

Excel with SAS® and Microsoft Excel

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Potential
of One

Power
of
All

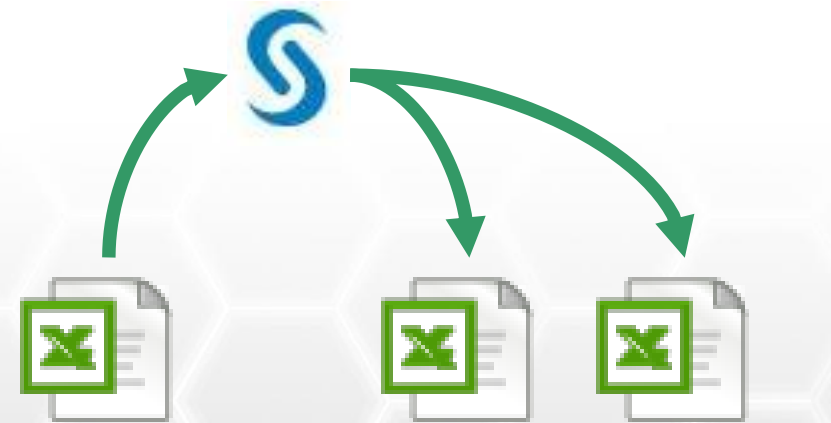
SAS Global Forum
Washington DC
23 – 26 March 2014

Introduction - SAS & Excel interaction

- Excel as a Data Source
- Excel as a Data Target
- Excel as a Report Target

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Data Source

Data Target

Report Target

SAS/Access for PC Files

ODS

Libname, SQL Connect
Proc Import / Export
Import / Export Wizards

SAS Enterprise Guide

SAS Visual Analytics

SAS & Excel interaction (cont.)

- “Client Server” (SAS Client)
- “Client Server” (SAS Server)

Potential
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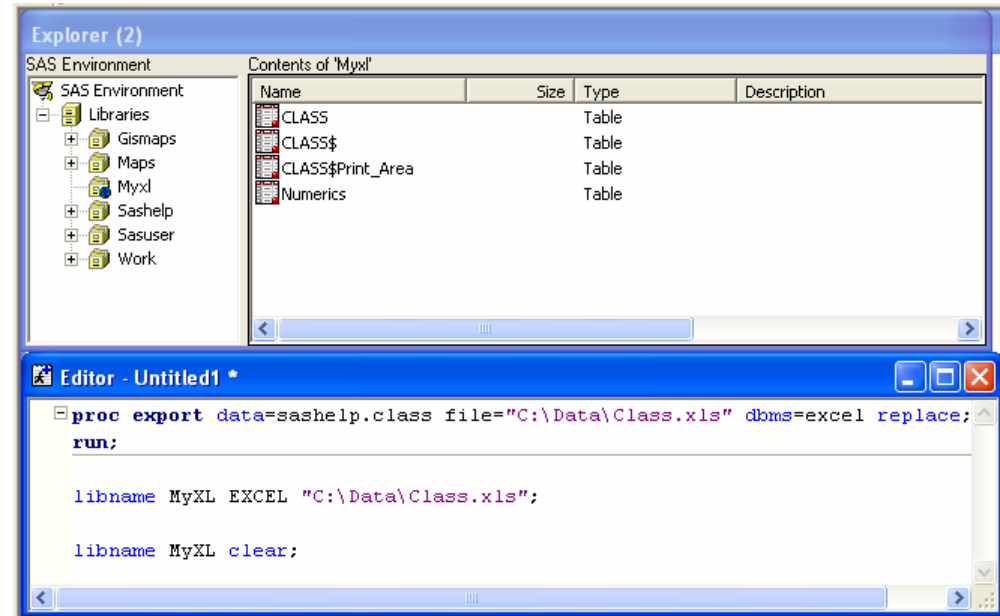
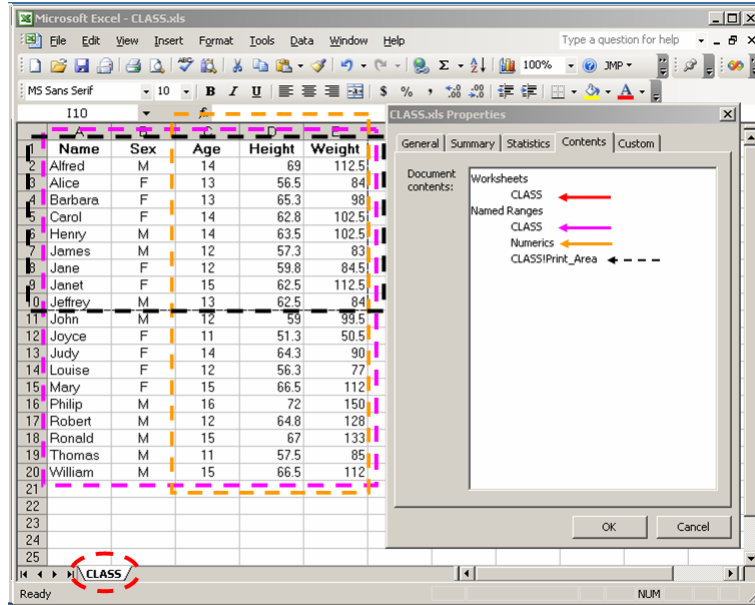


SAS & Excel – Topics covered



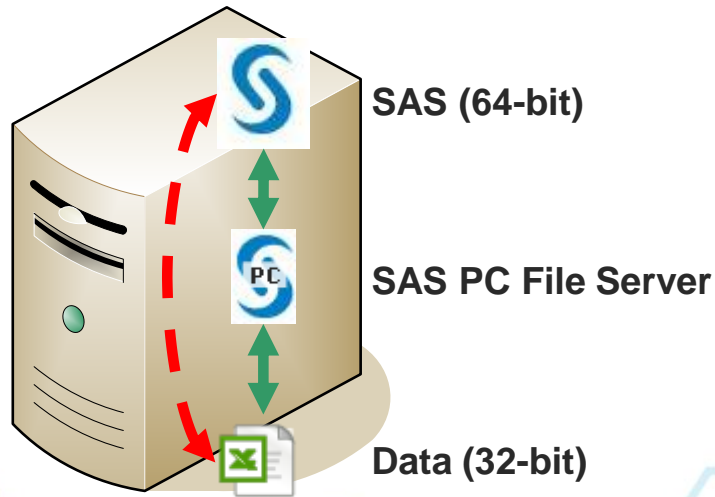
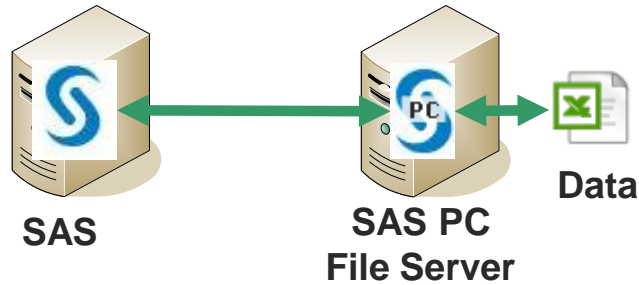
- Sidebar: Worksheets & Named Ranges
- Sidebar: SAS PC File Server & 32/64-bit compatibility
- Excel as a Data Source
- Excel as a Data Target
- Excel as a Report Target
- Client Server (SAS Client)
- Client Server (SAS Server)

Excel Worksheets & Named Ranges



- SAS treats Excel Worksheets and Named Ranges as Tables.

SAS PC FILES Server – the 32/64 bit barrier



- SAS PC Files Server is useful where SAS is on one server & data sources are another (non-SAS) server
- SAS PC Files Server serves as “intermediary”
- **64-bit SAS cannot directly read/write 32-bit data sources on the same server**
- **Solution: Use SAS PC Files Server on the same machine**

Excel as a Data Source



- Proc Import
- Libname & SQL Connect
- Import Wizard
(SAS Display Manager)
- Open / Import Task
(SAS Enterprise Guide)
- SAS Visual Analytics

Proc Import



```
Program*
Save Run Stop Selected Server: Analyze Program Export Send To Create
proc import file="C:\Data\Class.xls" dbms=excel out=work.class;
  sheet="Class";
run;
```

DBMS

CSV

EXCEL

EXCEL4

EXCEL5

EXCELCS

XLS

XLSX

- Requires **SAS Access to PC Files**
- **DBMS=EXCEL** imports all Excel types
- SAS v9.4 supports XLSX
- SAS v9.4 can read XLSX directly from Unix without SAS PC File Server

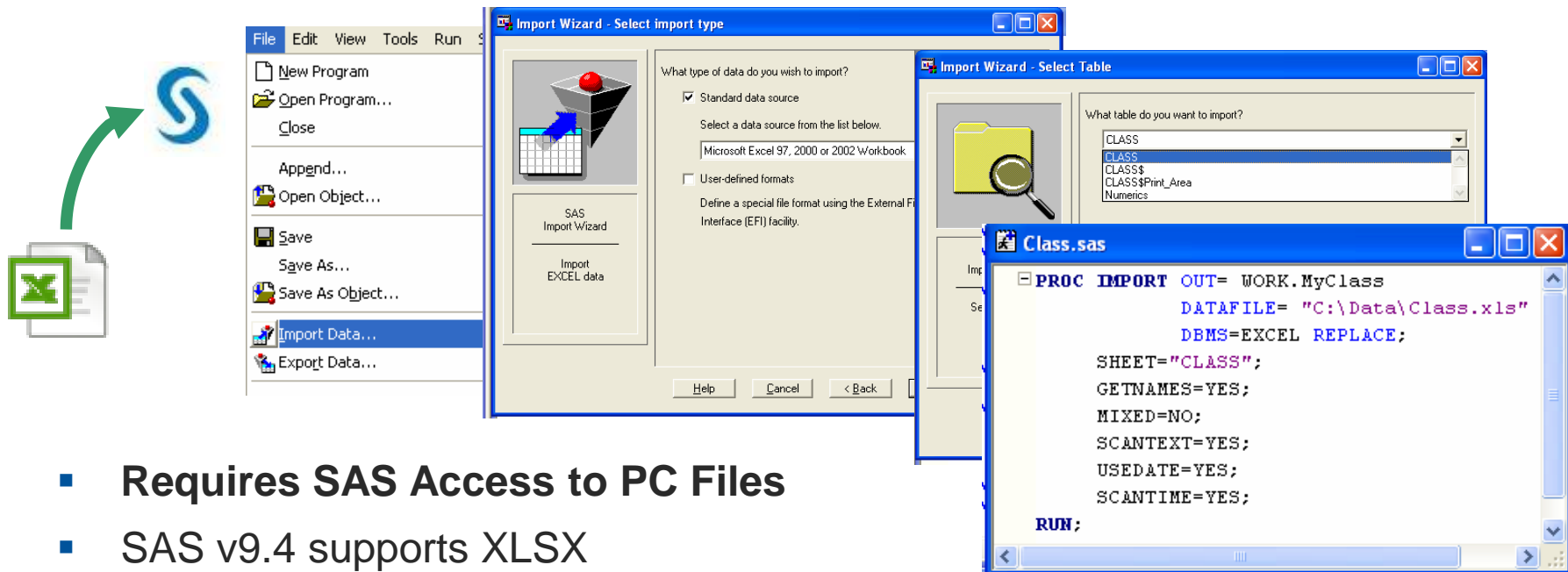
Libname & SQL Connect



```
Editor - Untitled1 *  
  
libname MyXL "C:\Data\Class.xls";  
libname MyXL clear;  
  
libname MyXL PCFILES server=localhost path="C:\Data\Class.xls";  
libname MyXL clear;  
  
proc sql;  
    connect to excel (path="C:\Data\Class.xls");  
    disconnect from excel;  
quit;
```

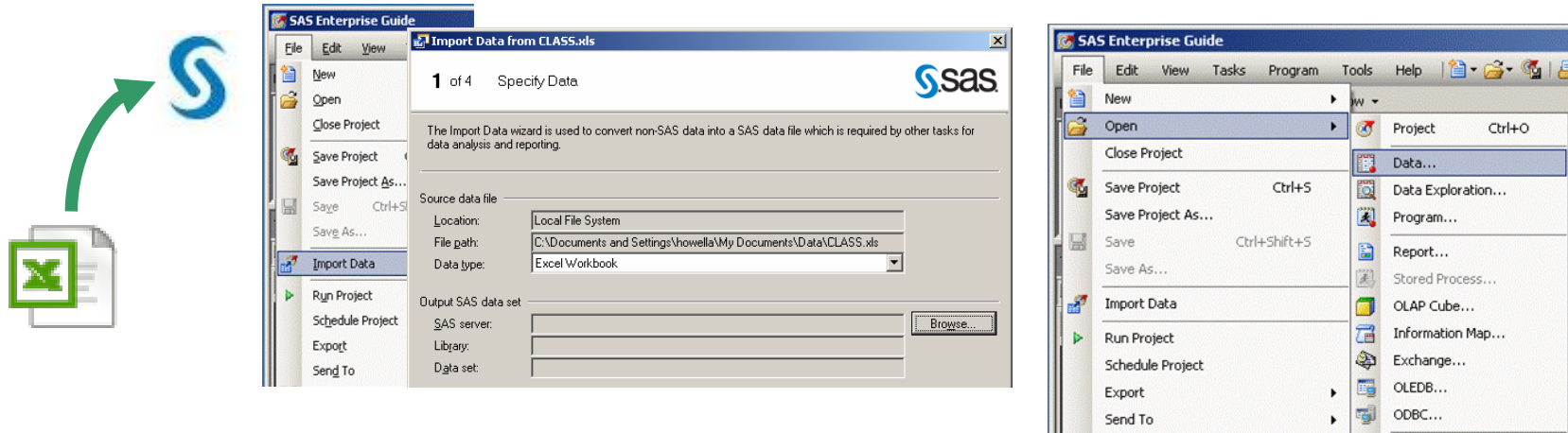
- **Requires SAS Access to PC Files**
- *Alternatively, SAS Access to ODBC / OLEDB*
- Opens all Excel types
- Libname/Connect locks Excel file (*until “clear” or end session*)
- SAS v9.4 supports XLSX
- SAS v9.4 can read XLSX directly from Unix without SAS PC File Server

Import Wizard (SAS Display Manager)



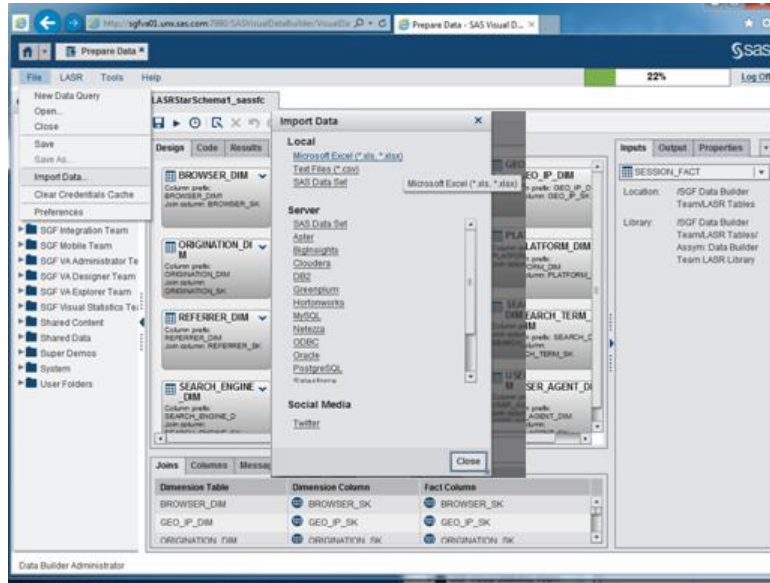
- **Requires SAS Access to PC Files**
- SAS v9.4 supports XLSX
- SAS v9.4 XSLX can read directly from Unix without SAS PC File Server
- Import Wizard can generate SAS code for automation of future imports

Open/Import Tasks (SAS Enterprise Guide)



- Excel data can be Imported or Opened
- Importing data creates a SAS session and a SAS “copy” of the Excel data
- Data can be Opened by Enterprise Guide without the underlying SAS session using the supplied Microsoft drivers (check Tools-Options).
(Does not require SAS/Access to PC Files.)

SAS Visual Analytics



- In general, importing data requires starting a SAS session on the SAS Application Server.
- Only XLSX & XLS can be imported. *XLSM, XLST & other Excel types cannot.*

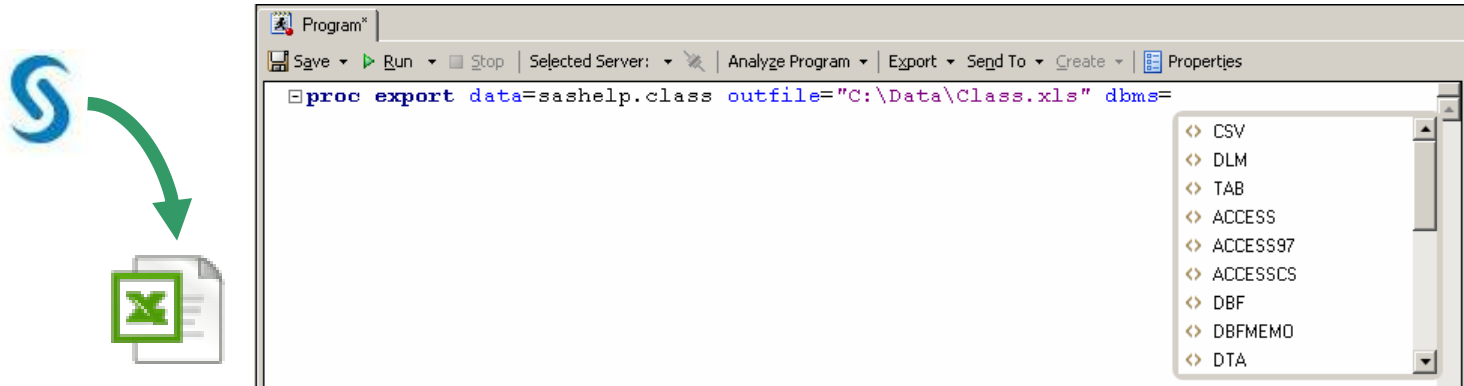
- Multiple worksheets:
 - By default, all worksheets are imported, one table per worksheet.
 - Can select worksheets.
 - Can select multiple worksheets into the one table.

Excel as a Data Target



- Proc Export
- Libname & SQL Connect
- Export Wizard
(SAS Display Manager)
- Send To / Export Tasks
(SAS Enterprise Guide)
- Visual Analytics
 - Save data
 - Save Report Object data

Proc Export



- **Requires SAS Access to PC Files**
- Supports all Excel versions from Excel97 onwards
- SAS v9.4 supports XLSX
- SAS v9.4 can add new XLSX worksheets or update existing XLSX worksheet
- SAS v9.4 can write XLSX directly to Unix without SAS PC File Server

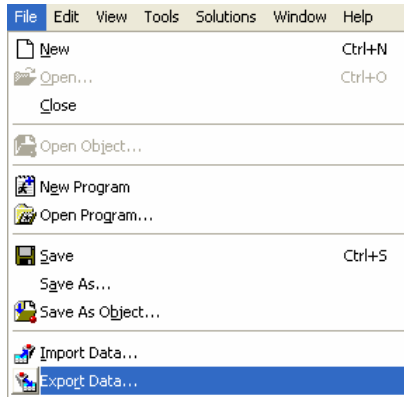
Libname & SQL Connect



```
Editor - Untitled1 *  
  
libname MyXL "C:\Data\Class2.xls" version=2007;  
  
proc sql;  
    connect to excel (path="C:\Data\Class3.xls" version=2007);
```

- **Requires SAS Access to PC Files**
- Alternatively, SAS Access to ODBC / OLEDB
- Supports all Excel versions from Excel97 onwards
- SAS v9.4 supports XLSX
- If no version supplied, default is **Excel97**
- SAS v9.4 can add new XLSX worksheets or update existing XLSX worksheet
- SAS v9.4 can write XLSX directly to Unix without SAS PC File Server

Export Wizard (SAS Display Manager)



```
PROC EXPORT DATA= SASHELP.CLASS  
OUTFILE= "C:\Data\MyClass.xls"  
DBMS=EXCEL REPLACE;  
SHEET="Class";  
RUN;
```

- **Requires SAS Access to PC Files**
- Supports all Excel versions from Excel97 onwards
- SAS v9.4 supports XLSX
- SAS v9.4 can add new XLSX worksheets or update existing XLSX worksheet
- SAS v9.4 can write XLSX directly to Unix without SAS PC File Server
- Export Wizard can generate SAS code for automation of future exports

Send To (SAS Enterprise Guide)



The screenshot displays the SAS Enterprise Guide interface. The 'Send To' menu is open, showing options like 'E-mail Recipient...', 'E-mail Recipient as a Step in Project...', 'Internet Explorer', 'Microsoft Word', 'Microsoft Excel' (highlighted), 'Microsoft PowerPoint', and 'JMP'. The background shows a data table with the following data:

	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69	
2	Alice	F	13	56.5	84
3	Barbara	F	13	65.3	98
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84
10	John	M	12	59	99.5
11			11	51.3	50.5
12	Joyce	F	11	51.3	50.5
13	Judy	F	14	64.3	90
14	Louise	F	12	56.3	77
15	Mary	F	15	66.5	112
16	Philip	M	16	72	150
17	Robert	M	12	64.8	128
18	Ronald	M	15	67	133
19	Thomas	M	11	57.5	85
20	William	M	15	66.5	112
21					

Below the SAS window, a Microsoft Excel window titled 'Book1' is shown, displaying the same data table in a worksheet format.

- Launches interactive Excel session
- Sends SAS data to Excel worksheet.
- *Does not require SAS/Access to PC Files*

Export (SAS Enterprise Guide)



The screenshot shows the SAS Enterprise Guide interface. The 'Export' menu is open, showing options: 'Export CLASS...', 'Export As A Step In Project...', 'Export All Code In Process Flow...', and 'Export All Code In Project...'. Below this, the 'Export' dialog box is open, showing '2 of 5' and 'Select a file type for the output file.' The 'Output File Type' list includes various formats, with 'Microsoft Excel Workbooks (*.xlsx)' selected. To the right, a preview of the resulting Excel file is shown, displaying a table of data.

	A	B	C	D	E	F
1	Name	Sex	Age	Height	Weight	
2	Alfred	M	14	69	112.5	
3	Alice	F	13	56.5	84	
4	Barbara	F	13	65.3	98	
5	Carol	F	14	62.8	102.5	
6	Henry	M	14	63.5	102.5	
7	James	M	12	57.3	83	
8	Jane	F	12	59.8	84.5	
9	Janet	F	15	62.5	112.5	
10	Jeffrey	M	13	62.5	84	
11	John	M	12	59	99.5	
12	Joyce	F	11	51.3	50.5	
13	Judy	F	14	64.3	90	
14	Louise	F	12	56.3	77	
15	Mary	F	15	66.5	112	
16	Philip	M	16	72	150	
17	Robert	M	12	64.8	128	
18	Ronald	M	15	67	133	
19	Thomas	M	11	57.5	85	
20	William	M	15	66.5	112	
21						

- Saves data as an Excel file
- Overwrites existing Excel file
- *Does not require SAS/Access to PC Files*

Export As a Step (SAS Enterprise Guide)



SAS Enterprise Guide

Project Tree

Process Flow

Run

Export

Export CLASS...

Export As A Step In Project...

Export All Code In Process Flow...

Export All Code In Project...

Export

2 of 5 Select a file type for the output file.

Output File Type:

- SAS Data Files (V7 Long Name) (*.sas7bdat)
- SAS Library Member (*.sas7bdat)
- SAS Data Files (V6) (*.sd2)
- Microsoft Excel Workbooks (*.xlsx)
- Microsoft Excel 97-2003 Workbooks (*.xls)
- Microsoft Access 2002-2003 Databases (*.mdb)
- Text Files (Comma delimited) (*.csv)
- Text Files (*.txt)
- Text Files (Tab delimited) (*.tab)
- Text Files (Space delimited) (*.txt)
- HTML Files (*.htm)
- HTML Files (*.html)

Specifies the type of file that you want to export.

<Back Next Finish Cancel Help

SAS Enterprise Guide

Project Tree

Process Flow

CLASS

Export File [CLASS]

CLASS

Export File [CLA...]

CLASS.xlsx

SAS Enterprise Guide

Project Tree

Process Flow

CLASS

Export File [CLASS]

Export File [CLASS]

Export job

Export successful to: C:\Data\CLASS.xlsx

- (As per Export)
- Repeatable process

SAS Visual Analytics

- VA data can be exported to SAS data via the SASIOLA engine.
- Data from List, Crosstab & Graph report objects can be exported:
 - CSV, etc..
 - If Excel, then XLSX only



Export or Save As

Rows:
☒ All rows
☐ Rows
From: 1 To: 1

Columns:
☒ All columns
☐ Selected columns:
Product Line
Product
Revenue
Expenses
Profit

☒ Formatted data

☒ Export to: Excel 2007 Workbook (*.xlsx)
☐ Save as: Tab-Separated Values (*.tsv)

OK Cancel

Export or Save As

Rows:
☒ All rows
☐ Rows
From: 1 To: 1

Columns:
☐ All columns
☒ Selected columns:
☒ Facility Region
☒ Facility State
☒ Facility City
☒ Expenses

☒ Formatted data

☒ Export to: Excel 2007 Workbook (*.xlsx)
☐ Save as: Tab-Separated Values (*.tsv)

OK Cancel

Export or Save As

Rows:
☒ All rows
☐ Rows
From: 1 To: 1

Columns:
☒ All columns
☐ Selected columns:
Product Line
Product
Profit

☒ Formatted data ☐ Detailed data

☒ Export to: Excel 2007 Workbook (*.xlsx)
☐ Save as: Tab-Separated Values (*.tsv)

OK Cancel

Excel as a Report Target



Output Delivery System

- ODS CSVALL (*.csv)
- ODS MsOffice2k (*.html)
- ODS ExcelXP (*.xml)
 - Most “feature rich”
 - Download the ExcelXP tagset (Proc Template) code from SAS

- **All available in Base/SAS**

Excel as a Report Target



```
ods tagsets.excelxp file='C:\Data\Excel_ODS.xls' style=statistical
options(auto_subtotals='yes' default_column_width='7, 10, 10, 7, 7'
frozen_rowheaders='yes' sheet_interval='none' sheet_name='Canada'
autofilter='all' autofilter_table='2');

/* My code goes here - PROC PRINT, PROC TABULATE, etc. */

ods tagsets.excelxp close;
```

In this example:

- Frozen headers
- Column widths
- Subtotals
- Autofilters
- Sheet naming

Region	Division	Product type	Total Predicted Sales	Total Actual Sales
EAST	FURNITURE		\$11,081.00	\$12,483.00
	CONSUMER OFFICE		\$21,838.00	\$16,991.00
	FURNITURE		\$12,972.00	\$14,467.00
	EDUCATION OFFICE		\$16,434.00	\$20,169.00
	Division Total		\$62,426.00	\$64,130.00
WEST	FURNITURE		\$10,286.00	\$10,380.00
	CONSUMER OFFICE		\$16,042.00	\$16,371.00
	FURNITURE		\$12,816.00	\$11,234.00
	EDUCATION OFFICE		\$17,759.00	\$18,905.00
	Division Total		\$56,903.00	\$56,890.00
Grand Total			\$119,329.00	\$121,020.00

Country	Region	Division	Product Type	Product	Quar	Month	Year	Predicted Sal	Actual Sal	difference
CANADA	EAST	CONSUMER	FURNITURE	SOFA	1	Jan	1993	\$ 425.00	\$ 5.00	-\$ 420.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	1	Feb	1993	\$ 215.00	\$ 164.00	-\$ 51.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	1	Mar	1993	\$ 948.00	\$ 422.00	-\$ 526.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	2	Apr	1993	\$ 544.00	\$ 424.00	-\$ 120.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	2	May	1993	\$ 764.00	\$ 854.00	\$ 90.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	2	Jun	1993	\$ 446.00	\$ 168.00	-\$ 278.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	3	Jul	1993	\$ 957.00	\$ 8.00	-\$ 949.00
CANADA	EAST	CONSUMER	FURNITURE	SOFA	3	Aug	1993	\$ 967.00	\$ 748.00	-\$ 219.00

- Sample code from the SAS ODS web site.

“Client Server” (SAS client)



```
Editor - Untitled5 *
filename cmds dde 'excel|system';
data _null_;
  file cmds;
  /* Insert an Excel Macro Sheet */
  put '[workbook.insert(3)]';
run;

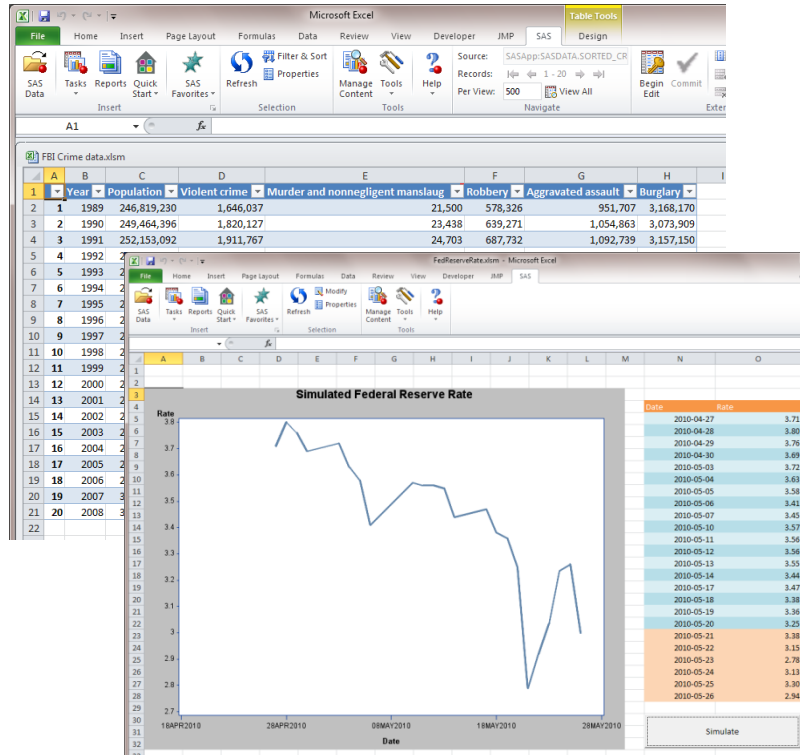
/* Direct the Output to the Newly created Macro Sheet */
filename xlmacro dde 'excel|macro1!r1c1:r5c1' notab;

data _null_;
  file xlmacro;
  put '=workbook.name("sheet1","NewSheet")';
  put '=halt(true)';
  /* Dump the contents of the buffer, allowing us to bot
  /* execute the macro in the same DATA Step
  put '!dde_flush';
  file cmds;
  /* Run Macro1 */
  put '[run("macro1!r1c1")]';
  put '[error(false)]';
  /* delete the Macro Sheet */
  put '[workbook.delete("macro1")]';
run;
```

- Dynamic Data Exchange (DDE)
- Effectively, SAS does the Excel “point & click” on your behalf.
- Requires SAS & Excel on the same machine.
- Requires “X” capability (*not always available*)
- Outdated technology; better methods available (for example, AMO or Enterprise Guide plug-ins)

■ Sample code from the SAS Companion for Windows

“Client Server” (SAS server)

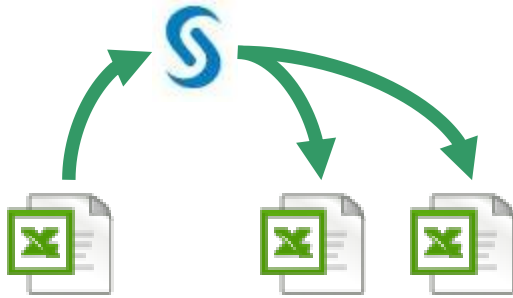


SAS Add-In for Microsoft Office

- Excel acts as the client
 - Displaying subsets of data
 - Displaying results
- User familiarity with Excel
 - No new toolset to learn.
- Requires SAS BI

- Screenshots from the SAS Add-In for Microsoft Office Getting Started guide

Summary



- SAS Access for PC Files v9.4
 - Supports XLSX file formats
 - SAS v9.4 can read XLSX directly from Unix without SAS PC File Server
- SAS Visual Analytics supports XLSX file formats
- SAS provides many options to support a wide range of users
 - Programming
 - Interactive
 - » SAS clients
 - » Excel client

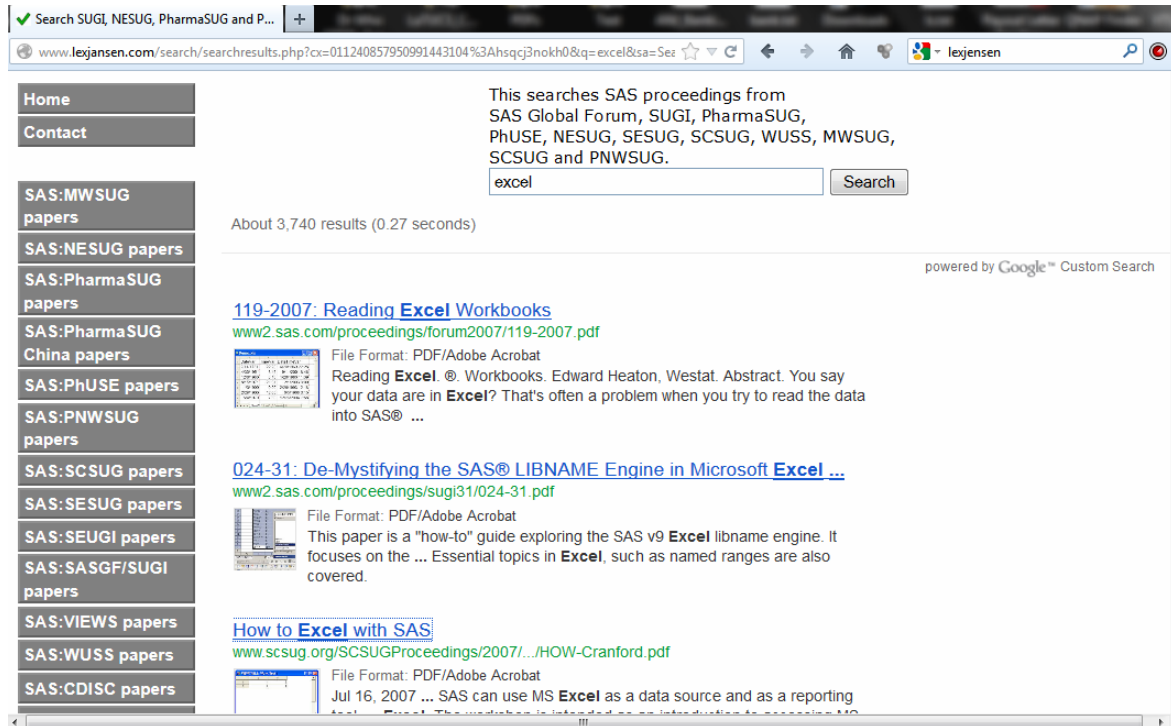


RESOURCES

- The SASDummy blog (Chris Hemedinger)
 - <http://blogs.sas.com/sasdummys>
- Knoware YouTube channel (*SAS Partner*)
- ODS and Microsoft Excel
 - <http://support.sas.com/rnd/base/ods/excel/>
- ExcelXP tagset
 - Available at the SAS **ODS MARKUP** page
 - <http://support.sas.com/rnd/base/ods/odsmarkup>

RESOURCES – LexJansen.com

- Archive of many forum whitepapers



RESOURCES – Communities.sas.com

■ Discussion Boards

The screenshot shows the SAS Support Communities website. The header includes the SAS logo and navigation links. The main content area is titled "SAS Support Communities" and features a search bar, a list of "Available Support Communities" (such as SAS Procedures, SAS Macro Facility, etc.), and a section for "Recent Highlights from support.sas.com". A sidebar on the right contains a "How to ask a question" guide and a list of "Actions" (Start a discussion, Write an article, etc.).

Auto updating SAS charts in the excel

refresh all the sas chart in the excel spreadsheet? Multiple excel files can be updated parallelly
Author: fafa Date: Jan 17, 2013 Location: Integration with Microsoft Office Bookmarks: 0 Likes: 0 Latest activity: Jan 17, 2013
Tags: excel

Export to specific cells in Excel

would like to export data to specific cells in an excel preformatted workbook. Does anyone have any
Author: jaw Date: Jul 20, 2013 Location: SAS Support Communities Bookmarks: 0 Likes: 0 Latest activity: Jul 20, 2013
Tags: excel export

Read an Excel File in Linux

Has anyone had an luck using SAS to read an excel file on a linux installation of SAS? I have been searching
Author: brean_bn Date: Jun 13, 2012 Location: SAS Macro Facility, Data Step and SAS Language Elements Bookmarks: 0 Likes: 0 Latest activity: Jun 13, 2012
Tags: sas excel access linux

excel to SAS dataset in UNIX

Hi, I have an excel file, which columns having length around 500-800 chars. I have to convert this ... SAS dataset, in UNIX. I am trying to use the excel libname with PCFILES statement, but it has one ... running the code using XTERM. But the SAS Code and excel file are on some other drive, say U drive. If the
Author: magg2410 Date: Nov 30, 2012 Location: Integration with Microsoft Office Bookmarks: 0 Likes: 0 Latest activity: Nov 30, 2012
Tags: excel

tagset.ExcelXP and Excel empty columns

Hello, I am trying to create an Excel report using Tagset.ExcelXP. I would like to create the report
Author: Madalin Date: Sep 25, 2013 Location: ODS and Base Reporting Bookmarks: 0 Likes: 0 Latest activity: Sep 25, 2013
Tags: excel format custom tagset

Re: DDE Footnotes in Excel

Profile." So in the end, I will end up with an Excel workbook page with a header that says "Membership ... get any errors, it did not add the title to the Excel workbook page.
Author: bspangler Date: Feb 11, 2014 Location: Integration with Microsoft Office Bookmarks: 0 Likes: 0 Latest activity: Feb 11, 2014
Tags: excel ode microsoft microsoft_excel footnotes

Re: Print data to excel

your suggestion about reading input data from excel spreadsheet (same as permanent dataset), doing
Author: Dhanashree Gadhari Date: Jan 28, 2014 Location: SAS Enterprise Guide Bookmarks: 0 Likes: 0 Latest activity: Jan 28, 2014
Tags: excel print





Washington, D.C.
March 23–26, 2014

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Thank You & Questions

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SASCommunity: AndrewHowell

Twitter: @AndrewAtANJ