments**
PO-20	**Sheetal Nisal**, Independent Consultant; **Shilpa Edupganti** , Eliassen Group

With the rapid developments in the industry standards like CDISC and with demanding FDA requirements, CROs and sponsor companies are trying to implement various data models developed by clinical data interchange standards consortium (CDISC). Proc CDISC is one of the important procedure which provides a way to import and export an XML document in CDISC ODM (operational data model) and SDTM (Study Data Tabulation model) formats. It provides functionality and features that is based on specific CDISC model. This paper introduces and describes application of proc CDISC for different domains, and illustrates the differences in output produced by proc CDISC when applied to different type of metadata.

Sheetal Nisal has completed Masters of Business Administration. For last several years she is a SAS user and independent consultant.
Shilpa Edupganti has pursued her Masters in Biomedical Engineering. she has been working as a SAS Programmer for last several years and currently she is working as a Senior SAS Programmer at Eliassen Group.

Monday 2:00 - 3:00	**Permutated-block randomization with varying block sizes using SAS® Proc Plan**
PO-21	**Lei Li**, RTI

Permuted-block randomization with varying block sizes using SAS® Proc Plan Permuted-block randomization is often used in determining treatment assignments for clinical trials. This method allows flexibility in achieving balanced allocation of subjects among treatment groups and is further enhanced with increased randomness of the assignments by the use of varying block sizes. Chow and Liu (2004) illustrated the implementation of the permuted-block randomization with a fixed block size using the SAS PROC PLAN. This paper presents a modified version of their SAS program to implement the permuted-block randomization with varying block sizes. This program is simple to run and self-contained. Users can easily adapt the program to meet various design specifications, produce analytical statistics and present the generated randomization schedule in a desired format.

Lei Li is a biostatistician at the RTI International. He primarily works on design and analysis of epidemiological studies and clinical trials arising from data coordinating center projects.

Monday 2:00 - 3:00 PO-23	A Coding Practice for Preparing Adaptive Multistage Testing
	Yung-chen Hsu, American Council on Education

The purpose of this paper is to present a simulation study of a coding practice for preparing adaptive multistage testing (MST) designs for a credentialing testing program in the coming years. MST is an adaptive test administration method in which a test form is tailored as a sequence of pre-constructed modules at item set level. At each adaptation point a module is selected to match the proficiency estimate of the examinee based on cumulative performance on previously administered modules. For some testing programs, MST is considered a better fit in their future test development because the test delivery model offers a balanced tradeoff and a promising amelioration between the computerized adaptive tests and the traditional linear fixed-length tests. In the simulation, a macro is developed to estimate the proficiency scores based on item response theory. The algorithm is implemented with PROC IML using Newton-Raphson method. To assess the classification consistency and decision accuracy for examinees, kappa coefficients from PROC FREQ and additional consistency measures are computed to more fully characterize the extent of the agreement. Practical policy questions and test development considerations are also discussed.

Yung-chen Hsu is a senior psychometrician at American Council On Education.

Monday 2:00 - 3:00 PO-24	Breastfeeding in Developing Countries: A Case Study of Nepalese Children
	Parwen Parhat, George Mason University

Breastfeeding is beneficial for the health of the child and the breast feeding mother. It is the recommended practice by the American Academy of Pediatrics. Many studies have been conducted on the effect of breastfeeding on children's health in the developed countries, whereas little is known about breastfeeding in the underdeveloped countries. This study characterized the relationship between breastfeeding and children's age and gender in Nepalese children. Using secondary data that were collected on 200 children at 5 time points, spaced approximately 4 months apart (1000 total observations), a logistic regression model was developed to regress the breastfeeding status on children's age and gender. This study utilized the Generalized Estimating Equations (GEE) from GENMOD procedure in SAS 9.2 to examine three situations of the distribution of variance of the model error term: compound symmetry (QIC = 539.6898), autoregressive (1) (QIC =525.8675), and independent (QIC =523.3782). Preliminary results suggest that the independent covariance structure fits the data best. The study found no significant gender effect on breastfeeding status. The probability of breastfeeding was negatively associated with increasing age of the child but the magnitude of this effect increasingly diminished as age increased.

Parwen Parhat is a PhD student in Statistical Science and is interested in applying advanced statistical techniques to health services research.

Monday 2:00 - 3:00 PO-26	**Business Intelligence and Analytics: Complements within a Decision Support Culture** **Alan Mann, Emile Barnes, Albert Briggs**, Deloitte Consulting, LLP

"Everybody talks about the weather, but nobody does anything about it!" is a common cultural saying, which could apply to Business Intelligence (BI), but one might replace the 'does' with 'knows much!' Questions to be answered are: What is BI? What is Analytics? When does a collection of enterprise data become Business Intelligence? When does data get expressed as Analytics, but not necessarily Business Intelligence? Do the 2 overlap? How does an analytic and data transformation product such as SAS contribute to the overall build of a BI enterprise? The poster visits the semantic adventure that vexes enterprise planners, application developers, and managers. While Business Intelligence is the overall collection of organized data into knowledge, is it a superset or subset of Analytics? Can you have analytics without Business Intelligence? Therefore, we may assume an overlap, not a dichotomy. Could BI stand without an analytic component? An analytic component, from an arithmetic script to a massive statistical analysis could stand on its own, and could compete with a business intelligence plan as a method to the same solution. This poster will define the boundaries and framework of definition, in hopes that a guide to defining project scopes will follow the solution rather than the label.

Alan Mann is a Specialist Senior in the Federal Information Management practice of Deloitte Consulting. He has more than 20 years experience leading and delivering data intelligence, data integration, business intelligence, and decision support products to a variety of Fortune 100 firms and government. Specialties are healthcare information delivery (epidemiology and outcomes research), financial data modeling, predictive analytics, and government applications, both military and civilian. Alan holds a BA from the University of Delaware.
Emile Barnes is a PMP certified professional with over 10 years experience in the area of project management and business analytics consulting mainly within the Department of Defense.   Emile has experience leveraging and implementing SAS Business Intelligence solutions for the Defense Readiness Reporting System Military Health System's TRICARE Defense Logistics Agency and the Department of Defense Office of the Inspector General. Emile holds a Bachelor's degree from Boston College and an MBA from American University.
Albert Briggs is a seasoned SAS Professional working in Deloitte's Federal INformation Management practice. Prior to joining Deloitte Al served as a Senior SAS Consultant with several organizations such as Westat Bank of America Fannie Mae Freddie Mac The Federal Reserve Census Bureau and Blue Cross / Blue Shield solving many complex business problems using advanced coding techniques within SAS Stored Procedures. Al holds a BS in Computer Information Science and has done graduate work in Statistics at the University of Maryland.

| Monday 2:00 - 3:00 PO-27 | **Does SAS® Distance Measurement Differ from ArcGIS Distance Measurement?** |
| | **Imam Xierali**, American Academy of Family Physicians (AAFP) |

Distance calculation on the surface of the earth is an important application for many fields of study such as geography and public health. This study is to examine the differences between the distance calculation with geodist function in SAS® 9.2 and distance measures with ArcGIS 9.3. Distance measures between a sample of points are calculated using SAS 9.2 and the same distances are also measured with ArcGIS 9.3 encompassing from very large to vary small scales. The correspondence between the measurements from the two software applications are then analyzed. Results suggest that there are significant differences between the SAS distance function and ArcGIS distance calculation between the points when projections of points are important. When distance measures are important factors for one's analysis, consideration of different geodetic models and projection distortions could be important as well.

Imam Xierali is Health Geographer and Research Scientist at the Robert Graham Center. His research interests are in spatial disparities in health and health care geospatial technologies for health applications statistical modeling and spatial statistics.
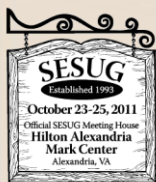
Reporting & Information Visualization

Section Chair: Carol Martell
UNC Highway Safety Research Center, Chapel Hill, NC

Brian Adams
Dominion Virginia Power

Monday Morning – Plaza III

Monday 9:00 - 9:50	**Introduction to ODS Graphics for the Non-Statistician**
RV-01	**Mike Kalt, Cynthia Zender**, SAS

Are you a History, English, or other Humanities major who's stumbled into SAS® programming? Are you a business analyst or report analyst whose statistical knowledge ends with mean, median, percentiles and standard deviation? Don't know a fitted loess curve from a survival estimate? Need to produce some series plots and bar charts and maybe the occasional box plot? Don't Panic! This presentation is for you!

This presentation illustrates how to use the new SG procedures, in particular, SGPLOT and SGPANEL to produce simple plots and bar charts. Once you know the basics of the SGPLOT statements to produce single graphs, learning SGPANEL to created paneled output will be a cinch. Through concrete examples, this paper will guide you through the basics of producing and customizing simple graphs using the new SG procedures. In addition, use of the ODS GRAPHICS statement for setting graph options will be covered. (Note: The SGSCATTER and SGRENDER procedures fall outside the scope of this presentation.)

Mike Kalt is a Technical Training Specialist in the Education Division at SAS, and teaches courses covering Base SAS, SAS/GRAPH, and the SAS Macro Language. He has been with SAS since 1981. Prior to joining the Education Division in 2003 he was a manager in the Technical Support Division and was responsible for customer support for SAS graphics products. Mike has a BA from the University of Michigan and a PhD from the University of North Carolina in Political Science.

Monday 10:00 - 10:50	**A PICTURE is Worth Alot of PUTS**
RV-02	**Carol Martell**, UNC Highway Safety Research Center

This paper demonstrates the use of PICTURE formats to deliver SAS® data to nonstandard destinations, including OpenGIS® KML for Google Earth™ and ArcGIS®.

Carol Martell has been using SAS since the '70s. It is her favorite tool for data manipulation.

Monday 11:00 - 11:50	**Using SAS® GTL to Visualize Your Data when there is Too Much of it to Visualize**
RV-08	**Perry Watts, Nate Derby**, Stakana Analytics

In many of the SAS® Institute publications about the new ODS statistical graphics, there is an introductory statement that defines an "effective" graph as one that reveals "patterns, differences and uncertainty that are not readily apparent in tabular output" (Kuhfeld, 2010; Rodriguez, 2008; Rodriguez and Cartier, 2009). Good graphs are also said to "provoke questions that stimulate deeper investigation, and ... add visual clarity and rich content to reports and presentations." Developing a good graph becomes a challenge, however, when input data map to crowded displays with overlapping points or lines. Such is the case with the Framingham Heart Study of 5209 subjects captured in the sashelp.heart data set and a series

of 100 cumulative booking curves for the airline industry. In addition, interleaving time series plots can be difficult to interpret, and patterns can be missed when lattice plot panels are charted out-of-order. In the paper, transparency, layering, data point rounding, median calculation, and color coding are among the techniques that are evaluated for their effectiveness to add visual clarity to graphics output. The following Graph Template Language (GTL) statements are referenced in the paper: ENTRY, HISTOGRAM, SCATTERPLOT, LINEPARM, REFERENCELINE, BANDPLOT, and SERIESPLOT plus layouts OVERLAY, DATAPANEL, LATTICE, and GRIDDED. GTL is chosen over SG PROCEDURES because of its greater graphics capability.

Perry Watts uses SAS software for information visualization. Currently she is migrating from traditional SAS/GRAPH to ODS statistical graphics. To make the transition, she has been learning all she can about ODS styles that have replaced GOPTIONS in formatting graphics output. Two user-group papers are the by-product of her research. Perry's knowledge about color and axes configurations as well as on-the-job experience solving graphics problems has also enabled her to come up to speed in ODS statistical graphics. While she is a veteran presenter, this is her first appearance at SESUG.
Nate Derby is President of Stakana Analytics a statistical consulting company. He has been programming in SAS since 2004 specializing in time series forecasting and Excel applications. Nate has presented award-winning papers at local regional and global SAS conferences. He co-chaired the PNWSUG '09 Conference and serves on the executive committees for the Puget Sound SAS Users Group (PUGSUG) and the Vancouver SAS Users Group (VanSUG). Nate has worked as a statistician and consultant at such organizations as the Bureau of Labor Statistics Looking Glass Analytics and Intel.

Tuesday Morning – Plaza III

Tuesday 9:00 - 9:20 RV-04	**Graphing a Progression of Time Series Plots** **Nate Derby**, **Laura Vo, Perry Watts,** Stakana Analytics

Graphing is an essential step for exploratory data analysis and statistical modeling. However, when graphing an ordered progression of time series plots, it can be difficult to effectively display the progression without looking disorganized and chaotic. This paper shows a couple of approaches to this problem using the GPLOT procedure from SAS/GRAPH software and the LAYOUT OVERLAY, LAYOUT DATAPANEL and SERIESPLOT statements from the Graphic Template Language (GTL) in ODS statistical graphics.

Nate Derby is a statistician specializing in time series analysis and forecasting who got his MS in statistics in 2004 from the University of Washington. He has worked for the German Institute for Economic Research, Princeton Brand Econometrics, T-Mobile, and Washington Mutual. He is now the owner of Stakana Analytics, specializing in business forecasting.
Laura Vo has a BS in statistics from the University of Washington specializing in survey sampling. She has been programming in SAS since the summer of 2010. She was a Young Professional Award winner for the 2010 Western Users of SAS Software Conference.
Perry Watts uses SAS software for information visualization and applications development. Her SAS Press book Multiple Plot Displays: Simplified with Macros" was published in 2002. Currently she is migrating from traditional SAS/GRAPH to ODS statistical graphics. Perry has a Bachelor's Degree in Computer Science and a Master's Degree in Information Systems. She has a long history of presenting papers at SAS user group conferences where she has won awards and competitions for her graphics papers and displays."

| Tuesday
9:30 - 9:50
RV-05 | **Printable Spreadsheets Made Easy: Utilizing the SAS® Excel XP Tagset**

Rick Andrews, CMS |

The SAS® System offers myriad techniques for reporting on data within Microsoft® Excel. Depending on the task at hand SAS Access® or the Output Delivery System (ODS) might be good choices; Dynamic Data Exchange (DDE) or the old standby, Comma-Separated Values (CSV). This paper describes a method of creating multi-tab, print-ready reports using the Excel XP tagset available in version 9.1. This feature of Base SAS can greatly minimize the manual and repetitive task of preparing headers, footers, and various other formatting needs.

Rick Andrews has been using SAS software for nearly 20 years and has presented as the SAS Global Forum and the North East SAS User Group conferences.

| Tuesday
10:00 - 10:50
RV-06 | **Quick and Dirty Formatted Excel Workbooks Without DDE or ODS**

Andrea Wainwright-Zimmerman, Capital One |

There is a simple trick using the X command in SAS® that allows you to write out your SAS data to a already formated Excel sheet with graphs and pivot tables already built. This paper will describe how to accomplish this, as well as the limitations of this method. The presentation will include a live demo.

Andrea Wainwright-Zimmerman has been writing computer programs since the 2nd grade and has been programming in SAS for almost 15 years. She graduated from Sam Houston State University with a BS in Mathematics and a MS in Statistics. She has been working for Capital One for just over 11 years now. In her spare time she is an animal lover and trainer working with 4 cats, 1 dog, 3 horses and one husband.

| Tuesday
11:00 - 11:50
RV-07 | **SAS® Code to Export and Create Pivot Tables in Excel 2007**

Robert Williams, Amerigroup |

Management and decision makers are always asking to have their report results in a pivot table in Excel® 2007. Why? Because Excel® is a widely used office software and pivot tables are popular among the business end users due to ease of drill-down capabilities of the data. Unfortunately, creating pivot tables is a manual process using a mouse. It becomes a chore when a SAS programmer is asked to create pivot tables in Excel® 2007 using the data from SAS®. In this paper, the step-by-step coding process will show you how SAS® eliminates the manual process of creating pivot tables in Excel® 2007. Using the Excel® pivot table macro, PROC EXPORT and SAS® Direct Data Exchange (DDE), SAS® will link and communicate with Excel® 2007 to automatically create the pivot tables without touching the mouse. You will be amazed, especially for routine weekly or monthly reports, how useful this process is for business reports that requires being in the management's preferred pivot table style in Excel® 2007. Let SAS® do the work of generating the Excel® 2007 pivot tables for you!

Robert Williams is currently a Decision Support Analyst III for Amerigroup Corporation for the Disease Management department. He started writing SAS codes in 2006 when he was first exposed to SAS during his graduate studies in Mathematics. Robert became a serious SAS programmer when he was first employed by a small local healthcare insurance company. Since then, Robert has been involved in SAS coding as well as data analysis and reporting. Robert has given papers on efficient SAS reporting techniques to VASUG. He is also a part-time Statistics instructor for a local community college.
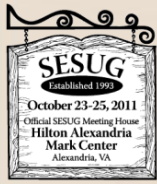
Step by Step

Section Chairs: Diane Cunningham   Peter Eberhardt
                    Southern Company   *Fernwood Consulting Group Inc.*

Monday Afternoon – Juniper

Monday 1:00 - 1:50 SS-01	**In Lockstep with the DoW-Loop**
	Paul Dorfman, Dorfman Consulting; **Lessia S. Shajenko**, Bank of America

The DOW-loop is a nested repetitive DATA step programming structure, intentionally organized in order to allow for programmatically and logically natural isolation of DO-loop instructions related to a certain breakevent from actions performed before and after the loop, and without resorting to superfluous conditional statements. Readily recognizable in its basic and most well-known form by the DO UNTIL (LAST.ID) construct, which naturally lends itself to control-break BY-processing of grouped data, the DOW-loop, however, is much more morphologically diverse and general in nature. In this talk, we aim to examine the internal logic of the DOW-loop and use the power of example to reveal its aesthetic beauty and pragmatic utility. To some industries, for example, pharma, where "flagging" every observation in a group based on conditions within the group is ubiquitous, the DOW-loop lends itself as an ideal logical vehicle by greatly simplifying the alignment of stream-of-consciousness and SAS® code.

Paul Dorfman started using SAS while pursuing a Ph.D. in computational physics and went on to work as a SAS consultant in telecommunication financial insurance engineering and pharma industries. Paul's personal SAS interests lie in custom-coded DATA step implementations of high-performance programming algorithms and sophisticated high-volume data management. For his activities in the realm of SAS he received such awards as being nicknamed Sashole" by a team of COBOL bigots "Most Valuable SAS-Ler" and Hall-of-Famer by SAS-L and "The Hash-Man" by Paul Kent from SAS R&D.

Lessia S. Shajenko started using SAS while pursuing her Ph.D. in Slavic linguistics. Then she focused her attention on the financial industry and has used SAS day in and day out for the last 10 years as a business and quantitative analyst with Bank of America. Lessia has presented in tandem with Paul Dorfman at SUGI, NESUG, SESUG, and PhilaSUG.

Monday 2:00 - 2:50 SS-02	**Misquoting Jane Austen in the Name of Quality**
	Deborah Posner, Westat

A proficient programmer may not be an eager code checker. Have you ever heard a programmer announce that a task was completed, followed by someone else finding errors in the log, unexpected results, or (horrors!) no results at all? Have you ever been that programmer? The reality is that no matter how many times we say checking your work is part of the job, the tasks of programming and checking are intrinsically distinct. Virtuous programmers and their vigilant managers must determine the best way to accomplish the quality assurance task with regard to thoroughness and expedience. This paper outlines specific quality assurance tasks for programmers to include in their standard workflow. It also provides programming code to create outputs expressly designed for programmers, managers, and specification writers for their review. These outputs report on missing values

in the data, missing labels for variables, values (i. e., codes) without labels, and values where labels exist for expected data, but no data occurred for these values.

Deborah Posner has over 20 years of SAS programming experience in a diverse range of applications.

Monday 3:00 - 3:50 SS-03	**Let's Give'em Something to TOC About: Transforming the Table of Contents of Your PDF File** **Bari Lawhorn**, SAS

In PDF files, the table of contents provides a map that helps your audience to navigate the document easily. However, the default table of contents that is generated by the SAS Output Delivery System (ODS) destination, while informative, is fairly utilitarian. Your procedures and DATA steps generate tables and graphs that have meaning to you and your audience. Likewise, the table of contents should also be as meaningful as possible by clarifying the contents of your PDF. This paper explains and demonstrates step by step how to use the following statement, options, and procedures to customize your table of contents:
• the ODS PROCLABEL statement
• the CONTENTS= and the DESCRIPTION= options
• the DOCUMENT destination and procedure
• the TEMPLATE procedure
These SAS procedures, statements, and options provide you with the flexibility and the power to customize your table of contents so that you really leave your audience with something to TOC about!

Bari Lawhorn has been a Technical Support consultant in the BASE Product group at SAS since 1996. Three years ago her team added SAS/GRAPH support. Bari has supported ODS since its inception and has been using SAS for 15 years.

Monday 4:00 - 4:20 SS-10	**Wandering Cross Reference Lines in PROC GPLOT** **Sharon Avrunin-Becker, Marie Byrd Alexander**, Westat

PROC GPLOT is an interesting and somewhat mysterious SAS® procedure. New users of PROC GPLOT often find the procedure useful in producing simple graphs, but find it intimidating when trying to enhance and guide the visual interpretation of the graph. One type of plot involves the use of vertical and/or horizontal reference lines to emphasize the plotted points on the graph. Usually, when the horizontal (HREF) and vertical (VREF) reference lines are defined in the PLOT statement, a specific number is referenced to create the lines (e.g. HREF=10). What do you do if you have a graph where you want to have horizontal, vertical, or both, reference lines placed dependant on the data itself? This paper will demonstrate how to turn your reference lines parameters into macro variables and how to call the same PROC GPLOT routine to create unique and individualized graphs for each subject. When we show you the results for 8 sample graphs, you will be able to see the reference lines actually "moving" based on the data.

Sharon Avrunin-Becker has been using SAS for over 15 years.

Monday 4:30 - 4:50 SS-05	**Keeping Up Appearances: Turning Specifications into SAS® Format Libraries and Statements** **Sarah Woodruff**, Westat

Specifications documents concerning the desired appearance of SAS data are often provided in an Excel spreadsheet format. While such an arrangement provides ease of use to the person creating it, typically the client to whom the final data delivery will eventually be

returned, having format information set up this way it not directly conducive to its use in SAS. This paper describes the process by which formats presented in this way can be easily converted into both SAS format libraries and format statements. The process centers around the use of standard reports from Oracle Clinical to provide the basic information, but the methods can be applied to any specifications document in Excel. Along with the final format products, this encompasses evaluating the appropriateness of format names and making broadly applicable changes as needed, ensuring unique variable names, particularly if data is coming from multiple sources, and building in appropriate quality control steps along the way. This conversion requires both DATA step work and several common procedures (IMPORT, CONTENTS, FREQ), but is accomplished entirely in Base SAS and does not need any special products. Flexibility remains in the process to compile or subdivide both the format catalog and statements as needed by the user or as applicable based on the requirements of a particular deliverable.

__Sarah Woodruff__ has been programming in SAS professionally for five years. She works on reporting and analysis for the Adolescent Trials Network through NICHD as well as for the Tuberculosis Epidemiologic Studies Consortium through the CDC and report development for Westat's Clinical Trials division. She is serving as section co-chair for Government and Healthcare Applications at SESUG 2011. Her undergraduate work includes a BS in mathematics & statistics from Georgia State University and a BS in microbiology from University of Maryland. Currently she is pursuing an MS in bioinformatics.

Tuesday Morning – Juniper

Tuesday 9:00 - 9:20 SS-06	__Fuzzy matching - Is there a silver bullet?__ __Milorad Stojanovic__, RTI International

Fuzzy matching is sometimes the only option available when attempting to match data from various sources that don't have well-defined common identifiers. Attempting to do so via SAS® Proc SQL or SAS merge statements typically does not render a dataset of acceptable quality with respect to record matching. Alternate approaches have their limitations as well. Developers should thoroughly research the sources they are working with and consider the reliability and standardization of all potential variable matching candidates before deciding on any given approach. A school data matching example will be provided to help illustrate the pros and cons of fuzzy matching approach. The example will also demonstrate several SAS tools that programmers can use to help speed up the matching process.

__Milorad Stojanovic__ has 18 years of experience with SAS. His main experience is in SAS (Base Stat Graph and Macros). As systems and programming analyst he developed application software for processing clinical trials data. He also has experience in education surveys. He developed application software for longitudinal studies. His formal education was in Applied Physics (Nuclear Science) from School of Electrical Engineering University of Belgrade Yugoslavia. He spent four years in biostatistics for Upjohn Company of Canada and fourteen years working for RTI International in NC.

Tuesday 9:30 - 9:50 SS-07	__Why the Bell Tolls 108 times? Stepping Through Time with SAS®__ __Peter Eberhardt,__ Fernwood Consulting Group Inc.; __Yunbo (Jenny) Sun__, Canada Post

For many SAS® programmers, new or even advanced, the use of SAS date and datetime variables is often very confusing. This paper addresses the problems that the most of programmers have. It starts by looking at the basic underlying difference between the data representation and the visual representation of date, datetime and time variables. From there

it discusses how to change data representations into visual representations through the use of SAS formats. Since date manipulation is core to many business process, paper also discusses date arithmetic first by demonstrating the use of simple arithmetic to increment dates; then by moving on to SAS functions which create, extract and manipulate SAS date and datetime variables. Finally, paper demonstrates the use of the %sysfunc macro function and the %let statement to present date, datetime and time variables. This paper is introductory and focuses on new SAS programmers, however, some advanced topics also covered.

Peter Eberhardt is a long time SAS consultant and his company, Fernwood Consulting Group Inc, is a SAS Alliance Partner. Peter is a regular participant in his local user group as well as local user groups across Canada. In addition, he is actively involved in SESUG and SAS Global Forum.
Jenny Sun is a long time SAS user with Canada Post.

Tuesday **10:00 - 10:50** **SS-08**	**A Step by Step Approach to Preparing for a SAS® Intelligence Platform Environment Deployment/Migration** **Brian Varney**, Experis (formerly COMSYS)

Getting a new SAS® Intelligence Platform up and running is an exciting time for a company. The promises heard during the sales cycle and project demonstrations need to become actionable processes by the administrators, power users and information consumers once the installation is complete. The reality is that this can only happen with careful planning and preparation before, during and after the SAS platform installation process. This paper will address how to plan and prepare for each phase of a SAS Intelligence Platform deployment and migration, such that, when the installation and configuration is complete; the platform can be leveraged in an organized manner.

Brian Varney has been a SAS consultant trainer and technical manager for over 21 years with Experis (formerly COMSYS) a SAS Alliance Gold Member. Located in Kalamazoo Michigan he keeps busy with providing SAS training consulting support and business development (plus a few hours a week for soccer). He has worked mostly in the pharmaceutical industry but also has worked in industries such as medical device manufacturing insurance entertainment and telecommunications.

Tuesday **11:00 - 11:50** **SS-09**	**Introduction to SAS® Macro Language** **John Myers**, Virginia Commonwealth University

Step by step process for developing SAS® programs using the SAS macro language. Topics include creating macro variables, building macro definitions, conditional processing and iterative processing. Examples are given to illustrate these topics. This presentation would be useful to those who have some experience with base SAS and want to begin using the SAS macro language.

John Myers has master of science in Biostatistics. John has over 20 years experience with SAS programming. He has managed data and generated reports for clinical trials and research projects. John is currently working in the psychiatry department at VCU where twin data is used to find the genetic heritability of psychiatric disorders.

Statistics and Data Analysis

Section Chairs: Venita DePuy   William Benjamin
Bowden Analytics   *Owl Computer Consultancy, LLC*

Monday Morning – Aspen

Monday 9:00 - 9:50 ST-01	**Analysis of a Complex Survey Data** **Varma Nadimpalli**, Westat

Analysis of dose-response relationships has long been the main focus of clinical and epidemiological research. More recently, this type of analysis has been employed to evaluate public education campaigns. The data that are collected in such evaluations are likely to come from standard household survey designs with all the usual complexities of multiple stages, stratification, and variable selection probabilities. To meet these challenges, a new jackknifed Gamma test for a monotone dose-response relationship is proposed. The main focus of this paper is analysis of the data from the complex survey and computation of the jackknifed gamma test using SAS®.

Varma Nadimpalli is a senior systems analyst in Westat from last 12 years working on SAS. While at Westat worked on Transportation Surveys clinical studies and clinical statistical projects.

Monday 10:00 - 10:20 ST-02	**Time Series Analysis: Separating Overlapping Events** **M. Scott Elliott**, FedEx Express

Analysts working with time series data often need to apply different events to their time series. An example of this problem is in dealing with global demand data, non-related holidays and events need to be separated, especially those that overlap. SAS® Forecast Server and the SAS High Performance Forecasting (HPF) language use 'dummy variables' to identify holiday events using one HPFEvents file for a project. A simple solution is to sort the data BY origin country and then use the same BY statement in the PROC TIMESERIES, but what if there are numerous locations per country? This paper describes one solution being implemented at FedEx that uses a macro to generate the HPFEvents file that will be used by the SAS HPF® program, handling each country separately. This method can also be used for local holidays and weather events that do not affect the entire time series.

Scott Elliott is an Operations Research Analyst at FedEx in Memphis, TN. His function is to forecast package and weight volumes using a SAS-based process. SAS Forecast Server is now being used as a tool in the forecasting process

Monday 10:30 - 10:50 ST-03	**Find Potential Fraud Leads Using Data Mining Techniques** **Qiling Shi**, NCI Information Systems, Inc

The purpose of this study is to use data mining techniques such as principal component analysis and clustering technique to find the potential fraud leads using SAS®. Here fraud leads are the providers with suspicious or extremely aberrant billing activities that should be investigated in more details. We will identify the results from a supposed fraud matrix which also give rise to the concern. This example of fraud matrix ranks eleven providers by seven

fraud indices, where these seven indices are given equal importance. A fraud index can be the rank of number of services billed during the holidays or provided to a deceased client. We will combine the multiple fraud indices into one comprehensive index and rank the providers by this comprehensive index. The top providers should be the fraud leads which are on the top of the alert list. Also by clustering providers into different categories using these seven fraud indices will give people a better picture of fraud maps. SAS procedures such as PROC PRINCOMP, PROC SORT, and PROC UNIVARIATE, PROC TABULATE, PROC PRINT, ODS HTML, PROC CLUSTER, PROC TREE, PROC SQL and DATA STEPS are employed to do the data analysis.

Qiling Shi is a mathematics PhD and a certified fraud examiner working in fraud detection area for Medicaid insurance data across 29 US states.

Monday 11:00 - 11:20 ST-04	**Proc MIXED - Right Options to get Right Output**
	Sheetal Nisal, Independent Consultant, **Shilpa Edupganti**, Eliassen Group

The Mixed Procedure fits a variety of mixed linear models to data that enables us to use these fitted models to make statistical inferences about the data. Once a model has been fit to the data, we can use it to make statistical inferences via both the fixed-effects and covariance parameters. Proc Mixed computes several different statistics suitable for generating hypothesis tests and confidence intervals and several other statistical parameters. The validity of these statistics depends upon the mean and variance-covariance model we select by the right ordering of the data and picking the right estimate difference, so it is important to choose the right model. We use Proc Mixed for statistical analyses very frequently and might have to do some trial and errors to check which model works best for us. There were few problems that we have overcome when running on large data and some of the trial output from Proc Mixed helped us to assess the model and compare it with others which gave us a lot of options to work on the mixed model changing the model itself with right treatment ordering and picking up the right treatment covariate interaction and other parameters. Based on multiple possibilities one option would be best for each of the possibility. So this presentation demonstrates different problems and its suitable method to pick the right parameter or model to deliver the desired output.

Shilpa Edupganti has pursued her Masters in Biomedical Engineering. Shilpa has been a SAS Programmer for last several years and is currently working as a Senior SAS Programmer at Eliassen Group.
Sheetal Nisal has completed Masters of Business Administration. For last several years, she is a SAS user and independent consultant.

Monday 11:30 - 11:50 ST-05	**PROC SURVEY...Says!: Selecting and Analyzing Stratified Samples**
	Darryl Putnam, CACI, Inc.

Statisticians and analysts need to design stratified survey plans and analyze the results of those surveys. Gone are the days when the analyst can ignore survey design tools when drawing inferences from the surveys. By forgoing the SAS® survey analysis procedures, estimates of the mean and standard error will be incorrect. By combining DATA STEP processing with the SAS survey analysis procedures of PROC SURVEYSELECT and PROC SURVEYMEANS, we can determine the sample size, allocate the sample size across strata, and then draw correct inferences. This paper will demonstrate how to use these survey design and analysis tools with a stratified sample of an inventory audit.

Darryl Putnam is an experienced SAS consultant who creates SAS solutions for business problems in a wide variety of industries and environments. He is focused on building statistical and analytical infrastructure for analysts and decision makers. Currently Mr. Putnam has an engagement with the U.S. Coast Guard building SAS solutions for their logistics problems

Monday 1:00 - 1:50 ST-06	On Deck: SAS/STAT® 9.3
	Robert Rodriguez, Maura Stokes, Fang Chen, Ying So, SAS

SAS/STAT® 9.3, coming soon to a site near you, delivers numerous enhancements to the statistical software. The PHREG procedure supports frailty models for incorporating random effects in Cox regression and the MCMC procedure provides a RANDOM statement to facilitate fitting Bayesian models with random effects. The NLIN procedure has been updated, and the MI procedure offers additional flexibility by providing a fully conditional specification method. The new SURVEYPHREG and HPMIXED procedures are also outfitted with additional capabilities.
This talk reviews the highlights of the 9.2 and 9.22 releases of SAS/STAT software and then describes important 9.3 enhancements with practical illustrations.

Bob Rodriguez joined SAS in 1983 and is a senior director in SAS Research & Development with responsibility for the development of statistical software, including SAS/STAT and SAS/QC. He received his PhD in statistics from the University of North Carolina at Chapel Hill and worked as a research statistician at General Motors Research Laboratories before joining SAS. Bob is a Fellow of the American Statistical Association and is the President-elect of the ASA in 2011.

Monday 2:00 - 2:50 ST-07	**Tailoring Logistic Regression Model Analyses with the ODDSRATIO Statement in PROC LOGISTIC**
	Taylor Lewis, University of Maryland

Binary logistic regression is typically preferred when modeling a dichotomous outcome variable. Interpretation can be tricky, however, since parameter estimates of the model are given in terms of log-odds. Exponentiating the log-odds returns an odds ratio, which is somewhat easier to handle. By default, PROC LOGISTIC will output a series of odds ratios for all categorical predictor variables not involved in any interactions. The new ODDSRATIO statement offers the flexibility to tailor odds ratios per the analyst's desired comparisons, even when interactions are specified. In addition to discussing odds ratios for categorical variables, this paper illustrates how the UNITS statement can facilitate customized odds ratios for continuous explanatory variables.

Taylor Lewis is a PhD student at the Joint Program in Survey Methodology at the University of Maryland College Park. He holds a masters degree from the same department but his bachelor's degree in statistics was earned from Virginia Tech. He is a certified advanced SAS Programmer and has presented at several SAS conference on topics such as complex survey design and logistic regression analysis.

Monday 3:00 - 4:50 ST-09	**Data Simulation for Evaluating Statistical Methods in SAS®**
	Rick Wicklin, SAS

To assess statistical techniques, you often need to create data with known properties, both random and nonrandom. This workshop presents techniques for using the DATA step and SAS/IML® software to simulate data.
You will learn to simulate:
• data from common univariate and multivariate distributions, including skewed and heavy-tailed distributions
• data from a mixture of distributions

• data with known properties such as a specific covariance structure or a known regression structure

You will learn to use simulated data to evaluate:

• the performance of algorithms
• the robustness of statistics
• the coverage probabilities of approximate confidence intervals

This workshop is intended for researchers and practicing statisticians who are familiar with SAS® programming and SAS/STAT® procedures. Participants who are unfamiliar with SAS/IML software might want to refer to the book, Statistical Programming with SAS/IML Software (Wicklin, 2010).

Rick Wicklin is a senior researcher in computational statistics at SAS Institute and is a principal developer of SAS/IML and SAS/IML Studio. His areas of expertise include numerical analysis, statistical graphics, and modern methods in statistical data analysis. Rick received a Ph.D. in Applied Mathematics from Cornell University in 1993. Prior to joining SAS in 1997, Rick was a professor of mathematics at the University of Minnesota.

Tuesday Morning – Aspen

Tuesday 9:00 - 9:20 **ST-10**	**An Exact Implicit Enumeration Algorithm for Variable Selection in Multiple Linear Regression Models Using Information Criteria** **Dennis Beal**, SAIC

For large multivariate data sets the data analyst often wants to know the best set of independent regressors to use in a multiple linear regression model. Akaike's Information Criteria (AIC) is one information criterion calculated in SAS® that is used to score a model. For a small number of independent variables p, an explicit enumeration of all possible models is possible. However, for large multivariate data sets where p is large, an explicit enumeration of all possible models becomes computationally intractable. This paper presents SAS code that implements the exact implicit enumeration algorithm authored by Bao (2005) that has been shown to always arrive at the globally optimal minimum AIC value when let run to completion. The number of models evaluated to determine the optimal model with the smallest AIC score is minimal and shown to be much more efficient than an explicit enumeration of all possible models. A large multivariate data set is simulated with a known true model to demonstrate how fast the exact implicit enumeration algorithm arrives at the true model. The number of models evaluated is compared to an explicit enumeration algorithm and the REG procedure in SAS. This paper is for intermediate SAS users of SAS/STAT who understand multivariate data analysis and SAS macros.

Dr. Dennis Beal has over 20 years of experience as a statistician supporting a wide variety of projects primarily for the U.S. Department of Energy in Oak Ridge Tennessee. Dr. Beal earned his Ph.D. in management science from the University of Tennessee. Dr. Beal also holds advanced degrees in applied mathematics from Virginia Tech and statistics from the University of Tennessee. Dr. Beal has 22 years of experience as a SAS user and has presented papers at SESUG annually since 2004. His areas of research are data mining variable selection and environmental statistical applications.

Tuesday 9:30 - 9:50 **ST-08**	**Acknowledging the Unknown: A SAS® Macro for Investigating Omitted Variable Bias in Two-Level Linear Models** **Jason Schoeneberger**, **Bethany Bell,** University of South Carolina; **Jeffrey Kromrey**, University of South Florida

Albeit model specification is an essential aspect of any statistical model, there is little evidence to suggest that applied researchers adequately consider the impact of model misspecification.

To help address this important issue, in this paper we introduce users to MIXED_OVA, a SAS® macro for conducting sensitivity analysis of hypothetical omitted variable bias in two-level linear models. By utilizing data from PROC MIXED ODS tables in conjunction with PROC IML data simulation, the macro provides a comparison of parameter estimates, standard errors, and p-values from a user's analytic model with those generated from a model that contains the hypothetical omitted variable. This paper provides the macro programming language, as well as results from an executed example.

Jason Schoeneberger *is currently a doctoral candidate in the Education Research & Measurement program at the University of South Carolina. He has previously served as a Student Ambassador at the 2010 SAS Global Forum and has contributed posters and presentations to SGF and Southeastern SAS Users Group conferences on topics such as diagnostics for multilevel models and side-by-side boxplots.*

Tuesday 10:00 - 10:20	**Eyes on the Road: A Methodology for Analyzing Complex Eye-Tracking Data**
ST-12	**Mary Anne Bertola, Stacy A Balk**, SAIC

Distracted driving is a relevant social issue with potentially devastating consequences. In part due to recent calls from President Obama and United States Transportation Secretary LaHood to curb distracted driving, research on the topic is becoming more prevalent. The use of eye tracking devices in on-road vehicles is an invaluable resource to investigate driver situational awareness and attention capture. Such tools provide insight into where drivers are looking, both within and outside the vehicle, while traveling down a roadway. Data from eye trackers in a real world environment, however, present a unique set of analysis challenges. For example, there are multiple ways to quantify visual behavior (e.g., duration of fixations, percentage of time, etc.) and such quantifications are constrained to non-negative values since a driver cannot look at an object for a negative amount of time. Additionally, responses are correlated since it is general practice to use eye movement data from one person over a period of time, as opposed to one specific instance in time. The GENMOD procedure in SAS® lends itself to accommodating such analysis challenges of eye tracking data through the use of generalized estimating equations which allow for restrictions on the values of a response variable and account for correlated measurements. This paper demonstrates the application of generalized estimating equations through the GENMOD procedure to analyze driver visual behavior in the presence of different roadway environments. Eye tracking devices are implemented in a variety of settings (e.g., training flight simulators, software usability, etc.). As such, it is hoped that analytical methodologies presented in this paper are also useful in the analysis of a variety of other eye tracking applications.

Mary Anne Bertola *has a Bachelor of Science degree in mathematics from James Madison University and will be graduating in May 2011 with a Master of Science degree in statistical science from George Mason University. She began working as a transportation research analyst with SAIC in 2009. There she assists in planning and implementing transportation research studies, including those in field vehicles and highway driving simulators, and also analyzes data from such experiments. She recently obtained her Base Programmer Certification for SAS® 9 and plans to continue in her field as a statistician.*
Stacy A Balk *recently completed her Ph.D. in Human Factors Psychology at Clemson University. Her doctoral work focused on roadway safety especially as it relates to nighttime visual perception. Stacy continues to be actively involved in the roadway safety community as a Research Psychologist in the SAIC Transportation Solutions Division at FHWA's Turner-Fairbank Highway Research Center.*

Tuesday 10:30 - 10:50 ST-13	**Linear Logistic Test Model: Using SAS® to Simulate the Decomposition of Item Difficulty by Algorithm, Sample Size, Cognitive Component and Time to Convergence** **George MacDonald, Jeffrey Kromrey** , University of South Florida

Fischer (1973) introduced a model called The Linear Logistic Test Model (LLTM) that is capable of bridging cognitive processing models and psychometric models. In his mathematics study, he found that differentiating calculus items could be explained by eight basic cognitive operations. He postulated that item difficulty could be re-parameterized to express these operations. LLTM can be coded in SAS using PROC NLMIXED. Clustering items within persons is considered by many to be a multi-level approach. Because no algorithm method exists that always finds the global optimum, and given the array of optimization algorithms available, coders may well want to know which algorithms work best under various test conditions. To provide some answers to these questions, a simulation study was undertaken to determine the utility of the algorithm methods available in PROC NLMIXED according to varying sample sizes,number of cognitive components, and time to convergence. The results will be interpreted and their significance, and implications for LLTM use will be discussed. Guidance for the use of PROC NLMIXED, for the estimation of LLTM, and suggestions for future research will be highlighted.

__George MacDonald__ is the Assistant Director of Research and Grant Development in the David C. Anchin Center, College of Education, University of South Florida. His research specializes in Mathematics Education, Reliability Generalization and Item Response Theory. His work has been published in The International Journal of Educational and Psychological Assessment, and the Journal of Individual Differences.
__Jeffrey D. Kromrey__ is a Professor in the Department of Educational Measurement and Research at the University of South Florida. His specializations are applied statistics and data analysis. His work has been published in Communications in Statistics Educational and Psychological Measurement Multivariate Behavioral Research Psychometrika Journal of Educational Measurement and Educational Researcher. He has been a SAS programmer for 25 years and uses SAS for simulation studies as well as for applied data analysis.

Tuesday 11:00 - 11:50 ST-14	**Scatterplots: Basics, enhancements, problems and solutions** **Peter Flom**, Peter Flom Consulting

The scatterplot is a basic tool for presenting information on two continuous variables. While the basic plot is good in many situations, enhancements can increase its utility. And there are some problems that arise in certain situations as well (e.g. overplotting).

__Peter Flom__ is a statistical consultant to graduate students and researchers in the social sciences medicine education and other fields. He earned his PhD in psychometrics from Fordham in 1999. He has been using SAS for almost 20 years and has presented at NESUG SGF and NYASUG.

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Paper Content: Users are urged to present papers describing real-world applications using SAS software. SESUG also accepts a limited number of theoretical and general overview papers. Acceptance of all presentations is at the discretion of the Conference Co-Chairs. Oral presentations and written papers describing projects or services of a commercial nature may only be presented at the conference if they describe how the product relates to the use of SAS Institute software; and they do NOT include price lists, support commitments, or other material of a promotional or sales nature.

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lug – [luhg] 1) a type of nut used on a tire stud (noun), 2) to haul around (verb), 3) a type of shoe tread (noun), 4) a Local SAS Users Group!
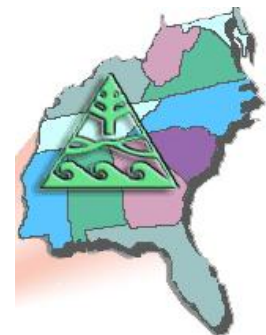
SESUG provides a speaker to local users groups once per year in addition to the local user group support provided by SAS. Get involved in your LUG or start a new one if your area doesn't have one.

See more at http://sesug.org, email lug@sesug.org, or ask one of us for more info at the conference: Barbara Okerson or Marje Fecht.

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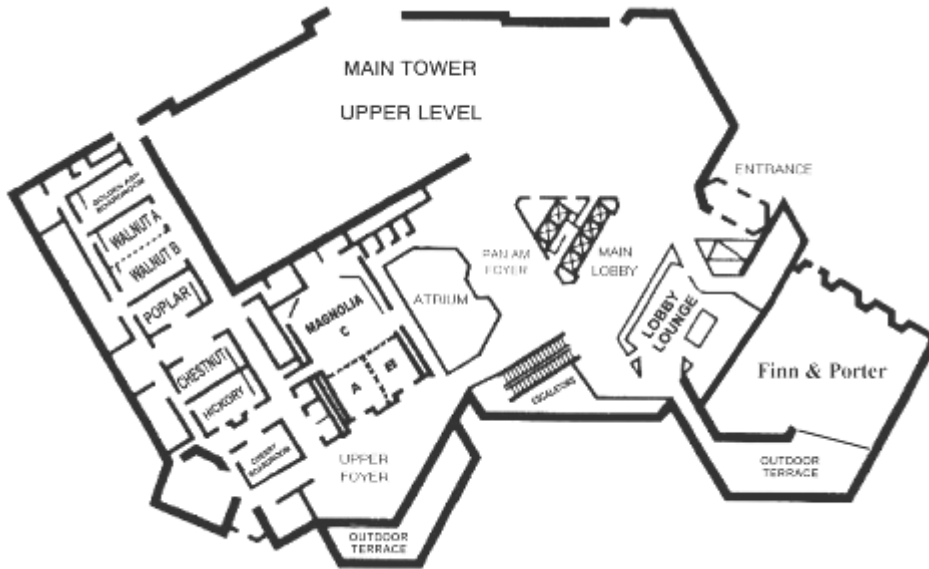
Going to Olde Town Alexandria with other attendees for dinner?
The hotel offers a complimentary shuttle service to & from the King Street Metro (on the blue and yellow lines). Shuttles depart from the front of the hotel at 15 minutes past the hour from 3:15 PM to 9:15 PM. The shuttle is on a first come, first serve basis.

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October 23-25, 2011
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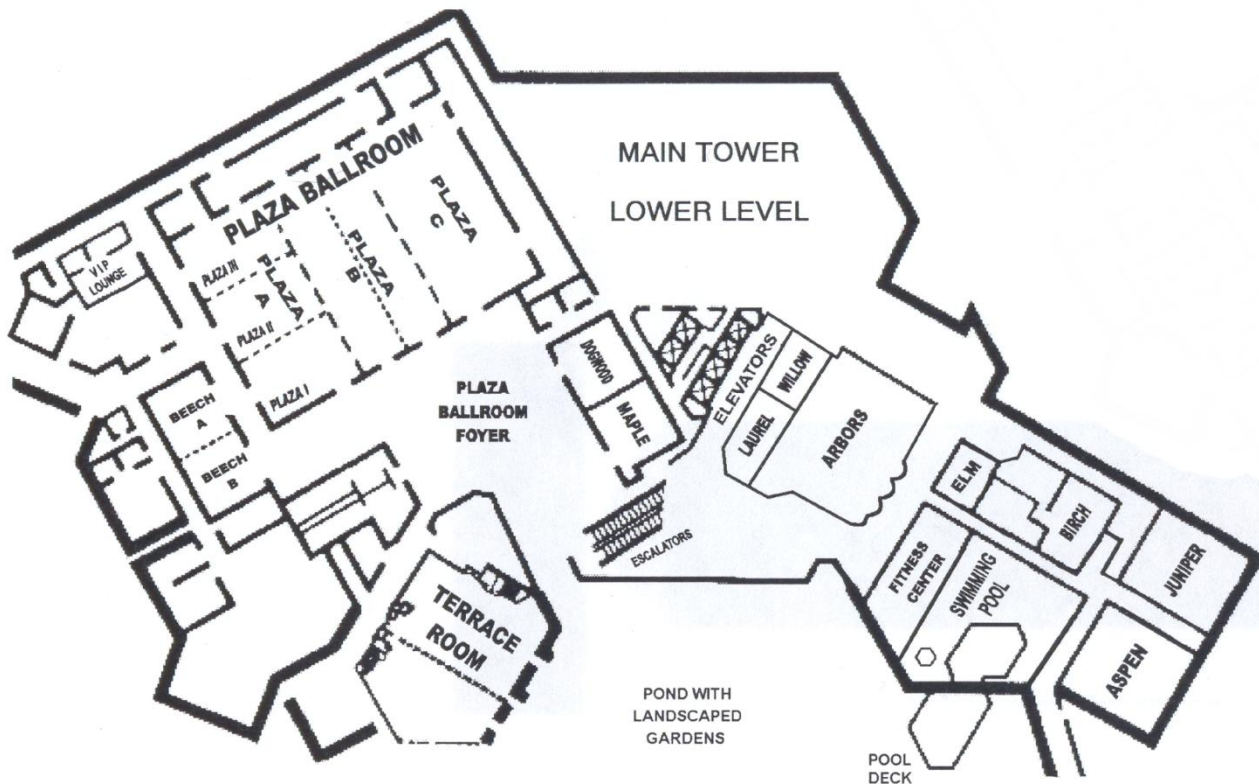
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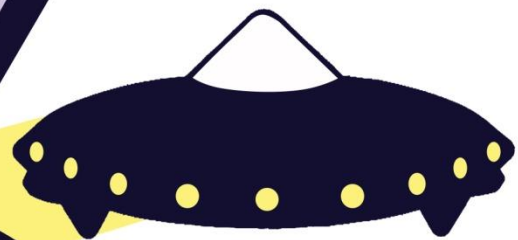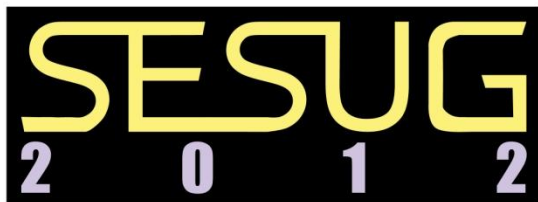**www.westat.com**

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