

Paper 312-2011

Easy Ways to get SAS® Enterprise Guide® to Send Tables and Graphs to Microsoft Office Suite, Without Writing Code!

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Abstract:

This paper will demonstrate several ways to output tables, graphs, databases, and files that are in formats that Microsoft products are able to process. All of these methods require no programming, and just use little known or hidden techniques that are available directly from the SAS® Enterprise Guide user interface. The focus will be directly on how a new user to SAS® Enterprise Guide can prepare and deliver data to the Microsoft Office (MS Office) suite of tools.

Introduction:

At first glance, SAS Enterprise Guide is – ALL BUSINESS – ALL SAS --, but dig a little deeper, peel back a layer or two, and you will find several portals into the Microsoft world of data processing. From the simple import/export commands hiding in plain sight on the “FILE” button on the command line to the hidden “Excel” and “Word” icons tucked away in the “customized” menu options. Plus the other methods that require real programming on the part of the user. This paper will focus upon the non-programming ways SAS Enterprise Guide can prepare data for use by Microsoft Office products. This author uses SAS® Learning Edition Version 4.1 which is advertised by SAS as a tool to study for certification exams. SAS Learning Edition Version 4.1 uses a nearly complete version of SAS Enterprise Guide. The SAS Enterprise Guide Explorer is missing, the software is limited to 1500 input observations, and the EULA limits the use to non-commercial uses. But this software is a powerful teaching tool.

Getting Started:

After starting a new SAS Enterprise Guide project, the first way a programmer usually finds to move data is to look at the “FILE” button on the main command bar usually at the top of the screen. I say usually because ALL of the windows and toolbars in SAS Enterprise Guide can be moved or changed. The “FILE” button has an “EXPORT” sub-menu that expands to three items, but until there is a data file defined the options are inaccessible.

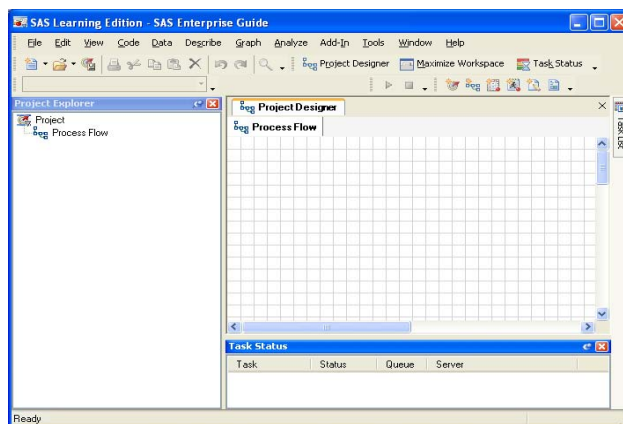
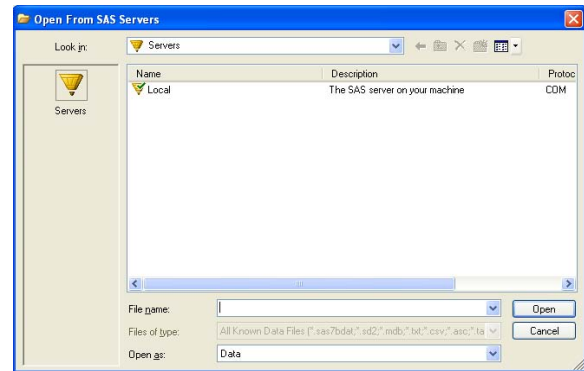


Image of the standard startup screen for SAS Enterprise Guide

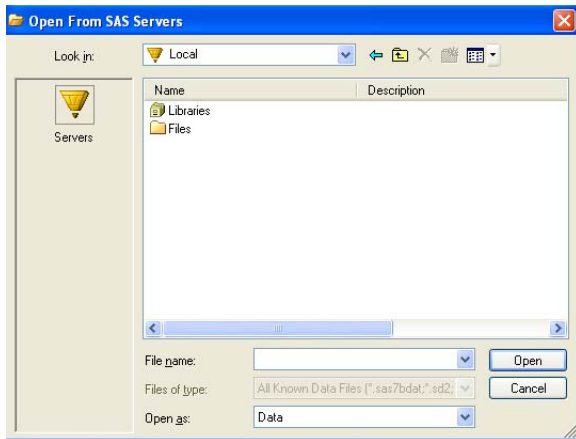
This paper will use the SAS “SHOES” dataset from the SASHELP library, the file can be located by choosing “FILE”>”OPEN”>”DATA” and a screen similar to the “Open Data Form” on the left will appear.



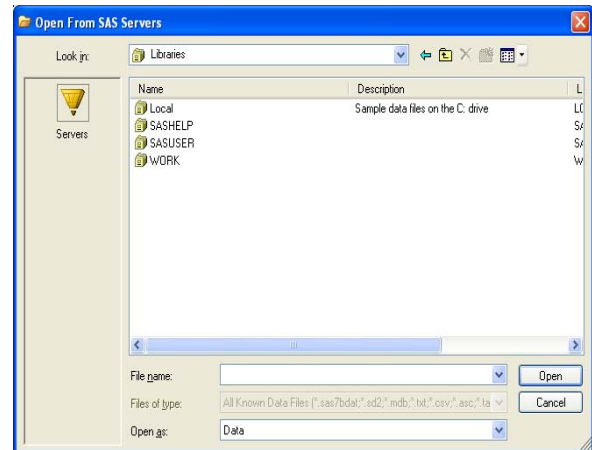
1 - Next select the SAS Servers icon, and



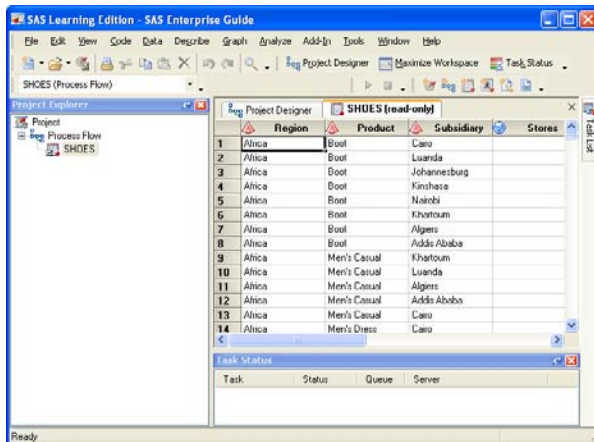
2 - Then double click on the local server icon.



3 – Select the Libraries icon.



4 - And finally access to the SASHELP files is available



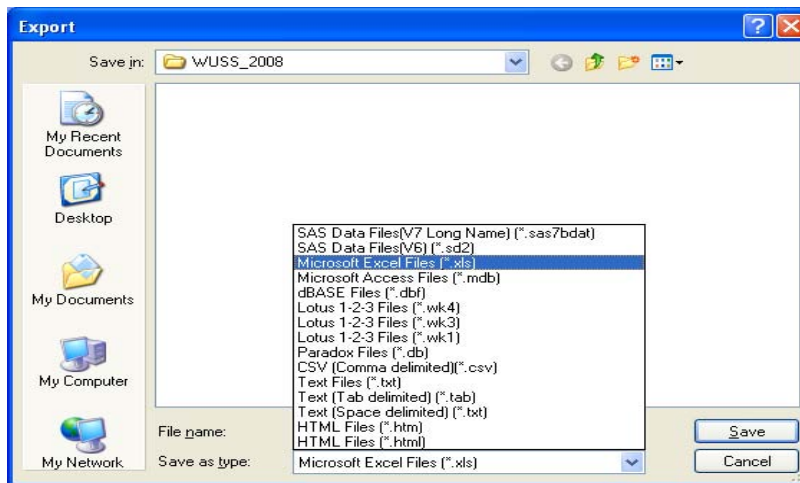
5 – This screen shows the actual data from the SASHELP.SHOES dataset.

Now on to the meat of the Paper:

The next question to answer is how many ways can we use SAS Enterprise Guide to output data to a MS Office tool. As was noted above, the first place to look is the “FILE” option on the main tool bar menu. Now when the “FILE”>“EXPORT” buttons are selected the dialogue box offers to “Export Shoes” (the currently visible dataset in the workspace) and when selected displays the following:



Which leads to the commonly seen interface shown below:



This screen shows as many as 8 different ways (*.xls, *.mdb, *.csv, *.tab, 2 forms of *.txt, *.htm, and *.html formats) to produce files usable by MS Office tools. So depending upon how much work you are willing to do after leaving SAS, these options may be enough to meet your needs. However, as shown below(using *.csv format), some output file formats may need more work than others... depending upon the source SAS data file. Below note that columns H, I, J, and K seem to have extra data values. These come from the commas displayed in the formatted data values being propagated into the “CSV” file.

	A	B	C	D	E	F	G	H	I	J	K
1	Region	Product	Subsidiary	Stores	Sales	Inventory	Returns				
2	Africa	Boot	Cairo	20	\$4	646	\$18	965	\$229		
3	Africa	Boot	Luanda	8	\$6	81	\$51	572	\$325		
4	Africa	Boot	Johannesb	14	\$9	365	\$33	11	\$483		
5	Africa	Boot	Kinshasa	16	\$13	921	\$70	736	\$553		
6	Africa	Boot	Nairobi	25	\$16	282	\$66	17	\$844		
7	Africa	Boot	Khartoum	24	\$19	282	\$105	370	\$700		
8	Africa	Boot	Algiers	21	\$21	237	\$73	737	\$710		
9	Africa	Boot	Addis Aba	12	\$29	761	\$191	621	\$769		
10	Africa	Men's Cas	Khartoum	1	\$9	244	\$16	230	\$478		
11	Africa	Men's Cas	Luanda	3	\$62	893	\$149	864	\$1	701	
12	Africa	Men's Cas	Algiers	4	\$63	206	\$100	982	\$2	221	
13	Africa	Men's Cas	Addis Aba	4	\$67	242	\$118	36	\$2	284	
14	Africa	Men's Cas	Cairo	25	\$360	209	\$1	63	\$251	\$9	424
15	Africa	Men's Dret	Cairo	5	\$4	51	\$45	962	\$97		
16	Africa	Men's Dret	Nairobi	1	\$8	587	\$20	877	\$363		
17	Africa	Men's Dret	Khartoum	3	\$18	53	\$51	132	\$1	177	
18	Africa	Men's Dret	Luanda	2	\$29	582	\$67	247	\$705		
19	Africa	Men's Dret	Kinshasa	5	\$57	691	\$95	663	\$1	699	
20	Africa	Men's Dret	Addis Aba	7	\$76	793	\$136	273	\$2	433	

Image of *.csv file output from SAS Export option.

The following screen shot is from Microsoft Access 2007, and shows the output file created by selecting the file type *.mdb to create SHOES.mdb. SAS Enterprise Guide really does create a Microsoft Access readable database file. Nothing was done to this file except move it to a VISTA platform and open the file with MS/Access 2007. Versions newer than MS Access 97 may be required to open the files.

Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
Africa	Boot	Cairo	20	\$4,846.00	\$18,965.00	\$229.00
Africa	Boot	Luanda	8	\$6,081.00	\$51,572.00	\$325.00
Africa	Boot	Johannesburg	14	\$8,365.00	\$33,011.00	\$483.00
Africa	Boot	Kinshasa	16	\$13,921.00	\$70,736.00	\$553.00
Africa	Boot	Nairobi	25	\$16,282.00	\$66,017.00	\$844.00
Africa	Boot	Khartoum	24	\$19,282.00	\$105,370.00	\$700.00
Africa	Boot	Algiers	21	\$21,297.00	\$73,737.00	\$710.00
Africa	Boot	Addis Ababa	12	\$29,761.00	\$191,821.00	\$769.00
Africa	Men's Casual	Khartoum	1	\$9,244.00	\$16,230.00	\$478.00
Africa	Men's Casual	Luanda	3	\$62,893.00	\$149,864.00	\$1,701.00
Africa	Men's Casual	Algiers	4	\$63,206.00	\$100,982.00	\$2,221.00
Africa	Men's Casual	Addis Ababa	4	\$67,242.00	\$118,036.00	\$2,284.00
Africa	Men's Casual	Cairo	25	\$360,209.00	\$1,063,251.00	\$9,424.00
Africa	Men's Dress	Cairo	5	\$4,051.00	\$45,962.00	\$97.00

Image of *.mdb file output from SAS Export option.

Another option that is often used is moving data to text files. The Export option allows three different formats of text file, (1) Raw data, (2) tab delimited, and (3) space delimited. Each of these produce slightly different output files. Let's take a look at each of them. These have uses in Microsoft files because the tools will read the files, but these files can also go beyond the Windows world onto Mainframe and Unix computer systems. So, let's take a closer look. First the raw test file.

```

"Region","Product","Subsidiary","Stores","Sales","Inventory","Returns"
"Africa","Boot","Addis Ababa",12,$29,761,$191,821,$769
"Africa","Boot","Algiers",21,$21,297,$73,737,$710
"Africa","Boot","Cairo",20,$4,846,$18,965,$229
"Africa","Boot","Johannesburg",14,$8,365,$33,011,$483
"Africa","Boot","Khartoum",24,$19,282,$105,370,$700
"Africa","Boot","Kinshasa",16,$13,921,$70,736,$553
"Africa","Boot","Luanda",8,$6,081,$51,572,$325
"Africa","Boot","Nairobi",25,$16,282,$66,017,$844
"Africa","Men's Casual","Addis Ababa",4,$67,242,$118,036,$2,284
"Africa","Men's Casual","Algiers",4,$63,206,$100,982,$2,221
"Africa","Men's Casual","Cairo",25,$360,209,$1,063,251,$9,424
"Africa","Men's Casual","Khartoum",1,$9,244,$16,230,$478
"Africa","Men's Casual","Luanda",3,$62,893,$149,864,$1,701
"Africa","Men's Dress","Addis Ababa",7,$76,793,$136,273,$2,433
"Africa","Men's Dress","Algiers",13,$123,743,$428,575,$3,621
"Africa","Men's Dress","Cairo",5,$4,051,$45,962,$97
"Africa","Men's Dress","Khartoum",3,$18,053,$51,132,$1,177
"Africa","Men's Dress","Kinshasa",5,$57,691,$95,663,$1,699
"Africa","Men's Dress","Luanda",2,$29,582,$67,247,$705
"Africa","Men's Dress","Nairobi",1,$8,587,$20,877,$363
"Africa","Sandal","Addis Ababa",10,$62,819,$204,284,$1,861
"Africa","Sandal","Algiers",25,$29,198,$84,447,$1,530
"Africa","Sandal","Cairo",9,$10,532,$50,430,$598
"Africa","Sandal","Johannesburg",13,$17,337,$63,003,$809
"Africa","Sandal","Khartoum",18,$26,427,$81,825,$1,281
"Africa","Sandal","Kinshasa",10,$16,662,$104,438,$611
"Africa","Sandal","Luanda",9,$11,145,$19,900,$657
"Africa","Sandal","Nairobi",19,$16,289,$47,406,$1,175
"Africa","Slipper","Addis Ababa",14,$68,641,$279,795,$1,771

```

Image of *.txt file output from "Text Files (*.txt)" SAS Export option.

Note that the fields are output without any spacing between the fields. Alphabetic fields are in double quotes, special characters and spaces are preserved in the quoted fields and the fields seem to be

separated by commas. Dollar signs also precede the numeric dollar fields. This is interesting because SAS knows about character fields and numeric fields. As a programmer, if you have ever used a data step and put commands to write a file of raw text data you needed to remember to use the dollarw.d format to get the dollar signs to print. Also, the dollarw.d. format output a number with commas embedded in the number. Look at the screen shot on this page. From this image can you tell how many fields should be read using this file as an input file? Can you even tell if all of the fields have the same number of columns? A close examination will reveal that this is the same format as *.csv, at least this author has never seen a difference between *.csv and this method of creating text file in the *.txt format. But, a double click on a *.csv file will open an Excel spreadsheet, as noted above.

Well let's look at another text format, the "Text (Tab delimited) *.tab file format....

Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
"Africa"	"Boot"	"Addis Ababa"	12	\$29,761	\$191,821	\$769
"Africa"	"Boot"	"Algiers"	21	\$21,297	\$73,737	\$710
"Africa"	"Boot"	"Cairo"	20	\$4,846	\$18,965	\$229
"Africa"	"Boot"	"Johannesburg"	14	\$8,365	\$33,011	\$483
"Africa"	"Boot"	"Khartoum"	24	\$19,282	\$105,370	\$700
"Africa"	"Boot"	"Kinshasa"	16	\$13,921	\$70,736	\$553
"Africa"	"Boot"	"Luanda"	8	\$6,081	\$31,572	\$323
"Africa"	"Boot"	"Nairobi"	25	\$16,282	\$66,017	\$844
"Africa"	"Men's Casual"	"Addis Ababa"	4	\$67,242	\$118,036	\$2,284
"Africa"	"Men's Casual"	"Algiers"	4	\$63,206	\$100,982	\$2,221
"Africa"	"Men's Casual"	"Cairo"	25	\$360,209	\$1,063,251	\$9,424
"Africa"	"Men's Casual"	"Khartoum"	1	\$9,244	\$16,230	\$478
"Africa"	"Men's Casual"	"Luanda"	3	\$62,893	\$149,864	\$1,701
"Africa"	"Men's Dress"	"Addis Ababa"	7	\$76,793	\$136,273	\$2,433
"Africa"	"Men's Dress"	"Algiers"	13	\$123,743	\$428,575	\$3,621
"Africa"	"Men's Dress"	"Cairo"	5	\$4,051	\$45,962	\$97
"Africa"	"Men's Dress"	"Khartoum"	3	\$18,053	\$51,132	\$1,177
"Africa"	"Men's Dress"	"Kinshasa"	5	\$57,691	\$95,663	\$1,699
"Africa"	"Men's Dress"	"Luanda"	2	\$29,582	\$67,247	\$705
"Africa"	"Men's Dress"	"Nairobi"	1	\$8,587	\$20,877	\$363
"Africa"	"Sandal"	"Addis Ababa"	10	\$62,819	\$204,284	\$1,861
"Africa"	"Sandal"	"Algiers"	25	\$29,198	\$84,447	\$1,530
"Africa"	"Sandal"	"Cairo"	9	\$10,532	\$50,430	\$598
"Africa"	"Sandal"	"Johannesburg"	13	\$17,337	\$63,003	\$809
"Africa"	"Sandal"	"Khartoum"	18	\$26,427	\$81,825	\$1,281
"Africa"	"Sandal"	"Kinshasa"	10	\$16,662	\$104,438	\$611
"Africa"	"Sandal"	"Luanda"	9	\$11,145	\$19,900	\$657
"Africa"	"Sandal"	"Nairobi"	19	\$16,289	\$47,406	\$1,175
"Africa"	"Slipper"	"Addis Ababa"	14	\$68,641	\$279,795	\$1,771

Image of *.txt file output from "Text Files (*.txt)" SAS Export option.

The data fields in this image show the data lined up on the tab boundaries, the character fields are enclosed in double quotes and the numeric fields are now separated. The user can also determine how many fields are in each record. This works well, but still requires a lot of effort on your part.

The final text format is the comma delimited format shown below.

Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
"Africa"	"Boot"	"Addis Ababa"	12	\$29,761	\$191,821	\$769
"Africa"	"Boot"	"Algiers"	21	\$21,297	\$73,737	\$710
"Africa"	"Boot"	"Cairo"	20	\$4,846	\$18,965	\$229
"Africa"	"Boot"	"Johannesburg"	14	\$8,365	\$33,011	\$483
"Africa"	"Boot"	"Khartoum"	24	\$19,282	\$105,370	\$700
"Africa"	"Boot"	"Kinshasa"	16	\$13,921	\$70,736	\$553
"Africa"	"Boot"	"Luanda"	8	\$6,081	\$31,572	\$323
"Africa"	"Boot"	"Nairobi"	25	\$16,282	\$66,017	\$844
"Africa"	"Men's Casual"	"Addis Ababa"	4	\$67,242	\$118,036	\$2,284
"Africa"	"Men's Casual"	"Algiers"	4	\$63,206	\$100,982	\$2,221
"Africa"	"Men's Casual"	"Cairo"	25	\$360,209	\$1,063,251	\$9,424
"Africa"	"Men's Casual"	"Khartoum"	1	\$9,244	\$16,230	\$478
"Africa"	"Men's Casual"	"Luanda"	3	\$62,893	\$149,864	\$1,701
"Africa"	"Men's Dress"	"Addis Ababa"	7	\$76,793	\$136,273	\$2,433
"Africa"	"Men's Dress"	"Algiers"	13	\$123,743	\$428,575	\$3,621
"Africa"	"Men's Dress"	"Cairo"	5	\$4,051	\$45,962	\$97
"Africa"	"Men's Dress"	"Khartoum"	3	\$18,053	\$51,132	\$1,177
"Africa"	"Men's Dress"	"Kinshasa"	5	\$57,691	\$95,663	\$1,699
"Africa"	"Men's Dress"	"Luanda"	2	\$29,582	\$67,247	\$705
"Africa"	"Men's Dress"	"Nairobi"	1	\$8,587	\$20,877	\$363
"Africa"	"Sandal"	"Addis Ababa"	10	\$62,819	\$204,284	\$1,861
"Africa"	"Sandal"	"Algiers"	25	\$29,198	\$84,447	\$1,530
"Africa"	"Sandal"	"Cairo"	9	\$10,532	\$50,430	\$598
"Africa"	"Sandal"	"Johannesburg"	13	\$17,337	\$63,003	\$809
"Africa"	"Sandal"	"Khartoum"	18	\$26,427	\$81,825	\$1,281
"Africa"	"Sandal"	"Kinshasa"	10	\$16,662	\$104,438	\$611
"Africa"	"Sandal"	"Luanda"	9	\$11,145	\$19,900	\$657
"Africa"	"Sandal"	"Nairobi"	19	\$16,289	\$47,406	\$1,175
"Africa"	"Slipper"	"Addis Ababa"	14	\$68,641	\$279,795	\$1,771

Image of *.txt file output from "Text Files (*.txt)" SAS Export option.

This space delimited format is ok too, but you still need a way to recognize the spaces in the quoted fields.

Here is a simple sample of the look of Microsoft Internet Explorer using the same data:

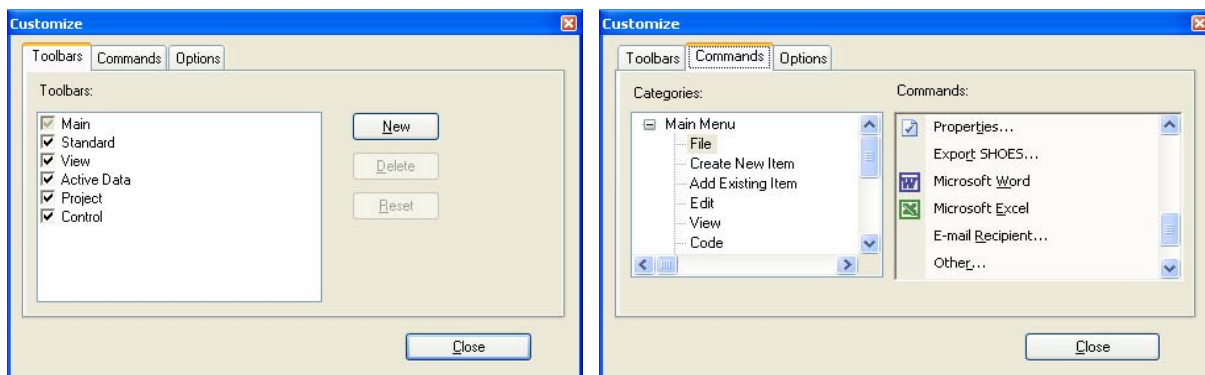


The screenshot shows a Microsoft Internet Explorer window with the title 'SHOES - Microsoft Internet Explorer'. The address bar shows the file path: \\William_hp-pc\\public\\All_SAS_Conferences\\WUSS_2008\\Shoes\\SHOES.htm. The main content area displays a table with the following data:

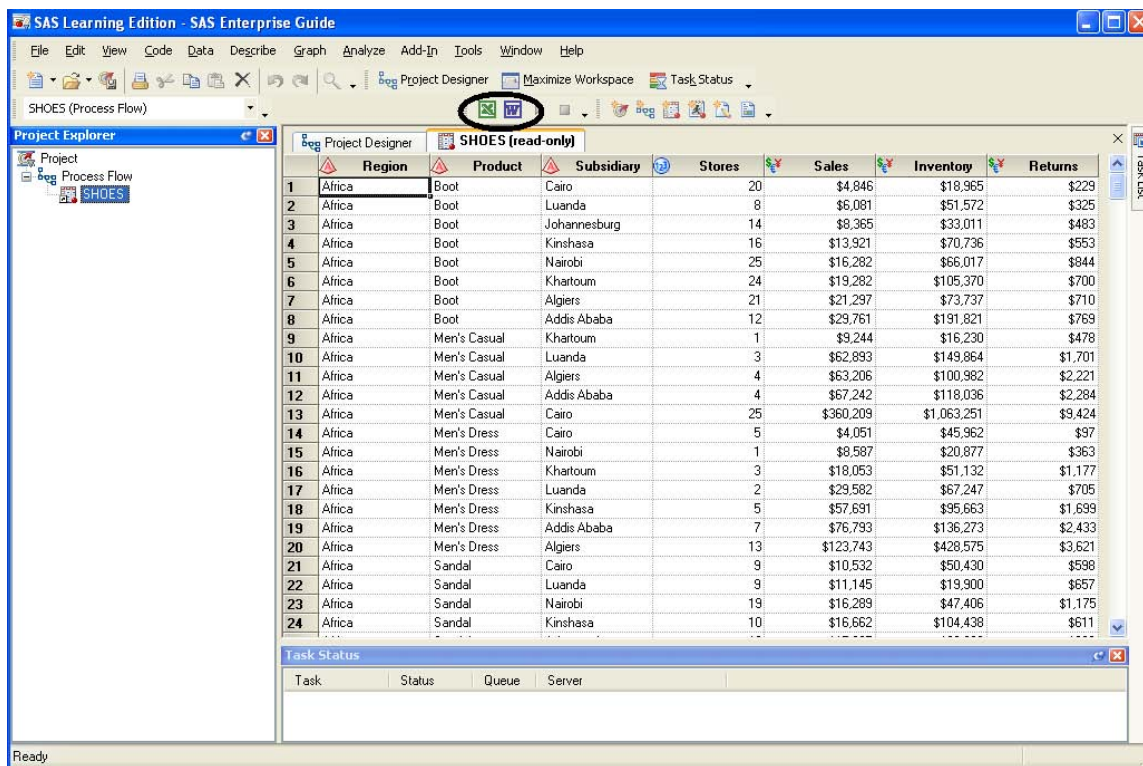
Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
Africa	Boot	Cairo	20.00	\$4846.00	\$18965.00	\$229.00
Africa	Boot	Luanda	8.00	\$6081.00	\$51572.00	\$325.00
Africa	Boot	Johannesburg	14.00	\$8365.00	\$33011.00	\$483.00
Africa	Boot	Kinshasa	16.00	\$13921.00	\$70736.00	\$553.00
Africa	Boot	Nairobi	25.00	\$16282.00	\$66017.00	\$844.00
Africa	Boot	Khartoum	24.00	\$19282.00	\$105370.00	\$700.00
Africa	Boot	Algiers	21.00	\$21297.00	\$73737.00	\$710.00
Africa	Boot	Addis Ababa	12.00	\$29761.00	\$191821.00	\$769.00
Africa	Men's Casual	Khartoum	1.00	\$9244.00	\$16230.00	\$478.00
Africa	Men's Casual	Luanda	3.00	\$62893.00	\$149864.00	\$1701.00
Africa	Men's Casual	Algiers	4.00	\$63206.00	\$100982.00	\$2221.00
Africa	Men's Casual	Addis Ababa	4.00	\$67242.00	\$118036.00	\$2284.00
Africa	Men's Casual	Cairo	25.00	\$360209.00	\$1063251.00	\$9424.00
Africa	Men's Dress	Cairo	5.00	\$4051.00	\$45962.00	\$97.00
Africa	Men's Dress	Nairobi	1.00	\$8587.00	\$20877.00	\$363.00
Africa	Men's Dress	Khartoum	3.00	\$18053.00	\$51132.00	\$1177.00
Africa	Men's Dress	Luanda	2.00	\$29582.00	\$67247.00	\$705.00
Africa	Men's Dress	Kinshasa	5.00	\$57691.00	\$95663.00	\$1699.00
Africa	Men's Dress	Addis Ababa	7.00	\$76793.00	\$136273.00	\$2433.00
Africa	Men's Dress	Algiers	13.00	\$123743.00	\$428575.00	\$3621.00
Africa	Sandal	Cairo	9.00	\$10532.00	\$50430.00	\$598.00

Image of *.htm file output from SAS Export option.


Since Simple does not always work best, let us dig a little deeper. The “VIEW”>“TOOLBARS”>“CUSTOMIZE” option produces a screen similar to the following:



Which when the “COMMANDS” tab is selected and the scroll bar is moved down on the “Commands” side of the window, the icons on the left are revealed. Now with a pair of quick left clicks, and flicks of the wrist, by dragging icons to the toolbars you can change the way SAS Enterprise Guide works by adding the following features:



Note the author's thick black ellipse around a familiar set of icons.

Now, while the SASHELP.SHOES file is visible in the project data window, a simple left click on the  that is now on the toolbar; and Microsoft Excel opens with the data neatly filled in on "SHEET1".

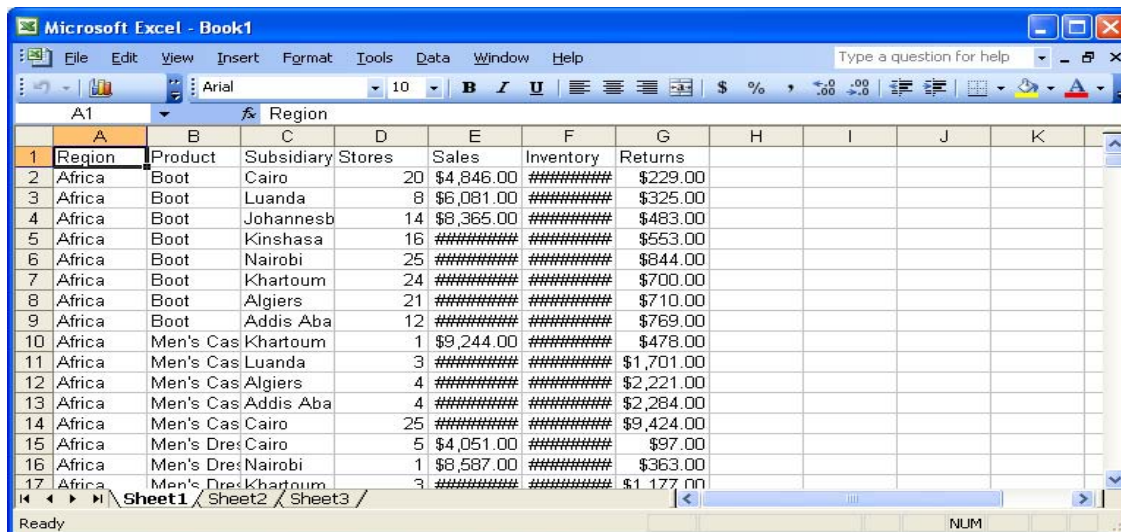






Image of *.xls file created from pushing the  button on the modified SAS toolbar.

While it is not quite as well formatted, the same thing happens when the  icon is activated by a left click.

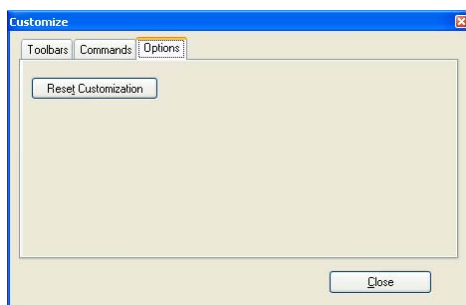


The screenshot shows a Microsoft Word window titled 'Document1 - Microsoft Word'. The window contains a table with the following data:

Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
Africa	Boot	Cairo	20	\$4,846	\$18,965	\$229
Africa	Boot	Luanda	8	\$6,081	\$51,572	\$325
Africa	Boot	Johannesb urg	14	\$8,365	\$33,011	\$483
Africa	Boot	Kinshasa	16	\$13,921	\$70,736	\$553
Africa	Boot	Nairobi	25	\$16,282	\$66,017	\$844
Africa	Boot	Khartoum	24	\$19,282	\$105,370	\$700
Africa	Boot	Algiers	21	\$21,297	\$73,737	\$710
Africa	Boot	Addis Ababa	12	\$29,761	\$191,821	\$769
Africa	Men's Casual	Khartoum	1	\$9,244	\$16,230	\$478
Africa	Men's Casual	Luanda	3	\$62,893	\$149,864	\$1,701
Africa	Men's Casual	Algiers	4	\$63,206	\$100,982	\$2,221

Image of *.doc file created from pushing the  button on the modified SAS toolbar.

Then when you want to hide these tools from the next user, just click on The “VIEW”> ”TOOLBARS”> ”CUSTOMIZE” option and choose the “OPTIONS” tab to reveal the following:

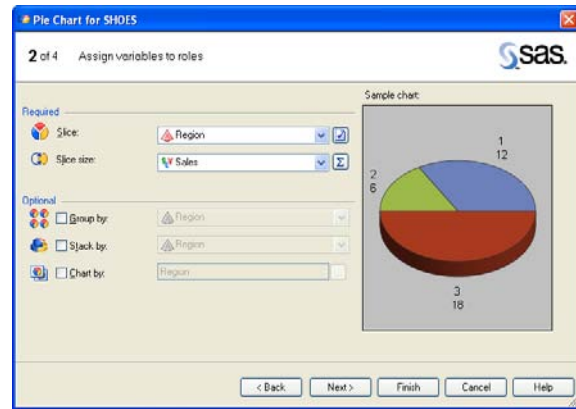


But does it do graphs?

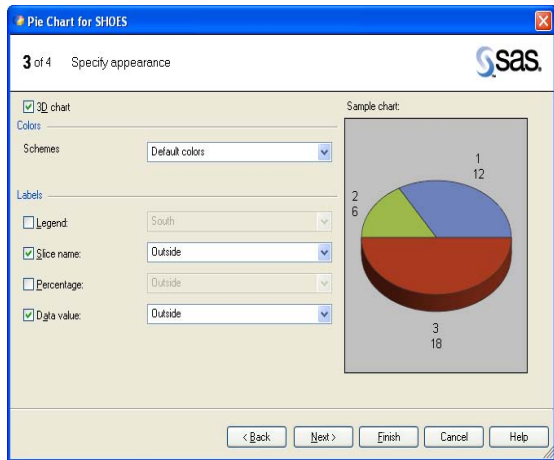
One of the biggest advancements of SAS Enterprise Guide (in this author's opinion) the ability to help visualize data. Nearly everyone has heard the phrase “A picture is worth a thousand words”. Well graphs really... really... look like pictures. The largely unused SAS “Graph-N-Go” product from SAS Version 8 and 9 is a great little tool. But I always found it a little hard to use, because the user was given a blank screen and drag-and-drop tools to build a graph, with limited instructions. This at least freed the programmer from the coding. However, there was little help to guide the user. SAS Enterprise Guide provides “Wizards” to help the uninformed stumble through the process. Let us see what it takes to make a pie chart. So, start with “GRAPH”>”WIZZARDS”>”PIE CHART” to display something like the following:



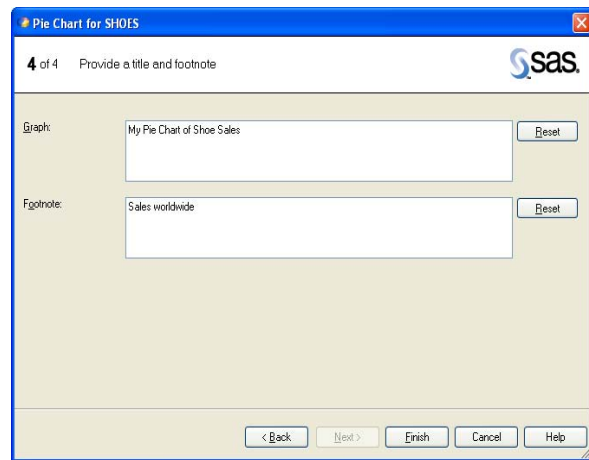
1) Click next to continue...



2) Pick the slice and size variables (Region and Sales)



3) Choose 2D/3D label placement



4) Add titles and footnotes.

When you are all done with the “Wizard” there appears a well formed pie chart with titles and labels. This is something you could use in a report or word document... if only you could get it there.

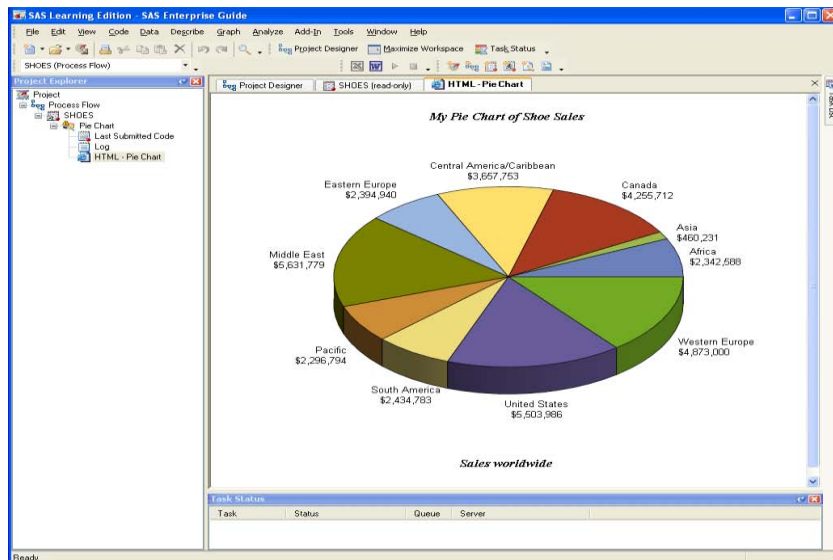


Image of Pie Chart created by SAS Enterprise Guide Graph Wizard.

Well – Remember the  button? -- Push it...

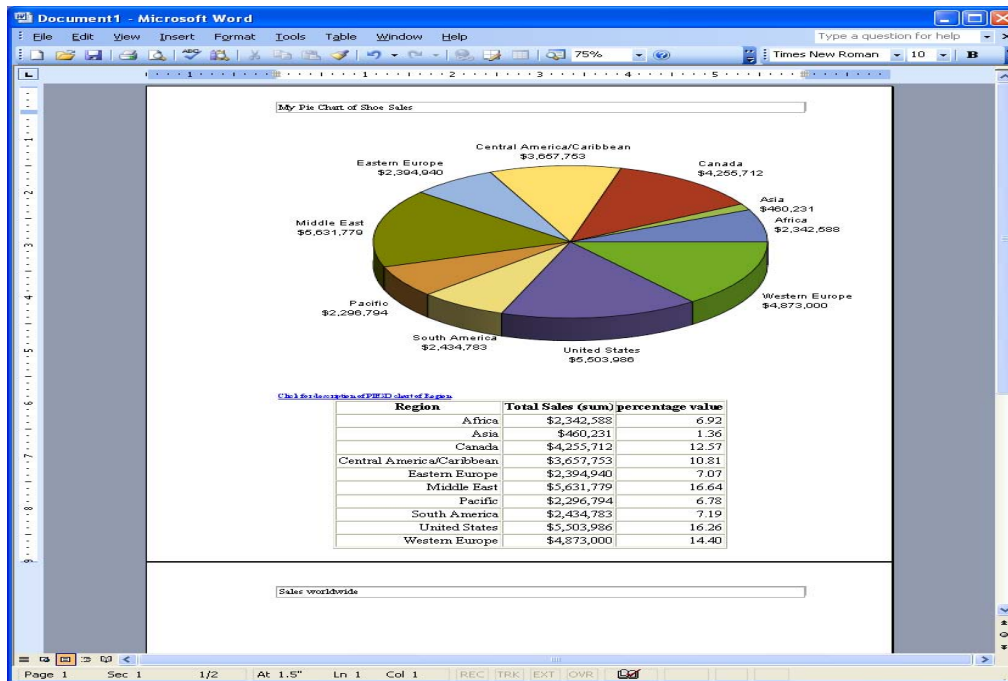
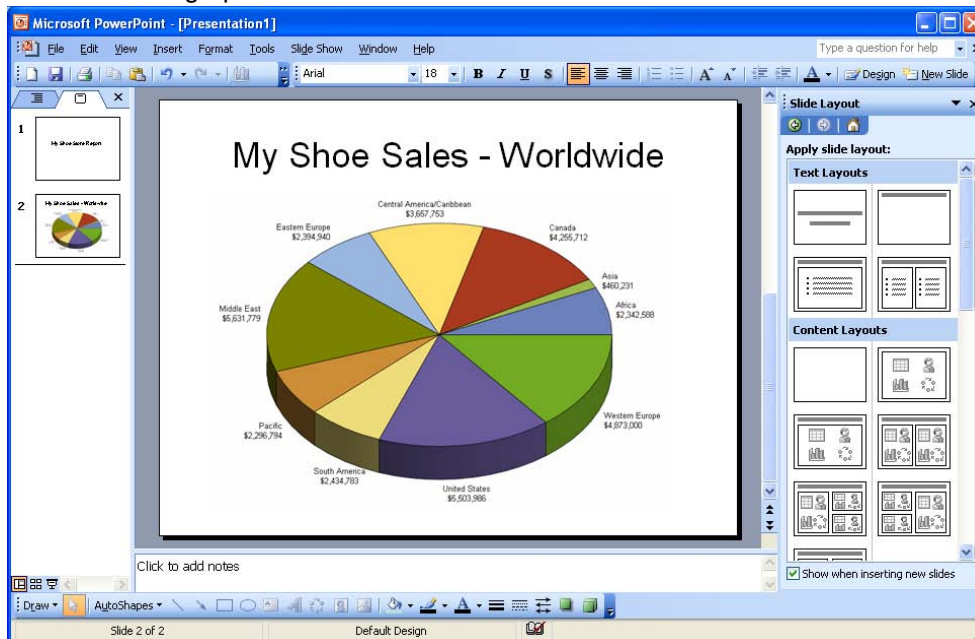


Image of Pie Chart created by SAS Enterprise Guide Graph Wizard after being exported to Microsoft Word.

This does not need much work to make it look good. All of the parts of this word document are independent and can be changed, sized, enhanced, or removed. It is only a cut and a paste away from wherever you want the data.

Now move the graph from Word to Power Point:



SAS Enterprise Guide Graph Wizard Pie Chart image after being copied from MS/Word to Power Point .

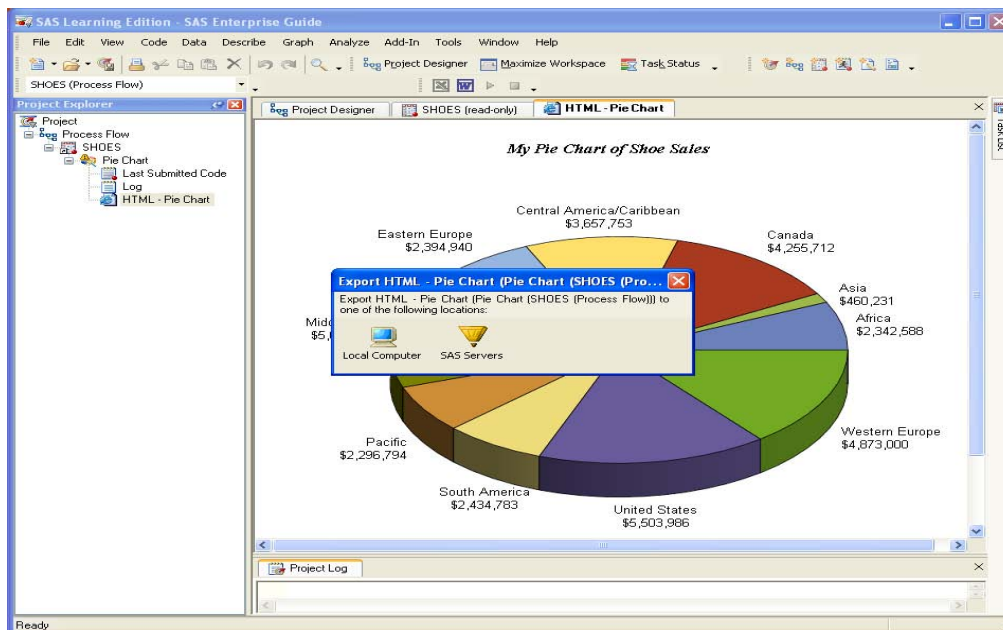
Now the Fun Begins

Learning “HOW” to get started is only the beginning. The process of making something do what you want, goes far beyond why the implementers created the “Wizards”. Most people are trained to use the mouse to click on the screen to start or continue a task. But, that usually means a “**LEFT**” mouse click. What about the “**Right**” mouse click? Up until now this paper has been like most ice cream people eat...

“**Vanilla**”, “**Plain**”, “**Simple**”, “**Blah**” ... well let’s spice it up some.

How would you like to give your boss an interactive chart that they could “adjust to be presented as the need arises” (play with to their heart’s content). After all, why should your boss be limited to a “PIE” chart? Give them the choice of what they want to view. The legends, titles, colors, background, data display Interactively! Now let’s start with the “Image of Pie Chart created by SAS Enterprise Guide Graph Wizard” from above.

While displaying the SAS “HTML – Pie Chart” window from above as the active window “**Left Click**” in the white space (background area of the graph if it is not white). Then in the toolbar “**Left Click**” on “File”; now “**Left Click**” on “Export”; now notice the new sub-menu item “Export HTML – Pie Chart”. “**Left Click**” on “Export HTML – Pie Chart”. A menu like the following will appear in the center of your screen:



SAS Enterprise Guide Graph Wizard Pie Chart image with export menu visible.

With the Export menu visible save the new file wherever you choose, and then open the file by double clicking on it. The first time this author opened a file created this way, the Internet Explorer loaded the SAS®/Graph Activex Control application onto the computer (admin privileges needed, this takes a few minutes and you need to follow on-screen instructions, your boss will need this too to view the output graphs). The OS was Windows Vista Ultimate – 64 bit. The “Export” process creates a file with the extension of *.HTML and a directory with a file name that contains a *.css (Cascading Style Sheet output file). Find and double click on the file just created by the export process, you will see something like the following graph, in Windows Internet Explorer.

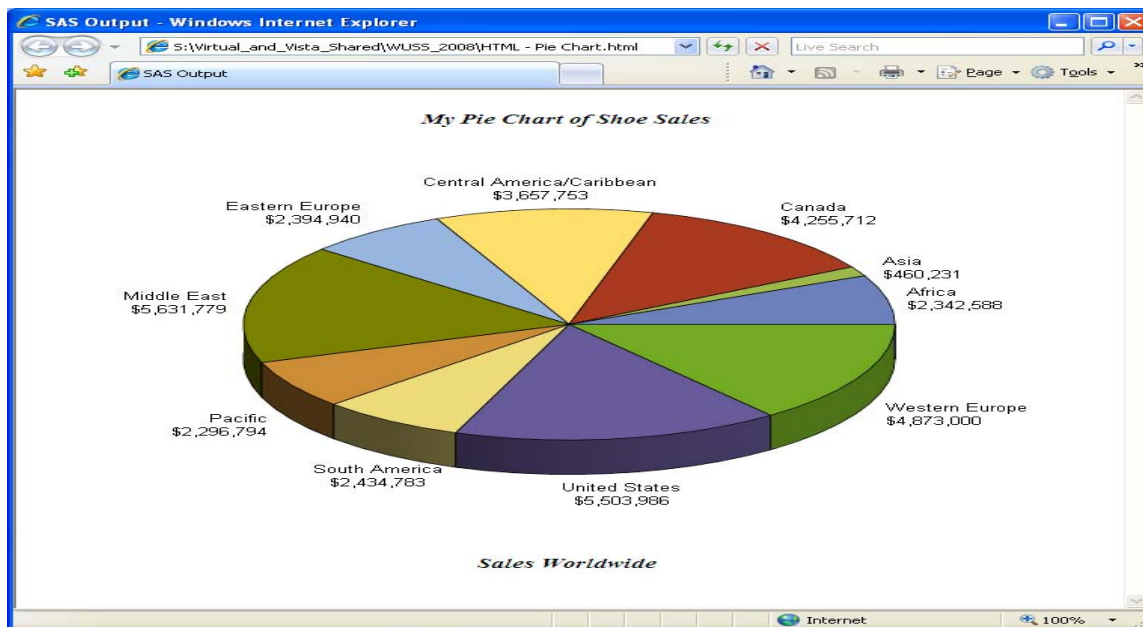


Image of graph viewed in Windows Internet explorer.

“Right Click” on the graph, and a menu will appear, it should have several options like:

Pie Properties

Graph toolbar

Style editor

Save as

Print

Chart Type → With a sub-menu of chart types like Horizontal bars, vertical bars, Pie Plot, and Area

Graph Properties

Data options

Titles → With a sub-menu of Title and Footnote

Copy

View → 2D Chart, Chart tips, Legend, and Reset view

Let's first turn on the Graph toolbar, it is shown below:

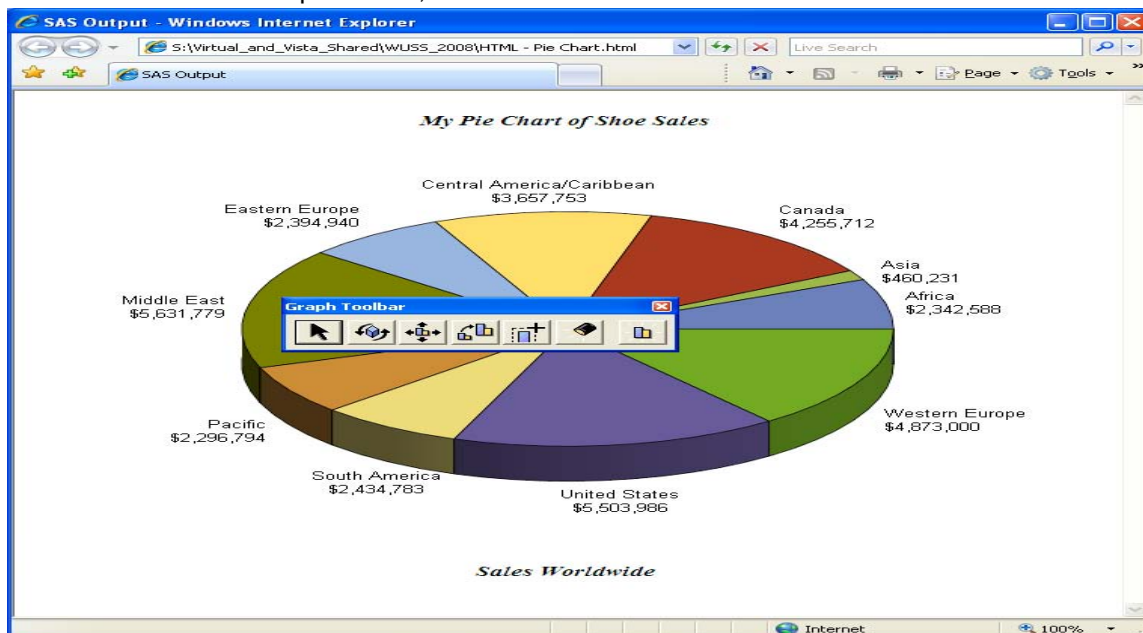


Image of graph toolbar in Windows Internet explorer, it is also available in SAS Enterprise Guide.

The buttons (from the left) are Select, Rotate, Move, Zoom, Subset Data, Position light, and Reset view.

Now it is time for me (the author) to play, and you (the student) to guess what I did. Let's adjust the graph type, size, legend, titles, and view using Windows Internet Explorer and the free SAS/Graph Activex Control application. But, make sure to save both the *.HTML file and the *.css style sheet directory.

Ready, Set, Go....



Image of graph after it was adjusted in multiple steps using "right Clicks" and menus found in **BOTH** Windows Internet Explorer and SAS Enterprise Guide, without writing code!

Conclusion

This graph is nearly "Production Ready" without writing a line of code, or writing a call to ODS directly. Furthermore, it is interactive, and in a set of files ready to be used by Internet Explorer (or possibly other web browsers). The note on the bottom about showing sales amounts is active, making the graph interactive. The image can still be changed by interacting with the browser, but moving the output to a PDF can probably freeze that from happening. This is a simple graph, and no time was spent trying to add drill down fields to the graph. This could be left as a student exercise.

Admittedly, nearly anyone could do this, there are no programming tricks and no code written to produce these results. These are simple examples, but the hardest part about programming is getting started, and learning where to find the tools needed to do the job. If this paper has shown you one thing you did not know about SAS Enterprise Guide, then it was worth your time to read it and my time to write it. None of the screen shots in this document (except for the Power Point image) have been edited, they are exactly the way SAS Enterprise Guide produced them. Since SAS Enterprise Guide does not write directly to MS Power Point the title was added, but the graph was only a cut, and a paste, away from MS Word. The Internet Explorer screen shots were not modified, and the files were created with the simple export command directly from the file menu (when the graph was the active window).

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