


BASUG Half-Day Training Announcement

Please join us for this informative training, and consider coming to our morning quarterly meeting as well (separate event). *For information on the morning meeting, please visit [Quarterly Meeting Announcement](#)*

BASUG is hosting an informal light buffet lunch {between the morning and afternoon sessions / prior to the training}. We hope you can join us for this opportunity to network and socialize with your fellow SAS users.

Topic	A behind the scenes view of PROC Report.
Summary	This course will open the hood and show you how the REPORT procedure's engine and its internal processes work step-by-step. A major feature of this talk is the development of rules describing the internal working of PROC Report and the linking of those rules to complicated, and desirable, report formats. <i>Please see detailed topics below.</i>
Instructor	Russ Lavery, Independent Consultant
When	June 23, 2017 1:30 – 5:00PM
Where	 <p>Microsoft New England Research and Development Center (NERD)¹ One Memorial Drive Conference Center, First Floor Cambridge, MA 02142 857-453-6000</p>
Directions	Please visit the meeting site directions page
Price	\$155 - if paid online by June 13 \$180 - if paid online before by NOON June 22 \$195 - at-the-door – check only <i>Please see details below</i>
Audience / Prerequisites	Beginner to intermediate SAS programmers – at least a couple of months of general SAS experience. Previous experience with PROC Report not required.
How to register	Individual, on-line registration required. Pre-payment guarantees you a seat and handouts. Please visit the event registration page
Contact	If you have questions about the course, please contact the training coordinators .

Course Description

PROC Report is one of the most powerful tools in SAS' report writing toolbox. It calculates like a data step and can format output in sophisticated ways. Producing output that might otherwise require several data steps or SQL joins, it can eliminate hundreds of lines of code and greatly simplify your reporting programs. PROC Report is especially useful (and efficient) when dealing with large files – it can produce very complicated reports with only one pass through a source data set!

Through several increasingly complicated examples and over 160 animated PowerPoint slides, this seminar will demonstrate the many features of PROC Report. This seminar will also delve into the internals of PROC Report, discussing a series of rules to guide your coding process. It will give a person with little or no experience with PROC Report the ability to program complicated reports. And folks who are more advanced programmers should come away with a few tricks, but most importantly, a deeper understanding of what this powerful procedure is capable of.

As an aside: This half-day seminar was once burned onto a CD and included as an extra feature in Art Carpenter's excellent book on PROC Report. Since the book is no longer sold in hardcover format, the seminar has been unavailable for a few years.

Course Outline

The talk is divided into sections, each section having the focus described below.

Intro Section 1: An introduction to features and capabilities of PROC Report (this section included for those who haven't used it very often).

Intro Section 2: An introduction to the PROC Report graphic.

Intro Section 3: An introduction to the 3 internal steps of PROC Report (evaluation phase, set up phase and report row phase)

Intro Section 4: Some Rules for PROC Report syntax and how those rules relate to the structure and contents of PROC Report internal files.

Sample Report 1: In this section, we apply the rules to create a report with details and report breaks.

Sample report 2: In this section, we apply the rules to create a report with detail information, an "Rbreak after" and a compute statement.

Sample Report 3: In this section, we apply the rules to create a report with summary level information and an RBreak.

Sample Report 4a: To really understand calculations and PROC Report, one must understand the timing sequence of the 3 different types of computes (a "compute var" block, a computer "before/after var" block or a "compute before/after" block). This report introduces timing rules and offers evidence that the timing rules are, in fact, accurate. We will build on these rules in later reports.

Sample Report 4B: This report explores if statement execution in compute blocks - a desirable feature of PROC Report that increases the PROC's ability to produce very customized output.

Sample Report 5: This report uses all the techniques developed above to show how you can use a new type of variable to carry information "across rows" (think retain statement) as a PROC Report performs calculations. The typical piece of information that one carries across rows (retains) is the denominator in the calculation of a fraction. This report illustrates the calculation of percentages and of total cumulative percentages. This report illustrates the mechanism one would use if you wanted to add an observation number to a report.

Sample Report 6: This report shows the internals of the very powerful "Across" option in PROC Report. The "Across" option, combined with the ability of PROC Report to export one of its internal files, makes PROC Report a competitor for PROC Transpose.

Sample Report 7: This report is another example of the "Across" option but shows the computation of a column "inside" levels of an "Across" variable. The author learned this technique from the lady, at SAS, who was in charge of programming PROC Report. When she shared this trick she opined that only one or 2% of SAS programmers knew how to do this.

Instructor Bio

Russ Lavery has over twenty years' experience using SAS on both windows and UNIX machines. He has both built and managed data marts and then created and managed production reports produced from the data marts. He is active in the SAS community and has presented over sixty papers at SAS conferences/universities and companies all over the US, in Europe and China. He has won three best paper awards and one of his talks, with his voice, was burned onto a CD and is included in the back of Art Carpenter's book on Proc Report (which is the training he will be providing at BASUG). He is one of sixty "SAS Partners" in the North East section of the US.

Training Registration and Payment Instructions

Please read this ENTIRE section carefully!

1. Pricing

\$ 155 if paid online by **June 13**
 \$ 180 if paid online before by **NOON June 22**
 \$ 195 if paid at-the-door (check only)
 INDIVIDUAL, ON-LINE REGISTRATION IS REQUIRED.

2. Register

You *must register* for this training (even if you plan to pay by check). To register and purchase tickets for the class please visit the [event registration page](#).

Please register early! Seating and handouts are guaranteed only for pre-paid registrants.

3. Payment Methods

Credit Card: We urge you to pay by credit card, using our online system. Make sure to purchase your ticket by **June 13** to get the early-bird price.

Check: **Do NOT mail a check to us prior to the workshop.** Pre-register online, and bring a check with you for the at-the-door-price.

Full payment is due by the day of the class. There will be NO EXCEPTIONS. We never accept cash. We *do* accept credit card payments through our online registration service.

4. Refund Policy

To receive a refund for the training, please send an email to [our training coordinators](#) by 5PM on **June 13**. After **June 13**, we will refund your payment (less a \$10 processing fee) only if we can fill your seat with other attendees.

[Event Registration Page](#)
[Top of Training Announcement](#)
[Meeting Announcement](#)
[Return to BASUG](#)

BASUG Contacts

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- (1) The Microsoft New England Research & Development Center (NERD) is a research and software innovation campus located in the heart of Cambridge, Massachusetts. The NERD vertical campus spans two buildings with its primary presence and conference center located at One Memorial Drive and a recently renovated and expanded space located at One Cambridge Center. NERD is home to some of Microsoft's most strategic teams including Microsoft Research New England, Microsoft Application Virtualization (App-V), SharePoint Workspace, Microsoft Technical Computing, Microsoft Advertising, Microsoft Lync, Microsoft Office 365 and more. NERD has become a hub of activity for the local tech community and has hosted more than 500 events and welcomed more than 40,000 visitors during the past two years.