

Automate Highly Formatted Excel Reports Directly from SAS®

LeRoy Bessler PhD

Bessler Consulting and Research

Strong Smart Systems™

Le_Roy_Bessler@wi.rr.com

Notice

SAS is a registered trademark or trademark of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other product and brand names are trademarks or registered trademarks of their respective owners.

To copy code from the slides

1. Make a second copy of the slides so that you always have a backup of the original.
2. Rename the second copy to change the file extension from pps to ppt.
3. Open the ppt version, and you will be able to copy any code, text, or image.

Structure of Presentation

- Why use the ODS TableEditor TagSet
- What I regard as significant distinguishing advantages of ODS tagsets over using the simpler solution of ODS HTML
- The Basics of ODS HTML
- Color-Coding without Red-Green
- Multiple WorkSheets per WorkBook
- WorkSheets with Multiple Graphs, Multiple Tables, Multiple Tables and One Graph
(NOTE: One Graph is the maximum, and it must be last if presented in a horizontal panel)
- Some Either/Or limitations of TableEditor

You Can Help . . .

First. If you have any solutions to SAS-to-Excel reporting, I would appreciate your sharing them. If I use them for publication, I will give you conspicuous acknowledgement.

I'm not a user of Excel macros, VBA, etc.

SAS, ODS, DDE only.

Second. If you find any error in these slides, please let me know.

Thanks.

Scope of Presentation

- As much as preparation time permitted
- For a paper that covered ODS HTML, a bit on the ExcelXP tagset, and a bit on an earlier version of the MSOffice2K_x tagset (which could not do multi-sheet workbooks), see

<http://www.mwsug.org/proceedings/2010/solutions/MWSUG-2010-167.pdf>

- For more on those two tagsets, as well a good introduction to the TableEditor tagset, see these slides and my updated and expanded paper, to be written as part of a near future project. Send me an email if you want to receive the paper.

Not In Scope of Presentation

- How to enable SAS to control the format of numeric data, dates, etc. when passed to Excel will be covered in an update to these slides
- MSOffice2K IS NOT covered here, but MSOffice2K_x, which has more capability, IS covered here

Content of Presentation

- Picture of Output
- Code Used
- Code discussion limited
- All code will provided via email upon request
 - to adapt
 - for self-study
 - to get clarified by reading at support.sas.com

What will be in Online Proceedings

- These slides
- DDE slides, paper, and toolkit

Paper, Code, Other References

- These slides are based on work in progress
- Formal long paper might be written this summer
- Code package for these slides cannot be added to Proceedings immediately
- You can request via email:
 - Code package
 - List of references
 - Bessler summaries, excerpts from references
 - Updates as they become available
 - Paper, if prepared later

Acknowledgement

- Some of the code here is derived from or related to or inspired by examples at support.sas.com or in papers by Chevell Parker.
- There are numerous papers about ExcelXP by Vincent DelGobbo. I'm not a fan of ExcelXP. It cannot handle graphs. So there is probably nothing here from his papers.
- The easiest way to find papers by any author on any subject related to SAS is by searching the index to the treasure trove of SAS lore at www.lexjansen.com

Comment

I have done a lot of work of communication-effective graphic design and construction, and written numerous papers. The graphs used here are simply for proof of concept (i.e., that they can be delivered). They are not meant as good examples of graphic design. I can provide a web index to my graphics papers, if desired.

Ways to Do SAS to Excel with highly formatted output

- DDE (Dynamic Data Exchange)*
- ODS HTML
- ExcelXP tagset
- MSOffice2K tagset
- MSOffice2K_x tagset
- TableEditor tagset

*See conference proceedings for paper, slides,
and toolkit of sample programs, macros, etc.

Why care about TagSets?

If you don't use DDE,
there are things that
ODS HTML cannot do
(DDE can do more
than TagSets can)

TableEditor TagSet

IS

the only ODS solution
to create Pivot Tables

The Best Reason
to use
TableEditor TagSet

PivotTable.xls - Microsoft Excel

PivotTable Tools

Options Design

File Home Insert Page Layout Formulas Data Review View Acrobat

PivotTable Active Field Group Sort & Filter Sort Refresh Change Data Source Data Calculations Actions PivotChart OLAP Tools What-If Analysis Tools Field List +/- Buttons Field Headers Show

A1 Year

	A	B	C	D	E	F	G	H
1	Year	(All)						
2								
3	Sum of Profit	Quarter						
4	Product_Line	1999Q1	1999Q2	1999Q3	1999Q4	2000Q1	2000Q2	2000Q3
5	Children	83729.45	169275.76	159256.52	129290.36	90331	176233.57	191090.19
6	Clothes & Shoes	764469.01	1233880.86	1213900.28	977378.48	887637.3	1452140.44	1452140.44
7	Outdoors	572127.17	947800.82	762239.5	605265.87	697337.23	1120274.81	1120274.81
8	Sports	1172794.99	1576959.49	1485250.23	1418872.03	1417305.81	1910901.94	1910901.94
9	Grand Total	2593120.62	3927916.93	3620646.53	3130806.74	3092611.34	4659550.76	4659550.76
10								
11								
12								
13								
14								
15								
16								
17								
18								

Table_1 Table_1_pivot

Ready

100%

PivotTable Field List

Choose fields to add to report:

- ☐ Obs
- ☒ Year
- ☒ Quarter
- ☒ Product_Line
- ☐ Product_Category
- ☐ Product_Group
- ☐ Quantity
- ☒ Profit
- ☐ Total_Retail_Price

Drag fields between areas below:

Report... Column...

Year Quarter

Row Labels Values

Product_Line Sum of Profit

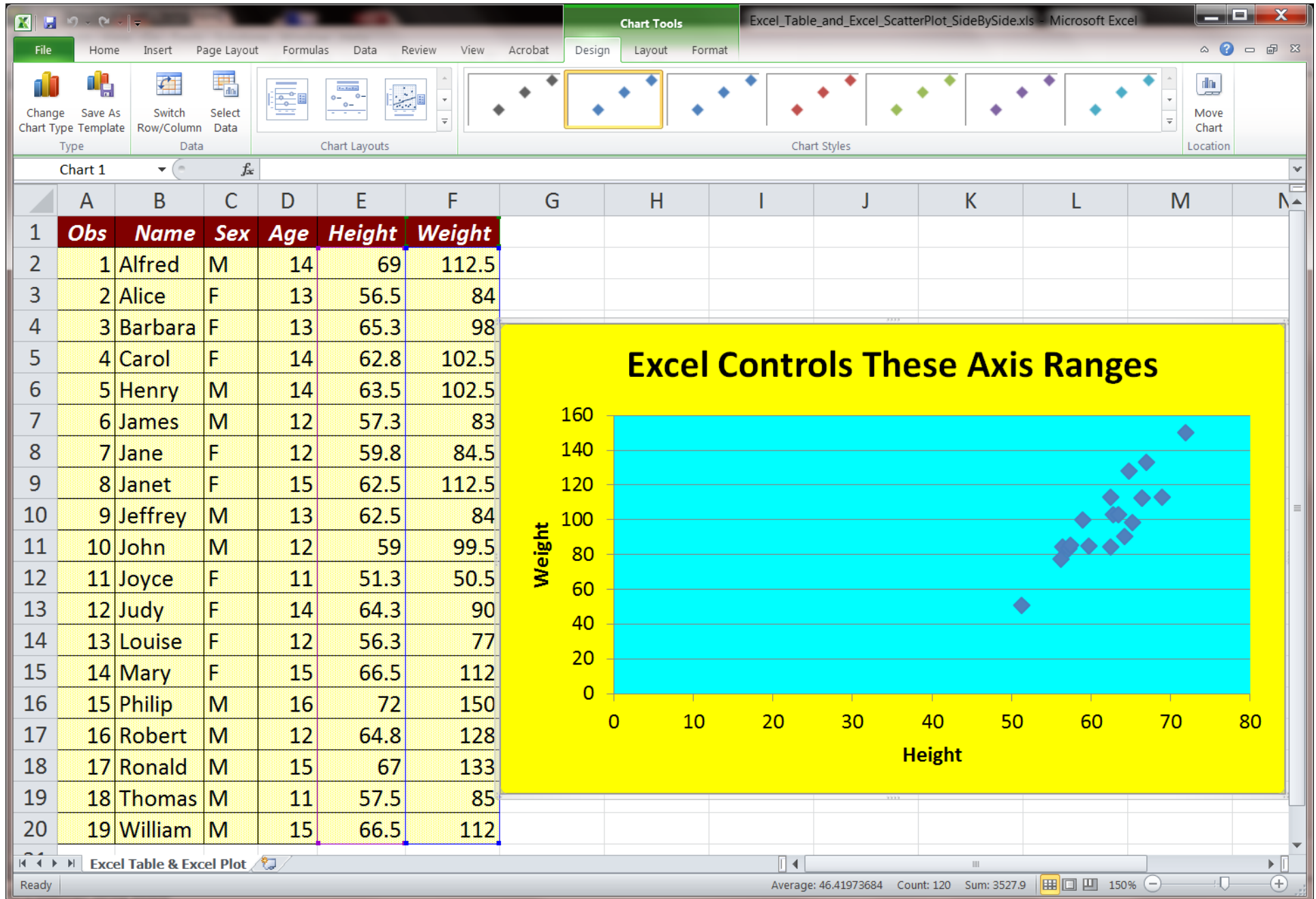
Defer Layouts Update

```
ods tagsets.tableeditor
file="%sysfunc(getoption(work))\temp.html"
options(
pivotrow="product_line"
pivotcol="quarter"
pivotdata="profit"
pivotpage="year"
auto_excel="yes"
excel_save_file="C:\\SAStoXLoutput\\PivotTable.xls"
);
proc print data=sashelp.orsales;
run;
ods tagsets.tableeditor close;
/* MORE pivot table options are available */
```

Another Thing
That
ONLY
TableEditor
Can Do

Excel-specific Format Table and Excel Graph in a Panel

SAS creates Excel Table & Excel Plot



```
ods tagsets.tableeditor  
file="%sysfunc(getoption(work))\temp.html"  
options(  
  excel_zoom="150"  
  /* other options here to create the Excel-only outputs */  
  auto_excel="yes"  
  excel_save_file=  
    "C:\\SASToXLoutput\\Excel_Table_Excel_ScatterPlot.xls"  
);  
proc print data=sashelp.class; run;  
ods tagsets.tableeditor close;
```

options used to create the Excel-only outputs:

sheet_name="Excel Table & Excel Plot"

chart_type="xyscatter"

chart_title="Excel Controls These Axis Ranges"

chart_title_size="10"

chart_title_color="8" /* this is disregarded */

chart_xaxes_title="Height" chart_yaxes_title="Weight"

chart_area_color="6" chart_plotarea_color="8"

chart_source="e:f" /* NOTE: SAS log contains a FALSE message:

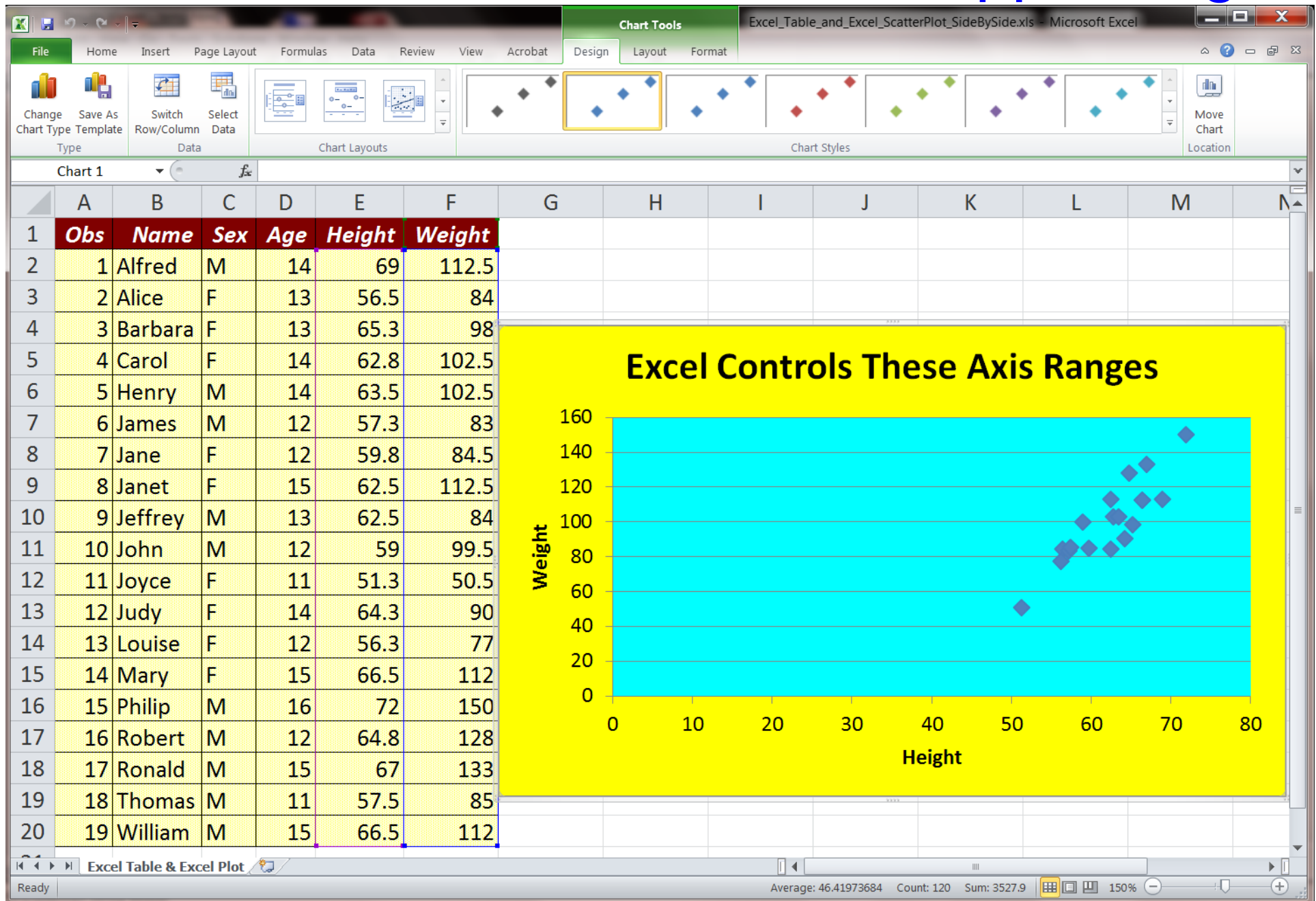
"Unrecognized option: CHART_SOURCE" */

chart_location="same_sheet"

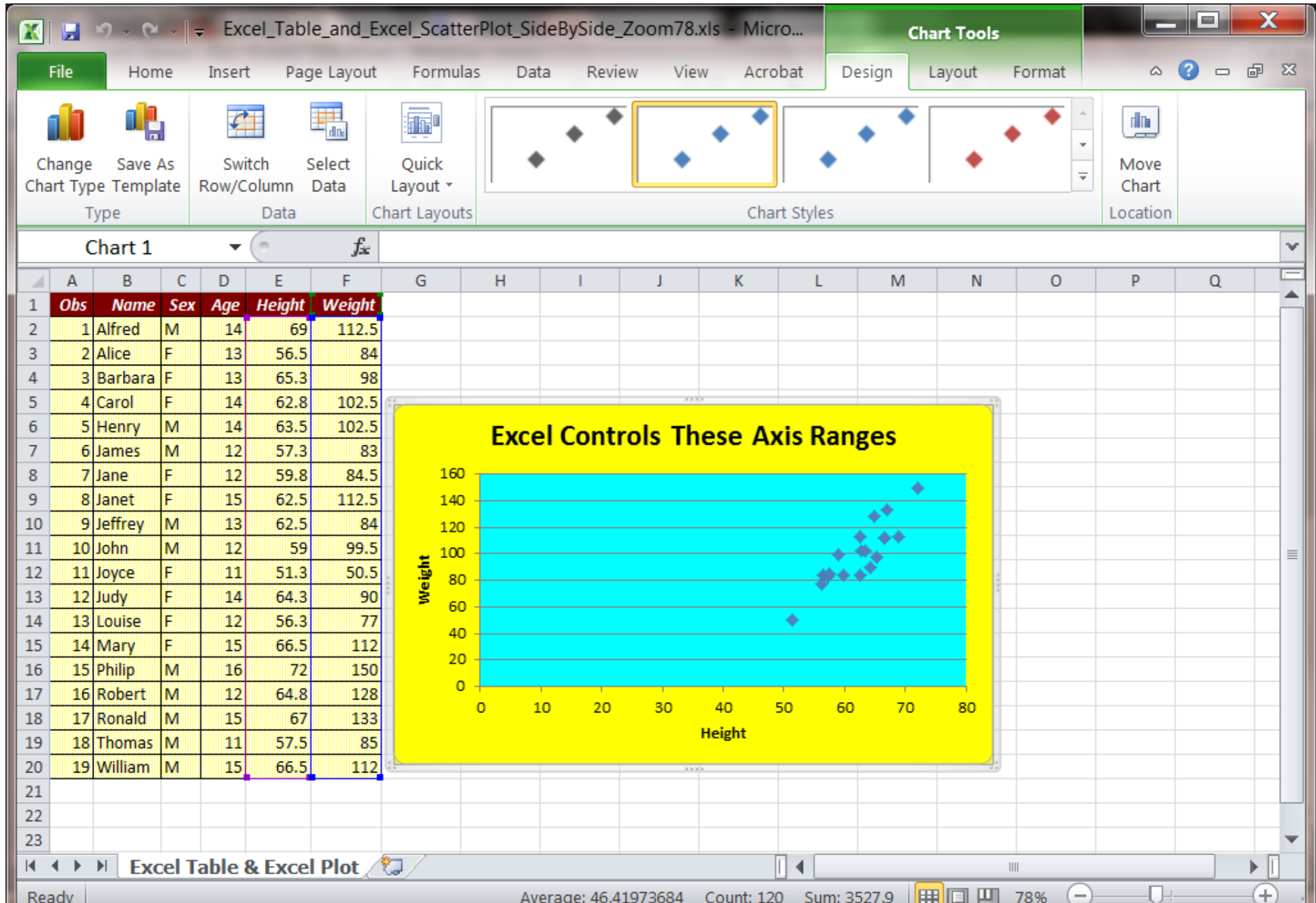
chart_legend="none" /* undocumented option—used here to remove useless legend */

auto_format="color2" /* Optional. Other values are ? */

Created at 1920 X 1080 and Cropped Right



Created at 1024 X 768 with zoom="78"



Many, but not all uses of the TableEditor tagset, require use of this type of program structure:

```
ods results; /* comments about this statement later */
ods tagsets.tableeditor
  file="%sysfunc(getoption(work))\temp.html"
  options( . . .
    auto_excel="yes"
    excel_save_file="C:\\SAStoXLoutput\\FileName.xls");
< some PROC step here >
ods tagsets.tableeditor close;
```

`%sysfunc(getoption(work))` assigns the folder used for your WORK data sets to be used for the HTML file. The WORK folder is always deleted at end of session. The path to the Save File (to your output Excel file) must include `\\` everywhere you would otherwise use `\`

```
ods tagsets.tableeditor
```

```
file="%sysfunc(getoption(work))\temp.html"
```

```
options( . . .
```

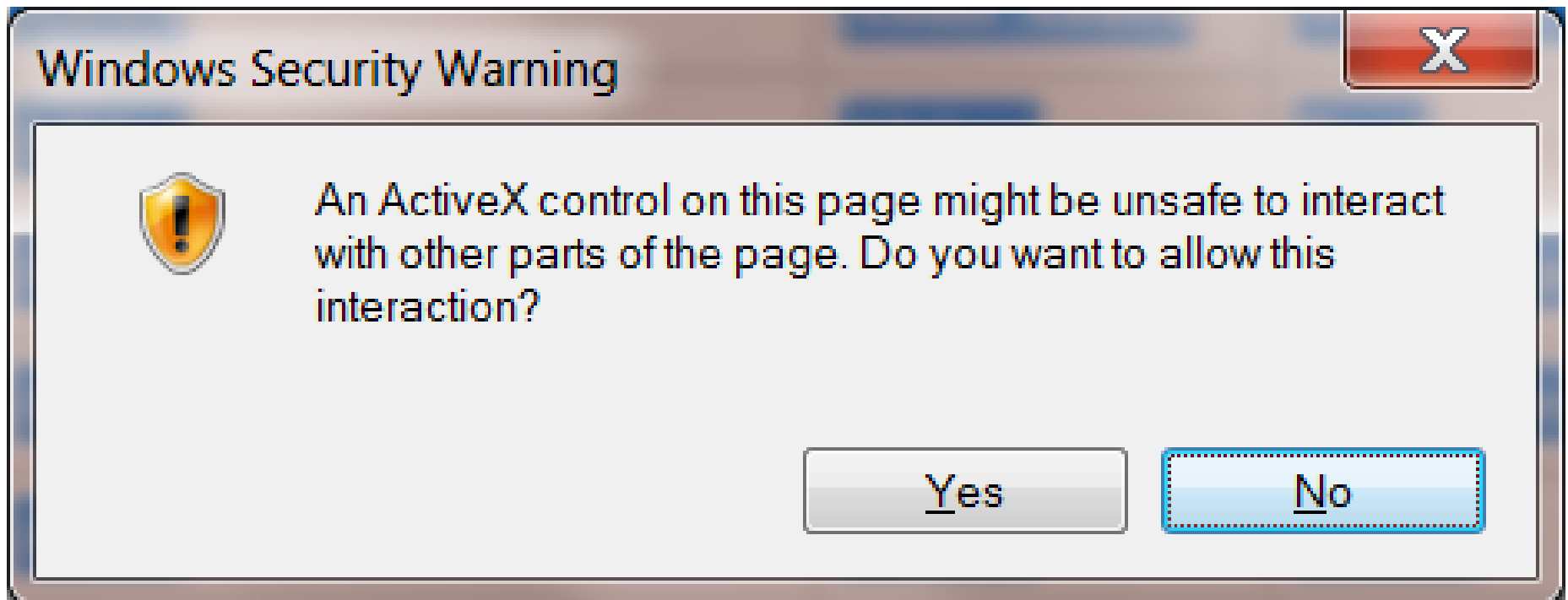
```
auto_excel="yes"
```

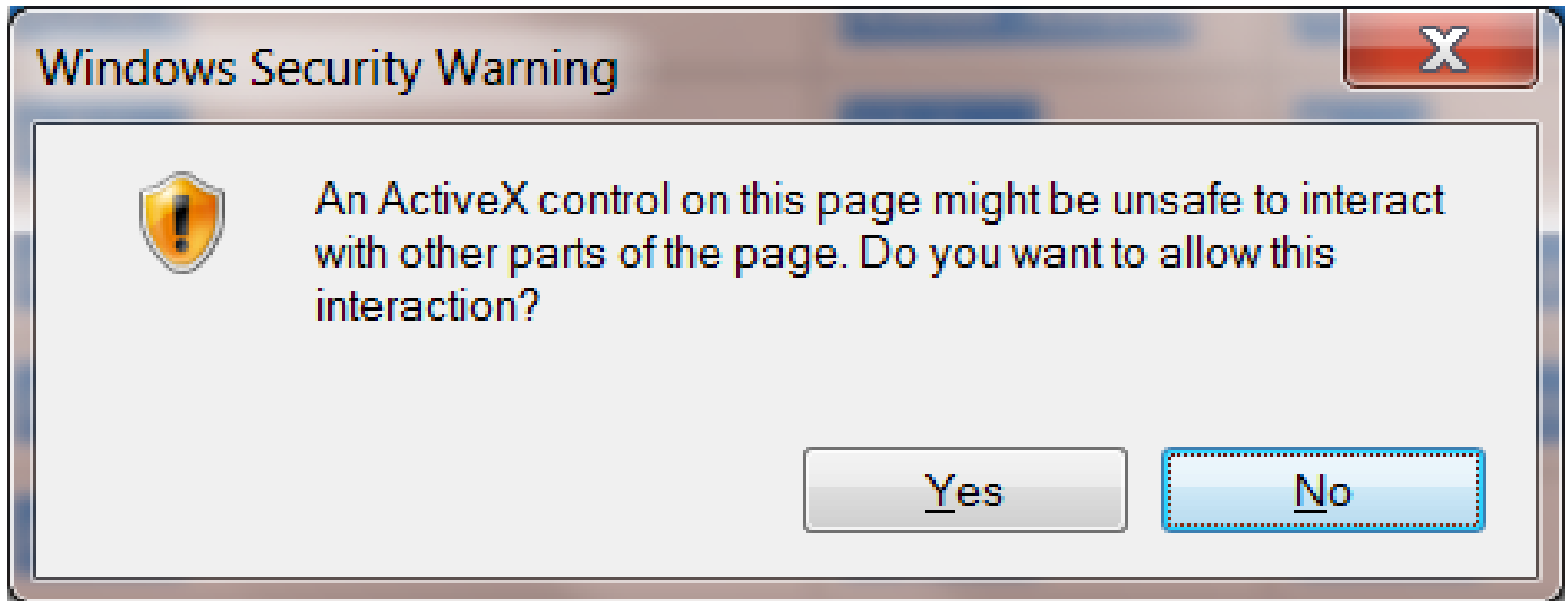
```
excel_save_file="C:\\SAStoXLoutput\\FileName.xls");
```

```
< some PROC step here >
```

```
ods tagsets.tableeditor close;
```

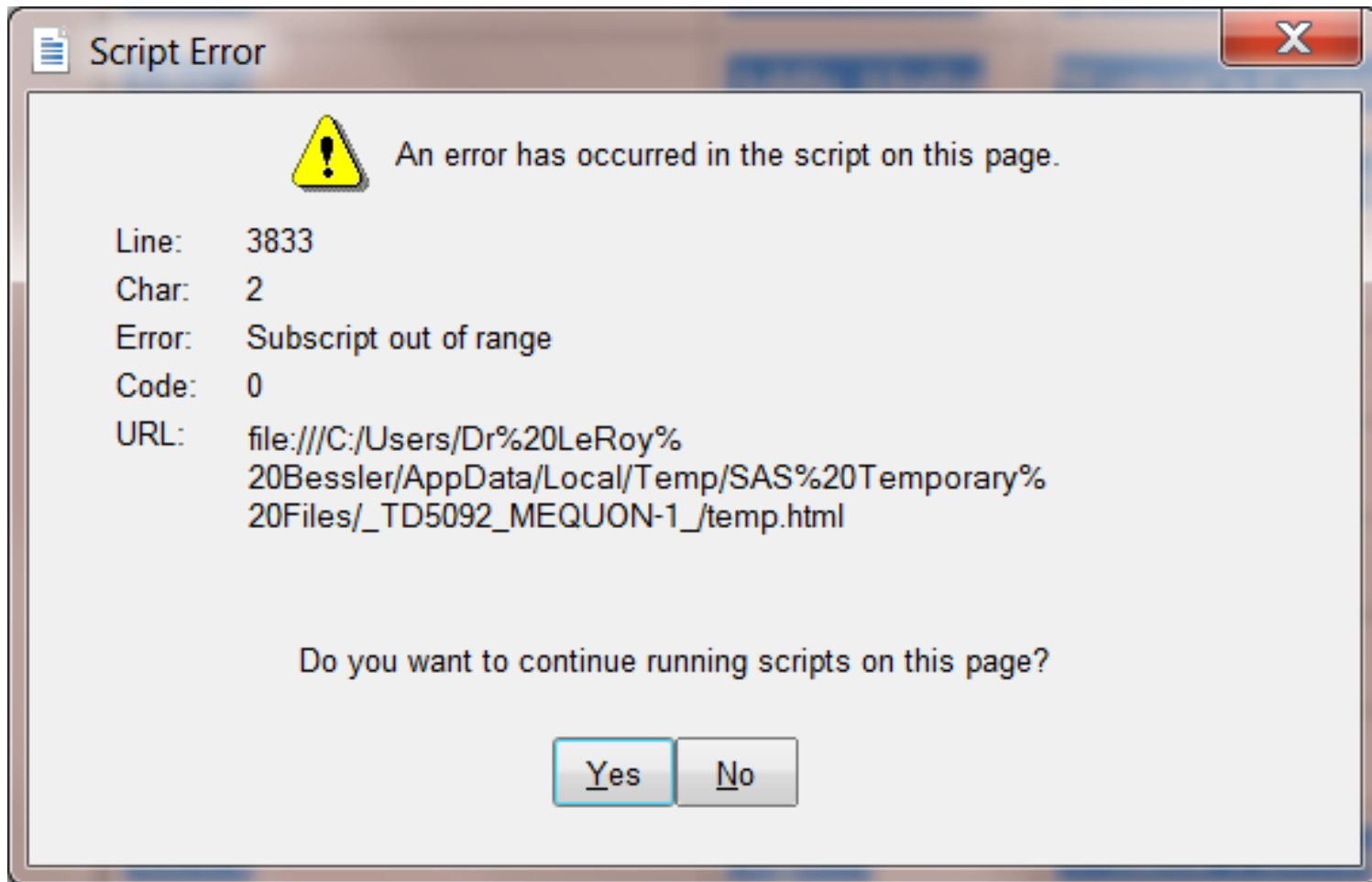
ALWAYS causes two prompts. Here is the first:





As soon as you click Yes,
the Excel workbook is created,
but another prompt will appear . . .

If you use "ods noresults;"
instead of "ods results;" (which is the default),
NO prompts will appear
and NO Excel files will be created



Whether you click Yes or No,
the workbook is already complete.

Distinguishing Advantages of ODS TagSets over ODS HTML

High Usability Features in Excel

- Titles
- Frozen Headers*
- Frozen RowHeaders*
- AutoFilters*
- Hyperlink in a title
- Zoom*

*Not available with ODS HTML,
Requires an ODS tagset

Effect of Each TagSet

- Enables each feature IF supported, but possibly somewhat differently
- For the same ODS style renders appearance of style differently
- In most cases,
I have used STYLE=Minimal

Support for AutoFilters

ExcelXP – All Columns or Selective, easy

MSOffice2Kx – Only All Columns option

Table Editor – All Columns or Selective, but
Different Syntax

Different Appearance of Filters

ExcelXP Frozen Hdrs & RowHdrs, Filter Cols A-D

ExcelXP_ZoomedLandscapeTableWithTitleAndHyperLinkAndFrozenHeadersAndFrozenRowHeadersAndSpe...

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

D6 12

Listing of SASHELP.SHOES with ExcelXP TagSet & zoom="65"
 If using justify=left for TITLE1, what extends past Column A is hidden
 Go to Wisconsin Illinois SAS Users Home Page

Region	Subsidiary	Product	Sto	Sales	Inventory	Returns
Africa	Addis Ababa	Boot	12	\$29,761.00	\$191,821.00	\$769.00
Africa	Addis Ababa	Men's Casual	4	\$67,242.00	\$118,036.00	\$2,284.00
Africa	Addis Ababa	Men's Dress	7	\$76,793.00	\$136,273.00	\$2,433.00
Africa	Addis Ababa	Sandal	10	\$62,819.00	\$204,284.00	\$1,861.00
Africa	Addis Ababa	Slipper	14	\$68,641.00	\$279,795.00	\$1,771.00
Africa	Addis Ababa	Sport Shoe	4	\$1,690.00	\$16,634.00	\$79.00
Africa	Addis Ababa	Women's Casual	2	\$51,541.00	\$98,641.00	\$940.00
Africa	Addis Ababa	Women's Dress	12	\$108,942.00	\$311,017.00	\$3,233.00
Africa	Algiers	Boot	21	\$21,297.00	\$73,737.00	\$710.00
Africa	Algiers	Men's Casual	4	\$63,206.00	\$100,982.00	\$2,221.00
Africa	Algiers	Men's Dress	13	\$123,743.00	\$428,575.00	\$3,621.00
Africa	Algiers	Sandal	25	\$29,198.00	\$84,447.00	\$1,530.00
Africa	Algiers	Slipper	17	\$64,891.00	\$248,198.00	\$1,823.00
Africa	Algiers	Sport Shoe	9	\$2,617.00	\$9,372.00	\$168.00
Africa	Algiers	Women's Dress	12	\$90,648.00	\$266,805.00	\$2,690.00
Africa	Cairo	Boot	20	\$4,846.00	\$18,965.00	\$229.00
Africa	Cairo	Men's Casual	25	\$360,209.00	\$1,063,251.00	\$9,424.00
Africa	Cairo	Men's Dress	5	\$4,051.00	\$45,962.00	\$97.00
Africa	Cairo	Sandal	0	\$10,533.00	\$50,430.00	\$500.00

ExcelXP Features Demo

Ready 65%

Title1 Defect Using STYLE=Minimal

testByLeRBwithMinimalODSstyle.xml - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

D6 12

Listing of SASHELP.SHOES
If using justify=left for TITLE1, what extends past Column A is hidden
Go to Wisconsin Illinois SAS Users Home Page

Region	Subsidiary	Product	Stock	Sales	Inventory	Returns
Africa	Addis Ababa	Boot	12	\$29,761.00	\$191,821.00	\$769.00
Africa	Addis Ababa	Men's Casual	4	\$67,242.00	\$118,036.00	\$2,284.00
Africa	Addis Ababa	Men's Dress	7	\$76,793.00	\$136,273.00	\$2,433.00
Africa	Addis Ababa	Sandal	10	\$62,819.00	\$204,284.00	\$1,861.00
Africa	Addis Ababa	Slipper	14	\$68,641.00	\$279,795.00	\$1,771.00
Africa	Addis Ababa	Sport Shoe	4	\$1,690.00	\$16,634.00	\$79.00
Africa	Addis Ababa	Women's Casual	2	\$51,541.00	\$98,641.00	\$940.00
Africa	Addis Ababa	Women's Dress	12	\$108,942.00	\$311,017.00	\$3,233.00
Africa	Algiers	Boot	21	\$21,297.00	\$73,737.00	\$710.00
Africa	Algiers	Men's Casual	4	\$63,206.00	\$100,982.00	\$2,221.00
Africa	Algiers	Men's Dress	13	\$123,743.00	\$428,575.00	\$3,621.00
Africa	Algiers	Sandal	25	\$29,198.00	\$84,447.00	\$1,530.00
Africa	Algiers	Slipper	17	\$64,891.00	\$248,198.00	\$1,823.00
Africa	Algiers	Sport Shoe	9	\$2,617.00	\$9,372.00	\$168.00
Africa	Algiers	Women's Dress	12	\$90,648.00	\$266,805.00	\$2,690.00
Africa	Cairo	Boot	20	\$4,846.00	\$18,965.00	\$229.00
Africa	Cairo	Men's Casual	25	\$360,209.00	\$1,063,251.00	\$9,424.00
Africa	Cairo	Men's Dress	5	\$4,051.00	\$45,962.00	\$97.00
Africa	Cairo	Sandal	0	\$18,533.00	\$59,438.00	\$588.00

ExcelXP Features Demo

Ready 65%

```
ods noresults; /* prevents pop-up about Save or Open */
ods graphics off; goptions reset=all;
ods tagsets.ExcelXP path="C:\SASStoXLoutput"
style=minimal
  file="SomeFileName.xml"
  /* can use file extension xls instead,
  but it causes a misleading message at file open time */
  options(
zoom="65"
embedded_titles="yes"
frozen_headers="5" frozen_rowheaders="3"
autofilter="1-4"
sheet_name="ExcelXP Features Demo" );
< PROC PRINT STEP HERE >
ods tagsets.ExcelXP close;
```

```
/* PROC PRINT STEP: */  
proc print data=sashelp.shoes noobs;  
title1 height=16pt color=blue ' title1 text here '  
title2 height=16pt 'If using justify=left for TITLE1, what  
extends past Column A is hidden';  
title3 justify=left height=16pt color=red  
link='http://www.wiilsu.org'  
'Go to Wisconsin Illinois SAS Users Home Page';  
  /* title3 "<a href='http://www.wiilsu.org'>Go to  
Wisconsin Illinois SAS Users Home Page</a>";  
  The above way to create a hyperlink in the title  
  does not work with this tagset. */  
id region subsidiary product;  
run;
```

Title1 Defect Removed If Using STYLE=Default

testByLeRBbutWithDefaultODSstyle.xml - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

D6 fx 12

Listing of SASHELP.SHOES with ExcelXP TagSet & zoom="65"
If using justify=left for TITLE1, what extends past Column A is hidden
Go to Wisconsin Illinois SAS Users Home Page

Region	Subsidiary	Product	Store	Sales	Inventory
Africa	Addis Ababa	Boot	12	\$29,761.00	\$191,821.00
Africa	Addis Ababa	Men's Casual	4	\$67,242.00	\$118,036.00
Africa	Addis Ababa	Men's Dress	7	\$76,793.00	\$136,273.00
Africa	Addis Ababa	Sandal	10	\$62,819.00	\$204,284.00
Africa	Addis Ababa	Slipper	14	\$68,641.00	\$279,795.00
Africa	Addis Ababa	Sport Shoe	4	\$1,690.00	\$16,634.00
Africa	Addis Ababa	Women's Casual	2	\$51,541.00	\$98,641.00
Africa	Addis Ababa	Women's Dress	12	\$108,942.00	\$311,017.00
Africa	Algiers	Boot	21	\$21,297.00	\$73,737.00
Africa	Algiers	Men's Casual	4	\$63,206.00	\$100,982.00
Africa	Algiers	Men's Dress	13	\$123,743.00	\$428,575.00
Africa	Algiers	Sandal	25	\$29,198.00	\$84,447.00
Africa	Algiers	Slipper	17	\$64,891.00	\$248,198.00
Africa	Algiers	Sport Shoe	9	\$2,617.00	\$9,372.00
Africa	Algiers	Women's Dress	12	\$90,648.00	\$266,805.00
Africa	Cairo	Boot	20	\$4,846.00	\$18,965.00
Africa	Cairo	Men's Casual	25	\$360,209.00	\$1,063,251.00

ExcelXP Features Demo

Ready 65%

Msoffice2K_x Frozen Hdrs & RowHdrs, Filter All Cols

MSOffice2K_x_ZoomedLandscapeTableWithTitleAndHyperLinkAndFrozenHeadersAndFrozenRowHeadersA...

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

A8 Africa

1 Listing of SASHELP.SHOES with Msoffice2K_x TagSet & Zoom="120"

2

3 font color and height requested for link below is disregarded.

4

5 [Go to Wisconsin Illinois SAS Users Home Page](#)

6

7	Region	Subsidiary	Product	Stor	Sal	Invento	Retur
8	Africa	Addis Ababa	Boot	12	\$29,761	\$191,821	\$769
9	Africa	Addis Ababa	Men's Casual	4	\$67,242	\$118,036	\$2,284
10	Africa	Addis Ababa	Men's Dress	7	\$76,793	\$136,273	\$2,433
11	Africa	Addis Ababa	Sandal	10	\$62,819	\$204,284	\$1,861
12	Africa	Addis Ababa	Slipper	14	\$68,641	\$279,795	\$1,771
13	Africa	Addis Ababa	Sport Shoe	4	\$1,690	\$16,634	\$79
14	Africa	Addis Ababa	Women's	2	\$51,541	\$98,641	\$940
15	Africa	Addis Ababa	Women's Dress	12	\$108,942	\$311,017	\$3,233

MSOffice2K_x Features Demo

Ready 120%

```
ods noresults; /* prevents pop-up about Save or Open */
ods graphics off; goptions reset=all;
ods tagsets.msoffice2k_x path="C:\SAStoXLoutput"
    style=minimal
    file="SomeFileName.xls"
    options(
zoom="120"
frozen_headers="7" frozen_rowheaders="3"
autofilter="yes"
sheet_name="MSOffice2K_x Features Demo" );
< PROC PRINT STEP HERE >
ods tagsets.msoffice2k_x close;
```

```
/* PROC PRINT STEP: */  
proc print data=sashelp.shoes noobs;  
title1 justify=left height=14pt color=blue 'title1 text';  
title2 justify=left height=14pt color=red 'font color and  
height requested for link below is disregarded.';  
  /* title3 justify=left height=16pt color=red  
link='http://www.wiilsu.org' 'Go to Wisconsin Illinois SAS  
Users Home Page';  
  The above way to create a hyperlink in the title  
  does not work with this tagset. */  
title3 justify=left height=14pt color=red "<a  
href='http://www.wiilsu.org'>Go to Wisconsin Illinois SAS  
Users Home Page</a>";  
id region subsidiary product;  
run;
```

TableEditor Frozen Hdrs Filter Cols A,B,C,D

TableEditorWorkSheetWithFrozenHeadersAndInRow2AutoFiltersOnlyForSpecificColumns.xls - Microsoft Ex...

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

A2

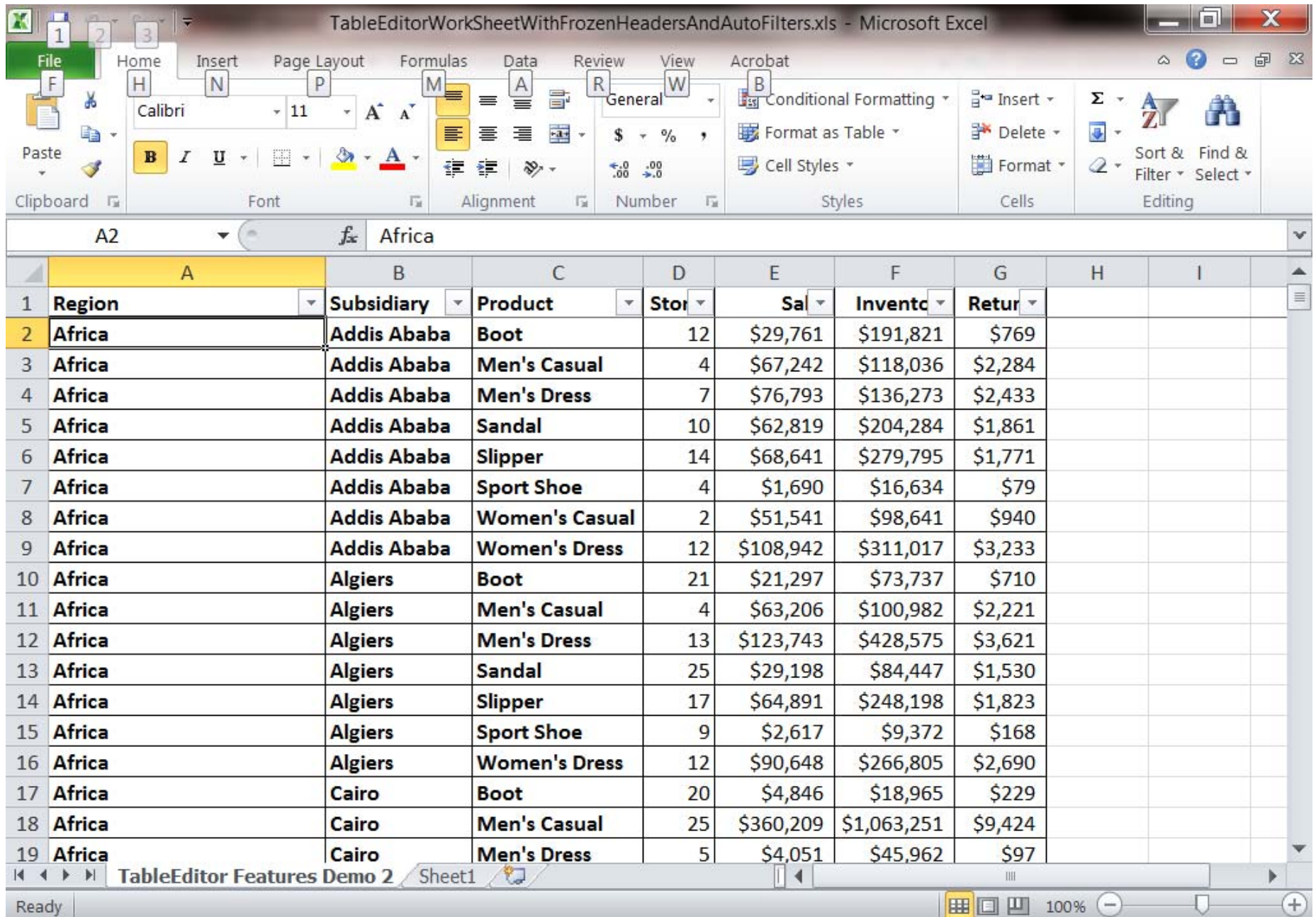
	A	B	C	D	E	F	G	H	I	J	K	L
1	Region	Subsidiary	Product	Stores	Sales	Inventory	Returns					
2	(all)	(all)	(all)	(all)								
3	Africa	Addis Ababa	Boot	12	\$29,761	\$191,821	\$769					
4	Africa	Addis Ababa	Men's Casual	4	\$67,242	\$118,036	\$2,284					
5	Africa	Addis Ababa	Men's Dress	7	\$76,793	\$136,273	\$2,433					
6	Africa	Addis Ababa	Sandal	10	\$62,819	\$204,284	\$1,861					
7	Africa	Addis Ababa	Slipper	14	\$68,641	\$279,795	\$1,771					
8	Africa	Addis Ababa	Sport Shoe	4	\$1,690	\$16,634	\$79					
9	Africa	Addis Ababa	Women's Casual	2	\$51,541	\$98,641	\$940					
10	Africa	Addis Ababa	Women's Dress	12	\$108,942	\$311,017	\$3,233					
11	Africa	Algiers	Boot	21	\$21,297	\$73,737	\$710					

TableEditor Features Demo 1

Ready 100%

```
ods results; /* MUST BE TURNED ON
  so you can get and respond to prompts */
ods graphics off; goptions reset=all;
ods tagsets.tableeditor style=Minimal
  file="%sysfunc(getoption(work))\temp.html"
options( sheet_name="TableEditor Features Demo 1"
excel_frozen_headers="yes"
autofilter="yes"
filter_cols="1,2,3,4" /* puts filters in row 2 */
/* AUTOFILTER_ENDCOL alternative does not work */
auto_excel="yes"
excel_save_file="C:\\SAS\\XLoutput\\Demo1.xls" );
proc print data=sashelp.shoes noobs;
id region subsidiary product; run;
ods tagsets.tableeditor close;
```

TableEditor – AutoFilter all columns



TableEditorWorkSheetWithFrozenHeadersAndAutoFilters.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

A2 Africa

	A	B	C	D	E	F	G	H	I
1	Region	Subsidiary	Product	Store	Sales	Inventory	Return		
2	Africa	Addis Ababa	Boot	12	\$29,761	\$191,821	\$769		
3	Africa	Addis Ababa	Men's Casual	4	\$67,242	\$118,036	\$2,284		
4	Africa	Addis Ababa	Men's Dress	7	\$76,793	\$136,273	\$2,433		
5	Africa	Addis Ababa	Sandal	10	\$62,819	\$204,284	\$1,861		
6	Africa	Addis Ababa	Slipper	14	\$68,641	\$279,795	\$1,771		
7	Africa	Addis Ababa	Sport Shoe	4	\$1,690	\$16,634	\$79		
8	Africa	Addis Ababa	Women's Casual	2	\$51,541	\$98,641	\$940		
9	Africa	Addis Ababa	Women's Dress	12	\$108,942	\$311,017	\$3,233		
10	Africa	Algiers	Boot	21	\$21,297	\$73,737	\$710		
11	Africa	Algiers	Men's Casual	4	\$63,206	\$100,982	\$2,221		
12	Africa	Algiers	Men's Dress	13	\$123,743	\$428,575	\$3,621		
13	Africa	Algiers	Sandal	25	\$29,198	\$84,447	\$1,530		
14	Africa	Algiers	Slipper	17	\$64,891	\$248,198	\$1,823		
15	Africa	Algiers	Sport Shoe	9	\$2,617	\$9,372	\$168		
16	Africa	Algiers	Women's Dress	12	\$90,648	\$266,805	\$2,690		
17	Africa	Cairo	Boot	20	\$4,846	\$18,965	\$229		
18	Africa	Cairo	Men's Casual	25	\$360,209	\$1,063,251	\$9,424		
19	Africa	Cairo	Men's Dress	5	\$4,051	\$45,962	\$97		

TableEditor Features Demo 2 Sheet1

Ready 100%

```
ods results; /* MUST BE TURNED ON
  so you can get and respond to prompts */
ods graphics off; goptions reset=all;
ods tagsets.tableeditor style=Minimal
  file="%sysfunc(getoption(work))\temp.html"
options( sheet_name="TableEditor Features Demo 2"
excel_frozen_headers="yes"
autofilter="yes"
excel_autofilter="yes" /* All, no = None */
auto_excel="yes"
excel_save_file="C:\\SAS\\XLoutput\\Demo1.xls" );
proc print data=sashelp.shoes noobs;
id region subsidiary product; run;
ods tagsets.tableeditor close;
```

ODS TagSets

- tagsets updated without new release of SAS
- part of Base SAS
- can be user installed*
- documentation ordeal
 - too much PARTIAL information
 - in TOO MANY places
 - some of it wrong or out of date
 - no manuals
- get doc in SAS log
by including doc='help' in ODS statement*

*explained at support.sas.com,
I can provide explanation later.

Coping with the Documentation Ordeal

- these slides **attempt** to provide a single, all-in-one-place survey of all of the non-DDE ways to create highly formatted reports in Excel directly from SAS, exclusively with SAS, without getting involved with Excel macros, VBA, or other non-SAS machinery
- these slides are the first edition of a work in progress

What I Can Do without DDE?

Solutions for Some Problems

- Simple things, using ODS HTML
 - Several examples
 - Some are progressive learning exercises
 - Also ODS tagsets
 - ExcelXP, the most beloved of SAS Institute
 - MSOffice2K_x*
 - TableEditor, the ODS Pivot Table solution
 - I still like DDE
- *MUCH more powerful than MSOffice2K

What the heck is DDE?

Dynamic Data Exchange:

A concurrent Excel session is started by the SAS session and acts as a server for that SAS session.

The SAS session acts as a client of Excel.

What Can You Do with DDE?

- Anything you can do with keyboard & mouse
- If interested, see my DDE paper, slides, and toolkit in the Proceedings

Now let's see what we can do without DDE

The Basics of ODS HTML

Getting Started

Microsoft Excel - GettingStarted.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

Arial 12 B I U

Reply with Changes... End Review...

IDX	Name																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
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																	
22																	
23																	
24																	
25																	
26																	
27																	

GettingStarted

Ready

- * Getting Started *;
- * Non-Customized Excel Output *;
- * KEY to the method: Use ods HTML to create **XLS** file *;

ods listing close;

ods noresults; * Do not open output in SAS *;

options reset=all; * Always do this. *;

ods HTML file="C:\SAS\toXLoutput\GettingStarted.**XLS**";

* start your reporting code here *;

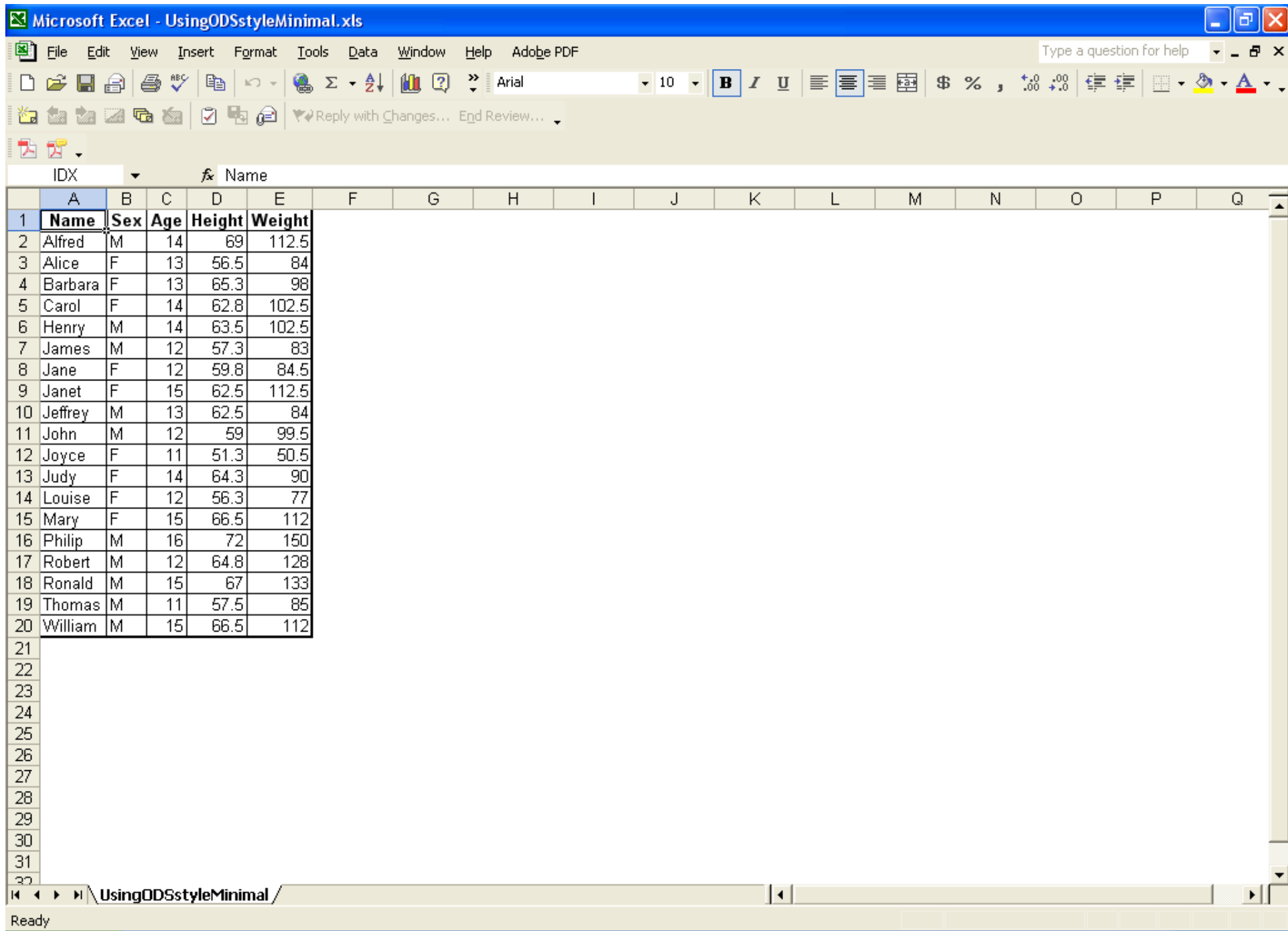
proc print data=sashelp.class noobs label;

run;

* end your reporting code here *;

ods HTML close;

Using ODS Style Minimal



- Using ODS Style Minimal *;

```
goptions reset=all;
```

```
ods html
```

```
    style=Minimal
```

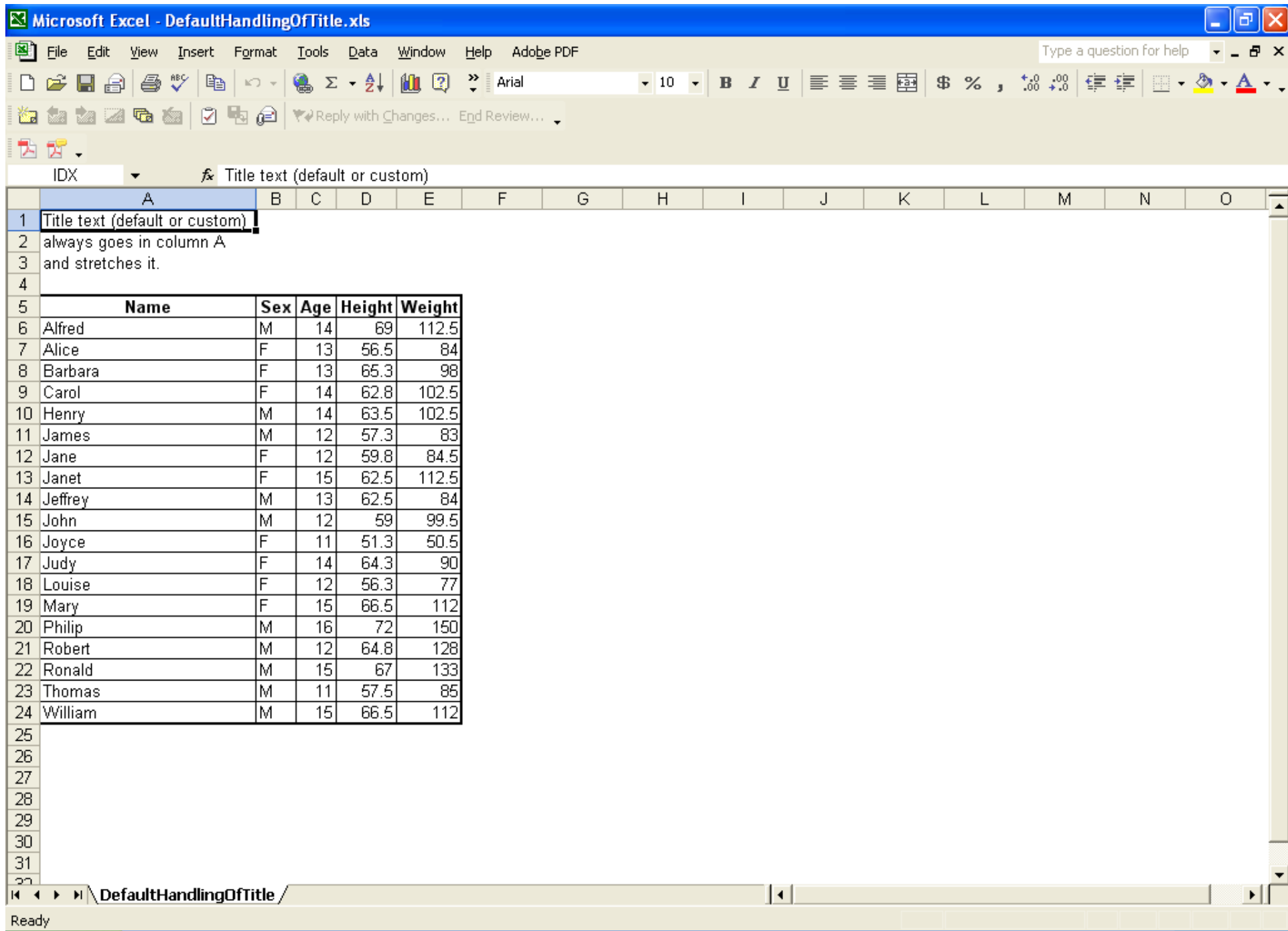
```
    file="C:\SASStoXLoutput\UsingODSstyleMinimal.xls";
```

```
proc print data=sashelp.class noobs label;
```

```
run;
```

```
ods html close;
```

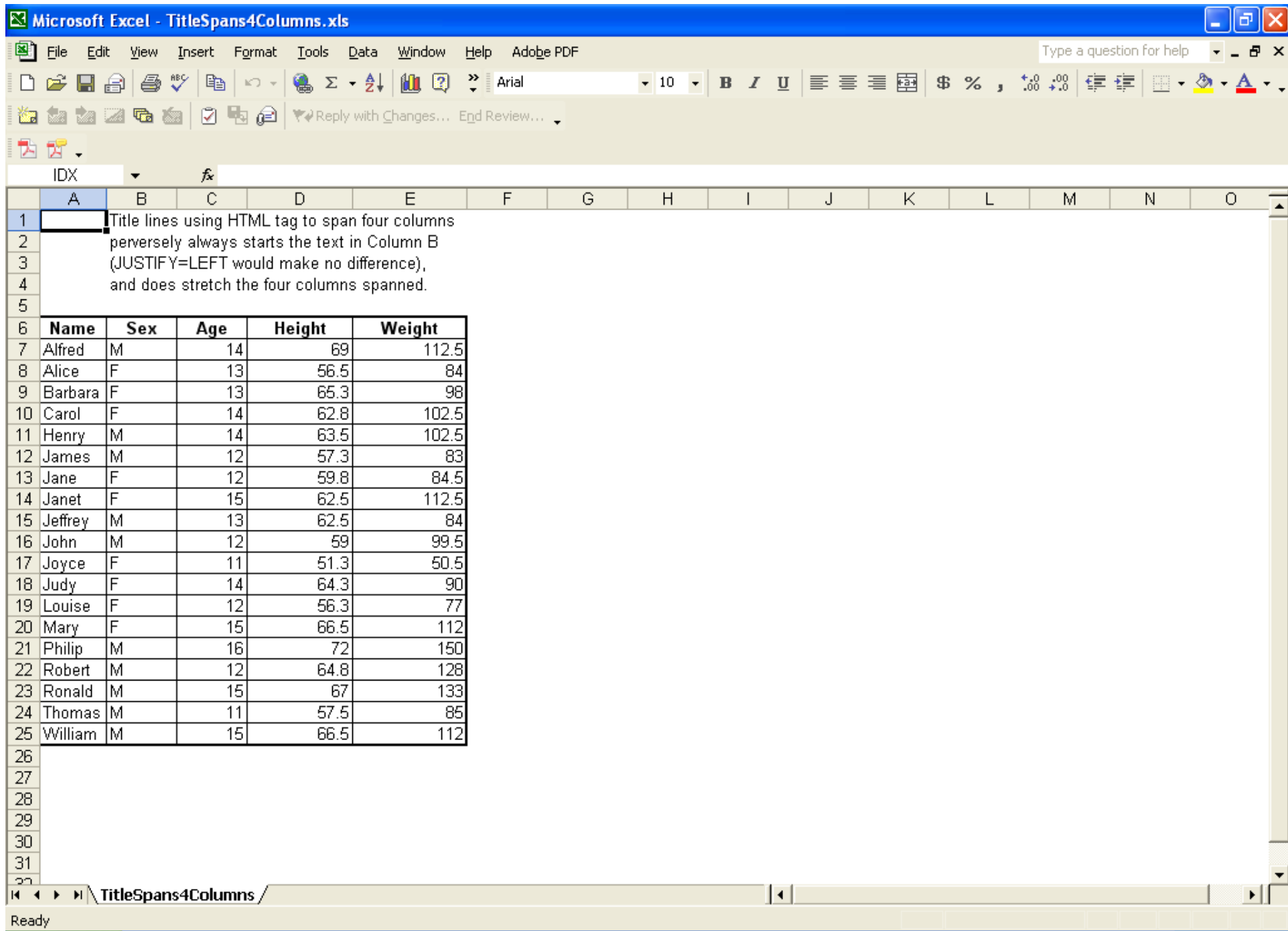
Default Handling of Title



- Default Handling of Title *;

```
goptions reset=all;  
ods html style=Minimal  
  file="C:\SASStoXLoutput\DefaultHandlingOfTitle.xls";  
title1 'Title text (default or custom)';  
title2 'always goes in column A';  
title3 'and stretches it.';  
proc print data=sashelp.class noobs;  
run;  
ods html close;
```

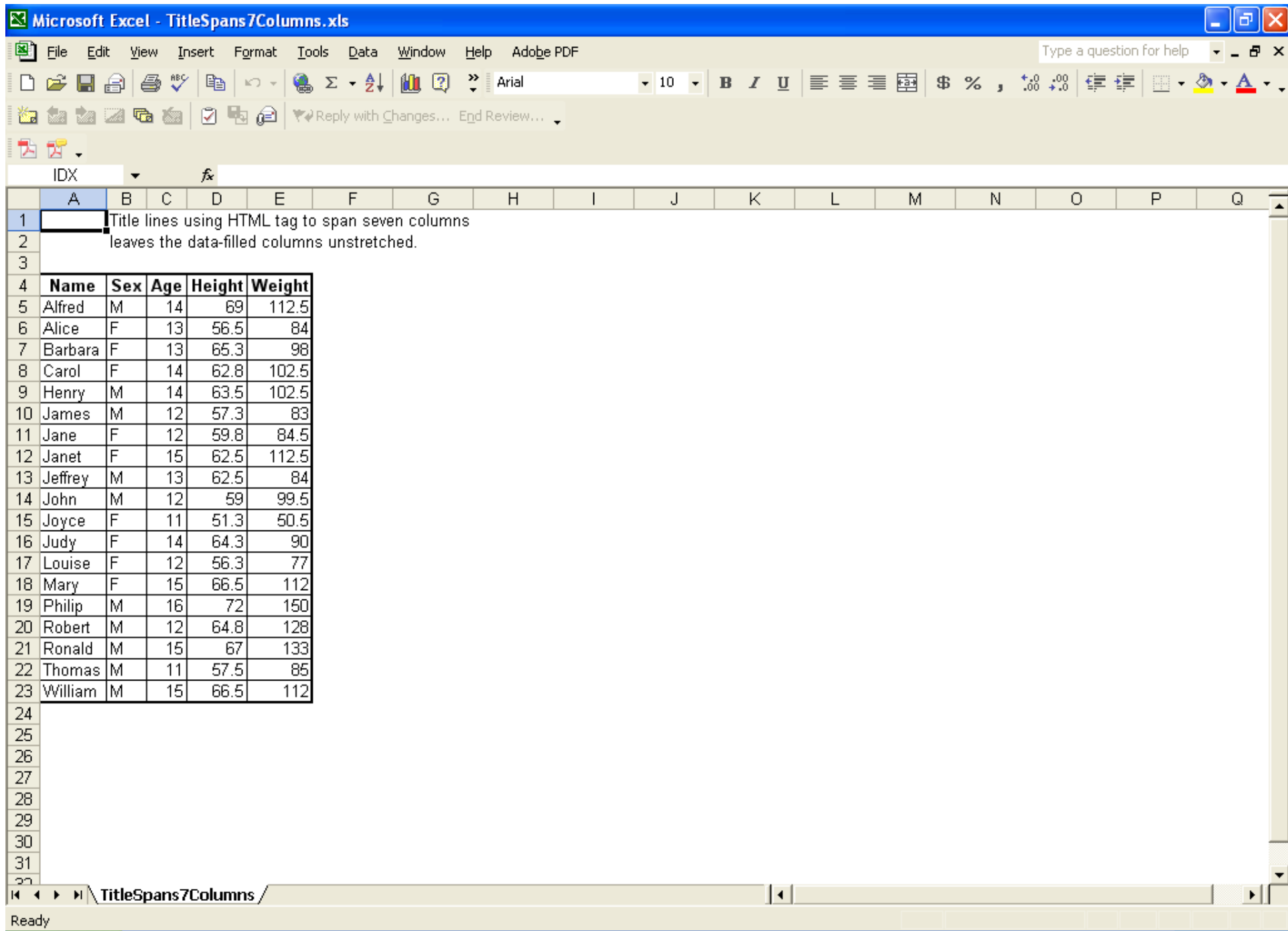
Using HTML Column Spanning Tag



- Using HTML Column Spanning Tag *;

```
goptions reset=all;
ods html style=Minimal
  file="C:\SASToXLoutput\TitleSpans4Columns.xls";
title1
  '<td COLSPAN=4>Title lines using HTML tag to span
four columns</td>';
title2 . . . ;
title3 . . . ;
title4 . . . ;
proc print data=sashelp.class noobs;
run;
ods html close;
```

Title Spanning Seven Columns



- * Title Spanning Seven Columns *;
- * The Correct Solution *;
- * for this length and font size of title *;

```
goptions reset=all;  
ods html style=Minimal  
  file="C:\SASToXLoutput\TitleSpans7Columns.xls";  
title1  
  '<td COLSPAN=7>Title lines using HTML tag to span  
seven columns</td>';  
title2 . . . ;  
proc print data=sashelp.class noobs;  
run;  
ods html close;
```

Conventional TITLE Statement
Controls for Appearance of Text
Fail with Column Spanning

Microsoft Excel - FailedTitleCustomizat0n.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

Georgia 16 B I U

Reply with Changes... End Review...

IDX

color=blue height=16pt font=Georgia used for this TITLE statement

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

FailedTitleCustomizat0n

Ready

* Conventional TITLE Statement Controls for
Appearance of Text File with Column Spanning *;

```
goptions reset=all;  
ods html style=Minimal  
  file="C:\SAS\XLoutput\FailedTitleCustomization.xls";  
title1 color=blue height=16pt font=Georgia  
  '<td COLSPAN=8>color=blue height=16pt  
  font=Georgia used for this TITLE statement</td>';  
proc print data=sashelp.class noobs;  
run;  
ods html close;
```

Irrelevant Choice:
Customize Text Appearance
in Stretched Column A

Microsoft Excel - IrrelevantChoice.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

Georgia 16 B I U \$ % , +.0 .00 +.00

Reply with Changes... End Review...

IDX color=blue height=16pt font=Georgia used for all TITLE text in Column A

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	color=blue height=16pt font=Georgia used for all TITLE text in Column A													
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														

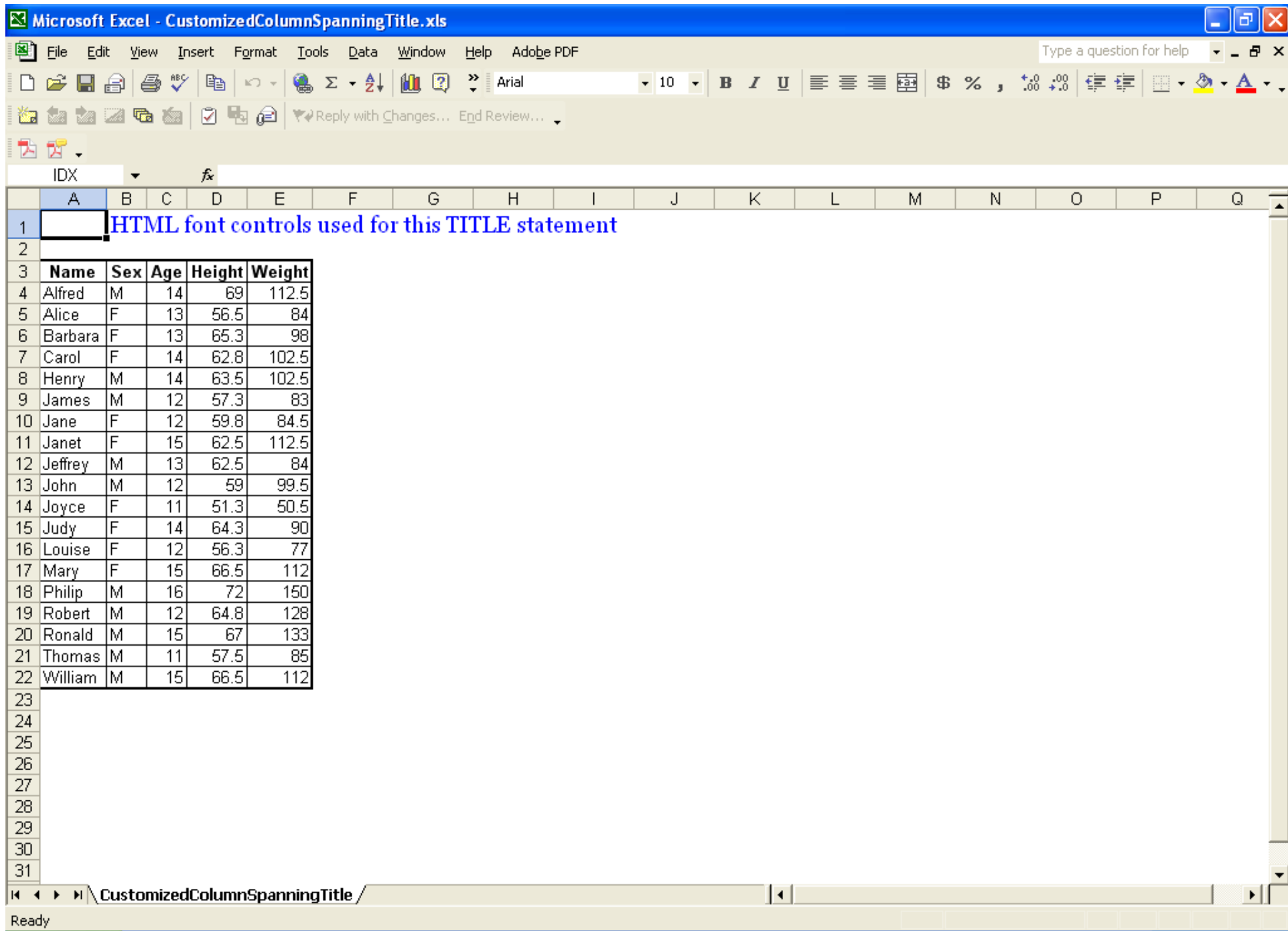
IrrelevantChoice

Ready

* Irrelevant Choice: Customize Text Appearance
in Stretched Column A *;

```
goptions reset=all;  
ods html style=Minimal  
  file="C:\SASToXLoutput\IrrelevantChoice.xls";  
title1 color=blue height=16pt font=Georgia  
  'color=blue height=16pt font=Georgia used for all  
TITLE text in Column A';  
proc print data=sashelp.class noobs;  
run;  
ods html close;
```

Customized Column-Spanning Title



* Customized Column-Spanning Title *;

```
goptions reset=all;
```

```
ods html style=Minimal
```

```
file="C:\SAS\XLoutput\CustomizedColumnSpanning  
Title.xls";
```

```
title1
```

```
'<td COLSPAN=8><font color=blue size=4  
face=Georgia>HTML font controls used for this TITLE  
statement</font></td>';
```

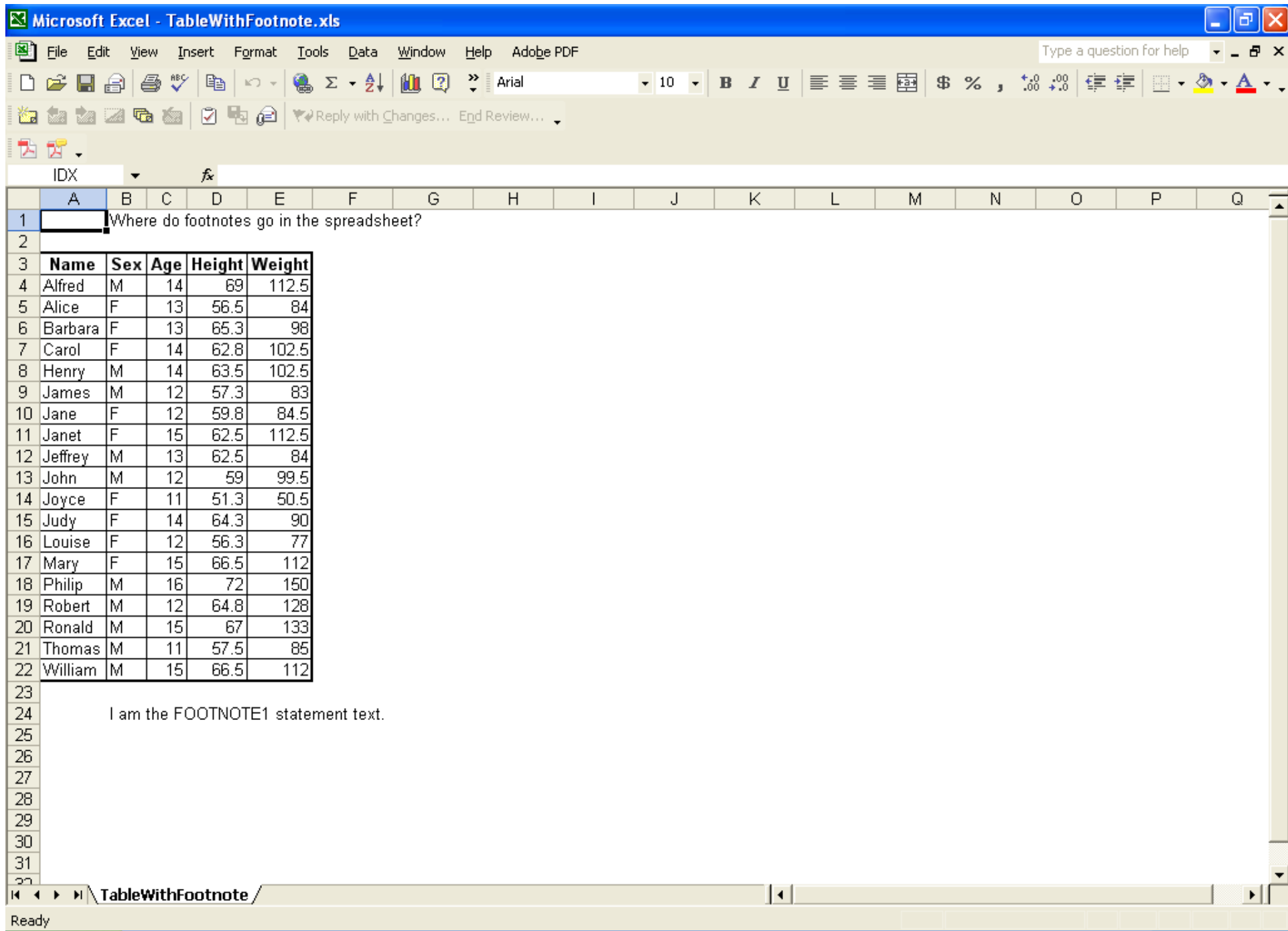
* HTML font sizes are 1,2,3,4,5,6,7,
which are not point sizes *;

```
proc print data=sashelp.class noobs;
```

```
run;
```

```
ods html close;
```

Table with Footnote



* Table with Footnote *;

```
goptions reset=all;
```

```
ods html style=Minimal
```

```
  file="C:\SASoXLoutput\TableWithFootnote.xls";
```

```
title1
```

```
  '<td COLSPAN=8>Where do footnotes go in the  
  spreadsheet?</td>';
```

```
footnote1
```

```
  '<td COLSPAN=8>I am the FOOTNOTE1 statement  
  text.</td>';
```

```
proc print data=sashelp.class noobs;
```

```
run;
```

```
ods html close;
```

Color-Coded Data

Color-Coded Data

Same Technique Applicable for

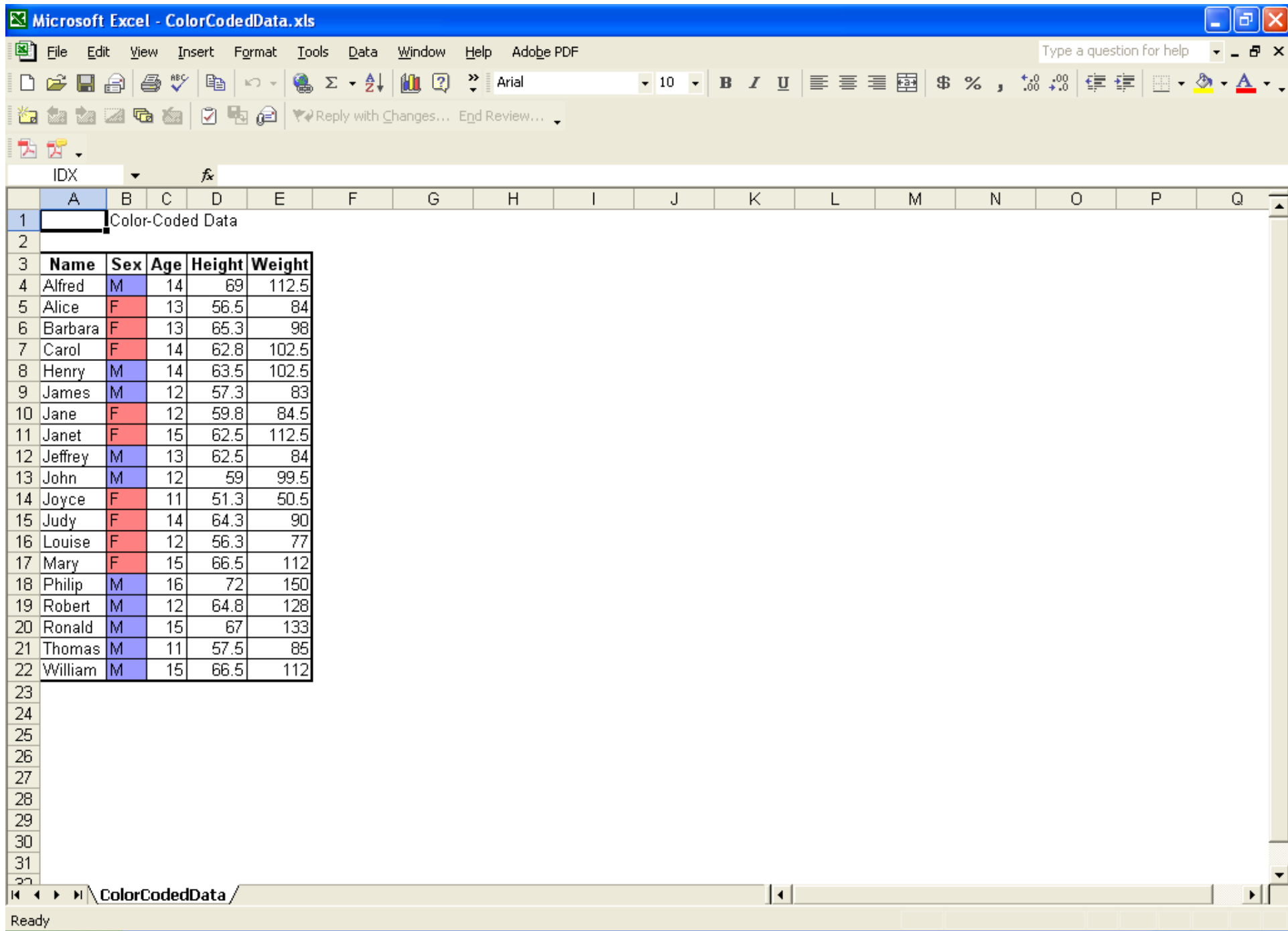
ODS HTML

ODS TagSets

ODS PDF

ODS RTF (for Word documents)

etc.



* Color-Coded Data *;

```
proc format lib=work;  
value $SexCol  
'F'      = 'CXFF9999'  
'M'      = 'CX9999FF';  
run;
```

< all usual ods html start stuff the same goes here >

```
proc print data=sashelp.class noobs;  
var Name;  
var Sex / style = [background = $SexCol.];  
var Age Height Weight;  
run;  
ods html close;
```

PROC PRINT

Font and Color Control

PROC PRINT

Font and Color Control

Every part you can customize
except what's accessible with
`STYLE(OBS)` and
`STYLE(OBSHEADER)`

PROC PRINT

Font and Color Control

With in-PROC STYLE controls
you can do MUCH MORE
than manage fonts and colors,
but that's another presentation

PROC PRINT

Font and Color Control

The in-PROC STYLE controls
are useful even when your report
destination is NOT Excel
(e.g., for PDF, RTF, or web)

Microsoft Excel - PROCPRINTfontANDcolorControl.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

ABC

Arial 10 B I U

Reply with Changes... End Review...

IDX

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		PROC PRINT Font & Color Control													
2		with ODS STYLE=													
3															
4		Age	Name	Height											
5		13	Alice	56.5											
6			Barbara	65.3											
7		13		121.8											
8		N = 2													
9		14	Carol	62.8											
10			Judy	64.3											
11		14		127.1											
12				248.9											
13		N = 2													
14		Total N = 4													
15															
16															
17															
18															
19															
20															
21															

PROCPRINTfontANDcolorControl/

Ready

```
* PROC PRINT Font and Color Control *;  
proc sort data=sashelp.class out=ToPrint;  
where name in ('Alice' 'Barbara' 'Carol' 'Judy');  
by Age Name; run;
```

```
%let FontFormatting = font_face=Arial font_weight=Bold  
font_size=5;
```

```
%let TitleFormatting = face=Arial weight=Bold size=5  
color=black;
```

```
< familiar ODS HTML prefix code goes here >
```

```
< TITLE statement using column spanning and HTML  
font control >
```

```
< PROC PRINT step goes here >
```

```
ods html close;
```

About %LET

It stores text associated with a symbol in a table.

References to the symbol in your code get resolved at program run time (i.e., symbol is replaced by the text).

The text string stored for you begins with first non-blank after the = sign.

The text string stored for you ends with last non-blank before the semi-colon.

About Symbols

& as prefix of symbol name is a signal

SAS replaces symbol at run time

If &YourSymbolName must be used in quotes, you must use double quotes: "&MySymbolText"

At runtime '&MySymbolText' gets resolved to &MySymbolText, rather than to the desired text.

*** Title Formatting *;**

```
%let TitleFormatting = face=Arial weight=Bold size=5  
color=black;
```

```
title1 justify=left
```

```
"<td COLSPAN=6><font &TitleFormatting>PROC  
PRINT Font & Color Control</font></td>"
```

```
justify=left
```

```
"<td COLSPAN=6><font &TitleFormatting>with ODS  
STYLE=</font></td>"
```

*** PROC PRINT Font and Color Control *;**

```
proc print data=ToPrint label N / ... ;  
by age;  
id age / ... ;  
var Name / ... ;  
var Height;  
sum Height / ... ;  
sumby age;  
run;
```

where ... are font and color controls

*** PROC PRINT Font and Color Control *;**

proc print data=ToPrint label N

style(header) = [&FontFormatting]

style(data) = [&FontFormatting]

style(total) = [&FontFormatting . . .]

style(bylabel) = [&FontFormatting . . .]

style(grand) = [&FontFormatting . . .]

style(N) = [&FontFormatting

background=cyan foreground=magenta just=left];

*** PROC PRINT Font and Color Control *;**

style(total) = [&FontFormatting
background=magenta foreground=cyan]

style(bylabel) = [&FontFormatting
background=magenta foreground=cyan
just=center]

style(grand) = [&FontFormatting
background=brown foreground=orange]

*** PROC PRINT Font and Color Control *;**

id age /

style(header) = [&FontFormatting
background=blue foreground=red]

style(data) = [&FontFormatting
background=red foreground=blue];

var Name /

style(header) =
[background=black foreground=CX999999]

style(data) =
[background=CX999999 foreground=black];

* PROC PRINT Font and Color Control *;

sum Height /

style(header) =

[background=CX009900 foreground=yellow]

style(data) =

[background=yellow foreground=CX009900]

style(total) =

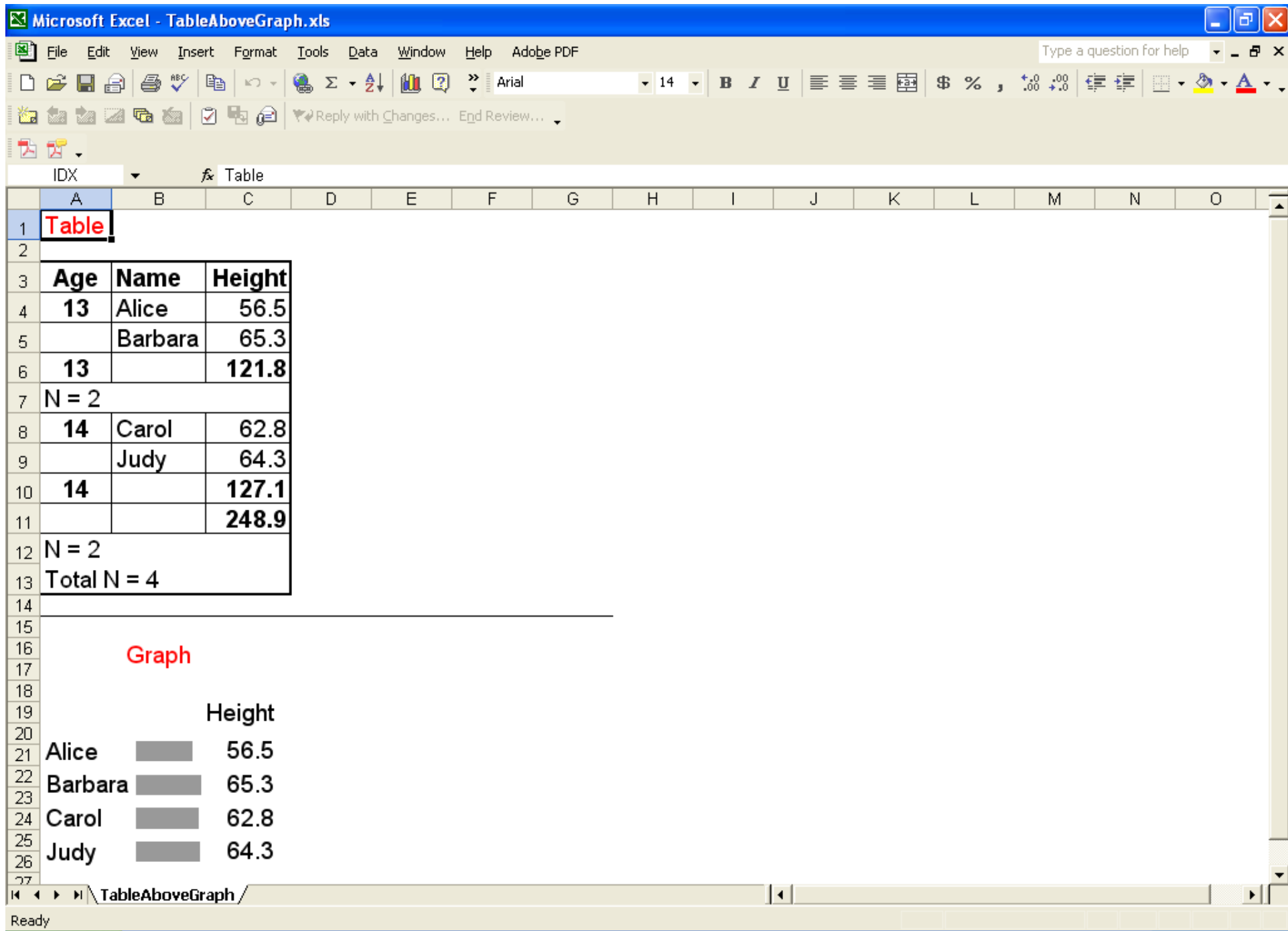
[&FontFormatting

background=black foreground=white];

Composites

Not Shown,
but ODS HTML can do:
multiple tables per web page
multiple graphs per web page

Table Above Graph

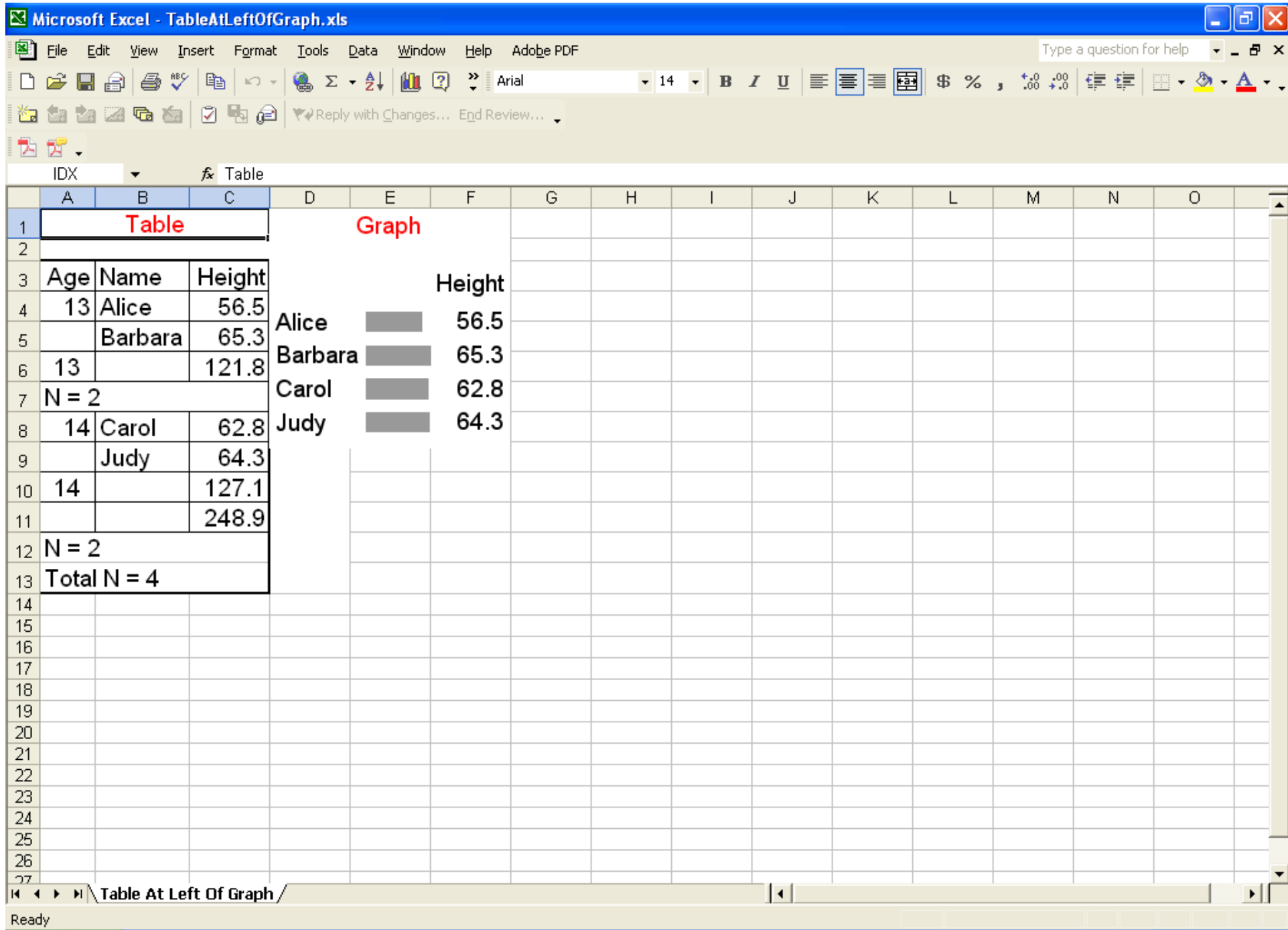


* Table Above Graph *;

```
ods html style=Minimal path="C:\SAS\StoXLoutput"  
  file="TableAboveGraph.xls";  
< proc print step here >  
< proc gchart step here >  
ods html close;
```

* path= indicates where both the .xls file and the imbedded image file for the graph are stored *;

Table at Left of Graph
(and Sheet Name Customization)



* Table at Left of Graph *;

* (and Excel Sheet Name Customization) *;

```
ods tagsets.MSOffice2K_x style=Minimal  
  path="C:\SAS\toXLoutput"  
  file="TableAtLeftOfGraph.xls"  
  options(panelcols="2"  
          sheet_name="Table At Left Of Graph"  
          doc="help");  
< proc print step here >  
< proc gchart step here >  
ods _all_ close;
```

* doc="help" to list all of the tagset options in SAS log *;

MSOffice2K_x panels

In this context,
panel = one row
of tables
or graphs
or tables and one graph

MSOffice2K_x panels

- . graphs only – any number OK
- . tables only – any number OK
- . any number of tables
at left of one graph OK
- . extra graphs (>1) right of table(s)
will overlay each other
- . table at right of graph goes
below graph, not next to it

extra graphs (>1) right of table(s)
will overlay each other

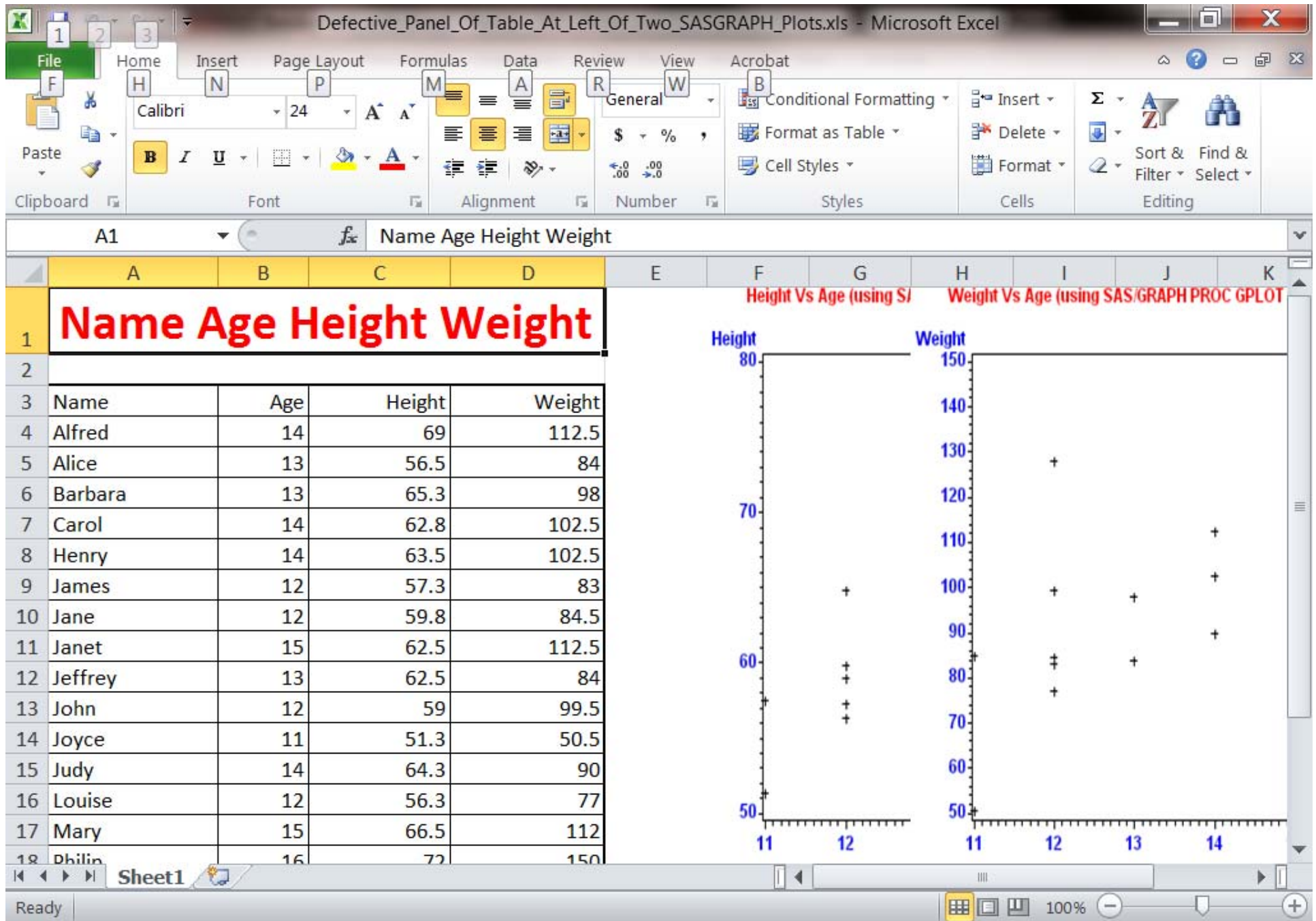
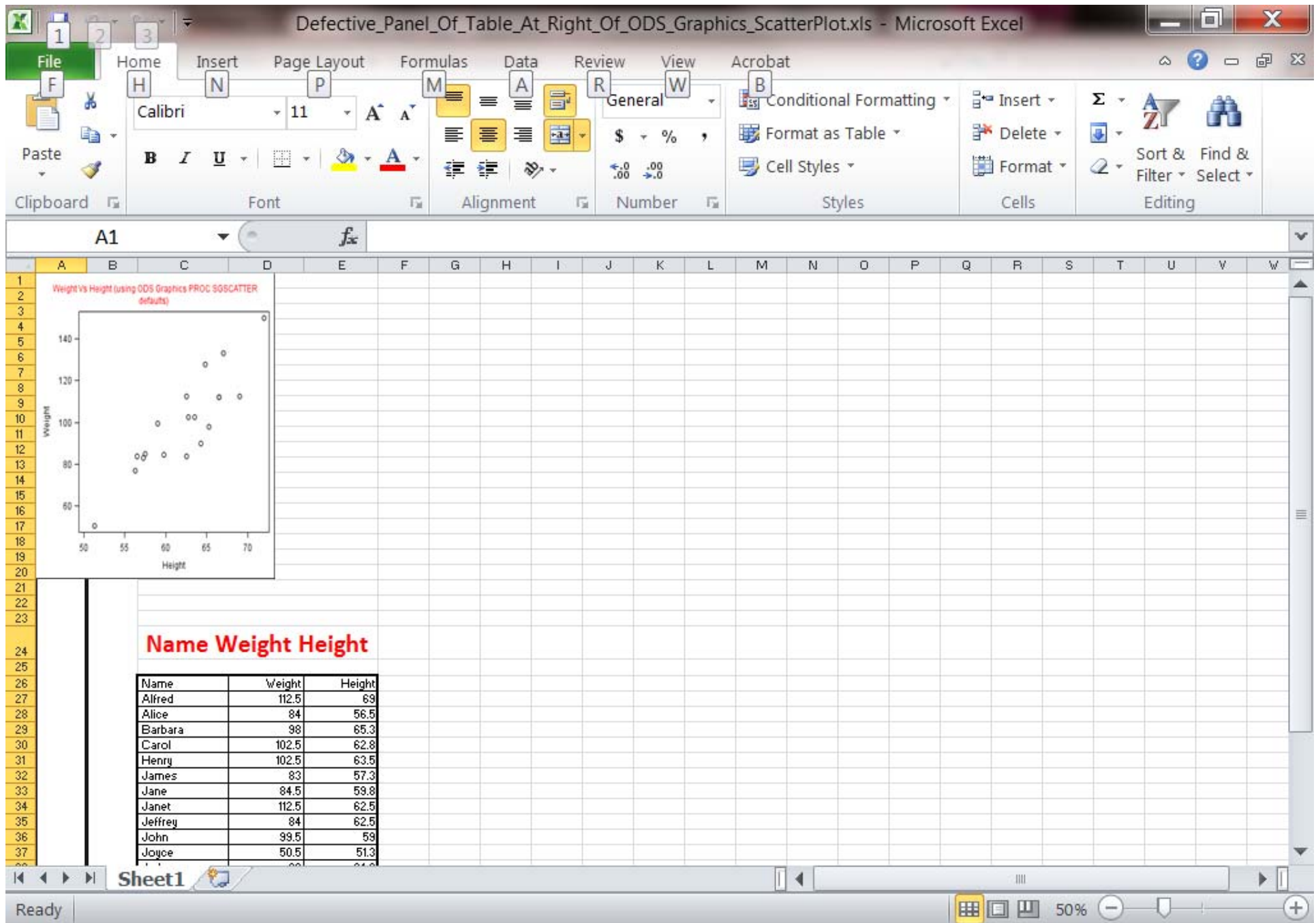


table at right of graph goes
below graph, not next to it



Now . . .

Multi-Sheet Workbook
(using ExcelXP tagset,
which can not support graphs)

NOTE: MSOffice2K_x tagset
can do multi-sheet workbook
that includes graphs

Microsoft Excel - MultiSheetTablesOnlyWorkbook.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

Arial 10

Reply with Changes... End Review...

A1 Name

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Name	Age												
2	Alfred	14												
3	Henry	14												
4	James	12												
5	Jeffrey	13												
6	John	12												
7	Philip	16												
8	Robert	12												
9	Ronald	15												
10	Thomas	11												
11	William	15												
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														

Height Sex F Sex M

Ready

- * Multi-Sheet Workbook with ExcelXP TagSet *;
- * Combination of successive PROCs and BY processing *;

```
ods tagsets.excelxp style=Minimal file=" . . . ";
ods tagsets.excelxp options(sheet_name="Height");
proc print data=sashelp.class noobs;
id name; var height; run;
ods tagsets.excelxp options(sheet_name="none");
ods tagsets.excelxp options(sheet_interval='bygroup'
    sheet_label='Sex' suppress_bylines='yes');
proc sort data=sashelp.class out=work.Sorted;
by sex; run;
proc print data=work.Sorted noobs;
by sex; id name; var age; run;
ods tagsets.excelxp close;
```

Multi-Sheet Workbook using MSOffice2K_x TagSet

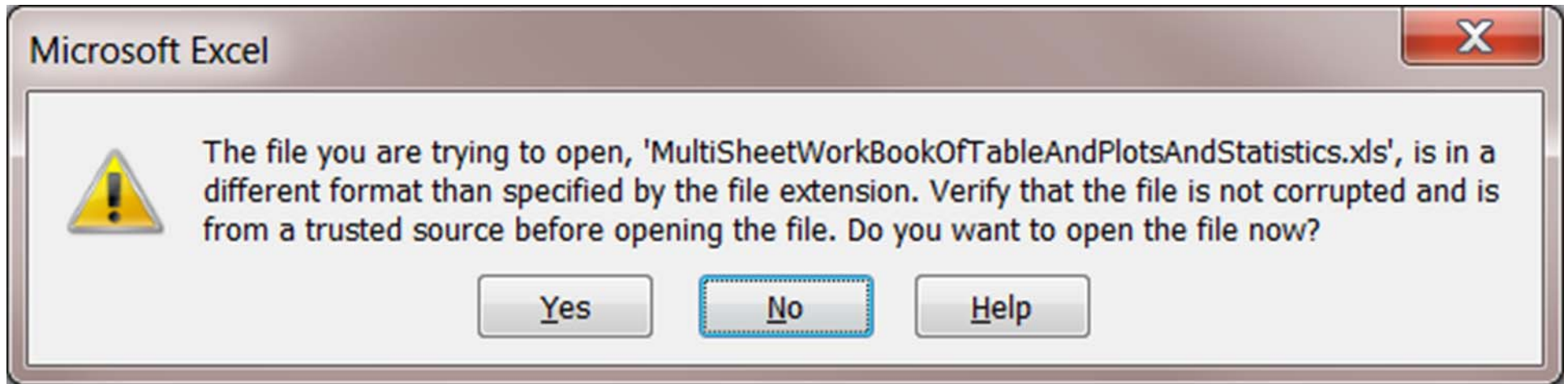
Multi-Sheet Workbook using MSOffice2K_x TagSet

Four Sheets:

- One Table (Simple Listing)
- Panel of three plots side by side
- Two Univariate Reports

Fifth Sheet (demo only) – A Warning

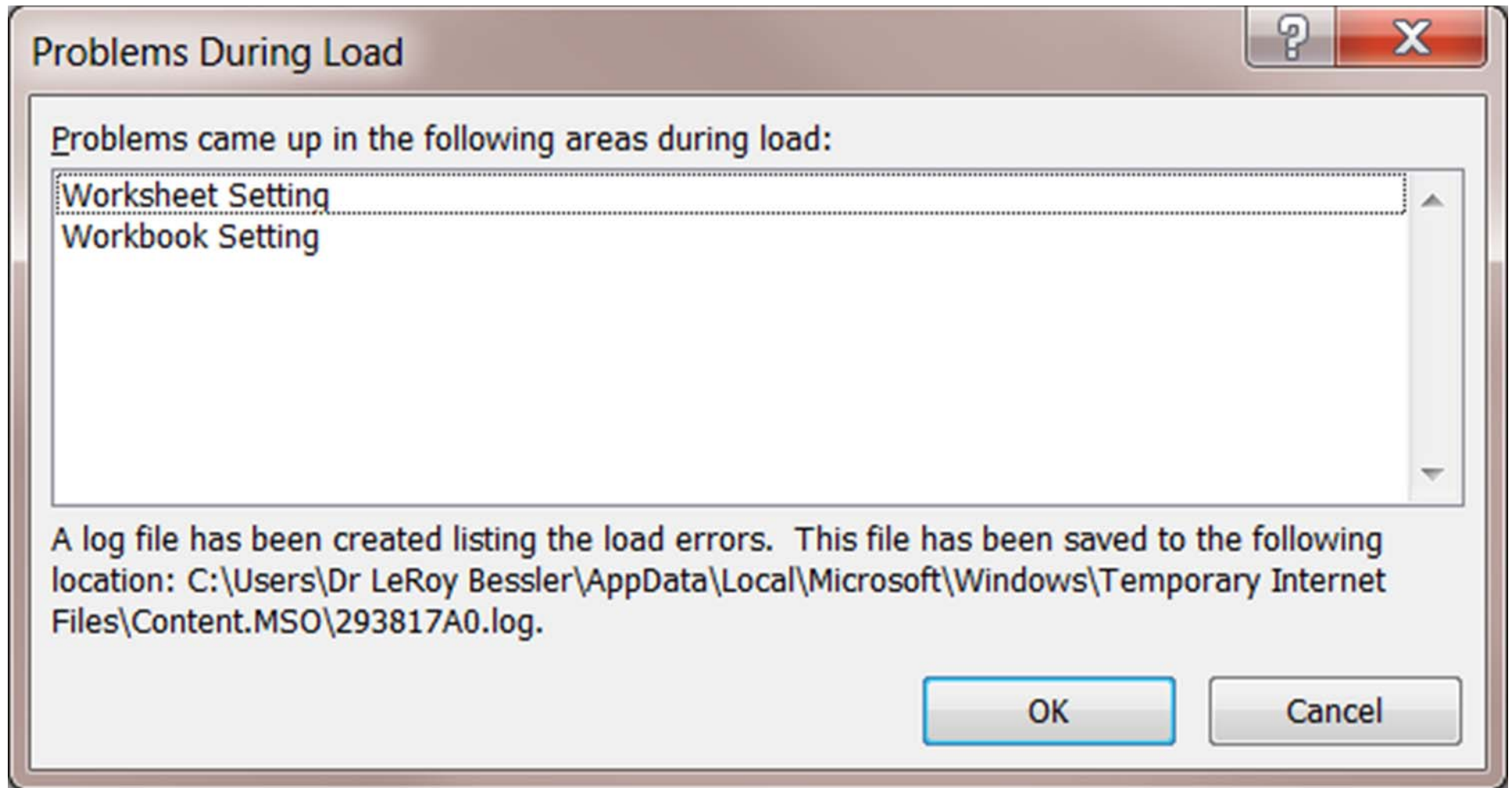
Let's Open the Result



There is no corruption

Get this with every ODS tagset
if you create Excel output.

Exception: Create ExcelXP with
filetype xml, but open it with Excel



This is a False Alarm

No Problem

This is a False Alarm

No Problem

But if you omit all graphs,
or create one per sheet
or multiple, but stacked within the sheet,
(i.e., avoid a side-by-side panel),
the pop-up does not occur.

For Demo Only

My workbook includes a warning worksheet

MultiSheetWorkBookOfTableAndPlotsAndStatistics.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

General Conditional Formatting Insert Delete Format

Format as Table Cell Styles Sort & Find & Filter Select

A1 WARNING

1 WARNING

In the step that assembles the multi-sheet workbook, if a WorkSheet Name Assigned in the ODS tagsets.msoffice2k_x statements exceeds 31 characters, a confusing label will be substituted for that name, and an EXTRA warning will be displayed in the pop-up message upon opening the WorkBook. It is NORMAL for the pop-up "Problems During Load" message to raise a false alarm about a Problem with Worksheet Setting and a Problem with Workbook Setting. That false alarm is caused by presence of the panel of three graphs. If the ODS options parameters for the panel and graph_width are omitted, the false alarm disappears, but the graphs appear in a vertical stack, not in a side-by-side array. If the workbook contains no graphic worksheets, the false alarm disappears.

Warning OneTable ThreePlots Hgt Stats Wgt Stats

Ready 100%

MultiSheetWorkBookOfTableAndPlotsAndStatistics.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

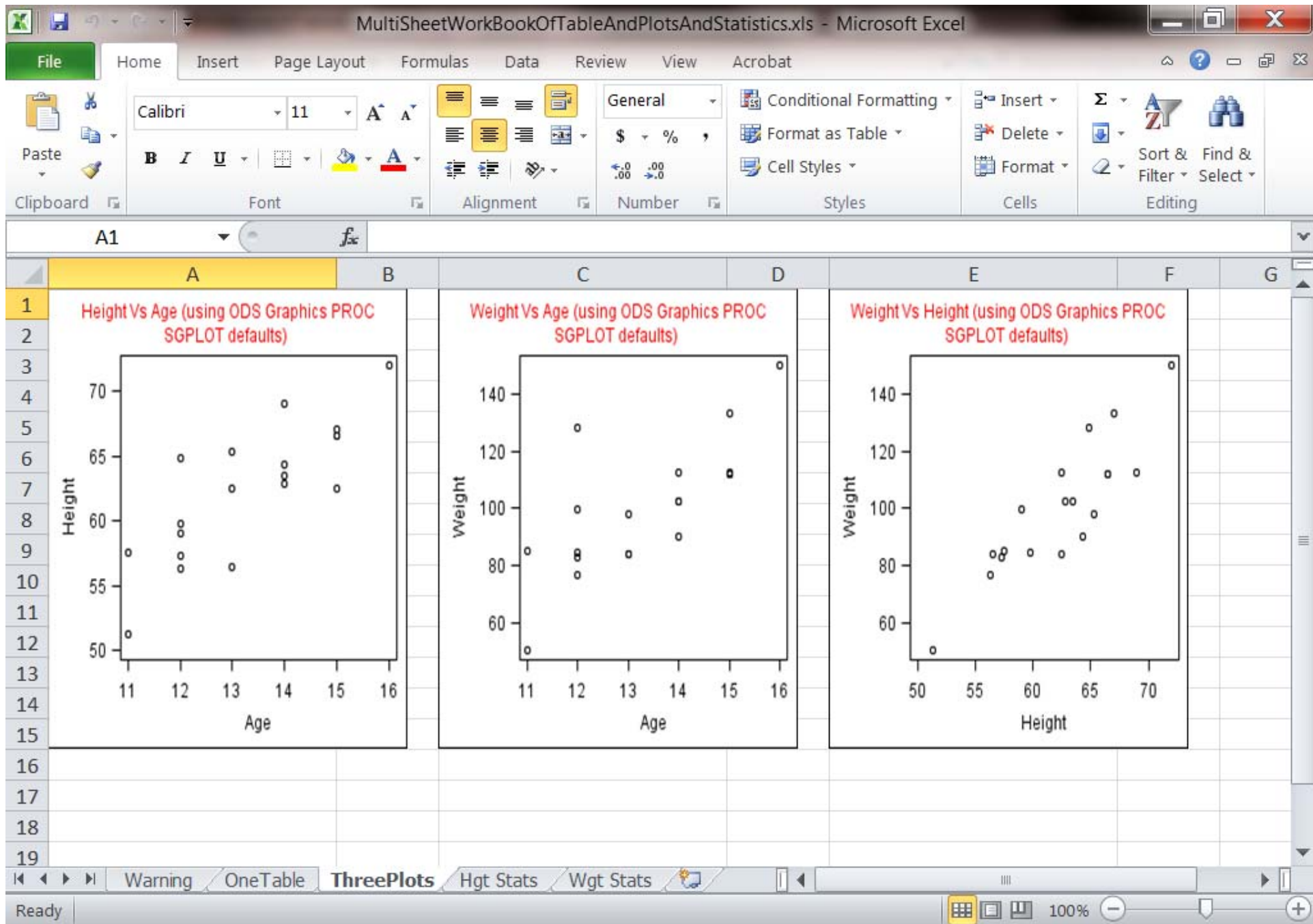
Clipboard Font Alignment Number Styles Cells Editing

A1 Student Age Height Weight

Student	Age	Height	Weight
Alfred	14	69	112.5
Alice	13	56.5	84
Barbara	13	65.3	98
Carol	14	62.8	102.5
Henry	14	63.5	102.5
James	12	57.3	83
Jane	12	59.8	84.5
Janet	15	62.5	112.5
Jeffrey	13	62.5	84
John	12	59	99.5
Joyce	11	51.3	50.5
Judy	14	64.3	90
Louise	12	56.3	77
Mary	15	66.5	112
Philip	16	72	150
Robert	12	64.8	128

Warning OneTable ThreePlots Hgt Stats Wgt Stats

Ready 100%



MultiSheetWorkBookOfTableAndPlotsAndStatistics.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

General Conditional Formatting Insert Delete Format

Format as Table Cell Styles

Sort & Find & Filter Select

A1 Variable: Height

	A	B	C	D	E	F	G	H	I	J	K
1	Variable: Height										
2											
3	Moments										
4	N	19	Sum Weights	19							
5	Mean	62.3368421	Sum Observations	1184.4							
6	Std Deviation	5.12707525	Variance	26.2869006							
7	Skewness	-0.2596696	Kurtosis	-0.1389692							
8	Uncorrected SS	74304.92	Corrected SS	473.164211							
9	Coeff Variation	8.22479143	Std Error Mean	1.17623173							
10											
11	Basic Statistical Measures										
12	Location		Variability								
13	Mean	62.33684	Std Deviation	5.12708							
14	Median	62.8	Variance	26.2869							
15	Mode	62.5	Range	20.7							
16			Interquartile Range	9							
17											
18	Note: The mode displayed is the smallest of 2 modes with a count of 2.										
19											

Warning OneTable ThreePlots Hgt Stats Wgt Stats

Ready Network Internet access 100%

```
goptions reset=all;
ods graphics on / reset=all height=3in width=3in
border=on antialiasmax=2500;
ods tagsets.msoffice2k_x path="C:\SAS\XLoutput"
(url=none) file="Plots.html" style=minimal
options(orientation="landscape"
panelcols="3" panel_space="1" graph_width="225" );
ods graphics on / imagename='HgtVsAge';
proc sgplot data=sashelp.class;
title color=red " title text here ";
scatter y=height x=age; run;
/* like above for two more plots */
ods tagsets.msoffice2k_x close;
```

```
ods tagsets.msoffice2k_x path="C:\SAS\toXLoutput"  
  file="Table.html" style=minimal;
```

```
proc print data=sashelp.class noobs;  
  title justify=left height=12pt color=blue " title text here ";  
  var name age height weight;  
run;
```

```
ods tagsets.msoffice2k_x close;
```

```
ods noproctitle;
```

```
ods tagsets.msoffice2k_x path="C:\SAS\toXLoutput"  
  file="HgtStats.html" style=minimal;
```

```
proc univariate data=sashelp.class;  
title;  
var height;  
run;
```

```
ods tagsets.msoffice2k_x close;
```

```
/* same for var weight */
```

```
ods tagsets.msoffice2k_x path="C:\SASStoXLoutput"  
  file="MultiSheetWorkBook.xls" style=minimal  
  options(worksheet_source="  
Warning#.\WarningMessageFromLeRB.html,  
OneTable#.\Table.html,  
ThreePlots#.\Plots.html,  
Hgt Stats#.\HgtStats.html,  
Wgt Stats#.\WgtStats.html  
");  
data _null_;  
  file print;  
  put _all_;  
run;  
ods tagsets.msoffice2k_x close;
```

About the dot ■ in OneTable# ■ \Table.html

dot is signal that html file is in the same folder as that of the output XLS file.

Package of xls file, html files,
and graph image files is relocatable

- Move anywhere
- Send via email
- XLS file will open & all parts will be found

Two Tables
in Separate WorkSheets
Using TableEditor TagSet

TableEditor_TwoWork...

File Home Insert Page Layout Formulas Data Review View Macros

Paste Font Alignment Number Styles Cells Editing

A1 \sum Name

	A	B	C	D	E	F
1	Name	Age	Height			
2	Alfred	14	69			
3	Alice	13	56.5			
4	Barbara	13	65.3			
5	Carol	14	62.8			
6	Henry	14	63.5			
7	James	12	57.3			
8	Jane	12	59.8			
9	Janet	15	62.5			
10	Jeffrey	13	62.5			
11	John	12	59			
12	Joyce	11	51.3			
13	Judy	14	64.3			
14	Louise	12	56.3			
15	Mary	15	66.5			
16	Philip	16	72			
17	Robert	12	64.8			
18	Ronald	15	67			

Height Weight

Average: 37.82631579 Count: 60 Sum: 1437.4 100%

TableEditor_TwoWork...

File Home Insert Page Layout Formulas Data Review View Macros

Paste Font Alignment Number Styles Cells Editing

A1 \sum Name

	A	B	C	D	E	F
1	Name	Age	Weight			
2	Alfred	14	112.5			
3	Alice	13	84			
4	Barbara	13	98			
5	Carol	14	102.5			
6	Henry	14	102.5			
7	James	12	83			
8	Jane	12	84.5			
9	Janet	15	112.5			
10	Jeffrey	13	84			
11	John	12	99.5			
12	Joyce	11	50.5			
13	Judy	14	90			
14	Louise	12	77			
15	Mary	15	112			
16	Philip	16	150			
17	Robert	12	128			
18	Ronald	15	133			

Height Weight

Average: 56.67105263 Count: 60 Sum: 2153.5 100%

```
ods graphics off; goptions reset=all; ods results;
ods tagsets.tableeditor minimal
  file="%sysfunc(getoption(work))\temp.html"
  options(
sheet_name="Height,Weight"
excel_table_move="1,2"
auto_excel="yes"
excel_save_file=
"C:\\SAS\\XLoutput\\TwoWorkSheets.xls"
);
proc print data=sashelp.class noobs;
var name age height; run;
proc print data=sashelp.class noobs;
var name age weight; run;
ods tagsets.tableeditor close;
```

Two Tables in a Panel

Using TableEditor TagSet

FileNameForTableEditorTwoTablePanel.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

Calibri 11 A A

General Conditional Formatting Insert Delete Format

Format as Table Cell Styles

Sort & Find & Filter Select

IDX Height

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

Ready

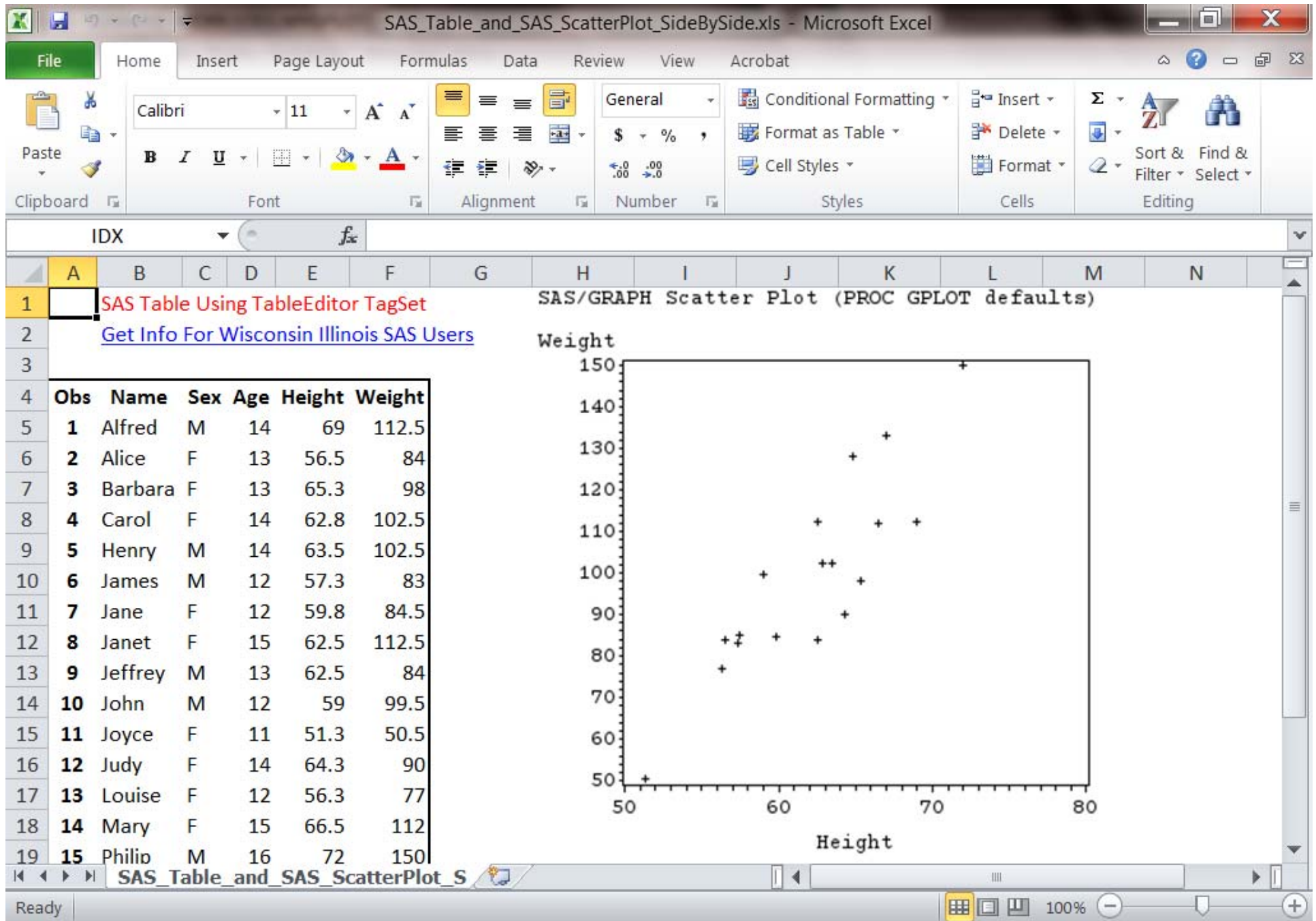
100%

```
ods graphics off; goptions reset=all;
ods tagsets.tableeditor path="C:\SAS\XLoutput"
  file="FileNameForTableEditorTwoTablePanel.xls"
  style=minimal
options(
panelcols="2"
sheet_name="This Sheet Name Is Ignored"
);
title 'Height';
proc print data=sashelp.class noobs;
var name age height; run;
title 'Weight';
proc print data=sashelp.class noobs;
var name age weight; run;
ods tagsets.tableeditor close;
```

Table and Graph in a Panel Using TableEditor TagSet

Table and Graph in a Panel Using TableEditor TagSet

- Like MSOffice2K_x TagSet, this only works if Table(s) is (are) at left of Graph
- Trying to place Table at right of Graph pushes Table below it.
- Maximum of one graph without graph-graph overlay problem.



```
goptions reset=all
```

```
    hsize=3.75in vsize=3.75in htext=4 PCT;
```

```
ods tagsets.tableeditor style=minimal
```

```
path="C:\\SASToXLoutput" (url=none)
```

```
file="SAS_Table_and_SAS_ScatterPlot_SideBySide.xls"
```

```
options( panelcols="2" excel_zoom="75" );
```

```
    /* zoom does not work */
```

```
proc print data=sashelp.class;
```

```
title1 "<td colspan=6><font color=red>SAS Table Using  
TableEditor TagSet</font></td>";
```

```
title2 "<td colspan=6><a href='http://www.wiilsu.org'>Get  
Info For Wisconsin Illinois SAS Users</a></td>"; run;
```

```
proc gplot data=sashelp.class;
```

```
title height=4 PCT "title text here";
```

```
plot weight*height / name='MyGPLOT'; run; quit;
```

```
ods tagsets.tableeditor close;
```

TableEditor TagSet

“Sometimes you can’t get
what you want”

The Torment of Either/Or

TableEditor TagSet

- TITLE statements are ignored
IF FrozenHeaders and/or AutoFilters are required
- In some cases, Excel_Zoom= is ignored
- In some cases, Sheet_Name= is ignored

Q: How can I create a zoomed worksheet with the TableEditor tagset?

A: You can not create the workbook directly, but must create it via an intermediate HTML file that gets programmatically exported to Excel using EXCEL_FILE_SAVE

Q: How can I name a worksheet with the TableEditor tagset?

A: You can not create the workbook directly, but must create it via an intermediate HTML file that gets programmatically exported to Excel using EXCEL_FILE_SAVE

```
ods noresults; /* Prevent pop-up asking you to Open,  
Save, or Cancel */  
ods graphics off; goptions reset=all;  
ods tagsets.tableeditor style=Minimal  
path="C:\SASToXLoutput"  
file="DirectlyCreatedFileWithBothSheetNameSpecificati  
onAndZoomRequestIgnored.xls"  
options(  
excel_zoom="50" /* This Option Is Ignored */  
sheet_name="This Option Is Ignored, too"  
);  
title1 "title text here"; /* This is NOT ignored. */  
proc print data=sashelp.shoes noobs;  
run;  
ods tagsets.tableeditor close;
```

Directly Created File

DirectlyCreatedFileWithBothSheetNameSpecificationAndZoomRequestIgnored.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

B I U

General

Conditional Formatting

Format as Table

Cell Styles

Insert

Delete

Format

Σ

Sort & Filter

Find & Select

IDX title text here

	A	B	C	D	E	F	G	H	I	J
1	title text here									
2										
3	Region	Product	Subsidiary	Stores	Sales	Inventory	Returns			
4	Africa	Boot	Addis Ababa	12	\$29,761	\$191,821	\$769			
5	Africa	Men's Casual	Addis Ababa	4	\$67,242	\$118,036	\$2,284			
6	Africa	Men's Dress	Addis Ababa	7	\$76,793	\$136,273	\$2,433			
7	Africa	Sandal	Addis Ababa	10	\$62,819	\$204,284	\$1,861			
8	Africa	Slipper	Addis Ababa	14	\$68,641	\$279,795	\$1,771			
9	Africa	Sport Shoe	Addis Ababa	4	\$1,690	\$16,634	\$79			
10	Africa	Women's Casual	Addis Ababa	2	\$51,541	\$98,641	\$940			
11	Africa	Women's Dress	Addis Ababa	12	\$108,942	\$311,017	\$3,233			
12	Africa	Boot	Algiers	21	\$21,297	\$73,737	\$710			
13	Africa	Men's Casual	Algiers	4	\$63,206	\$100,982	\$2,221			
14	Africa	Men's Dress	Algiers	13	\$123,743	\$428,575	\$3,621			
15	Africa	Sandal	Algiers	25	\$29,198	\$84,447	\$1,530			
16	Africa	Slipper	Algiers	17	\$64,891	\$248,198	\$1,823			
17	Africa	Sport Shoe	Algiers	9	\$2,617	\$9,372	\$168			
18	Africa	Women's Dress	Algiers	12	\$90,648	\$266,805	\$2,690			
19	Africa	Boot	Cairo	20	\$4,846	\$18,965	\$229			

DirectlyCreatedFileWithBothSheet

Ready

100%

```
ods results; /* MUST BE TURNED ON
so you can get and respond to prompts */
ods graphics off; goptions reset=all;
ods tagsets.tableeditor style=Minimal
file="%sysfunc(getoption(work))\temp.html"
options(
excel_zoom="50"
sheet_name="WorkSheet with Zoom=50%"
auto_excel="yes"
excel_save_file="C:\\SAS\\XLoutput\\WorksheetViaInter
mediateHTMLfileWithZoom50PercentAndWithRequeste
dSheetName.xls");
title1 'This title text does NOT appear';
title2 'even with option embedded_title="yes" ';
proc print data=sashelp.shoes noobs; run;
ods tagsets.tableeditor close;
```

SAS Code Saved Intermediate HTML To Excel

WorksheetViaIntermediateHTMLfileWithZoom50PercentAndWithRequestedSheetName.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

General

Conditional Formatting

Format as Table

Cell Styles

Insert

Delete

Format

Σ

Sort & Find & Filter Select

Editing

A1 Region

Region	Product	Subsidiary	Stores	Sales	Inventory	Returns
Africa	Boot	Addis Ababa	12	\$29,761	\$191,821	\$769
Africa	Men's Casual	Addis Ababa	4	\$67,242	\$118,036	\$2,284
Africa	Men's Dress	Addis Ababa	7	\$76,793	\$136,273	\$2,433
Africa	Sandal	Addis Ababa	10	\$62,819	\$204,284	\$1,861
Africa	Slipper	Addis Ababa	14	\$68,641	\$279,795	\$1,771
Africa	Sport Shoe	Addis Ababa	4	\$1,690	\$16,634	\$79
Africa	Women's Casual	Addis Ababa	2	\$51,541	\$98,641	\$940
Africa	Women's Dress	Addis Ababa	12	\$108,942	\$311,017	\$3,233
Africa	Boot	Algiers	21	\$21,297	\$73,737	\$710
Africa	Men's Casual	Algiers	4	\$63,206	\$100,982	\$2,221
Africa	Men's Dress	Algiers	13	\$123,743	\$428,575	\$3,621
Africa	Sandal	Algiers	25	\$29,198	\$84,447	\$1,530
Africa	Slipper	Algiers	17	\$64,891	\$248,198	\$1,823
Africa	Sport Shoe	Algiers	9	\$2,617	\$9,372	\$168
Africa	Women's Dress	Algiers	12	\$90,648	\$266,805	\$2,690
Africa	Boot	Cairo	20	\$4,846	\$18,965	\$229
Africa	Men's Casual	Cairo	25	\$360,209	\$1,063,251	\$9,424
Africa	Men's Dress	Cairo	5	\$4,051	\$45,962	\$97
Africa	Sandal	Cairo	9	\$10,532	\$50,430	\$598
Africa	Slipper	Cairo	9	\$13,732	\$54,117	\$1,216
Africa	Sport Shoe	Cairo	3	\$2,259	\$20,815	\$44
Africa	Women's Casual	Cairo	14	\$328,474	\$940,851	\$10,124
Africa	Women's Dress	Cairo	3	\$14,095	\$51,145	\$745
Africa	Boot	Johannesburg	14	\$8,365	\$33,011	\$483
Africa	Sandal	Johannesburg	13	\$17,337	\$63,003	\$809
Africa	Slipper	Johannesburg	12	\$39,452	\$130,025	\$1,565
Africa	Sport Shoe	Johannesburg	8	\$5,172	\$29,368	\$139
Africa	Women's Dress	Johannesburg	4	\$42,682	\$120,127	\$966
Africa	Boot	Khartoum	24	\$19,282	\$105,370	\$700
Africa	Men's Casual	Khartoum	1	\$9,244	\$16,230	\$478
Africa	Men's Dress	Khartoum	3	\$18,053	\$51,132	\$1,177
Africa	Sandal	Khartoum	18	\$26,427	\$81,825	\$1,281
Africa	Slipper	Khartoum	11	\$43,452	\$143,015	\$1,573
Africa	Sport Shoe	Khartoum	7	\$2,521	\$27,041	\$84
Africa	Women's Casual	Khartoum	1	\$19,582	\$30,727	\$384
Africa	Women's Dress	Khartoum	6	\$48,031	\$132,679	\$1,374
Africa	Boot	Kinshasa	16	\$13,921	\$70,736	\$553
Africa	Men's Dress	Kinshasa	5	\$57,691	\$95,663	\$1,699

WorkSheet with Zoom=50%

Ready

50%

Q: How can I get a TITLE in my worksheet with the TableEditor tagset?

A: You must create the workbook directly, NOT via an intermediate HTML file that gets programmatically exported to Excel using EXCEL_FILE_SAVE

```
ods graphics off; goptions reset=all;
ods tagsets.tableeditor path="C:\SAStoXLoutput"
  file="TitleMethod1.xls" style=Default;
/* Appearance of Default style can vary
based on SAS version,
but location of title does not.
Also, appearance of any style used
varies based on tagset used. */
title 'Listing of SASHELP.CLASS Data Set';
proc print data=sashelp.class noobs; run;
ods tagsets.tableeditor close;
```

Title in Column A of Row 1

Also, note absence of grid lines

Listing of SASHELP.CLASS Data Set

	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69	112.5
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	Joyce	F	11	51.3	50.5
12	Judy	F	14	64.3	90
13	Louise	F	12	56.3	77
14	Mary	F	15	66.5	112

```
ods graphics off; goptions reset=all;
ods tagsets.tableeditor path="C:\SASStoXLoutput"
  file="TitleMethod2.xls"
  style=Default;
title '<td colspan=7>Listing of . . . </td>';
/* Title (in Row 1) to span seven columns,
but ODS starts it in Column B */
proc print data=sashelp.class noobs;
run;
ods tagsets.tableeditor close;
```

Nice Custom-Formatted Column Spanning Title, could be a hyperlink, but what about grid lines?

The screenshot shows a Microsoft Excel window titled "TitleMethod2.xls". The ribbon includes File, Home, Insert, Page Layout, Formulas, Data, Review, View, and Acrobat. The Home ribbon is active, showing Font, Alignment, Number, Styles, Cells, and Editing groups. The formula bar shows "IDX" and a function icon. The worksheet grid has columns A through M and rows 1 through 18. A custom-formatted table is displayed starting at row 3, column A. The table has a title "Listing of SASHELP.CLASS Data Set" spanning columns A through E in row 1. The table data starts at row 3, column A, and ends at row 18, column E. The table has a blue header row and blue text for all cells. The status bar at the bottom shows "Ready", "TitleMethod2", and a zoom level of 100%.

Listing of SASHELP.CLASS Data Set				
Name	Sex	Age	Height	Weight
Alfred	M	14	69	112.5
Alice	F	13	56.5	84
Barbara	F	13	65.3	98
Carol	F	14	62.8	102.5
Henry	M	14	63.5	102.5
James	M	12	57.3	83
Jane	F	12	59.8	84.5
Janet	F	15	62.5	112.5
Jeffrey	M	13	62.5	84
John	M	12	59	99.5
Joyce	F	11	51.3	50.5
Judy	F	14	64.3	90
Louise	F	12	56.3	77
Mary	F	15	66.5	112
Philip	M	16	72	150

I want grid lines
in my worksheet created with the
TableEditor tagset

Let's try

```
options(gridline="yes" . . .)
```

GridLinesFailureType1.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Sort & Find & Filter Select

IDX

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		trying options(gridline="yes")											
2													
3		Name	Sex	Age	Height	Weight							
4		Alfred	M	14	69	112.5							
5		Alice	F	13	56.5	84							
6		Barbara	F	13	65.3	98							
7		Carol	F	14	62.8	102.5							
8		Henry	M	14	63.5	102.5							
9		James	M	12	57.3	83							
10		Jane	F	12	59.8	84.5							
11		Janet	F	15	62.5	112.5							
12		Jeffrey	M	13	62.5	84							
13		John	M	12	59	99.5							
14		Joyce	F	11	51.3	50.5							
15		Judy	F	14	64.3	90							
16		Louise	F	12	56.3	77							
17		Mary	F	15	66.5	112							
18		Philip	M	16	72	150							

GridLinesFailureType1

Ready 100%

Let's try

```
options(gridline_color="red" . . .)
```

GridLinesFailureType2.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

Conditional Formatting Format as Table Cell Styles

Sort & Find & Filter Select

IDX f_x

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		trying options(gridline_color="red")											
2													
3	Name	Sex	Age	Height	Weight								
4	Alfred	M	14	69	112.5								
5	Alice	F	13	56.5	84								
6	Barbara	F	13	65.3	98								
7	Carol	F	14	62.8	102.5								
8	Henry	M	14	63.5	102.5								
9	James	M	12	57.3	83								
10	Jane	F	12	59.8	84.5								
11	Janet	F	15	62.5	112.5								
12	Jeffrey	M	13	62.5	84								
13	John	M	12	59	99.5								
14	Joyce	F	11	51.3	50.5								
15	Judy	F	14	64.3	90								
16	Louise	F	12	56.3	77								
17	Mary	F	15	66.5	112								
18	Philip	M	16	72	150								

GridLinesFailureType2

Ready 100%

Q: How can I get gridlines in my worksheet with the TableEditor tagset?

A: You can not create the workbook directly, but must create it via an intermediate HTML file that gets programmatically exported to Excel using EXCEL_FILE_SAVE

```
ods graphics off; goptions reset=all;
ods results;
ods tagsets.tableeditor style=Default
  file="%sysfunc(getoption(work))\temp.html"
options(
  sheet_name="Grid Lines Are Present"
  auto_excel="yes"
  excel_save_file="C:\\SAS\\XLoutput\\GridLines.xls") ;
proc print data=sashelp.class noobs; run;
ods tagsets.tableeditor close;
```

GridLines.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Sort & Find & Filter Select

A1 Name

	A	B	C	D	E	F	G	H	I	J	K	L	M
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								

Grid Lines Are Present

Ready 100%

Q: OK, now I know how to get gridlines with the TableEditor tagset. They require me to create the worksheet via an intermediate HTML file that gets programmatically exported to Excel using EXCEL_FILE_SAVE.

Suppose I must use this creation method for a different reason.

Can I TURN OFF the gridlines?

A. OK, let's try.

```
ods graphics off; goptions reset=all;
ods results;
ods tagsets.tableeditor style=Default
  file="%sysfunc(getoption(work))\temp.html"
options(
  sheet_name="trying gridline=no"
  gridline="no"
  auto_excel="yes"
  excel_save_file=
"C:\\SASStoXLoutput\\GridTurnOff_Attempt_1.xls") ;
proc print data=sashelp.class noobs; run;
ods tagsets.tableeditor close;
```

GridTurnOff_Attempt_1.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles Cells Editing

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Σ Sort & Find & Filter Select

A1 Name

	A	B	C	D	E	F	G	H	I	J	K	L	M
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								

trying gridline=no

Ready Not connected - No connections are available

```
ods graphics off; goptions reset=all;
ods results;
ods tagsets.tableeditor style=Default
  file="%sysfunc(getoption(work))\temp.html"
options(
  sheet_name="trying gridline_color=red"
  gridline_color="red"
  auto_excel="yes"
  excel_save_file=
"C:\\SASStoXOutput\\GridTurnOff_Attempt_2.xls") ;
proc print data=sashelp.class noobs; run;
ods tagsets.tableeditor close;
/* NOTE: In the SAS Display Manager Results Viewer
window, you can see the temp.html file,
for which THOSE grid lines are red. */
```

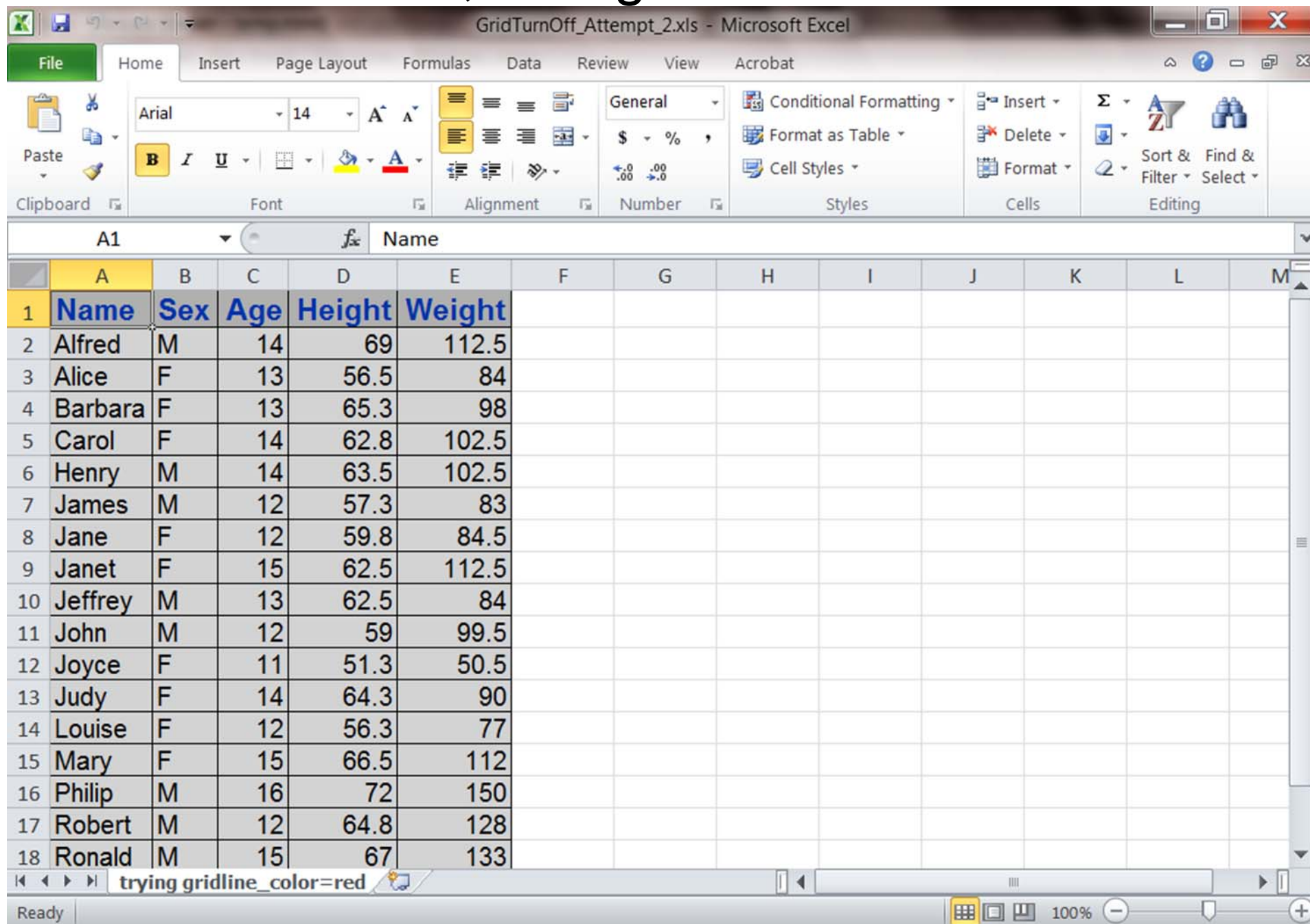
In the Results Viewer, with gridlinecolor='red'

The screenshot shows the SAS Results Viewer window. The title bar reads "SAS - [Results Viewer - SAS Output]". The menu bar includes "File", "Edit", "View", "Go", "Tools", "Solutions", "Window", and "Help". The toolbar contains various icons for file operations and viewing. On the left, a "Results" pane shows a tree view with "Results" and "Print" options. The main area displays a table with the following data:

Name	Sex	Age	Height	Weight
Alfred	M	14	69.0	112.5
Alice	F	13	56.5	84.0
Barbara	F	13	65.3	98.0
Carol	F	14	62.8	102.5
Henry	M	14	63.5	102.5
James	M	12	57.3	83.0
Jane	F	12	59.8	84.5
Janet	F	15	62.5	112.5
Jeffrey	M	13	62.5	84.0
John	M	12	59.0	99.5
Joyce	F	11	51.3	50.5
Judy	F	14	64.3	90.0
Louise	F	12	56.3	77.0
Mary	F	15	66.5	112.0

The table is rendered with red grid lines. The bottom status bar shows "Done" on the left and "C:\Users\Dr LeRoy Bessler" on the right. The taskbar at the very bottom displays several open windows: "Output - (Untitled)", "Log - (Untitled)", "Editor - Untitled1 *", and "Results Viewer - ...".

In Excel, with gridlinecolor='red'



GridTurnOff_Attempt_2.xls - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat

Paste Font Alignment Number Styles Cells Editing

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Sort & Filter Find & Select

A1 Name

	A	B	C	D	E	F	G	H	I	J	K	L	M
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								

trying gridline_color=red

Ready 100%

TableEditor and Grid Lines

Directly Created Files NEVER have grid lines.
Indirectly Created Files ALWAYS have grid lines,
and it is impossible to control their color.
The TableEditor TagSet options for grid lines
do NOT work as expected.
I will be pursuing this matter with SAS Technical
Support. If I find a solution, I will update these
slides.

Your Turn . . .

First. If you have any solutions to SAS-to-Excel reporting, I would appreciate your sharing them. If I use them for publication, I will give you conspicuous acknowledgement.

I'm not a user of Excel macros, VBA, etc.

SAS, ODS, DDE only.

Second. If you find any error in these slides, please let me know.

Thanks.

Paper, Code, Other References

- These slides are based on work in progress
- Formal long paper might be written this summer
- Code package for these slides cannot be added to Proceedings immediately
- You can request via email:
 - Code package
 - List of references
 - Bessler summaries, excerpts from references
 - Updates as they become available
 - Paper, if prepared later

What will be in Online Proceedings

- These slides
- DDE slides, paper, and toolkit

Conclusions

Presentations and Papers are supposed to end with Conclusions.

It would have been nice to furnish a matrix of which tool to use for which task.

If you assemble one after you read these slides, and maybe do some investigation and experimentation of your own, kindly send it to me.

I explained that this is a work in progress.

You have seen where I have gotten so far.

I hope that you find the slides helpful.

Coping with the Documentation Ordeal

- these slides **attempt** to provide a single, all-in-one-place survey of all of the non-DDE ways (i.e., of all of the ODS ways) to create highly formatted reports in Excel directly from SAS, exclusively with SAS, without getting involved with Excel macros, VBA, or other non-SAS machinery
- these slides are the first edition of a work in progress

About the Author

Dr. LeRoy Bessler has presented at software user conferences in the US, Canada, and Europe, on topics such as effective visual communication (using graphs, tables, web pages, or color), highly formatted Excel reporting from SAS, custom-developed tools to assist SAS server administrators, users, and managers, and Software-Intelligent Application Development methods to maximize Reliability, Reusability, Maintainability, Extendibility, and Flexibility. His SAS experience includes application development and supporting users, servers, software, and data.

For Your Requests, Suggestions,
Comments, Questions, Solutions

LeRoy Bessler PhD

Bessler Consulting and Research

Strong Smart Systems™

Converting Complexity Into Clarity™

Le_Roy_Bessler@wi.rr.com

262-512-1729