

SAS® GLOBAL FORUM 2016

IMAGINE. CREATE. INNOVATE.

The Dynamic Duo: ODS Layout and the ODS Destination for PowerPoint

Jane Eslinger, SAS Institute Inc.

#SASGF



Today's Lineup



Game Plan



Playing the Game



Final Stretch



Game Plan: Understanding Default Behavior



Objects accumulate before being sent to PowerPoint

- Might place titles and footnotes unexpectedly



Layout container size varies

- Might span multiple slides
- Might fill just a portion of one slide



Game Plan: Triggering a New Slide



Fill the entire slide



Use a DATA _NULL_ step

```
ods layout gridded;  
  proc print;  
  run;  
ods layout end;
```

```
data _null_;  
  dcl odsout obj();  
run;
```

```
ods layout gridded;  
  proc sgplot;  
  run;  
ods layout end;
```



Game Plan: Setting Output Object Size



Graph Size

- Set size in GOPTIONS statement
- Set size in ODS GRAPHICS statement
- Change axis labels and legend



Table Size

- Choose best procedure: REPORT, MEANS, TABULATE
- Use multiple tables in slide
- Remove header rows or change labels



Playing the Game: Graphs in 2x2 Pattern

```
proc sort data=sashelp.baseball  
        out=baseball;  
        by league division;  
run;
```



Playing the Game: Graphs in 2x2 Pattern

Using the ODS LAYOUT GRIDDED ROWS= option

```
ods powerpoint file='twobytwo1.pptx'  
              nogtitle nogfootnote;  
title 'Graphs in a 2x2 Pattern';  
ods graphics on / height=2.25in width=3in;  
ods layout gridded columns=2 rows=2  
              advance=bygroup;  
ods region;
```



Playing the Game: Graphs in 2x2 Pattern

Using the ODS LAYOUT GRIDDED ROWS= option

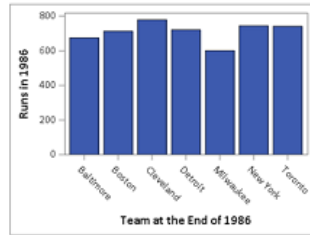
```
proc sgplot data=baseball;  
  by league division;  
  vbar team / response=nruns;  
  label league='League'  
         division='Division';  
  
run;  
  
ods layout end;  
  
ods powerpoint close;
```



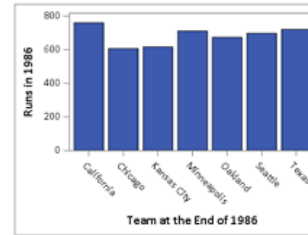
Playing the Game: ODS LAYOUT ROWS=

Graphs in a 2x2 Pattern

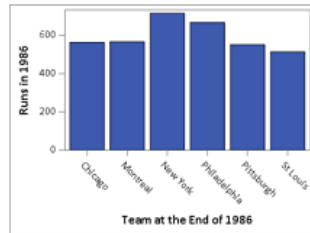
League=American Division=East



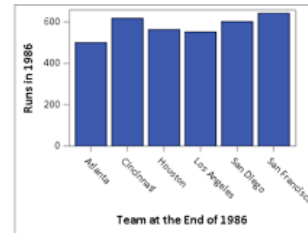
League=American Division=West



League=National Division=East



League=National Division=West



1



Playing the Game: Graphs in 2x2 Pattern

Using the ODS REGION HEIGHT= option

```
ods powerpoint file='twobytwo2.pptx'  
              nogtitle nogfootnote;  
title 'Graphs in a 2x2 Pattern';  
ods graphics on / height=2.25in width=3in;  
ods layout gridded columns=2  
              advance=bygroup;  
ods region height=47%;
```



Playing the Game: Graphs in 2x2 Pattern

Using the ODS REGION HEIGHT= option

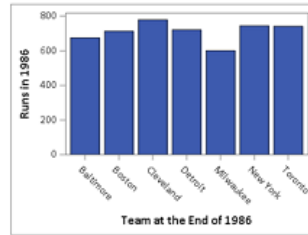
```
proc sgplot data=baseball;  
  by league division;  
  vbar team / response=nruns;  
  label league='League'  
         division='Division';  
  
run;  
  
ods layout end;  
  
ods powerpoint close;
```



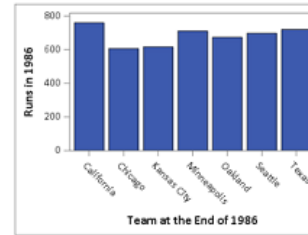
Playing the Game: ODS REGION HEIGHT=

Graphs in a 2x2 Pattern

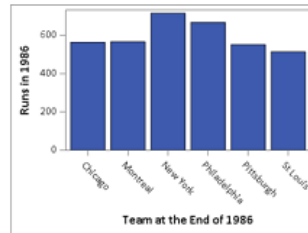
League=American Division=East



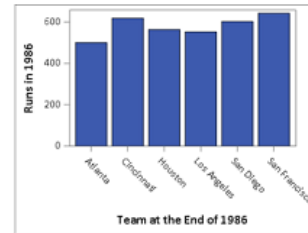
League=American Division=West



League=National Division=East



League=National Division=West



1



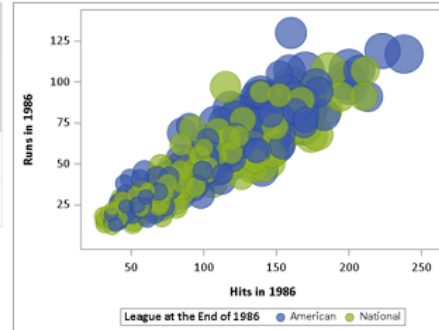
Playing the Game: Multiple Containers

Multiple Layout Containers One Slide

Table Shows Total Runs and Hits for Each League

The Graph Contains One Bubble for Each Player. The Size of Each Bubble Represents the Magnitude of the RBIs.

	Totals	
	Runs in 1986	Hits in 1986
American	9,761	18,845
National	7,053	14,449



1



Playing the Game: Multiple Containers

```
ods layout gridded rows=1 columns=1;

ods region;
proc odstext;
  p 'Table Shows Total Runs and Hits for
    Each League';
  p 'The Graph Contains One Bubble for Each
    Player. The Size of Each Bubble
    Represents the Magnitude of the RBIs.';
run;
ods layout end;
```



Playing the Game: Multiple Containers

```
ods layout gridded columns=2
  column_widths=(47% 47%) column_gutter=1pct;
ods region;
  proc tabulate data=sashelp.baseball;
    class league;
    var nruns nhits nrbi;
    tables league='',
      sum='Totals'*(nruns nhits)*f=comma12.;
  run;
```



Playing the Game: Multiple Containers

```
ods region;  
  proc sgplot data=sashelp.baseball;  
    bubble x=nhits y=nruns size=nrbi/  
          group=league transparency=.3;  
  run;  
ods layout end;
```



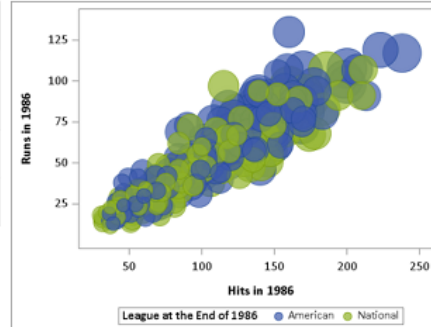
Playing the Game: Multiple Containers

Multiple Layout Containers One Slide

Table Shows Total Runs and Hits for Each League

The Graph Contains One Bubble for Each Player. The Size of Each Bubble Represents the Magnitude of the RBIs.

	Totals	
	Runs in 1986	Hits in 1986
American	9,761	18,845
National	7,053	14,449



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Final Stretch

- ⚪ Predefined Layouts
 - Are specified in ODS POWERPOINT LAYOUT= option
 - Are not the same as an ODS LAYOUT
 - Do not use on the same slide as ODS LAYOUT

- ⚪ Possible Values
 - TitleSlide
 - TitleAndContent
 - TwoContent



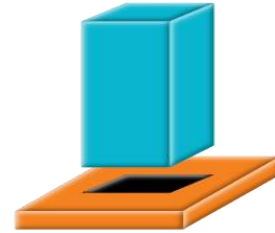


Square Peg, Square Hole— Getting Tables to Fit on Slides in the ODS Destination for PowerPoint

Jane Eslinger, SAS Institute Inc.

Your task:

Create a PowerPoint presentation containing results from your analysis.



Expectations

- Be prepared for trial and error
- Understand some tables will NOT fit on one slide

title

footnote

Default PROC TABULATE Output

```
ods powerpoint file='example.pptx';  
title 'Tabulate: Default';  
proc tabulate data=sashelp.prdsal3;  
  class country product;  
  var actual predict;  
  table country*product, (actual predict) *  
    (n sum mean);  
run;  
ods powerpoint close;
```

Tabulate: Default

		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
Country	Product						
Canada	BED	576	460670.80	799.78	576	496266.70	861.57
	CHAIR	576	457739.30	794.69	576	494753.40	858.95
	DESK	576	469536.10	815.17	576	492749.30	855.47
	SOFA	576	477230.10	828.52	576	518489.40	900.16
Mexico	BED	576	312039.10	541.73	576	353177.90	613.16
	CHAIR	576	300830.80	522.28	576	333331.50	578.70
	DESK	576	304936.20	529.40	576	337728.40	586.33

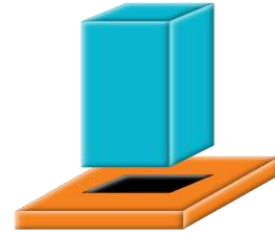
(Continued)

Tabulate: Default

		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
Mexico	SOFA	576	313853.00	544.88	576	350385.50	608.31
U.S.A.	BED	1728	1823734.20	1055.40	1728	1894823.20	1096.54
	CHAIR	1728	1838074.70	1063.70	1728	1953700.50	1130.61
	DESK	1728	1830805.80	1059.49	1728	1969057.70	1139.50
	SOFA	1728	1927313.00	1115.34	1728	1937251.00	1121.09

Strategies

- Remove optional output
- Reduce table size
- Divide and conquer
- Change font size



Strategy: Remove Optional Output

```
ods powerpoint file='example.pptx';  
title 'Tabulate: NOCONTINUED option';  
proc tabulate data=sashelp.prdsal3;  
  class country product;  
  var actual predict;  
  table country*product, (actual predict) *  
    (n sum mean) / nocontinued;  
run;  
ods powerpoint close;
```

Tabulate: NOCONTINUED option

		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
Country	Product						
Canada	BED	576	460670.80	799.78	576	496266.70	861.57
	CHAIR	576	457739.30	794.69	576	494753.40	858.95
	DESK	576	469536.10	815.17	576	492749.30	855.47
	SOFA	576	477230.10	828.52	576	518489.40	900.16
Mexico	BED	576	312039.10	541.73	576	353177.90	613.16
	CHAIR	576	300830.80	522.28	576	333331.50	578.70
	DESK	576	304936.20	529.40	576	337728.40	586.33
	SOFA	576	313853.00	544.88	576	350385.50	608.31

Tabulate: NOCONTINUED option

		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
U.S.A.	BED	1728	1823734.20	1055.40	1728	1894823.20	1096.54
	CHAIR	1728	1838074.70	1063.70	1728	1953700.50	1130.61
	DESK	1728	1830805.80	1059.49	1728	1969057.70	1139.50
	SOFA	1728	1927313.00	1115.34	1728	1937251.00	1121.09

Strategy: Reduce Table Size

```
ods powerpoint file='example.pptx';  
title 'Tabulate: BOX=';  
proc tabulate data=sashelp.prdsal3;  
  class country product;  
  var actual predict;  
  table country=' '*product=' ',  
         (actual predict)*(n sum mean) /  
         nocontinued box='Country*Product' ;  
run;  
ods powerpoint close;
```

Tabulate: BOX=

Country*Product		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
Canada	BED	576	460670.80	799.78	576	496266.70	861.57
	CHAIR	576	457739.30	794.69	576	494753.40	858.95
	DESK	576	469536.10	815.17	576	492749.30	855.47
	SOFA	576	477230.10	828.52	576	518489.40	900.16
Mexico	BED	576	312039.10	541.73	576	353177.90	613.16
	CHAIR	576	300830.80	522.28	576	333331.50	578.70
	DESK	576	304936.20	529.40	576	337728.40	586.33
	SOFA	576	313853.00	544.88	576	350385.50	608.31
U.S.A.	BED	1728	1823734.20	1055.40	1728	1894823.20	1096.54

Tabulate: BOX=

Country*Product		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
U.S.A.	CHAIR	1728	1838074.70	1063.70	1728	1953700.50	1130.61
	DESK	1728	1830805.80	1059.49	1728	1969057.70	1139.50
	SOFA	1728	1927313.00	1115.34	1728	1937251.00	1121.09

Strategy: Divide and Conquer

```
ods powerpoint file='example.pptx';  
title 'Tabulate: Page Dimension';  
proc tabulate data=sashelp.prdsal3;  
  class country product;  
  var actual predict;  
  table country,product,  
        (actual predict) * (n sum mean);  
run;  
ods powerpoint close;
```

Tabulate: Page Dimension

Country Canada

	Actual Sales			Predicted Sales		
	N	Sum	Mean	N	Sum	Mean
Product						
BED	576	460670.80	799.78	576	496266.70	861.57
CHAIR	576	457739.30	794.69	576	494753.40	858.95
DESK	576	469536.10	815.17	576	492749.30	855.47
SOFA	576	477230.10	828.52	576	518489.40	900.16

Tabulate: Page Dimension

Country Mexico

	Actual Sales			Predicted Sales		
	N	Sum	Mean	N	Sum	Mean
Product						
BED	576	312039.10	541.73	576	353177.90	613.16
CHAIR	576	300830.80	522.28	576	333331.50	578.70
DESK	576	304936.20	529.40	576	337728.40	586.33
SOFA	576	313853.00	544.88	576	350385.50	608.31

Strategy: Change Font Size

```
ods powerpoint file='example.pptx';  
title 'Tabulate: Change Font Size';  
proc tabulate data=sashelp.prdsal3 style=[fontsize=16pt];  
  class country product / style=[fontsize=16pt];  
  classlev country product / style=[fontsize=16pt];  
  var actual predict / style=[fontsize=16pt];  
  table country=''*product='', (actual predict)*(n sum mean) /  
    nocontinued box=[label='Country*Product'  
      s=[fontsize=16pt]];  
  keyword n sum mean / style=[fontsize=16pt];  
run;  
ods powerpoint close;
```

Tabulate: Change Font Size

Country*Product		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
Canada	BED	576	460670.80	799.78	576	496266.70	861.57
	CHAIR	576	457739.30	794.69	576	494753.40	858.95
	DESK	576	469536.10	815.17	576	492749.30	855.47
	SOFA	576	477230.10	828.52	576	518489.40	900.16
Mexico	BED	576	312039.10	541.73	576	353177.90	613.16
	CHAIR	576	300830.80	522.28	576	333331.50	578.70
	DESK	576	304936.20	529.40	576	337728.40	586.33
	SOFA	576	313853.00	544.88	576	350385.50	608.31
U.S.A.	BED	1728	1823734.20	1055.40	1728	1894823.20	1096.54
	CHAIR	1728	1838074.70	1063.70	1728	1953700.50	1130.61

Tabulate: Change Font Size

Country*Product		Actual Sales			Predicted Sales		
		N	Sum	Mean	N	Sum	Mean
U.S.A.	DESK	1728	1830805.80	1059.49	1728	1969057.70	1139.50
	SOFA	1728	1927313.00	1115.34	1728	1937251.00	1121.09

Summary

- Remove optional output
- Reduce table size
- Divide and conquer
- Change font size

Jane.Eslinger@sas.com

QUESTIONS?

YES! I made this presentation with SAS.

I made the peg image with PROC SGPLOT.

```
67 ods powerpoint options(backgroundimage="C:\_go_me\Papers\SGF2018\PPFiles_wide\ex1_tab\slide1.png");
68 title;
69 proc odstext pagebreak=yes;
70   p '';
71 run;
72
73 ods powerpoint options(backgroundimage="C:\_go_me\Papers\SGF2018\PPFiles_wide\ex1_tab\slide2.png" );
74 title;
75 proc odstext pagebreak=yes;
76   p '';
77 run;
78
79 ods powerpoint options(backgroundimage="C:\_go_me\Papers\SGF2018\BkgdImages\Content.png" transition="fracture");
80 />report default/;
81 title 'Default REPORT Output';
82 proc odstext pagebreak=yes;
83   p "ods powerpoint file='example.pptx';"
84   title 'Report: Default';
85   proc report data=sashelp.prdsal3;
86     ^{nbspace 3}column year country product quarter, (actual predict);
87     ^{nbspace 3}define year / group;
88     ^{nbspace 3}define country / group;
89     ^{nbspace 3}define product / group;
90     ^{nbspace 3}define quarter / across order=internal;
91     ^{nbspace 3}define actual / format=dollar12.2;
92     ^{nbspace 3}define predict / format=dollar12.2;
93     ^{nbspace 3}break after country / summarize;
94 run;
95 ods powerpoint close; />style=(fontfamily='Courier' fontsize=18pt foreground=black);
96 run;
```

