



SAS® Tech Report

February 12, 2008

Surprise! I'm back ... but not for long. Since my replacement hasn't been found, I've agreed to produce one more newsletter. I hope you'll find many helpful tips and articles in this issue.

And for even more tips, be sure to attend [SAS Global Forum 2008](#) in San Antonio. You'll get to mix and mingle with thousands of your peers, plus hundreds of SAS employees. You're sure to take away a few new tricks and ideas. I'll be there this year, so stop by the Pubs area in the Demo Room and say hello!

Shelley Sessoms

Editor

SAS News

The Output Delivery System (ODS) from Scratch

The Output Delivery System (ODS) is a great way to move beyond reports that just use the listing output. Using ODS, you can generate reports in formats such as HTML, XML, PDF, PostScript, RTF, and Microsoft Excel. This paper tells you what you need to know to generate reports with ODS, from scratch. You'll learn how to generate multiple output formats, simultaneously; how to change the look of your report using styles; how to add text passages; and other "neat" tips (that is, helpful information).

Download the entire 14-page document: <http://support.sas.com/rnd/base/ods/scratch/ods-from-sc-paper.pdf>

SAS® OnDemand for Academics

With SAS® OnDemand for Academics, you can access the power of SAS software through the Internet. Visit the Web site to learn more about the offering or to access support information:
<http://support.sas.com/ondemand/>

Modernizing Your SAS® Code

Most SAS programmers have used the FREQ procedure, perhaps to evaluate basic data quality, but many valuable features of PROC FREQ are underutilized, even by experienced SAS users who turn to potentially complex routines when similar results could be produced with a simpler approach.

Counting the Number of Distinct Levels of a Classification Variable

One traditional technique that yields a count of the number of distinct levels of a variable involves sorting the data prior to running a DATA step. Another possible approach is a GROUP BY clause in a PROC SQL query.

The major disadvantage to these approaches is that a separate analysis is required for each variable of interest. Furthermore, to identify the presence of missing values, more complexity must be introduced into each routine.

```
/* Repeat this for each variable of interest */
proc sort data=maps.metamaps out=sorted nodupkey;
  by contnent;
run;
data levels(keep= Contnent_Levels);
  set sorted end=no_more;
  if no_more;
  Contnent_Levels=_N_;
  label Contnent_Levels="Levels of CONTNENT";
run;
proc print data=levels label noobs;
run;
```

<p style="text-align: center;">Levels of CONTNENT</p> <p style="text-align: center;">7</p>
--

The NLEVELS option is supported with PROC FREQ starting in SAS9 and generates a summary of the level counts at the start of the procedure's output, including an indicator of the presence of missing values.

```
/* One PROC FREQ step can handle many variables */
proc freq data=maps.metamaps nlevels ;
```

```

tables type contnent gisimpert / noprint;
run;

```

Number of Variable Levels			
Nonmissing			Missing
Variable	Label	Levels	Levels

TYPE	Type of Map Dataset: GIS or GRAPH	2	0
CONTNENT	Numeric rep. for Continent	7	1
GISIMPRT	Imports into GIS	6	1

A huge advantage of this approach is obtaining information for many variables in a single step. The NLEVELS information is printed even when you suppress the detailed frequency reports with the NOPRINT option in the TABLES statement. The ODS output object named NLEVELS can be captured as a data set, too.

```

/* One PROC FREQ step can handle many variables */
ods output nlevels=Levels;
proc freq data=maps.metamaps nlevels;
tables type contnent gisimpert / noprint;
run;
proc print data=Levels;
run;

```

Obs	TableVar	TableVarLabel	NLevels
1	TYPE	Type of Map Dataset: GIS or GRAPH	2
0	2		
2	CONTNENT	Numeric rep. for Continent	7

```

1          6
3  GISIMPRT  Imports into GIS          6
1          5

```

Displaying Counts in Descending Order of Frequency

To emphasize the most common, or least common, values within your data, sequencing PROC FREQ results based on order of frequency is helpful.

A traditional technique is to sort and print the output data set produced through the OUT= option in the TABLE statement. This approach requires multiple steps to generate and order the counts, plus display the results. In addition, cumulative counts and percentages are not included in the output data set and would need to be calculated from the raw counts and percentages.

```

/* Repeat this for each variable of interest */
proc freq data=maps.metamaps;
    tables contnent / noprint out=byvalue;
run;
proc sort data=byvalue out=bycount;
    by descending count;
run;
proc print data=bycount;
run;

```

Obs	CONTNENT	COUNT	PERCENT
1	93	99	31.5287
2	95	83	26.4331
3	91	75	23.8854
4	92	27	8.5987
5	94	19	6.0510
6	96	11	3.5032
7	.	2	.

For many years, PROC FREQ has had a built-in capability to accomplish this task: the ORDER=FREQ option. SAS programmers could apply this option within their mainframe batch jobs more than a quarter century ago!

```

/* One PROC FREQ step can handle many variables */
proc freq data=maps.metamaps order=freq ;
  tables type contnent gisimpert;
run;

```

With this technique it is almost trivial to determine values that occur most often or least often. Likewise, because the cumulative statistics are displayed within the standard report, little effort is needed to determine what percentage of the data falls into the top N groups.

Type of Map Dataset: GIS or GRAPH				
TYPE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
GRAPH	281	88.92	281	88.92
GIS	35	11.08	316	100.00

Numeric rep. for Continent				
CONTNENT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
93	99	31.53	99	31.53
95	83	26.43	182	57.96
91	75	23.89	257	81.85
92	27	8.60	284	90.45
94	19	6.05	303	96.50
96	11	3.50	314	100.00

Frequency Missing = 2

Imports into GIS				
GISIMPRT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NA	179	60.07	179	60.07
ASIS	97	32.55	276	92.62
WHERE LAKE NE 1	20	6.71	296	99.33
WHERE ID NE 999	1	0.34	297	99.66

WHERE LAKE=0	1	0.34	298	100.00
Frequency Missing = 18				

Operating System and Release Information

Product Family	Product	System	Reported Release	Fixed Release*
SAS System	Base SAS	OpenVMS Alpha	9 TS M0	
		Linux	9 TS M0	
		HP-UX IPF	9 TS M0	
		64-bit Enabled Solaris	9 TS M0	
		64-bit Enabled HP-UX	9 TS M0	
		64-bit Enabled AIX	9 TS M0	
		Windows Vista	9 TS M0	
		Windows Millennium Edition (Me)	9 TS M0	
		WINDOWS/NTSV	9 TS M0	
		Microsoft Windows XP Professional	9 TS M0	
		Microsoft Windows Server 2003 Standard Edition	9 TS M0	
		Microsoft Windows Server 2003 Enterprise Edition	9 TS M0	
		Microsoft Windows Server 2003 Datacenter Edition	9 TS M0	
		Microsoft Windows NT Workstation	9 TS M0	
Microsoft Windows 2000	9 TS M0			

		Professional		
		Microsoft Windows 2000 Server	9 TS M0	
		Microsoft Windows 2000 Datacenter Server	9 TS M0	
		Microsoft Windows 2000 Advanced Server	9 TS M0	
		Microsoft Windows 95/98	9 TS M0	
		Microsoft® Windows® for x64	9 TS M0	
		Microsoft Windows XP 64-bit Edition	9 TS M0	
		Microsoft Windows Server 2003 Enterprise 64-bit Edition	9 TS M0	
		Microsoft Windows Server 2003 Datacenter 64-bit Edition	9 TS M0	
		Microsoft® Windows® for 64-Bit Itanium-based Systems	9 TS M0	
		z/OS	9 TS M0	
		Tru64 UNIX	9 TS M0	

* For software releases that are not yet generally available, the Fixed Release is the software release in which the problem is planned to be fixed.

Fair Lending Compliance: Intelligence and Implications for Credit Risk Management

By: Clark Abrahams and Mingyuan Zhang

List price: 65.00 USD

384 pages

ISBN: 978-0-470-16776-2**

ISBN 10: **

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Description:

Fair lending is no longer just a compliance issue -- it arguably has a significant impact on an institution's business growth and line operations. New ways of thinking about credit risk and credit access, supported by sound and powerful analytical methods, are required in order to seize revenue opportunities of an ever-expanding pool of credit consumers, while meeting regulatory challenges relative to lending products and practices. To that end, this book describes the frameworks and their building blocks for an effective compliance program and related risk measurement systems. The analysis methodologies explained in the book can help leverage alternative data and the next generation of credit models.

SAS Products and Releases: SAS Fair Banking

** ISBNs have changed from 10 to 13 digits. To form the 13-digit ISBN, a prefix of "978" is added and the last digit is changed.

Order online today: <http://www.sas.com/apps/pubscat/bookdetails.jsp?pc=61485>

For ODS, how can I see all the current style settings in my template?

To see the style definitions for your output, use the ODS MARKUP statement together with one of the utility tagsets listed below. These are default tagsets for SAS 9, but you can [download them](#) for use in Release 8.2. These tagsets are experimental for 8.2.

NAMEDHTML

creates HTML output like STYLE_POPUP but with all the objects labeled similar to ODS TRACE. When you click on the item that you are interested in, a window pops up and shows all of the style attributes.

ODSSTYLE

creates PROC TEMPLATE code for the STYLESHEET= file that you specify. The code includes unparented information, that is, all of the exact style settings.

STYLE_DISPLAY

creates HTML like STYLE_POPUP and also produces a sample page of output.

STYLE_POPUP

creates HTML like HTMLCSS, but if you're using Internet Explorer, a window pops up and shows the resolved ODS style definition for any item that you click.

Here is an example. View [output](#).

```
ods markup file="temp.html" tagset=tagsets.namedhtml
stylesheet="temp.css";

proc print data=sashelp.class;
run;

ods markup close;
```

See also the SAS online documentation and the [STYLESHEET= defaults](#) table for CSS.

Operating System and Release Information

Product Family	Product	System	Reported Release	Fixed Release
SAS System	Base SAS	All	n/a	

Newest Certification Prep Tool

If you are an experienced SAS user preparing to take the SAS Advanced Programming exam for SAS[®]9, be sure to review the newly released reference book, [SAS[®] Certification Prep Guide: Advanced Programming for SAS[®]9](#). This prep guide covers major topics tested on the SAS Advanced Programming Exam for SAS[®]9.

Events

SAS® Global Forum 2008

<http://support.sas.com/events/sasglobalforum/2008/>

March 16-19
San Antonio

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<http://support.sas.com/training/sasglobalforum/>

March 12-14 (training)
March 16 (certification)
San Antonio

<http://support.sas.com/training/sasglobalforum/>

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