

Grünenthal

Creating native
Excel outputs
with SAS



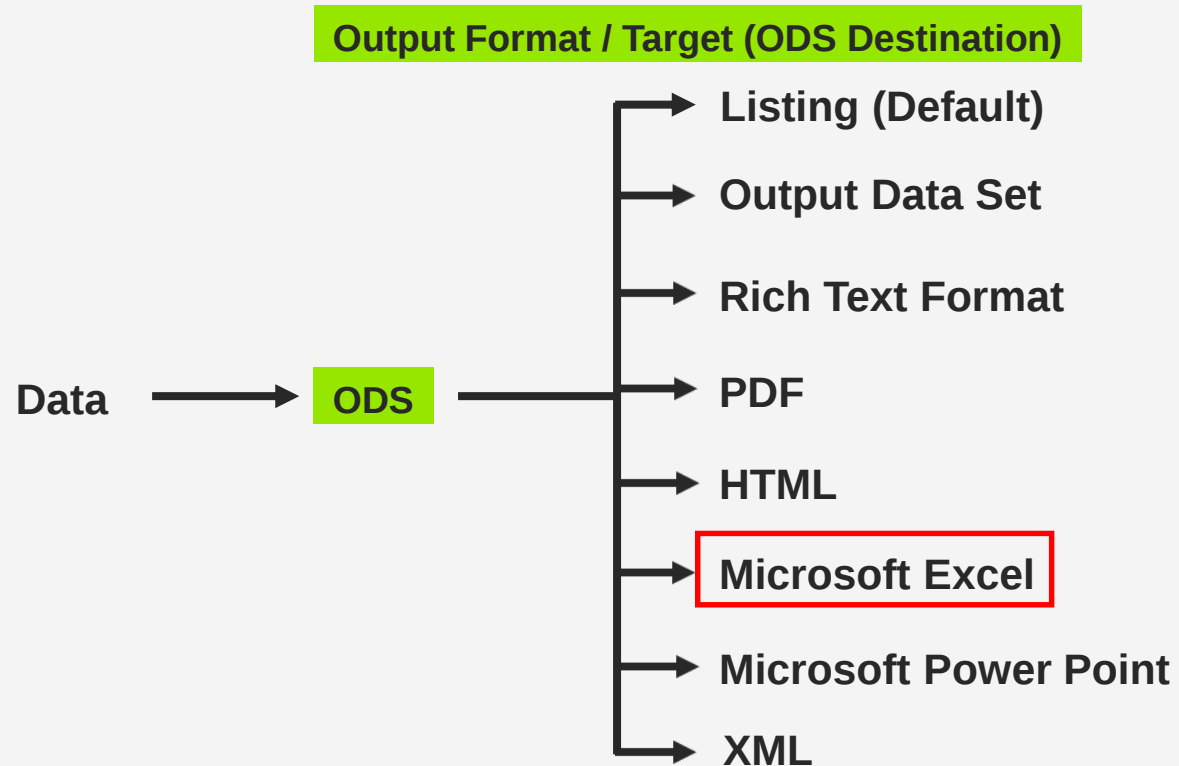
Tageset ExcelXP – ODS Excel – DDE

Feature	ExcelXP *	ODS Excel **	DDE
Pivot Tables	No	Yes	with additional Excel Macro
Filter	Yes	Yes	Yes
Title	Yes	Yes	Yes
Auto. Column adjustment	No	Yes	Yes
Freezing	Yes	Yes	Yes
Graphics	No	Yes	Yes
Multiple Spreadsheets	Yes	Yes	Yes
Header and Footer	Yes	Yes	Yes
System-Independent	Yes	Yes	No - only Windows
File extension	xml	xlsx	xls/xlsx

* ExcelXP falls into the category 'tagsets' - customizable.

** Available since SAS Version 9.4 – Experimental Version 9.4 (TS1M1) – Full Support 9.4 (TS1M3)

Introduction to ODS Excel - 1



Introduction to ODS Excel - 2

```
21 ods trace on / label;  
22  
23 proc univariate data=out.statepop mu0=3.5;  
NOTE: Data file OUT.STATEPOP.DATA is in a format that is native to another host, or the file encoding does not match  
the session encoding. Cross Environment Data Access will be used, which might require additional CPU resources  
and might reduce performance.  
24 var citypop_90 citypop_80;  
25 run;
```

Output Added:

Name: Moments
Label: Moments
Template: base.univariate.Moments
Path: Univariate.CityPop_90.Moments
Label Path: 'The Univariate Procedure'. 'CityPop_90'. 'Moments'

Output Added:

Name: BasicMeasures
Label: Basic Measures of Location and Variability
Template: base.univariate.Measures
Path: Univariate.CityPop_90.BasicMeasures
Label Path: 'The Univariate Procedure'. 'CityPop_90'. 'Basic Measures of Location and Variability'

Output Added:

Name: TestsForLocation
Label: Tests For Location
Template: base.univariate.Location
Path: Univariate.CityPop_90.TestsForLocation
Label Path: 'The Univariate Procedure'. 'CityPop_90'. 'Tests For Location'

Output Added:

Name: Quantiles

controlled with ODS SELECT/EXCLUDE.

```
ods excel file="ods_excel\output\example001.xlsx"
  anchor='PHUSE SDE 2018' dom="ods_excel\output\example001.htm";
```

ODS Document Object Model (DOM) Structure

The ODS document object model (DOM) is the in-memory representation of an ODS report. You can use the DOM to dynamically access and update the content, structure, and style of ODS output. By viewing the DOM, you can determine what elements and attributes exist so that you can construct your CSS selectors to access those areas. To view the DOM for a destination, use the DOM option in any ODS destination statement except ODS LISTING and ODS OUTPUT. You can also specify the DOM option in the ODS TRACE statement.

For example, the ODS TRACE DOM statement in the following code writes the trace record to the SAS log.

Quelle:

<http://documentation.sas.com/?docsetId=odsadvug&docsetTarget=n1gckkp6ygimrdn1c4b0wh0bgfuz.htm&docsetVersion=9.4&locale=de>

```
<tbody>
  <tr>
    <td class="pageno">1
  </td>
</tr>
</tbody>
</table>
```

Introduction to ODS Excel - 4

Suboptions of the OPTION Statement

ABSOLUTE_COLUMN_WIDTH=	ABSOLUTE_ROW_HEIGHT=	AUTOFILTER=
BLACKANDWHITE=	BLANK_SHEET=	CENTER_HORIZONTAL=
CENTER_VERTICAL=	COLUMN_REPEAT=	CONTENTS=
DPI=	DRAFTQUALITY=	EMBEDDED_FOOTNOTES=
EMBED_FOOTNOTES_ONCE=	EMBEDDED_TITLES=	EMBED_TITLES_ONCE=
FITTOPAGE=	FORMULAS=	FROZEN_HEADERS=
FROZEN_ROWHEADERS=	GRIDLINES=	HIDDEN_COLUMNS=
HIDDEN_ROWS=	INDEX=	MSG_LEVEL=
ORIENTATION=	PAGE_ORDER_ACROSS=	PAGES_FITHEIGHT=
PAGES_FITWIDTH=	PRINT_AREA=	PRINT_FOOTER=
PRINT_FOOTER_MARGIN=	PRINT_HEADER=	PRINT_HEADER_MARGIN=
ROWBREAKS_COUNT=	ROWBREAKS_INTERVAL=	ROWCOLHEADINGS=
ROW_HEIGHTS=	ROW_REPEAT=	SCALE=
SHEET_LABEL=	SHEET_NAME=	START_AT=
SUPPRESS_BYLINES=	TAB_COLOR=	TITLE_FOOTNOTE_NOBREAK=
TITLE_FOOTNOTE_WIDTH=	ZOOM=	FLOW=
PROTECT_WORKSHEET=	SHEET_INTERVAL=	

ODS Excel – Program Frame

Program Code

```
ods excel file="ods_excel\output\example01.xlsx" style=harvest;  
  
proc print data=sashelp.cars (where=(upcase (make)='AUDI')) noobs;  
    by type;  
run;  
  
ods excel close;
```

Output

Type=Sedan							
Make	Model	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders
Audi	A4 1.8T 4dr	Europe	Front	\$25.940	\$23.508	1,8	4
Audi	A4 1.8T convertible 2dr	Europe	Front	\$35.940	\$32.506	1,8	4
Audi	A4 3.0 4dr	Europe	Front	\$31.840	\$28.846	3,0	6
Audi	A4 3.0 Quattro 4dr manual	Europe	All	\$33.430	\$30.366	3,0	6
Audi	A4 3.0 Quattro 4dr auto	Europe	All	\$34.480	\$31.388	3,0	6
Audi	A6 3.0 4dr	Europe	Front	\$36.640	\$33.129	3,0	6
Audi	A6 3.0 Quattro 4dr	Europe	All	\$39.640	\$35.992	3,0	6
Audi	A4 3.0 convertible 2dr	Europe	Front	\$42.490	\$38.325	3,0	6
Audi	A4 3.0 Quattro convertible 2dr	Europe	All	\$44.240	\$40.075	3,0	6
Audi	A6 2.7 Turbo Quattro 4dr	Europe	All	\$42.840	\$38.840	2,7	6
Audi	A6 4.2 Quattro 4dr	Europe	All	\$49.690	\$44.936	4,2	8
Audi	A8 L Quattro 4dr	Europe	All	\$69.190	\$64.740	4,2	8
Audi	S4 Quattro 4dr	Europe	All	\$48.040	\$43.556	4,2	8

ODS Excel – The CONTENTS Option

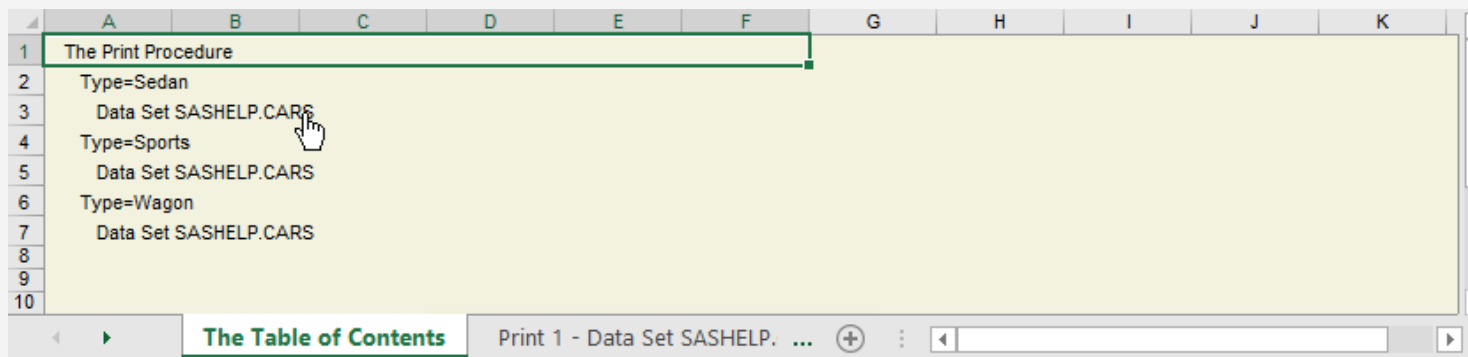
Program Code

```
ods excel file="ods_excel\output\example02.xlsx"  
  options(contents='on') style=harvest;  
  
proc print data=sashelp.cars (where=(upcase(make)='AUDI')) noobs;  
  by type;  
run;  
  
ods excel close;
```

Possible input values

```
/* on (alias=yes): will build a table of contents in the Excel workbook with hyperlinks */  
/* off (alias=no): table of contents are not created (Default) */
```

Output



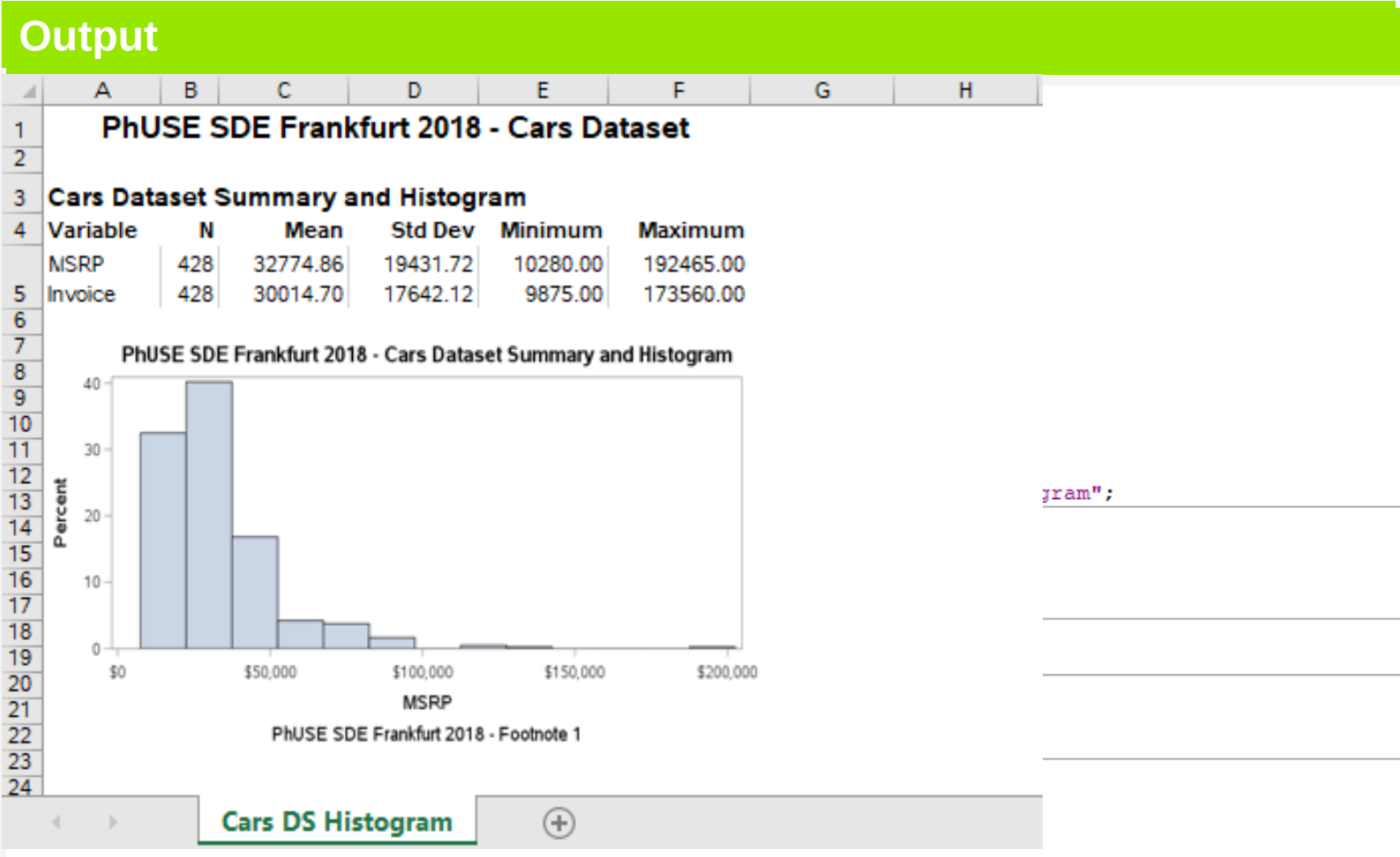
	A	B	C	D	E	F	G	H	I	J	K
1	The Print Procedure										
2	Type=Sedan										
3	Data Set SASHELP.CARS										
4	Type=Sports										
5	Data Set SASHELP.CARS										
6	Type=Wagon										
7	Data Set SASHELP.CARS										
8											
9											
10											

ODS Excel – Commonly Used Options – 1

Output

PhUSE SDE Frankfurt 2018 - title 1									
Type=Sedan									
Make	Model	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	
Audi	A4 1.8T 4dr	Europe	Front	\$25.940	\$23.508	1,8	4	170	
Audi	A41.8T convertible 2dr	Europe	Front	\$35.940	\$32.506	1,8	4	170	
Audi	A4 3.0 4dr	Europe	Front	\$31.840	\$28.846	3,0	6	220	
Audi	A4 3.0 Quattro 4dr manual	Europe	All	\$33.430	\$30.366	3,0	6	220	
Audi	A4 3.0 Quattro 4dr auto	Europe	All	\$34.480	\$31.388	3,0	6	220	
Audi	A6 3.0 4dr	Europe	Front	\$36.640	\$33.129	3,0	6	220	
Audi	A6 3.0 Quattro 4dr	Europe	All	\$39.640	\$35.992	3,0	6	220	
Audi	A4 3.0 convertible 2dr	Europe	Front	\$42.490	\$38.325	3,0	6	220	
Audi	A4 3.0 Quattro convertible 2dr	Europe	All	\$44.240	\$40.075	3,0	6	220	
Audi	A6 2.7 Turbo Quattro 4dr	Europe	All	\$42.840	\$38.840	2,7	6	250	
Audi	A6 4.2 Quattro 4dr	Europe	All	\$49.690	\$44.936	4,2	8	300	
Audi	A8 L Quattro 4dr	Europe	All	\$69.190	\$64.740	4,2	8	330	
Audi	S4 Quattro 4dr	Europe	All	\$48.040	\$43.556	4,2	8	340	
PhUSE SDE Frankfurt 2018 - Footnote 1									

ODS Excel – Commonly Used Options – 2



ODS Excel – The #BYVAL Function

Output

	A	B	C	D	E	F	"
1	Age=11						
2							
3	Name	Sex	Height	Weight			
4	Joyce	F	51,3	50,5			
5	Thomas	M	57,5	85,0			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
	11		12	13	14	15	16

ODS Excel – Metadata Options

Output

Properties *

Size	10,2 KB
Title	PhUSE SDE Frankfurt 2018 e...
Tags	PhUSE SDE Frankfurt 2018 o...
Comments	Sample Program PhUSE SD...
Template	
Status	Draft
Categories	PhUSE SDE Frankfurt 2018 o...
Subject	Specify the subject
Hyperlink Base	Add text
Company	Specify the company

Related Dates

Last Modified	Today, 15:27
Created	Today, 15:27
Last Printed	

Related People

Manager	Specify the manager
Author	 Frank Biedermann
	Add an author
Last Modified By	 Frank Biedermann

Related Documents

 [Open File Location](#)

[Show Fewer Properties](#)

ODS Excel – Alias

Suboptions – Alias

BLACKANDWHITE= on – alias – yes, off (default) – alias – no	CENTER_HORIZONTAL= on – alias – yes, off (default) – alias – no	CENTER_VERTICAL= on – alias – yes, off (default) – alias – no
DRAFTQUALITY= on – alias – yes, off (default) – alias – no	EMBEDDED_FOOTNOTES= on – alias – yes, off (default) – alias – no	EMBED_FOOTNOTES_ONCE alias EMBED_FOOTERS_ONCE = on – alias – yes, off (default) – alias – no
EMBEDDED_TITLES= on – alias – yes, off (default) – alias – no	EMBED_TITLES_ONCE= on – alias – yes, off (default) – alias – no	FITTOPAGE= on – alias – yes, off (default) – alias – no
FLOW= data, headers – alias – header, rowheaders – alias – rowheader, tables – alias table, text	FORMULAS= on – alias – yes, off (default) – alias – no	FROZEN_HEADERS= on – alias – yes true, off (default) – alias – no false
FROZEN_ROWHEADERS= on – alias – yes, off (default) – alias – no	GRIDLINES= on – alias – yes, off (default) – alias – no	INDEX= on – alias – yes, off (default) – alias – no
PAGE_ORDER_ACROSS= on – alias – yes, off (default) – alias – no	PROTECT_WORKSHEET= on – alias – yes, off (default) – alias – no	ROWCOLHEADINGS= on – alias – yes, off (default) – alias – no
SHEET_INTERVAL= bygroup – alias – bygroups, none, now, page, proc, table – alias – output	SUPPRESS_BYLINES= on – alias – yes, off (default) – alias – no	TITLE_FOOTNOTE_NOBREAK= on – alias – yes, off (default) – alias – no

ODS Excel – The ID Option

Output

A1 ✕ ✓ fx Type=Sedan

Mittwo

Type=Sedan

Make	Model	Origin	DriveTrain	MSRP	Invo
Audi	A4 1.8T 4dr	Europe	Front	\$25,940	\$23,
Audi	A4 1.8T convertible 2dr	Europe	Front	\$35,940	\$32,
Audi	A4 3.0 4dr	Europe	Front	\$31,840	\$28,
Audi	A4 3.0 Quattro 4dr manual	Europe	All	\$33,430	\$30,

example06_id_sasweb_style.pdf - Adobe Acrobat Reader DC

Start Werkzeuge example06_id_sasw... ? Anmelden

1 / 1 56,8% 1

Mittwoch, 14. Februar 2018 12:38:20 1

Make	Model	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway	Weight	Wheelbase	Length
Audi	A4 1.8T 4dr	Europe	Front	\$25,940	\$23,508	1.8	4	170	22	31	3252	104	179
Audi	A4 1.8T convertible 2dr	Europe	Front	\$35,940	\$32,506	1.8	4	170	23	30	3638	105	180
Audi	A4 3.0 4dr	Europe	Front	\$31,840	\$28,846	3.0	6	220	20	28	3462	104	179
Audi	A4 3.0 Quattro 4dr manual	Europe	All	\$33,430	\$30,366	3.0	6	220	17	26	3583	104	179
Audi	A4 3.0 Quattro 4dr auto	Europe	All	\$34,480	\$31,388	3.0	6	220	18	25	3627	104	179
Audi	A6 3.0 4dr	Europe	Front	\$36,640	\$33,129	3.0	6	220	20	27	3561	109	192
Audi	A6 3.0 Quattro 4dr	Europe	All	\$39,640	\$35,992	3.0	6	220	18	25	3880	109	192

ODS Excel – Output formatting – 1

Program Code

```
proc template;  
  define style Styles.grid;  
    parent=styles.excel;  
    class header / background=_undef_  
      color=black;  
    class body / background=_undef_;  
  end;  
run;  
  
ods excel file="ods_excel\output\example07.xlsx"  
  options(sheet_name='Dataset class')  
  style=styles.grid;  
  
proc print data=sashelp.class noobs;  
run;  
  
ods excel close;
```

18	Ronald	M	15	67,0	133,0		
19	Thomas	M	11	57,5	85,0		
20	William	M	15	66,5	112,0		

Dataset class

+

ODS Excel – Output formatting – 2

Output

	A	B	C	D	E
1	Make	Model	Type	Origin	Long Text
2	Acura	MDX	SUV	Asia	Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee
3	Acura	RSX Type S 2dr	Sedan	Asia	Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee
4	Acura	TSX 4dr	Sedan	Asia	Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee
5	Acura	TL 4dr	Sedan	Asia	Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee
16	Audi	A4 3.0 conv			Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee
17	Audi	Quattro			Aaaaaaaaaaaaaaaaaaaaaaaaaa bbbbbbbbbbbbbbbbbbCcccc ccccccccccccccccDdddddd ddddddddddEeeeeeeeeee eeeeee

ODS Excel – CSS

Output

	A	B	C	D	E	F	G
1	Name	Sex	Age	Height	Weight		
2	Alfred	M	14	69,0	112,5		
3	Alice	F	13	56,5	84,0		
4	Barbara	F	13	65,3	98,0		" /
5	Carol	F	14	62,8	102,5		" /
6	Henry	M	14	63,5	102,5		s-serif; " /
7	James	M	12	57,3	83,0		" /
8	Jane	F	12	59,8	84,5		" /
9	Janet	F	15	62,5	112,5		" /
10	Jeffrey	M	13	62,5	84,0		
11	John	M	12	59,0	99,5		s-serif; } " ;
12	Joyce	F	11	51,3	50,5		
13	Judy	F	14	64,3	90,0		
14	Louise	F	12	56,3	77,0		
15	Mary	F	15	66,5	112,0		
16	Philip	M	16	72,0	150,0		
17	Robert	M	12	64,8	128,0		
18	Ronald	M	15	67,0	133,0		
19	Thomas	M	11	57,5	85,0		
20	William	M	15	66,5	112,0		
21							
22							
23							
24							

CSS - Format

ODS Excel – Formula

Output

	A	B	C	D	E	F	G	H	I
1	Region	Product	Product type	Actual Sales	Predicted Sales	Difference			
2	EAST	BED	FURNITURE	\$73.870,00	\$68.031,00	-\$5.839			
3		CHAIR	OFFICE	\$75.855,00	\$69.420,00	-\$6.435			
4		DESK	OFFICE	\$73.616,00	\$72.645,00	-\$971			
5		SOFA	FURNITURE	\$72.601,00	\$73.085,00	\$484			
6		TABLE	OFFICE	\$74.319,00	\$75.631,00	\$1.312			
7	WEST	BED	FURNITURE	\$68.167,00	\$69.836,00	\$1.669			
8		CHAIR	OFFICE	\$72.425,00	\$66.690,00	-\$5.735			
9		DESK	OFFICE	\$75.616,00	\$73.550,00	-\$2.066			
10		SOFA	FURNITURE	\$75.987,00	\$67.366,00	-\$8.621			
11		TABLE	OFFICE	\$67.881,00	\$70.041,00	\$2.160			
12	Total			\$730.337,00	\$706.295,00	-\$24.042			
13									
14									
15									
16									
17									
18									

	A	B	C	D	E	F
1						
2		5	10	15		
3						
4				30	=B2+C2+D2	
5				10	=D2-C2+B2	
6						

	1	2	3	4	5	6
1						
2		5	10	15		
3						
4				30	=R[-2]C[-2]+R[-2]C[-1]+R[-2]C	
5				10	=R[-3]C-R[-3]C[-1]+R[-3]C[-2]	
6						

ODS Excel – References

Parker, Chevell 2016, A Ringside Seat: The ODS Excel Destination versus the ODS ExcelXP Tagset

<https://support.sas.com/resources/papers/proceedings16/SAS5642-2016.pdf>

William E Benjamin Jr. 2017, SAS® ODS Excel® Destination: Using the ID Option to Write Different Excel Workbooks at the same time.

http://analytics.ncsu.edu/sesug/2017/SESUG2017_Paper-220_Final_PDF.pdf

William E Benjamin Jr. 2017, Working with the SAS® ODS Excel® Destination to Send Graphs, and Use Cascading Style Sheets When Writing to Excel Workbooks.

<https://www.mwsug.org/proceedings/2016/HW/MWSUG-2016-HW04.pdf>

Kirk Paul Lafler 2017, Hands-on Introduction to the SAS® ODS Excel® Destination

<https://www.mwsug.org/proceedings/2017/HW/MWSUG-2017-HW01.pdf>

Cynthia L. Zender 2009, CSSSTYLE: Stylish Output with ODS and SAS® 9.2

<https://support.sas.com/resources/papers/proceedings09/014-2009.pdf>

Working with the SAS® ODS Document Object Model

<http://documentation.sas.com/?docsetId=odsadvug&docsetTarget=n0pg2pc6qv5vzhn160f8j7ap4uv1.htm&docsetVersion=9.4&locale=de>

