



**2019**



# Hands-On Workshops

**The 2019 South Central SAS® Users Group (SCSUG) Education Forum in Baton Rouge, Louisiana is excited to offer twelve Hands-On Workshops (HOWs) !**

With dozens of engaging SAS® presentations, twelve in-conference hands-on workshops, featured "fee-based" pre- and post-conference seminars, networking opportunities, breakfasts, lunches, mixers, and more, SCSUG 2019 will be one education and networking extravaganza you won't want to miss! We have planned an event with incredible learning and networking opportunities and hope you will join us on October 17<sup>th</sup> – 18<sup>th</sup>, 2019 at the Business Education Complex on the campus of Louisiana State University (LSU) in beautiful Baton Rouge, Louisiana.

Paper and Hands-on Workshop (HOW) presentations are at the heart of a SAS users group meetup. The 2019 SCSUG Education Forum will feature dozens of presentations and HOWs organized into several academic sections covering a variety of topics and experience levels.

We are also planning to offer several moderately-priced "fee-based" pre- and post-conference seminars at this year's Education Forum. Stay tuned for the seminar topics, dates and times of these additional learning opportunities.

Plan to attend the 2019 SCSUG Education Forum and please spread the word to colleagues and friends! Our hash tag for all social media is **#SCSUG2019** and our Twitter handle is **@scsugorg**. Visit our **LinkedIn group page** at **SCSUG-on-LinkedIn** from time-to-time as we organize great content and so you can see the highlighted presentations, HOWs and special events we're planning for you – our valued attendees – at the 2019 SCSUG Educational Forum.

# 2019 SCSUG Education Forum

## In-Conference Hands-On Workshops (HOWs) !

### **SAS® Studio: Learning the basics of the newest interface to SAS**

As of today, there are 3 primary interactive interfaces to SAS® that are provided and supported by SAS®. The Display Manager, including the Program Editor and somewhat later the Enhanced Editor date back to the late 1980's. In 1999, the first edition of SAS® Enterprise Guide® was released. The most recent interface, SAS® Studio, was introduced in 2014 and is a web interface to the SAS system.



**Kevin Davidson,  
Ph.D**

Currently, SAS does not have any plans on further development to Display Manager. All future development is being geared towards Enterprise Guide and SAS Studio with a stated goal of making the two products more similar in function. For users relatively new to SAS, utilizing Enterprise Guide or SAS Studio will likely prove the most beneficial for learning SAS coding skills. For the longtime Display Manager user, it may be worth considering a hybrid approach of using both Display Manager and either Enterprise Guide or SAS Studio.

This Hands-On workshop will focus on how to navigate within SAS Studio and on the utilities within SAS Studio that may help you speed up your work compared to Display Manager. Attendees should be able to load SAS Studio from their SAS 9.4 sessions. In addition to reviewing and practicing SAS Studio features, we will also briefly review some of the features currently lacking that may have you looking towards Enterprise Guide or Display Manager to perform some of your SAS duties.

### **Data Driven Programming Using SAS® For Beginners**

One of the skills that epitomizes a senior SAS programmer (aka: GURU if you will) is the ability to write code that is data driven. This requires understanding and distinguishing what is code from data. As one shifts towards data driven programming you will find the old paradigm of what is code versus data shifts greatly. This paper and presentation explores several data driven programming techniques that are available to SAS(r) users. It is not meant to be exhaustive in nature, but rather, a gentle introduction into what is possible with data driven techniques. First we will start distinguishing what is code versus data. Then move on to demonstrate how to use Macros, Data Step, Call Execute, and Hash Objects to automate your programs/reports using data driven techniques.



**Toby Dunn**

### **Beyond The Basics: Using SAS® Enterprise Guide® 7.1 on fictitious NAEP data (and Excel too)**

SAS® Enterprise Guide® (EG) provides the user with all of the SAS tasks that can be executed from the program data screen. In educational assessment, such as National Assessment of Educational Progress (NAEP) data, the user has to check that the current data is comparable to all of the previous years' data. This is why SAS is so essential to the educational data field. Attendees at this session will go through a typical day of verifying and cleaning educational data. The Hands-On Workshop (HOW) group will use Procedure Contents, Univariate, Frequency, Regression, and the Output Delivery System (ODS) enhancements, which add greater flexibility in generating, storing, and reproducing SAS procedures. Also, attendees will export their results into Excel.



**Rebecca  
Frederick**

## **Extreme SAS Reporting: Tips, Tricks and Building Blocks for Creating Extraordinary Reports with SAS®**

Since 1998, the U.S. Centers for Medicare and Medicaid Services (CMS) has maintained a website, *Nursing Home Compare*, which provides detailed quality information about every certified nursing home in the country. In December 2008, CMS greatly enhanced the usability of the website by adding an easy-to-understand 5-star rating. Each nursing home receives one to five stars based on performance in each of three key quality domains (health inspections, reported staffing levels, and quality measures derived from mandated assessments of resident health and well-being) plus an overall quality rating. Calculation of ratings requires integration of information from both facility and resident-level data sources. SAS® was used extensively in analysis to support the development of the rating system, and it is currently used both to process data to refresh the ratings each month, based on newly collected data in each domain, and to perform analyses of the effectiveness and accuracy of constantly changing techniques and data streams.



**Louise Hadden**

The provider previews, which were originally three pages in length and included extensive explanations of how the ratings were created, are continuously revised to incorporate new information and new regulations affecting nursing home providers throughout the country. This changing data stream is published on the Nursing Home Compare website in various forms, and the provider preview readers are now referred to a Technical User Guide (TUG) and other government web site links explaining how each domain's rating is calculated and other important information rather than take up inordinate static space in the provider previews. The provider previews vary in length according to the information being conveyed and/or highlighted each month, generally running between 5 and 11 pages.

A preview of the month's ratings in the form of a customized PDF report is generated for each provider for each month. These reports are automatically loaded into providers' e-mailboxes by means of specific identifying information embedded in the file name for each provider's report. The data sources for the reports include but are not limited to a Provider Rating file created by individually processing data from staffing, inspection, and quality measure domains; and detailed tables and information on each of these domains.

Attendees will walk through the process of constructing control tables, assembling disparate data sets (using publically available files), and building attractive and useful reports such as the provider preview described above.

## **Getting Started with the SGPLOT Procedure**

Do you want to create highly-customizable, publication-ready graphics in just minutes using SAS®? This workshop introduces the SGPLOT procedure, which is part of ODS Statistical Graphics, included in Base SAS®. Starting with the basic building blocks, you can construct basic plots and charts in no time. We'll work through several plot types and learn some simple ways to customize each one.



**Joshua Horstman**



**Troy Martin  
Hughes**

### **Ushering SAS® Emergency Medicine into the 21st Century: Toward Exception Handling Objectives, Actions, Outcomes, and Comms**

Exception handling (also called event trapping or error handling) describes both the identification and resolution of adverse, unexpected, or untimely events that can occur during software execution, and should be implemented in SAS® software that demands reliability and robustness. The goal of exception handling is always to reroute process control back to the "happy trail" or "happy path"—i.e., the originally intended process path that delivers full business value. When insurmountable events do occur, exception handling routines should instruct the process, program, or session to terminate gracefully to avoid damage or other untoward effects. And between the opposing outcomes of a fully recovered program and graceful program termination lie several other exception resolution paths that can deliver full or partial business value, sometimes only with a slight delay. This hands-on workshop demonstrates six different methods that SAS practitioners can implement to ensure software dynamically responds to exceptions. The &SYSERR and &SYSCC automatic macro variables are used to detect warnings and runtime errors programmatically, and other SAS automatic macro variables and environmental variables are evaluated to drive dynamic software functionality.



**Andrew  
Kuligowski**

### **Parsing Useful Data Out of Unusual Formats Using SAS®**

Most "Introduction to Programming" courses will include a section on reading external data; the first assumption they make will be that the data are stored in some sort of documented and consistent format. Fortunately, in the "real world", a lot of the data we deal with has the same basic assumption of occurring in a documented, consistent format – a *lot* of it, but not *all* of it.

This hands-on workshop will address some techniques that can be used when we are not dealing with cleanly formatted data, when the data we want is in a less-than-ideal format, perhaps intermingled or seemingly buried with unnecessary clutter. It will discuss the principles of using SAS® to parse a file to extract useful data from a normally unusable source. This will be accomplished by citing examples of unusual data sources and the SAS Code used to parse it.



**Kirk Paul Lafler**

### **Hands-on SAS® Macro Programming Essentials for New Users**

The SAS® Macro Language is a powerful tool for extending the capabilities of the SAS System. This hands-on workshop teaches essential macro coding concepts, techniques and tips to help new users learn the basics of how the Macro language works. Using a collection of Macro Language coding techniques, attendees learn how to write and process macro statements and parameters; replace text strings with macro variables; generate SAS code using macro techniques; manipulate macro variable values with macro functions; create and use global and local macro variables; construct simple arithmetic and logical expressions; interface the macro language with the SQL procedure; store and reuse macros; and troubleshoot and debug macros.



**Russ Lavery**

### **A HOW on Hashing**

Hash tables are underutilized, and very fast, techniques developed for table lookup – that now do much more. A key feature of has use is the avoidance of CPU and RAM intensive sorting of data during table “merges”. Understanding the behavior, and even the “shape”, of this memory resident object can be a bit of a challenge to the typical SAS programmer. This paper, with its cartoon format, endeavors to make this new programming technique more approachable.

Hash tables use a new syntax format that is similar to the object oriented syntax of other languages. Hash tables are created in a data step and exist only as long as that data step is running. It exists in RAM and are separate from the program data vector.

It should be remembered that SAS has hash tables due to the work of Dr. Paul Dorfman and the responsiveness of the people at SAS to user input.

### **Do you know when your data is lying to you? The HOW of**

#### **Regression Analysis with Quantitative and Qualitative Variables**

Bring your computer to this Hands-On Workshop and let’s explore how your data lies to you! You will use regression analysis (PROC REG) that is widely used to explain and predict quantitative outcomes based on both quantitative indicators and qualitative indicators. A qualitative indicator such as a binary variable, D, may describe a population difference, such as ‘male’ and ‘female,’ or ‘before’ and ‘after’ some event.



**Steven Myers,  
Ph.D**

This workshop will walk you through the analysis of whether an outcome variable, Y, is influenced by a binary event, D. Using only 14 years of data on Y, you will learn that what seems very simple actually takes 8 different regressions and many Wald statistical tests to reveal that the best conclusion is a complexity of model specification and statistical inference. The take away is no matter how sophisticated the technique and how good the data, there is no substitute for thinking your way through a problem. Blindly following technique alone is a bad practice that leads you to make huge mistakes.

You will learn the value of articulating a problem, preparing data, exploring the data and the importance of the data generating process. You will experience interpreting the results and inferring the validity of the results and drawing a conclusion. You will learn a rather comprehensive set of techniques in a very simple example. Most importantly, you will learn that the roadmap for similar problem solutions is not guided by the techniques as much as the critical application of human thought.

### **Python in SAS®**



**Charu Shankar**

With the entry of several new open source languages, users feel the need to learn them and understand the differences and commonalities between them. Come learn how to express your data needs by writing a python panda. The DATA step and Python are completely different languages. Learn how object oriented programming python stacks up with procedural SAS DATA step code, and do a compare and contrast. Learn to write native python code to perform data access and data manipulation tasks and submit it in your SAS session. Learn how computing principles such as 'order of first occurrence' play out in both languages. Learn Python on free SAS university edition in this Bring your own device (BYOD) hands-on workshop (HOW).



**Stephen Sloan**

## **Twenty ways to run your SAS program faster and use less space**

When running SAS® programs that use large amounts of data or have complicated algorithms we often are frustrated by the amount of time it takes for the programs to run and by the large amount of space required for the program to run to completion. Even experienced SAS programmers sometimes run into this situation, perhaps through the need to produce results quickly, through a change in the data source, through inheriting someone else's programs, or for some other reason. This hands-on workshop shows twenty techniques that can reduce the time and space required for a program without requiring an extended period of time for the modifications.