

 THE POWER TO KNOW



Under the Hood: Understanding the EXCELXP Tagset Template

User Group Presentation
Cynthia Zender
2009

THE POWER TO KNOW®

Today's Topics

Topics covered:

- Overview of Spreadsheet Markup Language XML concepts
- Simple TAGSETS.EXCELXP invocation
- Using Suboptions with TAGSETS.EXCELXP
- Applying Microsoft formats using TAGATTR= style override syntax
- Traffic Lighting with TAGSETS.EXCELXP
- Some of the topics will be covered via demo.
- Demo code and programs are available on the conference CD.

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.



Overview

Microsoft Spreadsheet Markup Language XML

THE POWER TO KNOW®

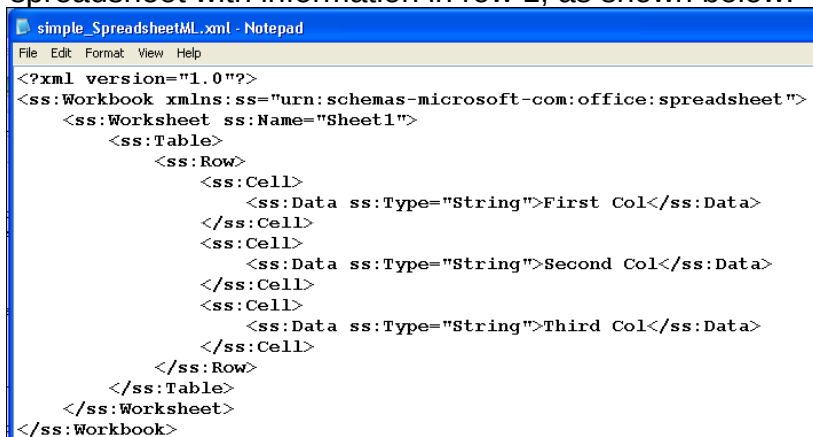
Excel XML or SpreadsheetML

- SpreadsheetML (also known as Excel XML) was introduced in 2002 when Microsoft announced its intention to support XML in Microsoft Office 11.
- In June 2005, Microsoft announced the adoption of XML for default file formats in Office 12.
- The ODS TAGSETS.EXCELXP destination currently generates SpreadsheetML, for which you need Microsoft Office 2002 or higher in order to open the file.

<http://xml.coverpages.org/Office12-XML.html>

Brian Jones' SpreadsheetML Example

Brian Jones, a program manager at Microsoft, writes about SpreadsheetML and Microsoft Office topics. In a Web log, he describes the minimum XML needed to define a spreadsheet with information in row 1, as shown below.



```

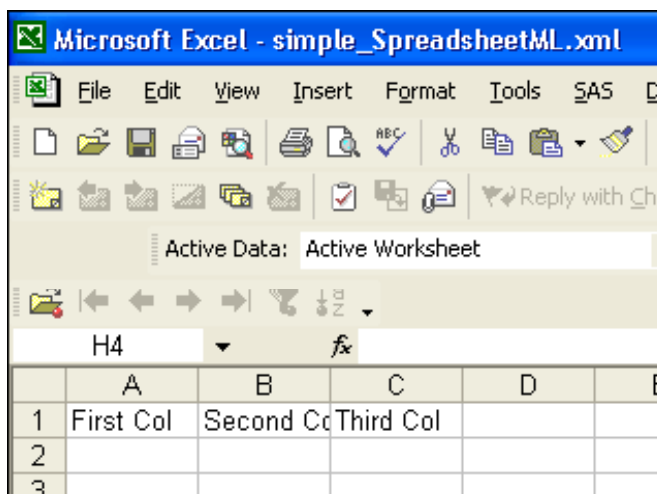
simple_SpreadsheetML.xml - Notepad
File Edit Format View Help
<?xml version="1.0"?>
<ss:Workbook xmlns:ss="urn:schemas-microsoft-com:office:spreadsheet">
  <ss:Worksheet ss:Name="Sheet1">
    <ss:Table>
      <ss:Row>
        <ss:Cell>
          <ss:Data ss:Type="String">First Col</ss:Data>
        </ss:Cell>
        <ss:Cell>
          <ss:Data ss:Type="String">Second Col</ss:Data>
        </ss:Cell>
        <ss:Cell>
          <ss:Data ss:Type="String">Third Col</ss:Data>
        </ss:Cell>
      </ss:Row>
    </ss:Table>
  </ss:Worksheet>
</ss:Workbook>
  
```

5

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

XML Rendered by Excel

When the XML file is opened and rendered by Excel, it has three columns and one row.



Microsoft Excel - simple_SpreadsheetML.xml

File Edit View Insert Format Tools SAS Data

Active Data: Active Worksheet

H4 fx

	A	B	C	D	E
1	First Col	Second Co	Third Col		
2					
3					

6

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.



Introduction

Using ODS TAGSETS.EXCELXP to Create SpreadsheetML Files



SAS and SpreadsheetML

Starting in SAS[®]9, you can create Spreadsheet Markup Language files using the ExcelXP tagset and ODS. In order to open the resulting XML file, you must use Microsoft Office 2002 or higher.

- ODS TAGSETS.EXCELXP will create SpreadsheetML XML files that can only be opened with Microsoft Excel.
- The only limitation with TAGSETS.EXCELXP is that, **by Microsoft design**, SpreadsheetML XML does not support the inclusion of any graphic images (such as logos or output created with SAS/Graph).

ExcelXP Example

```
ods tagsets.ExcelXP file='websale.???';
  title 'Web Sales';
... SAS code ...
ods tagsets.ExcelXP close;
```

SAS®9 code creates an XML file. You can use either a .XML or .XLS file extension.

**Viewed with
Excel 2002**

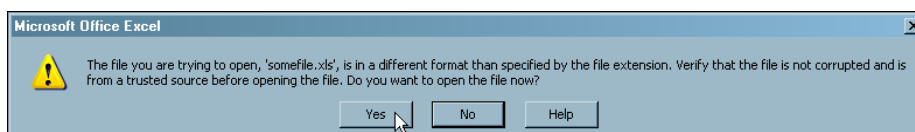
	A	B	C	D
1	Dest	Type	Avg Amt	Number of Sales
2	CHICAGO	TEL	150	2
3	GENEVA	WEB	350	2
4	LONDON	TEL	550	2
5		WEB	700	1
6	PARIS	TEL	800	1
7		WEB	900	1
8			500	9

9

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Excel 2007

If you give the ODS output file an extension of .XLS, you will receive this warning message from Excel 2007, because it detects that you have given a file extension of .XLS to what is really an XML file. Simply click 'YES' to open the output file in Excel 2007.

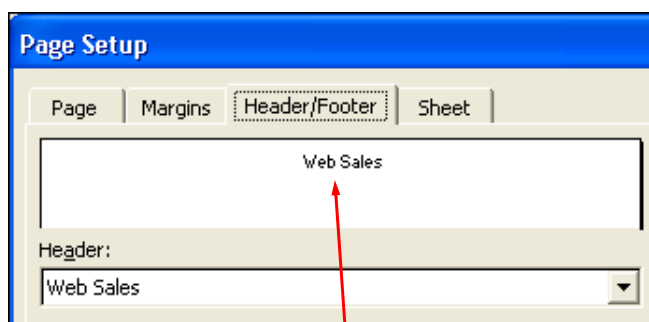


10

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Page Setup

In addition to having the SAS style template respected, the SAS title (or footnote) is placed in the appropriate page setup area.



```
title 'Web Sales';
```

11

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

ExcelXP XML behind the Scenes

```
websales.xls - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="windows-1252"?>
<Workbook xmlns="urn:schemas-microsoft-com:office:spreadsheet"
  xmlns:x="urn:schemas-microsoft-com:office:excel"
  xmlns:ss="urn:schemas-microsoft-com:office:spreadsheet"
  xmlns:html="http://www.w3.org/TR/REC-html40">
```

The top of the XML file, websales.xls, is created automatically by the ExcelXP tagset template. This type of XML conforms to the Microsoft Spreadsheet Markup Language specification.

12

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

ODS TAGSETS.ExcelXP With Two Proc Steps

By default, the ExcelXP tagset creates one worksheet tab for each procedure's results.

```
ods tagsets.ExcelXP file='toXLS_XP.xls'
                        style=sasweb;
proc report data=tktdata nowd;
run;

proc report data=tktdata nowd;
run;
ods tagsets.ExcelXP close;
```

Table 1 - Detailed and or summa / Table 2 - Detailed and or summa /

13

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

ODS TAGSETS.ExcelXP Output

PROC REPORT 1

	A	B	C	D
1	Dest	Type	Avg Amt	Number of Sales
2	CHICAGO	TEL	150	2
3	GENEVA	WEB	350	2
4	LONDON	TEL	550	2
5		WEB	700	
6	PARIS	TEL	800	
7		WEB	900	
8			500	

PROC REPORT 2

	A	B	C	D
1	Type	Total Amt	Avg Amt	Max Amt
2	TEL	2200	440	800
3	WEB	2300	575	900
4		4500	500	900

The <Worksheet> tag shows how name is created and used.

```
<Worksheet ss:Name="Table 1 - Detailed and or summa">
```

```
<Worksheet ss:Name="Table 2 - Detailed and or summa">
```

Table 1 - Detailed and or summa / Table 2 - Detailed and or summa /

14

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Documentation Request

The ExcelXP tagset is self-documenting.

If you submit a request for documentation, as highlighted in the ODS invocation statement, the SAS log contains the current documentation for this tagset.

```
ods tagsets.ExcelXP file='websales.xls'
options(doc='Help')
style=sasweb;
```

```
168 ods tagsets.excelxp options(doc='Help');
NOTE: Writing TAGSETS.EXCELXP Body file: sashtml6.htm
-----
The EXCELXP Tagset Help Text.

This Tagset/Destination creates Microsoft's spreadsheetML XML.
It is used specifically for importing data into Excel.

Each table will be placed in it's own worksheet within a workbook.
This destination supports ODS styles, traffic lighting, and custom formats.

Numbers, Currency and percentages are correctly detected and displayed.
Custom formats can be given by supplying a style over-ride on the tagattr
style element.

By default, titles and footnotes are part of the spreadsheet, but are only
used for printing.

Also by default, printing will be in 'Portrait'.
The orientation can be changed to landscape.

The specification for this xml is here.
http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnexcel/html/ods_excelml.asp

See Also:
http://support.sas.com/rnd/base/topics/odsmarkup/
-----
These are the options supported by this tagset.

Sample usage:
ods tagsets.excelxp options(doc='Quick');
ods tagsets.excelxp options(embedded_titles='No' Orientation='Landscape');

Doc: No default value.
Help: Displays introductory text and options.
Quick: Displays available options.
```

15

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.



Using the ExcelXP Tagset

This demonstration illustrates creating several SpreadsheetML files for Excel using ODS TAGSETS.EXCELXP.

ExcelXP1.sas
ExcelXP2.sas
ExcelXP3.sas

16

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.



Doing More

**Understanding Suboptions,
TAGATTR and Traffic Lighting**

**THE
POWER
TO KNOW®**

New Version of the ExcelXP Tagset

The EXCELXP destination is available starting in SAS 9.1.

- SAS 9.1.3 comes with the v1.28 tagset, 08/29/05.
- SAS 9.2 comes with the v1.75 tagset, 07/26/07.
- As of Dec, 2008, the latest, most current version of the tagset is v1.86, 04/15/08.

As tagset templates are updated, you will occasionally want to download updated versions of the tagset template. The latest EXCELXP tagset can be downloaded from <http://support.sas.com/rnd/base/topics/odsmarkup/excltags.tpl>

The updated EXCELXP tagset will be stored in the SASUSER.TEMPLAT item store if using the default ODS PATH statement.

About INI Files and the ExcelXP Tagset

An *INI file* is an initialization or configuration file that generally contains configuration data for Microsoft Windows-based applications. Using an INI file with the ExcelXP tagset enables you to store configuration data for later reuse.

The ExcelXP tagset enables you to do the following:

- create an INI file
- use an existing INI file
- point to a section within an INI file

19

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

General INI File Format

An INI file is an ASCII text file that can be created with Notepad and has a .ini file extension. The application that uses the INI file must be programmed to accept and use the configuration information. An INI file will generally conform to these specifications:

- Sections start with a section declaration that encloses the section name in square brackets. ([and]).

[SectionName]

- Parameters follow the form shown below.

var = value

- Lines starting with a semicolon are assumed to be comments, and are ignored.

;Ignore this comment

20

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Creating an INI File with ExcelXP

To create an INI file with ExcelXP, use the following syntax:

```
ods tagsets.ExcelXP file='make_ini.xls'
  data='makedata.ini'
  options(zoom='75' Embedded_Titles='ON'
    Print_Header='&L&D ')
  style=sasweb;

... SAS code ...
ods tagsets.ExcelXP close;
```

```
[default]
Tagset_name =TAGSETS.EXCELXP
ZOOM = 75
EMBEDDED_TITLES = ON
PRINT_HEADER = &L&D
```

makedata.ini
file

21

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Using an INI File with ExcelXP

To use a predefined INI file with ExcelXP, use the following syntax:

```
ods tagsets.ExcelXP file='use_ini.xls'
  options(configuration_file='makedata.ini')
  style=analysis;
... SAS Code ...

ods tagsets.ExcelXP close;
```

The configuration_file option points to the INI file that contains the options to be used for this particular invocation of the ExcelXP tagset.

```
[default]
Tagset_name =TAGSETS.EXCELXP
ZOOM = 75
EMBEDDED_TITLES = ON
PRINT_HEADER = &L&D
```

22

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Using a Multi-Section INI File with ExcelXP

To use a single section in a predefined INI file with ExcelXP, use the following syntax:

```
ods tagsets.ExcelXP file='use_ini_sect.xls'
  options(configuration_file='sect_usedata.ini'
           configuration_name='landscape')
  style=analysis;
  ... SAS Code ...
ods tagsets.ExcelXP close;
```

The configuration_file option points to the INI file and the configuration_name option points to the section within the INI file. If you do not use the configuration_name option, ExcelXP looks for a section named 'default'.

```
[regular]
ZOOM = 100

[small]
ZOOM = 75

[landscape]
ORIENTATION=landscape
```

23

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Doing More with ExcelXP: Formats

Sometimes your SAS formats are not respected by Excel when your output file is opened. For example:

- leading zeroes may not be honored
- character strings (like customer id or SSN) may be treated as numbers by Excel
- dates may not appear as you want in Excel or may seem to be "off" by 60 years
- decimal places or dollar signs set by SAS formats may not be respected.

To fix this, you need to learn about and use Microsoft formats (not SAS formats) for your variable values. ODS uses the TAGATTR= style attribute as a way to pass Microsoft formats from SAS to Excel.

24

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

About TAGATTR and Microsoft Formats

You use the TAGATTR= style attribute with

- **FORMAT** specification – to send a Microsoft format from SAS to Excel. You can either select an Excel number format or create your own custom formats.
- **TYPE** specification to set a specific data type – such as String, Number or DateTime
- **FORMULA** specification to send a formula to Excel using R:C notation.

25

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

About Microsoft Formats

Specifying a custom Excel format is similar to a SAS PICTURE format. The PICTURE format uses the numbers 0 and 9 as digit selectors, while Excel uses the pound sign (#) and the number 0 as digit selectors.

- **#,##0** number format is a Microsoft number format similar to comma5. or a custom PICTURE format of 0,009. The pound sign instructs Excel not to include digits if no value is provided.
- **#,##0.00** is a custom format, which also uses the pound sign as a placeholder. However the '.00' ensures that two decimal places will be used to display the value. If the decimal places do not exist, then zeros will be used.

26

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

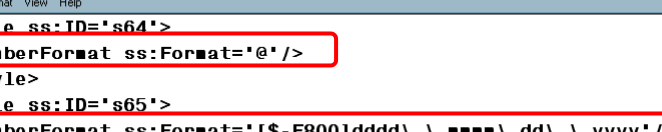
Table A-1. Commonly encountered values for mso-number-format

from: <http://www2.sas.com/proceedings/sugi28/052-28.pdf>

16-03-02	dd-mm-yy
16-03-2002	dd-mm-yyyy
16.03.02	dd.mm.yy
16.03.2002	dd.mm/yyyy
03/16/02	mm/dd/yy
03/16/2002	mm/dd/yyyy
03.16.02	mm.dd.yy
03.16.2002	mm.dd/yyyy

Product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Microsoft Example



```
<?xml version='1.0' encoding='UTF-8'>
<Style ss:ID='s64'>
  <NumberFormat ss:Format='@' />
</Style>
<Style ss:ID='s65'>
  <NumberFormat ss:Format='[$-F800]dddd\, \ ■■■\ dd\, \ yyyy' />
</Style>
<Style ss:ID='s66'>
  <NumberFormat ss:Format='&quot;*&quot;;#,##0.00' />
</Style>
<Style ss:ID='s68'>
  <NumberFormat ss:Format='0.0%' />
</Style>
</Styles>
```

TagAttr0.xml - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Developer

Font

Calibri 11 A A

B I U

Font

Paragraph

Alignment

Number

Percentage

10.0%

	D1						
	A	B	C	D	E	F	G
1	000123	Friday, October 26, 1900	\$600.00	10.0%			
2							
3							

Doing More with ExcelXP

Sometimes you want variable values to be conditionally highlighted based on a cell value:

- change background color
- change foreground color
- change font attributes.

29

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Trafficlighting Concepts

Traffic lighting can be performed in ODS destinations that use style attributes such as HTML, MSOFFICE2K, PDF, RTF, and EXCELXP.

Two common methods for performing traffic lighting:

- Using CALL DEFINE in a COMPUTE block in the REPORT procedure
- Referencing user-defined formats in the STYLE= option in the PRINT, REPORT, or TABULATE procedures (or in a TABLE template).
- If you are using a user-defined format, then the format label will contain the style attribute value that you want to be applied. For example, in PROC REPORT:

```
define Sales / style(column)={background=bck.};
define Dept / style(column)={foreground=$fore.};
```

30

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Defining and Using the Format

However, before you use the format for the style attribute value, you must define the format:

1 Define

```
proc format;
  value bck low-50000 = 'white'
            50000<-high = 'yellow';
  value $fore 'CEO Support' = 'green'
            'IT Support' = 'cyan'
            other = 'black';
```

2 Use

```
define Sales / style(column)={background=bck.};
define Dept / style(column)={foreground=$fore.};
```

31

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.


Doing More with ExcelXP

These demonstrations illustrate how to update how to specify some of the new options when you use the ExcelXP tagset.

INI Files: ExcelXP4.sas
 Microsoft Formats: TagAttr1.sas
 Traffic Lighting: TrLight1.sas

32

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Contact Information and Additional Resources

Questions? Contact Cynthia.Zender@sas.com

Additional Resources:

Office 2003: XML Reference Schemas (SpreadsheetML- Excel 2003)

<http://www.microsoft.com/downloads/details.aspx?familyid=fe118952-3547-420a-a412-00a2662442d9&displaylang=en>

Updated SAS Tagsets to Download Individually

<http://support.sas.com/rnd/base/topics/odsmarkup/#download>

Try This Demo: The ExcelXP Tagset and Microsoft Excel

http://support.sas.com/rnd/base/topics/odsmarkup/excelxp_demo.html

Printable Spreadsheets Made Easy: Utilizing the SAS® Excel XP Tagset

Rick Andrews, UnitedHealth Group, Cary, NC

<http://www.nesug.org/proceedings/nesug08/ap/ap06.pdf>

Copyright © 2009, SAS Institute Inc. All rights reserved. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

More ODS MARKUP Resources

ODS Markup, Tagsets, and Styles!

<http://www2.sas.com/proceedings/forum2007/225-2007.pdf>

ODS MARKUP: The SAS® Reports You've Always Dreamed Of

<http://www2.sas.com/proceedings/sugi30/085-30.pdf>

The Devil Is in the Details: Styles, Tips, and Tricks That Make Your Microsoft Excel Output Look Great!

Eric Gebhart, SAS Institute, Cary, NC

<http://www2.sas.com/proceedings/forum2008/036-2008.pdf>