



2012 Educational Forum “Schedule At-a-Glance”

Sunday, November 4th

Time	Event
8:00am - 5:00pm	Pre-Forum training seminars
4:00pm - 6:00pm	Registration opens
5:00pm - 6:00pm	Welcome Mixer

Monday, November 5th

Time	Event
8:00am - 5:00 pm	Registration
7:00am - 8:00am	Continental Breakfast available
8:00am - 8:30am	Opening session
8:30am - 10:00am	Presentations
10:00am - 10:15am	Break (Refreshments provided for attendees) in SAS Demo Room
10:00am – 12:15pm	SAS Demo Room
10:15am - 12:15pm	Presentations
12:15pm - 1:30pm	Lunch (provided for attendees) and Keynote Address by Paul Kent
1:15pm – 6:30pm	SAS Demo Room
1:30pm - 3:00pm	Presentations
3:00pm - 3:15pm	Break (Refreshments provided for attendees) in SAS Demo Room
3:15pm - 5:00pm	Presentations
5:00pm - 6:30pm	SAS Sponsored Mixer in the SAS Demonstration Room

Tuesday, November 6th

Time	Event
7:00am - 8:00am	Continental Breakfast available
8:00am - 10:00am	Presentations
8:00am – 12:15pm	SAS Demo Room
10:00am - 10:15am	Break (Refreshments provided for attendees) in SAS Demo Room
10:15am - 12:15pm	Presentations
12:15pm - 1:30 pm	Lunch (provided for attendees)
1:30pm - 3:00 pm	Presentations
3:00pm - 3:15pm	Break (Refreshments provided for attendees)
3:15pm - 3:45 pm	Closing Session

Wednesday, November 7th

Time	Event
8:00am - 5:00pm	Post-Forum training seminars

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* Patent No 8266159 issued on September 11, 2012.

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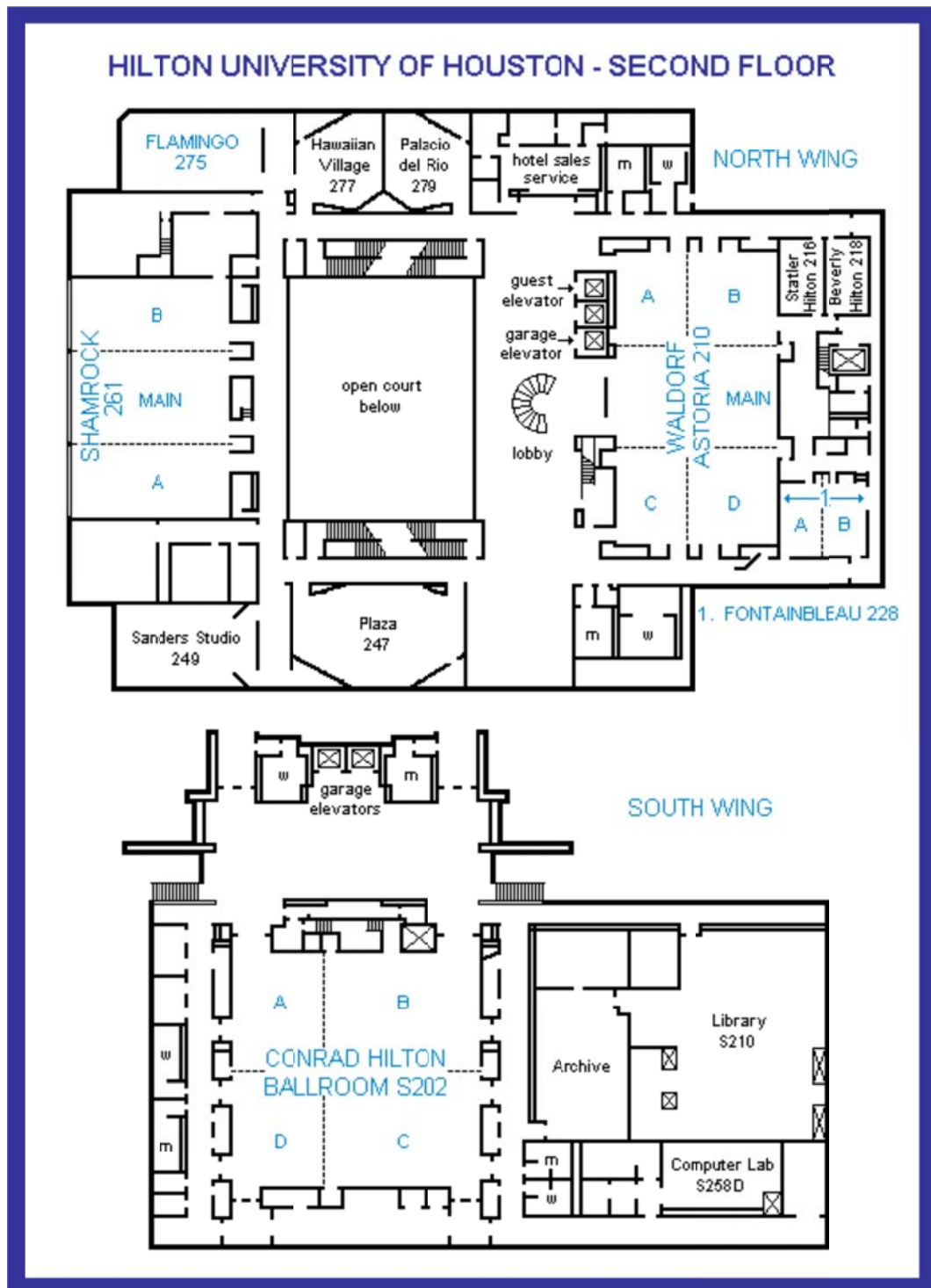
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Meeting Room Map



SCSUG Educational Forum 2012

November 5-6, 2012

Houston, TX

Schedule of Events

11/4/2012	Sunday - Pre-Conference Training
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8:00 AM - 5:00 PM	SAS® Essentials Boot Camp	Kirk Lafler	Hawaiian Village
1:00 PM - 5:00 PM	Creating Complex Reports	Cynthia Zender	Palacio del Rio

11/7/2012	Wednesday - Post-Conference Training
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8:00 AM - 12:00 PM	PROC SQL Programming: The Basics and Beyond	Kirk Lafler	Palacio del Rio
1:00 PM - 5:00 PM	Building Reusable Tools with the SAS® Macro Language	Kirk Lafler	Palacio del Rio

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9:00 AM	Output Delivery System (ODS) ? Simply the Basics - Lafler	Predicting Students Enrollment Using SAS - Djunaidi	You Want ME to Use SAS Enterprise Guide?? - DelGobbo	Getting the Right Report (Again): Your Compatibility Guide for ODS PDF 9.2 - Huntley	Let Oil and Gas Talk to You: Predicting Production Performance - Soto		Super Demo: Drag and Drop Statistical Process Control with the Control Chart Builder - Gotwalt
9:30 AM							
10:00 AM	Morning Break (inside Demo Room - Shamrock)						
10:15 AM	Two Methods to Merge Data onto Every Observation in Another Dataset - Mendez	Statistical comparison of relative proportions of bacterial genetic sequences - Garcia-Mazcorro	Using SAS to locate and rename external files - Gan	Enhancing SAS output with Output Delivery System (ODS) -Mehta	Using SAS Risk Dimensions' dynamic features to handle multiple curves - Moore	SAS Business Intelligence (BI) - Building Financial Analytic Content (with Enterprise Guide and OLAP Cube Studio) -Farias	Super Demo: Quick Results with SAS ODS Graphics Designer - Matange
10:45 AM	Exploring DICTIONARY Tables and SASHELP Views - Lafler						
11:15 AM	Keep it Organized: A Grad Student & How To & Paper - Priest	Key Insight into the utility of megapixel camera photography using SAS - Hallum	JavaScript menu that submits SAS/IntrNet Report code - Caudill	Nesting Multiple Box Plots and Blockplots using GTL and Lattice Overlay - Stanek	Intervention Analysis of Water Consumption for Utilities Using Different Time-Series Models - Wen		Super Demo: What's New with the SG Procedures in SAS® 9.3 - Matange
11:45 AM	Last chance to check out SAS Demo Room						
12:15 PM	Lunch (Provided to all registrants - Conrad N. Hilton Ballroom)						
1:30 PM	An Introduction to SAS® Hash Programming Techniques - Lafler	Net Present Value Model Approach - Qu	When was my data last updated? How to automate data monitoring and notification. - Turner	Overlaying Scatter Plots on Box Plots in the Presence of Ties - Minard			
2:00 PM 2:30 PM		Proc Surveyfreq: Why Do a Three Way Table in SAS When We Want Two Way Table Information? - Mehta	Institutional Research Intelligence (IRI): Go Beyond Reporting - Djunaidi	Data Visualization with SAS/Graph - Cranford			
3:00 PM	Afternoon Break (inside Demo Room - Shamrock)						
3:15 PM	Closing Sessiong (Conrad N. Ballroom)						

SAS Presentations

11/5/2012			
8:30 - 10:15 am	An Introduction to Creating Multi-Sheet Microsoft Excel Workbooks the Easy Way with SAS®	Vince DelGobbo	Plaza
9 to 10 am	Making Use of Incomplete Observations in the Analysis of Structural Equation Models: The CALIS Procedure's Full Information Maximum Likelihood Method in SAS/STAT® 9.3	Yiu-Fai Yung	Palacio del Rio
9 to 10 am	SAS® Style Templates: Always in Fashion	Cynthia Zender	Waldorf-Astoria E
9 to 10 am	Applying Business Analytics to Optimize Clinical Research Operations	David Handelsman	Waldorf-Astoria AB
10:15 - 10:45 am	Super Demo: Bootstrap Anything with the One Click Bootstrap in JMP	Chris Gotwalt	Shamrock
10:15 - 11:15 am	The Effective Use of Business Analytics	Philip Easterling	Hawaiian Village
10:15 - 11:15 am	PROC TEMPLATE Tables from Scratch	Kevin Smith	Waldorf-Astoria E
11:15 - 11:45 am	Super Demo: New Features in PROC FORMAT for SAS 9.3	Cynthia Zender	Shamrock
11:15 - 12:15 pm	A Different Point of View with ODS PDF 9.3	Scott Huntley	Waldorf-Astoria E
1:30 - 2:00 pm	Super Demo: Author with SAS	Shelley Sessoms	Shamrock
1:30 -2:30 pm	Tips, Tricks, and Strategies for Mixed Modeling with SAS/STAT® Procedures	Kathleen Kiernan	Palacio del Rio
1:30 -2:30 pm	Making Exploration of Nonlinear Models Fast and Easy Using JMP 10	Chris Gotwalt	Waldorf-Astoria E
1:30 -5:00 pm	Clinical Graphs using SAS 9.2	Sanjay Matange	Waldorf-Astoria AB
2:30 - 3:00 pm	Super Demo: ODS and Traffic Lighting for PROC PRINT, REPORT, and PROC TABULATE	Cynthia Zender	Shamrock
2:30 - 3:30 pm	ODS Document from Scratch	Kevin Smith	Waldorf-Astoria E
3:15 - 3:30 pm	Super Demo: Overview of the PLM Procedure	Kathleen Kiernan	Shamrock
3:15 - 5:00 pm	Structural Equation Modeling Using the CALIS Procedure in SAS/STAT® Software	Yiu-Fai Yung	Palacio del Rio
3:45-4:45 pm	SAS ODS and ODS Graphics for z/OS	MP Welch	Waldorf-Astoria E
4:15 - 4:45 pm	Super Demo: You Want ME to use SAS Enterprise Guide?	Vince DelGobbo	Shamrock
11/6/2012			
8:00 - 8:30 am	Super Demo: Author with SAS	Shelley Sessoms	Shamrock
8:00 - 9:00 am	Now You Can Annotate Your Statistical Graphics Procedure Graphs	Sanjay Matange	Waldorf-Astoria E
9:00 - 9:30 am	Super Demo: Drag and Drop Statistical Process Control with the Control Chart Builder	Chris Gotwalt	Shamrock
9:00 - 10:00 am	You Want ME to use SAS Enterprise Guide?	Vince DelGobbo	Palacio del Rio
9:00 - 10:00 am	Getting the Right Report (Again): Your Compatibility Guide for ODS PDF 9.2	Scott Huntley	Waldorf-Astoria E
9:00 - 10:00 am	Let Oil and Gas Talk to You: Predicting Production Performance	Rob Soto	Waldorf-Astoria AB
10:15 - 10:45 am	Super Demo: Quick Results with SAS ODS Graphics Designer	Sanjay Matange	Shamrock
11:15 – 11:45 am	Super Demo: What's New with the SG Procedure in SAS 9.3	Sanjay Matange	Shamrock

Monday Morning, November 5

	Meet the Speaker – Station 1	Meet the Speaker – Station 2
10:00 am to 12:15 pm	<p>Cynthia Zender</p> <p>Expertise: ODS, Report Writing, Stored Processes, SAS DATA Step, SAS Macro</p>	<p>David Handelsman</p> <p>Expertise: Clinical research, Health care CDISC, Pharma Industry</p>
Demo Area Closed – 12:15 to 1:15 pm		

Monday Afternoon, November 5

Time Slot	Meet the Speaker – Station 1	Meet the Speaker – Station 2
1:15 to 3:15 pm	<p>MP Welch</p> <p>Expertise: SAS ODS and ODS Graphics</p>	<p>Scott Huntley</p> <p>Expertise: ODS</p>
Afternoon Break – 3:00 to 3:15 pm		
3:15 to 5:15 pm	<p>Rob Soto</p> <p>Expertise: Energy (Oil and Gas) Solutions</p>	<p>Vince DelGobbo</p> <p>Expertise: SAS/IntrNet, SAS Stored Processes, SAS/Microsoft Office Integration, ODS, Base SAS, Web Enablement, Web Services, SAS/GRAPH (some), Business Intelligence, SAS Enterprise Guide</p>
SAS Sponsored Mixer – 5:00 to 6:30 pm		
5:15 to 6:30 pm	<p>Kevin Smith</p> <p>Expertise: ODS PROC Template, ODS Document</p>	<p>Yiu-Fai Yung</p> <p>Expertise: SAS/STAT, Structural Equation Modeling, Factor Analysis</p>
Demo Area Closed – 6:30 pm		

Tuesday Morning, November 6

Time Slot	Meet the Speaker – Station 1	Meet the Speaker – Station 2
8:00 to 10:00 am	Kevin Smith Expertise: ODS PROC Template, ODS Document	Yiu-Fai Yung Expertise: SAS/STAT, Structural Equation Modeling, Factor Analysis
Morning Break – 10:00 to 10:15 am		
10:00 am to 12:15 pm	Sanjay Matange Expertise: ODS Graphics, SAS/GRAPH	Vince DelGobbo Expertise: SAS/IntrNet, SAS Stored Processes, SAS/Microsoft Office Integration, ODS, Base SAS, Web Enablement, Web Services, SAS/GRAPH (some), Business Intelligence, SAS Enterprise Guide
Demo Area Closed – 12:15 pm		

SAS Demo Room Staff and Areas of Responsibility

Staff	Responsibility
Sharon Brandon	Publications
Christopher Gotwalt	JMP
Jenna Dragan	Training and Certification
Kathleen Kiernan	Technical Support
Angi Lawrence	Customer Loyalty
Shelley Sessoms	SAS Press
Will Shellman	Customer Loyalty
Michael Smith	Users Groups

Foundations & Fundamentals

SAS HASH Programming Basics

Daniel R Sakya - PPD Inc.

HASH programming is a hot topic in the industry that started with SAS 9. This paper is intended to provide more exposure to novice or experienced SAS programmers that are looking for alternatives to data step programming. The concept of HASH programming is similar to the definition of an array in SAS. Several SAS users have benefitted from HASH programming by considerably reducing the processing time for compound data merging tasks. This paper will entail the introduction to HASH programming, its syntax, a few examples, and last but not least, the benefits on using HASH programming versus regular data step. The examples and syntax illustrated are in SAS 9.2.

SAS® Programming Tips, Tricks 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, tricks 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.

Basic SAS® PROCedures for Producing Quick Results

Kirk Paul Lafler - Software Intelligence Corporation

As IT professionals, saving time is critical. Delivering timely and quality looking reports and information to management, end users, and customers is essential. The SAS System provides numerous "canned" PROCedures for generating quick results to take care of these needs ... and more. Attendees acquire basic insights into the power and flexibility offered by SAS PROCedures using PRINT, FORMS, and SQL to produce detail output; FREQ, MEANS, and UNIVARIATE to summarize and create tabular and statistical output; and DATASETS to manage data libraries. Additional topics include techniques for informing the SAS System which data set to use as input to a procedure, how to subset data using a WHERE statement (or WHERE= data set option), and how to perform BY-group processing.

The SAS® DATA Step: Where Your Input Matters

Peter Eberhardt – Fernwood Consulting Group Inc.,

Before the warehouse is stocked, before the stats are computed and the reports run, before all the fun things we do with SAS® can be done, the data need to be read into SAS. A simple statement, INPUT, and its close cousins FILENAME and INFILE, do a lot. This paper will show you how to define your input file and how to read through it, whether you have a simple flat file or a more complex formatted file.

SAS Hash update for SAS 9.2

Glen Becker - USAA

This presentation briefly reviews the basics of the SAS hash object, including the more commonly used features that SAS provided in SAS 9.1. SAS 9.2 adds many new features, including support for duplicate keys, internal counters, and several performance-enhancing features. It will present several programming examples that can help you easily use the SAS Hash and Hash Iterator objects. Whether you currently use the SAS Hash object or not, you will probably discover that the SAS Hash object provides a fast and easy way to solve problems that are very difficult to solve without it.

SPDE: The other SAS data structure

Kevin Davidson

The Good, The Bad, and The Ugly

Toby Dunn - AMEDDC&S

The SAS® System has all the tools users need to read data from a variety of external sources. This has been, perhaps, one of the most important and powerful features since its introduction in the mid-1970s. The cornerstone of this power begins with the INFILE and INPUT statements, the use of a single- and double-trailing @ sign, and the ability to read data using a predictable form or pattern. This paper provides insights into the INFILE statement, the various styles of INPUT statements, and illustrates numerous examples of how data can be read into SAS with the DATA step.

Add a Little Magic to Your Joins

Kirk Paul Lafler - Software Intelligence Corporation

To achieve the best possible performance when joining two or more tables in the SQL procedure, a few considerations should be kept in mind. This presentation explores options that can be used to influence the type of join algorithm selected (i.e., step-loop, sort-merge, index, and hash) by the optimizer. Attendees learn how to add a little magic with MAGIC=101, MAGIC=102, MAGIC=103, IDXWHERE=Yes, and BUFFERSIZE= options to influence the SQL optimizer to achieve the best possible performance when joining tables.

Things Dr Johnson Did Not Tell Me: An Introduction to SAS® Dictionary Tables

Peter Eberhardt – Fernwood Consulting Group Inc.,

SAS maintains a wealth of information about the active SAS session, including information on libraries, tables, files and system options; this information is contained in the Dictionary Tables. Understanding and using these tables will help you build interactive and dynamic applications. Unfortunately, Dictionary Tables are often considered an 'Advanced' topic to SAS programmers. This paper will help novice and intermediate SAS programmers get started with their mastery of the Dictionary tables.

Output Delivery System (ODS) ? Simply the Basics

Kirk Paul Lafler - Software Intelligence Corporation

Are you looking for ways to improve or enhance 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 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 presentation emphasizes an introduction to ODS including basic operation and syntax; how specialized output can be created including RTF, PDF, MS-Excel spreadsheets, SAS data sets, and HTML; and how selection (or exclusion) lists can be constructed to handle basic content customizations.

Two Methods to Merge Data onto Every Observation in Another Dataset

Lisa Mendez, Ph.D., Knowesis, Inc.,

There are times when you just can't seem to find a PROC that will do exactly what you want. We came across a scenario where we needed to calculate the mean of a student data file and then flag student observations that were more than three standard deviations from the mean. We came across two methods to do what we needed to do. One method uses a combination of Data steps and Procs, and utilizes the If _N_ then set method. Another method utilizes Proc SQL. This paper will outline both methods step-by-step and illustrates two different ways to do the same thing. Personal preference dictates which method to use.

Exploring DICTIONARY Tables and SASHELP Views

Kirk Paul Lafler - Software Intelligence Corporation

SAS® users can quickly access useful information about their SAS session with a number of read-only SAS data sets called DICTIONARY tables or SASHELP views. During a SAS session, information (or metadata) about system options, librefs, table names, column names and attributes, formats, indexes, and more can be accessed. This presentation explores DICTIONARY tables and SASHELP views, how they are accessed, what type of information is available, and their application using real-world scenarios.

Keep it Organized: A Grad Student “How To” Paper

Elisa L Priest - Baylor Health Care System

Grad students learn the basics of SAS programming in class or on their own. The classroom lessons focus on statistical procedures and the datasets are usually ready for analysis. However, independent research projects may have data organized in many complex structures and may require many different SAS programs for data organization, exploration, and analysis. At the end of a project, you generally end up with multiple SAS programs and data sets. During the project, students may not realize the need to organize and document their project. However, it may become painfully clear if modifications need to be made to the completed analysis.

This paper will provide students with the tools that can help them survive the challenges of organizing and documenting SAS code for a research project. I will present examples to help students keep their SAS code and data sets organized using base SAS as well as Enterprise Guide 5.1. The primary topics to be covered will include: documentation of SAS code, using comments, program headers, tables of contents, organization of SAS files, and organization of Enterprise Guide projects. This will allow the student researcher to remember what they did, how they did it, and where the results are. This diligence will be a critical timesaver in the final revisions of a research project or dissertation

An Introduction to SAS® Hash Programming Techniques

Kirk Paul Lafler - Software Intelligence Corporation

Beginning in Version 9, SAS software supports a DATA step programming technique known as hash that enables faster table lookup, search, merge/join, and sort operations. This presentation introduces what a hash object is, how it works, and the syntax required. Essential programming techniques will be illustrated to define a simple key, sort data, search memory-resident data using a simple key, match-merge (or join) two data sets, handle and resolve collision scenarios where two distinct pieces of data have the same hash value, as well as more complex programming techniques that use a composite key to search for multiple values.

Demystifying PROC SQL® Join Algorithms

Kirk Paul Lafler - Software Intelligence Corporation

When it comes to performing PROC SQL joins, users supply the names of the tables for joining along with the join conditions, and the PROC SQL optimizer determines which of the available join algorithms to use for performing the join operation. Attendees learn about the different types of join algorithms and explore nested loop (brute-force), sort-merge, index, and hash join methods along with selected options to control processing.

Multi-Panel scatter plots and scatter plot matrices

Paulina Kulesz - University of Houston, TIMES

A scatterplot is one of the most common tools utilized in the visual exploration of data. The scatterplot aids researchers in examination of relations between two variables X and Y, as well as reveals degree of symmetry, concentration of data, and possible outliers. A bivariate scatterplot is the simplest form of representing a relation between two variables. More advanced forms such as panel scatter plots and scatterplot matrices allow representing degree of dependence between multiple variables (taken two at the time) in a comparative way. This paper introduces improvements in visualizing data utilizing variations of scatterplots. More specifically, it presents how to create analytical graphs representing bivariate relations between variables in Statistical Graphics Procedures in SAS. SG PANEL and SG SCATTER procedures supporting different statements and options including annotation (SG ANNO) and attribute maps (DATTRMAP) are utilized in order to generate graphs useful in enhancing the visual exploration of data. SG PANEL procedure produces multi-cell classification panels which allow presentation of the data categorized by one or more categorical variables. SG SCATTER procedure not only generates multi-cell panels, but also offers comparative view of all bivariate relations. Specifically, it helps in comparing relations presented on one scatterplot with the effects presented on another. In sum, advancements provided by Statistical Graphics Procedures in SAS are helpful in generating highly efficient plots, which might aid researchers in visualizing data when confronted with page constraints. Furthermore, they allow representing the multi-dimensional data in the two-dimensional space utilizing various statements and options supported by SG PANEL and SG SCATTER procedures.

Making Use of Incomplete Observations in the Analysis of Structural Equation Models: The CALIS Procedure's Full Information Maximum Likelihood Method in SAS/STAT® 9.3

Yiu-Fai Yung – SAS Institute

Data are precious. Missing values are unavoidable. Instead of throwing away incomplete observations or imputing missing values ad hoc, what would be a better way to analyze data with random missing values? The full information maximum likelihood (FIML) method of the CALIS procedure in SAS/STAT® 9.22 and later enables you to use all the available information in your data to estimate your structural equation models. This paper illustrates how you can use PROC CALIS to deal with random missing values in the following data-analytic situations: (1) estimating means and covariances, (2) regression analysis, and (3) structural equation or path modeling.

Other methods for treating incomplete observations are described in a systematic manner. The FIML method is superior to the ad hoc methods for analysis with incomplete observations. With PROC CALIS, the FIML method is more convenient than the multiple imputation (MI) method for fitting path or structural equation models with incomplete observations. This talk also illustrates some new features of PROC CALIS for analyzing missing patterns and data coverages.

A SAS MACRO for estimating bootstrapped confidence intervals in dyadic regression models.

Robert E. Wickham

The actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006) is a popular procedure for analyzing dyadic data (e.g., married couples, twin-siblings). Recent work (Kenny & Ledermann, 2010; Wickham & Knee, 2012) demonstrates that the ratios of regression coefficients generated by the APIM are often of substantive interest to researchers. Unfortunately, the sampling distributions for these ratios are non-normal, which renders standard parametric tests of significance (e.g., t-test) unreliable. This talk presents a SAS MACRO for performing a non-parametric bootstrapping procedure that will provide unbiased confidence intervals for several of the key coefficient ratios estimated by the APIM. Extensions to this general model are discussed.

Using SAS® and Mplus® to investigate measurement equivalence/invariance

Pat Taylor – University of Houston

Although it seems logical to establish measurement equivalence/invariance (ME/I) before evaluating group differences, this practice is not consistently observed. There exists a fairly extensive literature discussing the need to verify ME/I. The important message from the ME/I literature is that failure to establish ME/I may result in meaningless group differences. Within the ME/I literature several authors have described sequences of confirmatory factor analysis (CFA) models that will allow for the testing of ME/I. Even so, the testing of ME/I is not consistently conducted. In an effort to make ME/I evaluation more accessible this paper presents a SAS® macro that systematically tests a series of CFA models to evaluate ME/I in a two group case. The user first fits a multi-group model with the desired factor structure in Mplus®. The macro then takes the resulting Mplus® output file and creates and runs the necessary scripts for a complete evaluation of measurement invariance. Steps in the process include tests of factor loadings, item thresholds, item residual variances, factor variances, factor covariances, and factor means. Results from each step are saved as SAS® datasets. Decisions regarding the freeing of parameters are purely numerical and therefore the results should be carefully evaluated in light of relevant theory.

Tips, Tricks, and Strategies for Mixed Modeling with SAS/STAT® Procedures

Kathleen Kiernan - SAS

Inherently, mixed modeling with SAS/STAT procedures, such as GLMMIX, MIXED, and NLMIXED is computationally intensive. Therefore, considerable memory and CPU time can be required. The default algorithms in these procedures might fail to converge for some data sets and models. This paper provides recommendations for circumventing memory problems and reducing execution times for your mixed analyses. This paper also shows how the new HPMIXED procedure can be beneficial for certain situations, as with large sparse mixed models. Lastly, the discussion focuses on the best way to interpret and address common notes, warnings, and error messages that can occur with the estimation of mixed models in SAS software.

Picture Perfect Graphing with Statistical Graphics Procedures

Julie VanBuskirk – Baylor Health Care System

Do you have reports based on SAS/GRAPH procedures, customized with multiple GOPTIONS? Do you dream of those same graphs existing in a GOPTIONS and Annotate free world? Recreating complex graphs using Statistical Graphics (SG) procedures is not only possible, but much easier than you think! Using before and after examples, I will discuss how the graphs were created using the combination of Proc Template, Graph Template Language (GTL), and the SG procedures. This method produces graphs that are nearly indistinguishable from the original, with code that has been proven to be reusable across projects, and is based on one central style template which allows style changes to cascade effortlessly.

Structural Equation Modeling Using the CALIS Procedure in SAS/STAT® Software

Yiu-Fai Yung - SAS Institute

The CALIS procedure in SAS/STAT software is a general structural equation modeling (SEM) tool. This workshop introduces the general methodology of SEM and applications of PROC CALIS. Background topics such as path analysis, confirmatory factor analysis, measurement error models, and linear structural relations (LISREL) are reviewed. Applications are demonstrated with examples in social, educational, behavioral, and marketing research. More advanced SEM techniques such as the full information maximum likelihood (FIML) method for treating incomplete observations, robust estimation, and diagnostics for outliers and leverage points in the SEM context are also covered. This workshop is designed for statisticians and data analysts who want an overview of SEM applications using the CALIS procedure in SAS/STAT 9.22 and later releases. Attendees should have a basic

understanding of regression analysis and experience using the SAS language. Previous exposure to SEM is useful but not required. Attendees will learn how to use PROC CALIS for (1) specifying structural equation models with latent variables, (2) interpreting model fit statistics and estimation results, (3) using the FIML method for treating incomplete observations, (4) and detecting outliers and leverage points.

An analysis of customer preference of automobile products using SAS.

Akkarapol Sa-ngasoongsong - Oklahoma State University

This paper presents an analysis of customer preference of automobile products in terms of Willingness-To-Pay (WTP) of vehicle attributes using SAS®, including customer segmentation based on WTP of Body Type (BT) attribute, and dimensionality reduction of WTP vector. This analysis addresses issues related to the preparation of customer inputs for effective prediction of customer preferences. Our analysis shows that respondents show maximum variability in specifying their WTP for BT attribute and hence classification based on BT associations is the most suitable way to differentiate between respondents from available data. In case of dimensionality reduction of WTP vector, we propose a twofold criteria for WTP rankings. The first addresses the importance of WTP for an attribute level from a respondent's utility maximization standpoint. The second criteria addresses the predictability of WTP from the available data using Signal-to-Noise Ratio (SNR). The combination of both criteria provides excellent insights to the analyst regarding importance and predictability of WTP data, and also provides a tractable way to the dynamic modeling of customer preferences.

Predicting Students Enrollment Using SAS

Harjanto Djunaidi - South Piedmont Community College

Data driven strategic decisions have been utilized and used many years in other areas than in education. For example, most financial or manufacturing companies have used simulation, mathematical programming and statistical approaches to improve their ability to make sound strategic investment and resource allocation decisions. Recent dynamic changes in the US and global economy as well as in the competitive environments where higher education institutions are operating have forced colleges and universities in the US to find ways to optimize their services to the students given the new realities. One of possible applications of statistical analyses which can be used by these institutions is to use logistic regression model to predict student yield. This new approach helps to max out the yield more efficiently and guide the Office of Students Recruitments to predict how many students who were offered admissions will accept and attend. The logistic regression model generates the probability which can be used in the decision making process. Modeling a specific student group that has relatively close traits will certainly improve the ability to predict candidates' probability of accepting admissions offer. As results, decision makers might be able to allocate resources efficiently and make better strategic decisions on financial award, class room and course management as well as dorm assignment. Decision makers will also be able to better plan on the number of students should that should be put on the wait list and how many of the applicants will be sent a rejection letter.

Statistical comparison of relative proportions of bacterial genetic sequences

Jose Garcia-Mazcorro - Universidad Autonoma de Nuevo Leon

The intestinal tract is inhabited by hundreds of different types of bacteria, which have the potential of enhancing health or disease in the host. Several current technologies are capable of identifying these bacteria by determining the order of nucleotides (sequencing) in their DNA sequence with an unprecedented coverage. These technologies can provide two types of datasets: 1) the raw genetic sequences (not discussed here), and 2) the relative proportions of sequences, which are calculated by dividing the number of sequences obtained from a given bacterial group by the total number of sequences obtained. This dependent variable (relative proportions of sequences) is continuous

but constrained between 0 and 100%, and has a nested architecture (bacterial species within a genus within a Family within an Order within a Class within a Phylum). We discuss different alternatives (both parametric and non-parametric) to analyze this data set, with emphasis on the use of SAS 9.2. PROC MIXED can be used but skewed residuals are commonly encountered (data is usually not normally distributed). PROC GLIMMIX with a beta distribution can also be used; however, the beta distribution assumes that the total proportion of 100 is divided between two groups. The Dirichlet distribution is a generalization of the beta distribution that allows a proportion to be divided between two or more groups, but SAS does not currently provide this option. Future analyzes are needed and ongoing to empirically determine the most appropriate statistical method to compare relative proportions of bacterial genetic sequences.

Key Insight into the utility of megapixel camera photography using SAS

Cecil Hallum - Sam Houston St. Univ.

Digital photography is everywhere in today's world and has usages all the way from recording family events to that of supporting multivariate techniques for discovery of missing bodies, monitoring aftermaths of episodic events (e.g., hurricanes, tsunamis, earthquakes, etc.), medical diagnosis, and crime prevention to mention a very few. This presentation demonstrates usages of SAS to provide critical insight into an especially wide range of such applications and provides evidence that supports the following conclusions: 1) for the general user, most digital cameras in today's world provide far more information than the human eye can process (e.g., most general users do not need a 5, or higher, megapixel camera; visually a 1% systematic sample of such a photo is indistinguishable from the original); 2) the digitization and adequate sampling of photography can provide highly effective (in terms of speed and accuracy) applications in geographic information systems, remote sensing, medical diagnosis, crime prevention, etc.; and 3) SAS provides a very capable platform for doing a wide range of digital photography analyses. This presentation provides the SAS structure for performing photo digitization and systematic sampling to permit an effective magnitude of time savings in support of various image analyses. A demonstration is provided in the area of cluster analysis using SAS AF Frame and the associated SCL along with procedures including PROC FASTCLUS, PROC CLUSTER, PROC GPLOT, and PROC FREQ.

Net Present Value Model Approach

Jingjing Qu - Transamerica Life Insurance Company

A special feature of an insurance product is that its sale generates a sequence of premium payments up to a future time. Unlike the sale of consumption goods, the revenue of an insurance product at the time of sale has to include the assessment of the future potential premium payments. Can an effective model predict beyond the initial response a sufficient degree that would positively impact revenue? This paper presents the business value as well as the methodology of Net Present Value (NPV) models. The paper covers the data requirements and statistical procedures, as well as the benefit of NPV models compared to a response model or a RIP (response/issue/paid) model. The statistical methods presented are from a technical perspective and concentrate on developing a NPV model by using SAS.

PROC SURVEYFREQ: Why Do a Three Way Table in SAS When We Want Two Way Table Information?

Hemalkumar Mehta

A Proc Surveyfreq procedure in SAS® has an advantage over Proc Freq in that it incorporates multi-stage probability sampling design into the analyses. Several nationally representative data have multi-stage probability sampling design. Most of the time we need two way table information for the group of our interest, e.g.: patients with a certain disease. There are two ways to get group specific results in Proc Surveyfreq: (i) use "by statement" (ii) do "three way tabulation." "By statement" will provide group specific results but it will not give valid domain analysis and it will not preserve the sampling design. Hence, the results will not be generalizable to the population level. "Three way tables" will provide group specific results with valid domain analysis while preserving the sampling design. In the current paper, using

Medical Expenditure Panel Survey (MEPS) data, we show that three way tables should be requested when we need two way table information primarily for valid domain analysis and extrapolating results at population level. This paper can serve as a guide to researchers who deal with single stage or multi-stage probability survey data which uses clustering, stratification and weighting.

Potpourri

Google® Search Tips and Techniques for SAS® and JMP® Users

Kirk Paul Lafler - Software Intelligence Corporation

Google (www.google.com) is the worlds most popular and widely-used search engine. As the premier search tool on the Internet today, SAS® and JMP® users frequently need to identify and locate SAS and JMP content wherever and in whatever form it resides. This paper provides insights into how Google works and illustrates numerous search tips and techniques for searching articles of interest, including reference works, information tools, directories, PDFs, images, current news stories, user groups, and much more to get the best search results quickly and easily.

A Cup of Coffee and PROC FCMP: I Cannot Function Without Them

Peter Eberhardt - Fernwood Consulting Group Inc.

How much grief have you put yourself through trying to create macro functions to encapsulate business logic? How many times have you uttered "If only I could call this DATA step as a function"?

If any of these statements describe you, then the new features of PROC FCMP are for you. If none of these statements describe you, then you really need the new features of PROC FCMP. This paper will get you started with everything you need to write, test, and distribute your own "data step"; functions with the new (SAS® 9.2) PROC FCMP. This paper is intended for beginner to intermediate programmers, although anyone wanting to learn about PROC FCMP can benefit.

The Effective Use of Business Analytics

Philip Easterling - SAS

As the use of analytics continues to increase across all industries, many organizations have analytical projects and initiatives at various levels of maturity. A large percentage of organizations are still at the early stages of figuring out how to use analytics to derive information about customers, markets, competitors, suppliers, employees, and operations in order to better communicate, plan, and execute strategies, allocate funds, and manage staff. Maximum value can be achieved when an organization embraces the use of analytics, combined with effective information management practices and policies, to support a broad fact-based decision-making process within and across organizational boundaries.

This presentation will start by defining the role of analytics and business intelligence. The discussion will then explore the organizational challenges to promote the proper use of analytics and the critical role which an analytics "Center of Excellence" can play to support their efforts. The presentation will conclude by providing guiding principles to assist organizations in identifying starting points to apply analytics.

Enterprise Guide for New and Experienced SAS Users

Steve Fleming - ACT

SAS Enterprise Guide (EG) has revolutionized the way SAS is used to process, model, and visualize data. This presentation will look at the advantages and disadvantages of EG from the perspective of both a user new to the SAS environment and an experienced SAS programmer. We will cover tips for using EG more efficiently, how EG leads to better project documentation, and when to not use EG. Data used to illustrate the application of EG will be taken from actual educational research projects.

The SAS® Programmer's Guide to XML and Web Services

Chris Schacherer - Clinical Data Management Systems, LLC

Extensible Markup Language (XML) provides a flexible means of organizing and transmitting data for consumption by both humans and computers. As such, it has come to be widely used in rendering data within web applications as well as for data transmission via the internet. Because of XML's growing role in data interchange, it is increasingly important for SAS programmers to become familiar with SAS technologies and techniques for creating XML output, importing data from XML files, and interacting with web services? which commonly use XML file structures for transmission of data requests and responses. The current work provides detailed examples of techniques you can use to perform these tasks using XML Mapper®, the XML LIBNAME engine, Output Delivery System®, the FILENAME statement, and new SOAP functions available beginning in SAS 9.3.

Identical SAS IntrNet code

Rob Caudill - Texas Education Agency

The Texas Education Agency, TEA, like many other organizations has two web reporting websites for dynamic content: a test website that is available behind the TEA's firewall and enables the content owner to view the web page before it is put into production, and a production website that is available to the public. Having SAS/IntrNet code that is the same for the test and production web reporting environments makes managing web reports less complex because the data the web report is based becomes the primary variable.

Master of Science in Analytics (MSA) Department of Information Systems & Decision Sciences, Louisiana State University, Baton Rouge, LA

Joni N. Shreve -- Louisiana State University

Louisiana State University launched an intensive, 10 month long, Master of Science in Analytics (MSA) program in 2012. MSA students learn to use information technology and advanced statistical methods to help organizations reduce costs, increase revenues, and streamline operations. The curriculum focuses on the use of SAS, R, Microsoft SQL Server, and other state-of-the-art tools to extract valuable insights from the huge data sets produced by today's digital systems. Students work individually and on teams with real business data to solve practical problems in a series of homework assignments and a major team project. Typical applications include segmenting customers, managing risk, detecting fraud, streamlining supply chain operations, and improving business processes. Graduates of last year's pilot program were hired by leading companies including Amazon.com, Bank of America, and SAS.

Application of SAS in Product Testing in a Retail Business

Steven X. Yan - Zale Corporation

Testing new products is an important and continuous task for the retail business. A reliable and efficient procedure to evaluate new products is critical to the success of any retailer: Either under- or over-assessment of a product may result in a significant cost and loss to the company. However, in practice many tests are much more difficult to utilize than they first appear because of various sources of uncertainty involved. For example, most tests are carried out only in a small sample of stores due to store space limitations, labor cost, product availability, and other logistic factors. In addition, store sales are affected by internal and external factors such as product inventory, weather, local holidays, etc. In this paper we will introduce a product testing procedure that we have developed using SAS that includes product segmentation, store selection, and product scoring. We will illustrate and evaluate the procedure by a simulation study. Several useful SAS techniques for simulation study are described as well.

SAS® Data Management Techniques: Cleaning and transforming data for delivery of analytic datasets

Chris Schacherer - Clinical Data Management Systems, LLC

The analytic capabilities of SAS® software are unparalleled. Similarly, the ability of the Output Delivery System® to produce an endless array of creative, high-quality reporting solutions is the envy of many analysts using competing tools. But beneath all of the glitz and glitter is the dirty work of cleaning and managing the data in order to turn it into reliable, valid information. The current work provides detailed examples of techniques used to help the SAS programmer (1) understand the dataset with which they are working, (2) interrogate data for potential threats to the veracity of subsequent analyses, (3) overcome common challenges in creating analytic datasets, and (4) consistently deliver high-quality analytic datasets.

You Want ME to Use SAS 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.

Using SAS to locate and rename external files

Lu Gan - PPD, Inc

When reading in external data into SAS, a program needs to specify the data file location and file name in the related importing statements. If the raw data file is named with a timestamp, the import program will require an extra step which is updating the file name every time before it's run. This will be a hassle if the import is needed on a routine schedule and/or there are multiple external data files. Therefore, a SAS program can be written to eliminate the repeating manual update. This approach includes two steps, first searching for the latest data file in the specific file directory, then renaming it by removing the specific timestamp. After execution of the above steps, the import program will be able to read in the data files directly.

The examples and syntax illustrated are in SAS 9.2. This paper assumes that the reader has a basic understanding of DATA step programming and the macro language.

JavaScript menu that submits SAS/IntrNet Report code

Rob Caudill - Texas Education Agency

The Texas Education Agency, TEA, like many organizations uses SAS/IntrNet to deliver dynamic web reports to their customers. The TEA's Office of School Finance is responsible for administering the Foundation School Program (FSP) and for producing reports and other data related to the FSP. School Finance's primary report is the Summary of Finance, SOF, which is available via SAS/IntrNet in ten separate district level reports covering four years and up to three versions per year and in four state level reports. The fourteen SOF's take up a significant amount of vertical space on the web page they are on because there is a separate district selection/submit box for each SOF positioned down the page. This paper would be about a JavaScript based menu system that provides access to the SOF reports in less space by using customer's selections to return the requested report to the customer's computer screen.

When was my data last updated? How to automate data monitoring and notification.

Drew Turner - Texas Parks & Wildlife Department

Knowing when data was last updated can prove invaluable when verifying data integrity. If you have ever spent time troubleshooting a process only to find out that your root problem was outdated data, then you know the importance of keeping track of how recent your data is. Having that information about your data—how much there is and how

recently it was updated—awaiting you first thing in the morning increases efficiency, and the ability to analyze and compare past results enables you to recognize trends and better predict future activity.

This paper will describe a method to identify when a table was last updated (whether stored in a separate database or the SAS server), how to store that information for later analysis and finally how to automatically notify you of the results.

Institutional Research Intelligent: Go Beyond Reporting

Harjanto Djunaidi - South Piedmont Community College

Higher education institutions in the US are required to complete various reports and submit different schools' related data to the government through IPEDS. Schools' related information such as students' enrollment; financial aids, graduation and retention rate are among several reports that need to be completed by each degree granting institution which have received some sort of government's funding/support. These data sets contain very valuable information which can be used by the decision makers to make strategic planning or decisions that enable them to out-smart their competitors or to increase program efficiency. Majority of colleges and universities, though have gone through and completed data gathering process fall short of utilizing the information and use it to improve their strategic decisions. With increasing competition in the industry, decreasing funding received from the state, the federal agencies and alumni; and increasing college tuition have caused higher education institutions with no choice, but to make data-driven strategic decisions. For example, colleges and universities might be able to apply statistical approaches such as categorical or/and multivariate to predict students' enrollment; make strategic decisions on financial awards, market penetration and others. Unless this new mindset is embedded in the decision process, higher education in the US may continue to downsize their programs due to a smaller education budget.

Graphing & Reporting

Automating the Creation of Complex PowerPoints

Julie VanBuskirk – Baylor Health Care System

The creation of production reports for our organization has historically been a labor-intensive process. Each month our team produced around 650 SAS graphs and 30 tables which were then copied and pasted into 16 custom PowerPoint presentations, each between 20 and 30 pages. With stored processes and the SAS Add-In for Microsoft Office (AMO), simply refresh those 16 PowerPoint presentations by using AMO to run SAS stored processes. The stored processes generate the graphs and tables while AMO refreshes the document with updated graphs already sized and positioned on the slides just as we need them. With this new process we are realizing the dream of reducing the amount of time spent on a single monthly production process.

This paper will discuss the steps to creating a complex PowerPoint presentation that is simply refreshed rather than created new each month. I will discuss converting the original code to stored processes using Enterprise Guide, options and style statements that are required to continue to use a custom style sheet, and how to create the PowerPoint presentation with an assortment of output types including horizontal bar charts, control charts, and tables. I will also discuss some of the challenges and solutions specific to stored process and PowerPoint Add-In that we encountered during this conversion process.

SAS® Style Templates: Always in Fashion

Cynthia Zender - SAS

The syntax for style templates changed in SAS® 9.2 and became much easier to use. With the new CLASS statement, there is no need to debate the use of the STYLE statement versus the now defunct REPLACE statement. Yes, the REPLACE statement has gone away, and now we have the CLASS statement. In addition, you can import a

CSS file into a SAS style template. All of these exciting new changes add up to stylish and fashionable output using ODS style templates. This paper provides an introduction into the use of style templates in SAS 9.2. Methods of determining the correct style elements will be shown along with several concrete examples of making style template changes. The use of the IMPORT statement will also be demonstrated. In addition to these topics, a job aid will be provided that outlines the most commonly used style elements and their attributes.

PROC TEMPLATE Tables from Scratch

Kevin Smith - SAS

Did you know that nearly every table created by the SAS® System uses a template to describe what it looks like? Did you know that you can modify these templates, or even write your own templates to create custom tables? In this paper, you learn how to create and modify table templates, including how to add, remove, and move columns as well as headers and footers. You also learn how to apply styles, formats, and other visual effects, all from scratch.

A Different Point of View with ODS PDF 9.3

Scott Huntley - SAS

Getting the Right Report (Again): Your Compatibility Guide for ODS PDF 9.2 ODS PDF in SAS® 9.2 looks and acts different from earlier versions. Why? What changed? How can I maintain the same look that I like? This paper written in collaboration with SAS® Technical Support and R&D will take commonly asked questions submitted to SAS Technical Support about ODS PDF and give you the answers. Once you understand how things work and why things changed, you'll have the tools you need to create that perfect report in SAS 9.2.

Making Exploration of Nonlinear Models Fast and Easy Using JMP® 10

Chris Gotwalt - SAS

Nonlinear models are frequently encountered in applied technological areas such as the semiconductor and pharmaceutical industries. Defect density and pharmacokinetic models are two examples where fitting a straight line to data is inadequate or inappropriate. Exploration of these models is often tedious and time consuming, and model comparison is difficult. Through its Nonlinear platform, JMP 10 introduces a quick and simple way to fit multiple curves and explore competing models, streamlining the discovery process. Two detailed examples are given using data similar to that found in practice.

ODS Document from Scratch

Kevin Smith - SAS

ODS Document From Scratch ODS Document is most likely the most under-utilized feature of ODS. ODS Document gives you the ability to customize the structure of your reports in ways that no other ODS features can. It enables you to store the actual ODS objects created when running a report which you can then later rerun without invoking the procedures from the original report. You aren't limited to simply regenerating the same report; you can change the order in which objects are rendered, the table of contents, the templates used, macro variables, and ODS and system options. Even if you don't consider yourself an ODS wizard, don't be afraid to take a peek at the features of ODS Document in this paper because we'll be taking it from scratch.

SAS ODS and ODS Graphics for z/OS

MP Welch - SAS

The System z provides many capabilities which provide real value to mainframe customers. Communicating the valuable information stored within mainframes to an audience now accustomed to high quality reporting is essential. z/OS® provides a robust platform for data processing and automation and easily produces PDF, Excel, Word, and HTML documents with tables and graphics using standard batch processing and the SAS® system. Learn about the sometimes overlooked capabilities of the IBM HTTP Server (httpd) combined with

the z/OS® Distributed File Service zSeries® File System (zFS) to store and distribute PC Format documents created with SAS® ODS and SAS® ODS Graphics with BASE SAS® on z/OS systems.

Now You Can Annotate Your Statistical Graphics Procedure Graphs

Sanjay Matange - SAS

Have you ever had a situation where you wanted to add custom labeling or other graphical features to your statistical graphics (SG) procedure output but could not find a way to do it? Even with all of the plot types and options of the SG procedures, you might have run into this situation. With SAS® 9.3, you can add these features directly by using the new annotation support in the SG procedures.

The annotation data set definition used by these procedures has been redesigned to take advantage of ODS Graphics functionality. This paper will discuss this functionality in detail, highlighting new features in this system that include the following:

- * rich text support (including superscripts, subscripts, and Unicode)

- * transparency support for all primitives

- * more drawing spaces for easier placement of annotations

Getting the Right Report (Again): Your Compatibility Guide for ODS PDF 9.2

Scott Huntley - SAS

ODS PDF in SAS® 9.2 looks and acts different from earlier versions. Why? What changed? How can I maintain the same look that I like? This paper written in collaboration with SAS® Technical Support and R&D will take commonly asked questions submitted to SAS Technical Support about ODS PDF and give you the answers. Once you understand how things work and why things changed, you'll have the tools you need to create that perfect report in SAS 9.2.

Enhancing SAS output with Output Delivery System (ODS)

Hemalkumar Mehta - PhD student

This presentation will introduce audience to the HTML, PDF, RTF, MS Excel spreadsheet and other types of SAS outputs. With the help of few examples, the presentation will also show how to add traffic lighting to the output and how to change appearance of titles and footnotes. Various tips, tricks and techniques in handling SAS ODS output will be shown to the attendees.

Nesting Multiple Box Plots and Blockplots using GTL and Lattice Overlay

Greg Stanek - Baylor Health Care System

The objective was to provide a summary table and graph for several quality improvement measures on a single page to allow leadership to monitor the performance of care over time. The challenges were to integrate multiple SAS procedures to generate the plots within one page and whether to use box plots or series plots of means or medians.

The solution was developed by using Graphics Template Language (GTL) and the SGRENDER Procedure. For each measure we used the BOXPLOT statement to display a series of box plots and the BLOCKPLOT statement for a summary table and then used the LAYOUT OVERLAY statement to combine the box plots and summary tables on one page.

The results display a summary table (BLOCKPLOT) above each box plot series for each measure on a single page. Within each box plot series there is an overlay of a system level benchmark value and a series line connecting the median values of each box plot. The BLOCKPLOT contains descriptive statistics per time period illustrated in the associated box plot.

The discussion points will focus on techniques for nesting the lattice overlay with box plots and BLOCKPLOTS in GTL and some reasons for choosing box plots versus series plots of medians or means.

Overlaying Scatter Plots on Box Plots in the Presence of Ties

Charles Minard - Baylor College of Medicine

Graphical methods are important for efficient and effective visualization of data. Many graphical methods are available, and combining different types of graphics can yield interesting and effective results. Box plots are commonly used to compare the distribution of continuously measured variables across two or more groups, and overlaying a scatter plot on a boxplot can provide additional information about distributional differences or similarities. However, ties may be common when the response variable is not measured with high fidelity such as when time is measured in days as an integer value. Random jitter could be used to create separation between points when ties are present in the response variable. However, this can create a figure that is distorted and somewhat difficult to interpret. Evenly distributing ties across the horizontal scale creates a figure that is clearer and more informative.

The purpose of this paper is to present SAS code for generating a scatter plot overlaid on a box plot in the presence of ties. The data set requirements to generate this figure are discussed, and the SAS procedures TEMPLATE and SGRENDER are used to produce the final graphic. A data set comparing the number of days from hospital discharge to readmission stratified by groups of patients is used as an example throughout.

Data Visualization with SAS/Graph®

Kieth Cranford - Texas Education Agency

With the increase use of Business Intelligence, data visualization is becoming more important as well. SAS/Graph provides many tools to perform data visualization quite well. Some procedures, particularly the new Statistical Graphics procedures, can be used for this function without much data manipulation, while other procedures may require a bit more work.

This paper will present several data visualization techniques, such as cycle plots, heatmaps, dot plots and deviation graphs. The use of these techniques will be illustrated along with SAS/Graph code to generate the visuals. In some cases alternative approaches are presented.

Clinical & Pharma

ADaM Implications of the CDER Data Standards Common Issues Document

Sandra Minjoe - Octagon Research Solutions, Inc.

Over the past few years, the United States Food and Drug Administration (US FDA), specifically the Center for Drug Evaluation and Research (CDER), has been receiving more data from sponsors in a Clinical Data Interchange Standards Consortium (CDISC) or CDISC-like structure. Reviewers have had tools built and received training, but there are some technical issues with many submissions that are hindering their review process and thus their full adoption of CDISC. This prompted the issuance of a document entitled "CDER Common Data Standards Issues Document".

Working closely with CDER to address many of these issues, the CDISC Submission Data Standards (SDS) team created an Amendment to the Study Data Tabulation Model (SDTM) version 1.2 and the SDTM Implementation Guide (IG) version 3.1.2. The CDISC Analysis Data Model (ADaM) team has not created a corresponding amendment, but there are many issues noted in the CDER document that have implications on ADaM. This poster examines issues that could affect ADaM, and describes how to handle them so that data and supporting documents submitted to FDA CDER are reviewer-friendly.

Applying Business Analytics to Optimize Clinical Research Operations

David Handelsman - SAS

SAS is widely accepted as the gold standard for determining safety and efficacy for clinical trials, and it provides the primary mechanism for

preparing data for traditional clinical research analysis activities. However, most SAS users in the biopharmaceutical industry are unaware of the broad range of SAS analytics that are widely applied in other industries. This paper discussed and describes how SAS business and advanced analytics can be used to design better trials, forecast patient-based activities, and optimize other operational processes. Applying business and advanced analytics to clinical trial operations represents a new and improved approach to reducing the cost and time associated with managing clinical research projects. As a result, the roles of SAS experts in the biopharmaceutical industry are expanded.

Use and Applications of JMP® in Microbial Ecology

Jose Garcia-Mazcorro - Universidad Autonoma de Nuevo Leon

Microbial ecology is the ecology of microorganisms; that is, the study of the relationship among microorganisms and between microorganisms and their environment. Millions of dollars and countless hours are currently spent by enthusiast scientists, microbiologists and bioinformaticians from all over the world to elucidate the characteristics and biological mechanisms behind the ecology of microorganisms.

Microorganisms are omnipresent in the biosphere. They can be found in virtually every environment, from bright-colored hot springs to the skin and guts of animals. However, perhaps because of their close relationship with our bodies, the microorganisms inhabiting the intestinal tract have received much more scrutiny than any other group of microorganisms on Earth. Intestinal microorganisms have also been studied because they strongly modulate health and disease in humans and other animals.

JMP® (SAS Institute) is a powerful software that offers a variety of tools and applications that have been used in many fields of study. Surprisingly, JMP® has only been scarcely used in the field of Microbial Ecology. In this paper, I will discuss the use and applications offered by JMP® 9.0.0 in the study of microbial ecology with a strong emphasis on gut microbial ecology. Topics will include basic statistics, graphical tools, and multivariate methods such as clustering and principal components. Real data sets obtained from animal studies will be utilized to demonstrate the usefulness of the software. Additionally, examples will be given from other fields of study for people outside the field of Microbial Ecology.

Dirty Data? Clean it up with SAS

Gabriela Cantu - Baylor Health Care System

Clinical trials data can be complex and integrate multiple data elements including demographic, laboratory, clinical, medication, and medical history. Although extremely valuable to the study the completeness and cleanliness of clinical trials data is often less than ideal. In order to be successful, clinical researchers must strategize methods to maintain data integrity and cleanliness. This presentation will focus on planning for and performing clinical trials data edit checks, cleaning and documentation.

Through a comprehensive planning process and a series of simple SAS® procedures, dirty data can be transformed into usable and clinically informative datasets. A simple ARRAY can be used to reassign tricky variables into more useful formats. Utilization of PROC UNIVARIATE to produce continuous variable statistics allows researchers to identify out of range and unexpected values for clinical data. Additionally, PROC FREQ will allow researchers to check for inappropriate or incorrect values for categorical variables. Through a series of MACROS, the clinical research is able to execute these SAS procedures with minimal key strokes and repetition. Accurate documentation of data cleaning and variable verification can be obtained by utilizing the SAS log and ODS statements. SAS provides the clinical researchers real time documentation of both data cleaning procedures and results.

The Effect of Adding the Chronic Disease Score to the Charlson Comorbidity Score in Predicting Mortality in Type – II Diabetes Patients: An Application of Reclassification Measures

Hemalkumar Mehta - College of Pharmacy, University of Houston

Risk adjustment models such as Charlson Comorbidity Score (CCS) and Chronic Disease Score (CDS) are used to control for confounding and predicting outcomes in epidemiologic studies. A traditional statistical measure such as concordance (c) statistics has been used widely in literature for comparison of different risk adjustment models. Recently, new measures have been introduced for comparison of such models; this includes reclassification methods such as reclassification tables and calibration statistics, net reclassification improvement (NRI) and integrated discrimination improvement (IDI). In the current study, in addition to c-statistics, we show the application of novel reclassification measures in comparing risk adjustment models. We compared CCS and CCS + CDS models in predicting one-year mortality in type-II diabetes mellitus patients using the Clinical Practice Research Database (CPRD) database. Descriptive statistics was used to describe the cohort. Logistic regression models were used to predict mortality; all analyses were adjusted for age and gender. Reclassification tables and calibration statistics, NRI and IDI were calculated. All data manipulation and statistical analyses were performed using SAS 9.3. Results of this study showed that both CCS and CDS were predictive of 1-year mortality (c-statistics: 0.791, 0.788, respectively). The addition of CDS to a model with the CCS score improved c-statistics slightly (C-statistics: 0.803). The NRI and IDI values were positive for CCS + CDS model compared to CCS model which demonstrated that the CCS + CDS model performed significantly better compared to CCS model. These results suggest that the combined use of the CCS and CDS may be useful to adjust for comorbidity in outcome models of mortality in patients with type – II diabetes mellitus.

Clinical Graphs using SAS 9.2

Sanjay Matange – SAS

Do you wish you could create modern clinical graphs using SAS? Have you heard that it is difficult to create such graphs using SAS? If the answer is yes to any of these questions, this course is for you. This half-day course will cover, in detail, how to create the graphs used in Health and Life Sciences industry, including graphs commonly used for analysis of safety data for clinical trials. In this course, we will build many such graphs from scratch using the most appropriate graph tools from the ODS Graphics tool set, including SG Procedures and GTL.

Energy

Using SAS to Read From And Write To EXCEL Workbooks Set Up as Templates Which Are Not Set Up In Columns

Carl Raish - Ercot

ERCOT procures Emergency Response Service (ERS) from providers in Texas using an EXCEL submission form which has several different tab layouts and with data that is not organized in columns. The presentation will give a brief overview of ERS, show how submission forms are input into SAS using the EXCEL libname engine, and then, following processing, written out for return to the submitter using custom built pre-defined EXCEL templates, the EXCEL libname engine, DDE and EXCEL macros.

Let Oil and Gas Talk to You: Predicting Production Performance

Rob Soto – SAS

How do historical production data relate a story about the subsurface oil and gas reservoirs? Business analysts must perform accurate analysis of reservoir behavior using only rate and pressure data as a function of time. This paper introduces methodologies to forecast oil and gas production by exploring implementations of the AUTOREG, ESM, and MODEL procedures in SAS/ETS. The AUTOREG procedure estimates linear regression models when the errors are autocorrected. The ESM procedure generates forecasts by using exponential smoothing models. Examples of the MODEL procedure arising in subsurface production data analysis are discussed. In addressing these examples, the techniques for pattern recognition, implementing TREE, CLUSTER, and SISTANCE procedures in SAS/STAT are

highlighted to explicate the importance of oil- and gas-well profiling to characterize the reservoir.

Using SAS Risk Dimensions' dynamic features to handle multiple curves

Jim Moore

In the analysis of a company-wide portfolio, it is often necessary to account for multiple price and volatility curves of varying lengths and characteristics. This presentation attempts to show how SAS Risk Dimensions 5.3 allows for multiple covariance matrices, and curves to be processed in the same model by using dynamic addressing. Specific areas that are covered include

- The generation of principal component "scores" and covariance matrices using Proc Princomp that are passed to RD
- The creation of risk factor definition data sets
- Risk Dimension methods for dynamically processing a subset of one or more curves

Intervention Analysis of Water Consumption for Utilities Using Different Time-Series Models

Fujiang Wen - Dallas Water Utilities

In December, 2011, mandatory watering restrictions on outdoor water use were implemented to reduce total consumption in the city of Dallas, which limited the use of sprinkler systems to twice weekly for the City's customers. Months later, the restrictions became a permanent water conservation measure. An intervention analysis was used to estimate the impact of the restrictions on water consumption using time-series models which include a transfer function in ARIMA models and time-varying regression effects in the RANDOMREG statement of Unobserved Components Models (UCM). The study indicated that Proc ARIMA provides flexibility to easily model transfer functions for intervention effects, and the UCM model is a convenient way of additively decomposing a time series into the components of trend, season, cycle, and irregular movements. Both procedures were demonstrated through a few of different steps, and simultaneous effects of environmental factors were also captured by the models.

Hands-On-Workshops

An Introduction to Creating 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 presentation provides basic information on how to use Base SAS 9 software to create multi-sheet Excel workbooks (for Excel versions 2002 and later). You will learn techniques for quickly and easily creating attractive, multi-sheet Excel workbooks that contain your SAS output using the ExcelXP tagset. The techniques can be used regardless of the platform on which SAS software is installed. You can even use them on a mainframe! More in-depth information on this topic will be presented if time permits.

Intro to Arrays

Lisa Mendez

Have you ever thought about using SAS arrays but just never had the time to learn about them? Have you ever wondered why you would even need to learn about arrays? Have you tried to use an array but got confused or frustrated and gave up? If so, then attend this Hands on Workshop (HOW) to learn the basics about SAS arrays. This is a scenario based HOW where SAS arrays, along with Do Loops, will be used to solve problems. This HOW will help you learn about SAS arrays, how to identify when to use them, and get you started coding them in SAS. This HOW is geared towards beginning SAS array users and will be conducted in a no frills, non-complex approach.

The Armchair Quarterback: Writing SAS® Code for the Perfect Pivot (Table, That Is)

Peter Eberhardt – Fernwood Consulting Group Inc.,

"Can I have that in Excel?" This is a request that makes many of us shudder. Now your boss has discovered Excel pivot tables. Unfortunately, he has not discovered how to make them. So you get to extract the data, massage the data, put the data into Excel, and then spend hours rebuilding pivot tables every time the corporate data are refreshed. In this workshop, you learn to be the armchair quarterback and build pivot tables without leaving the comfort of your SAS® environment. In this workshop, you learn the basics of Excel pivot tables and, through a series of exercises, you learn how to augment basic pivot tables first in Excel, and then using SAS. No prior knowledge of Excel pivot tables is required.

SAS Business Intelligence (BI) - An Introduction to Information Delivery Portal

John Taylor - Texas Parks and Wildlife

If you've ever wondered, "How do I surface my stored process onto the SAS Information Delivery Portal?", "How do I get the utility of SAS into the hands of those in my organization who are not SAS users", or even "How can I get access to those SAS Dashboards I see my colleagues using?", then this is a hands-on workshop for you. We will start off with showing you how the Portal was designed to work with many of the SAS clients that you have sitting right on your desktop. We will then discuss some configuration topics as well as some options to make the SAS Information Delivery Portal look just as you want. Finally, we will show you how to create Portal pages and portal portlets not only for you but for any group for which you are a content administrator. This is a great workshop allowing you hands-on use of a SAS interface that may prove to be the most beneficial of all to your organization.

SAS Business Intelligence (BI) - Building Financial Analytic Content (with SAS® Enterprise Guide and SAS® OLAP Cube Studio)

Alejandro Farias - Texas Parks and Wildlife

This methodology was created as an alternative to improve the overall performance of our SAS financial reports. Originally, financial reports were surfaced in SAS® Enterprise Guide and SAS® Add-In for Microsoft Office with SAS® Information Maps built on Oracle tables and views. This method had been an improvement over our existing Oracle financial reporting tools, however we identified several areas where we could continue to improve performance and add new analytic content not previously available on the core Oracle tables and views.

This reference document can serve as a step by step instructional tool to design, integrate and automate a Business Intelligence (BI) financial report using SAS® Enterprise Guide and SAS® OLAP Cube Studio.

Super Demos

Super Demo: Bootstrap Anything with the One Click Bootstrap in JMP

Chris Gotwalt –SAS

This demo will introduce the One Click Bootstrap in JMP Pro 10. Any statistic in JMP10 can now easily be bootstrapped by right clicking on it in a report window and selecting 'Bootstrap'. JMP then does the resample based simulation behind the scenes for you and gives you the bootstrapped data set.

Super Demo: New Features in PROC FORMAT for SAS 9.3

Cynthia Zender –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.

Super Demo: Author with SAS

Shelley Sessoms – SAS

This Super Demo will give you all the information you need to prepare a winning book proposal. You'll learn about the benefits offered by SAS Press, both pre-and post-publication. We'll walk through the documents needed for a book proposal, and leave plenty of time for Q&A.

Super Demo: ODS and Traffic Lighting for PROC PRINT, REPORT, and PROC TABULATE

Cynthia Zender –SAS

The Output Delivery System (ODS) used with PROC PRINT, REPORT and PROC TABULATE makes "traffic lighting" or highlighting of various output items easy to do. Find out how!

Super Demo: Overview of the PLM Procedure

Kathleen Kiernan – SAS

Learn how to use the PLM procedure to perform post-fitting analyses on model information stored from various SAS/STAT® modeling procedures.

Super Demo: You Want ME to use SAS Enterprise Guide?

Vince DelGobbo – SAS

This presentation will introduce you to the Enterprise Guide product, and provide you with some good reasons why you should consider using it.

Super Demo: Drag and Drop Statistical Process Control with the Control Chart Builder

Chris Gotwalt –SAS

This demo will show how to use the new Control Chart Builder in JMP10 to solve real manufacturing problems, and also show how to use it in conjunction with the Column Switcher to explore multivariate data quickly and easily.

Super Demo: Quick Results with SAS ODS Graphics Designer

Sanjay Matange –SAS

You just got the study results and want to get some quick graphical views of the data before you begin the analysis. Do you need a crash course in the SG procedures or export your data to another application just to get a quick graph? What to do? The SAS ODS Graphics Designer is the answer. With this application you can create many graphs for clinical research or business application using an interactive drag-and-drop process. In addition to getting your graph right away, you can also render your graph in batch with new data and output the results to any open destination. You can view the generated GTL code as a leg up to GTL programming.

Super Demo: What's New with the SG Procedures in SAS® 9.3

Sanjay Matange –SAS

The SG procedures are a powerful, yet simplified way to create graphics through the ODS Graphics system. In SAS 9.3, we made another leap forward to provide users with functionality they need to create graphs for their analyses and reports. This presentation focuses on these exciting innovations in the SG procedures, including vector graphics support, annotation support, attribute maps, new chart types, enhanced group visualizations, and enhancements to existing plots and charts. This presentation will conclude with a discussion about possible SAS 9.4 enhancements. Come by and take the opportunity to provide your feedback.