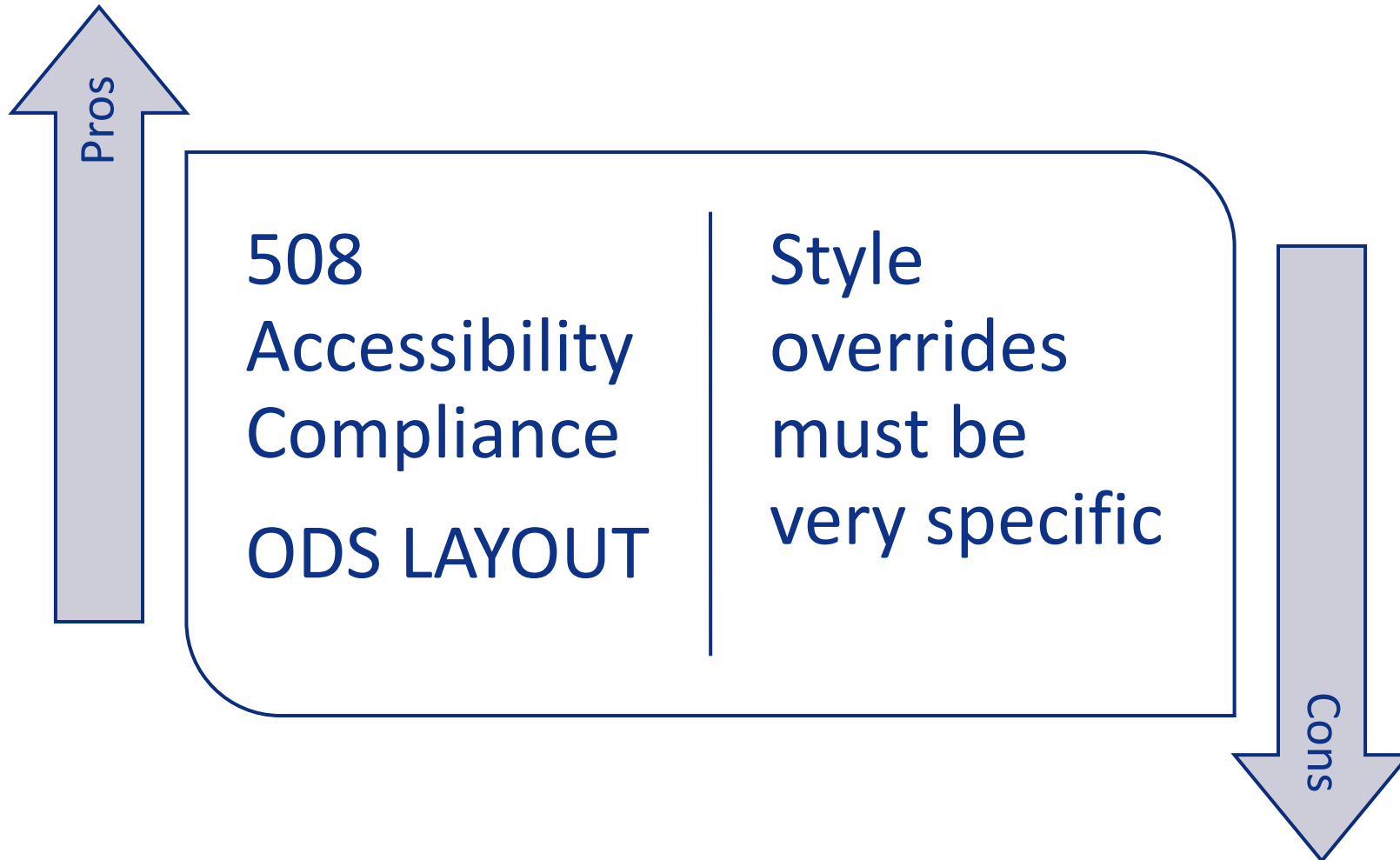


# Major ODS Destinations: Quirks

Jane Eslinger, Eslinger Enterprises

# PDF



# ODS PDF Statement Options

ODS PDF automatically adds tagging and other accessibility information

- ACCESSIBLE

Control whether non-visual metadata is added to the PDF file that enables the file to be accessed by assistive technology such as a screen reader

- ACCESSIBLE\_IDENTIFIER

Control whether an identifier is added to the metadata of the PDF file, which confirms that the PDF produced by SAS meets the PDF Matterhorn Protocol

# ODS PDF Accessibility Resources

## Overview of Creating Accessible Output

[https://go.documentation.sas.com/doc/en/pgmsascdc/v\\_037/odsacoutput/p06mb5me6004k4n1r9sr42e9bdha.htm](https://go.documentation.sas.com/doc/en/pgmsascdc/v_037/odsacoutput/p06mb5me6004k4n1r9sr42e9bdha.htm)

- Guidelines
- Tools
- Examples
- Lots of links to papers with examples!

# ODS PDF and ODS Layout

Use LAYOUT ABSOLUTE or LAYOUT GRIDDED

PDF only major ODS destination that supports ODS LAYOUT ABSOLUTE

ODS LAYOUT ABSOLUTE - Enables you to specify an exact page location using x and y coordinates.

ODS LAYOUT GRIDDED - Enables you to arrange output dynamically in a two-dimensional grid structure.

# ODS PDF LAYOUT Example

ODS PDF using: styles.Pearl, ODS LAYOUT, and PROCs ODSLST, ODSTEXT, REPORT & SGPLOT

The ODSTEXT procedure offers a powerful tool for inserting paragraph style text into your ODS destinations.

The ODSTEXT procedure allows us to: format text with style control offered with the statement option style=, use data sets, and add bullets.

A close sibling is PROC ODSLST, used to generate the following bulleted list of improved ODS PDF features:

- Styles.Pearl
- ODS LAYOUT
- PROCs ODSLST & ODSTEXT

Day	High	Low	Weather
Monday	73	61	Cloudy
Tuesday	76	60	Showers
Wednesday	78	59	Sunny
Thursday	76	60	Sunny
Friday	78	64	Showers
Saturday	79	63	Sunny
Sunday	75	64	Sunny

**A subset of SASHELP.CARS where MPG\_HIGHWAY is greater than 40**

Make	Model	MPG (Highway)	MPG (City)	Combined MPG	Type	Engine Size (L)	Horsepower	DriveTrain
Honda	Civic Hybrid 4dr manual (gas/electric)	51	46	49	Hybrid	1.4	93	Front
	Civic HX 2dr	44	36	40	Sedan	1.7	117	Front
Toyota	Prius 4dr (gas/electric)	51	59	55	Hybrid	1.5	110	Front
	Echo 2dr manual	43	35	39	Sedan	1.5	108	Front
	Echo 4dr	43	35	39	Sedan	1.5	108	Front
Volkswagen	Jetta GLS TDI 4dr	46	38	42	Sedan	1.9	100	Front

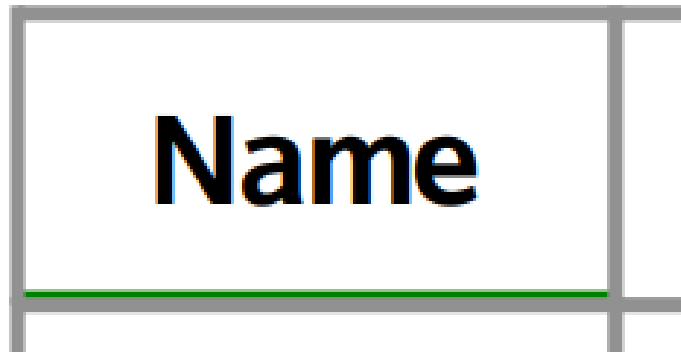
PROC FORMAT uses inline formatting and the Unicode style function to differentiate models based on the combined MPG

Created by SAS version: 9.4

<https://support.sas.com/kb/55/808.html>

# Style Overrides

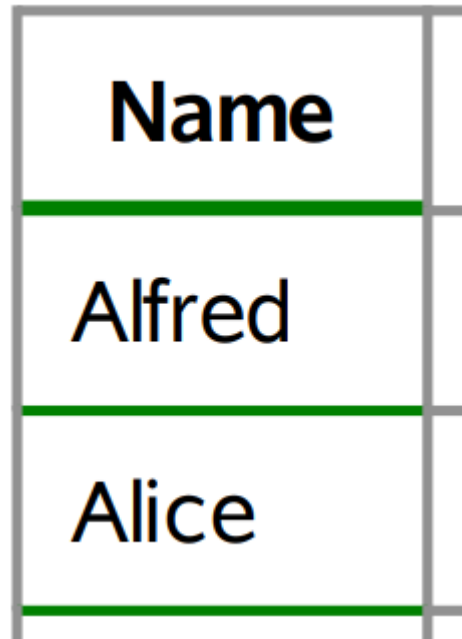
```
proc report data=sashelp.class;  
  define name /  
    style (header)={borderbottomcolor=green};  
run;
```



<b>Name</b>
-------------

# Style Overrides Workaround ???

```
proc report data=sashelp.class;  
  define name /  
    style (header)={borderbottomcolor=green}  
    style (column)={bordertopcolor=green};  
run;
```

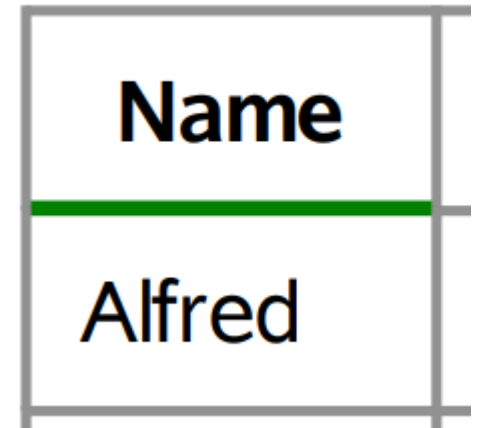


<b>Name</b>
Alfred
Alice



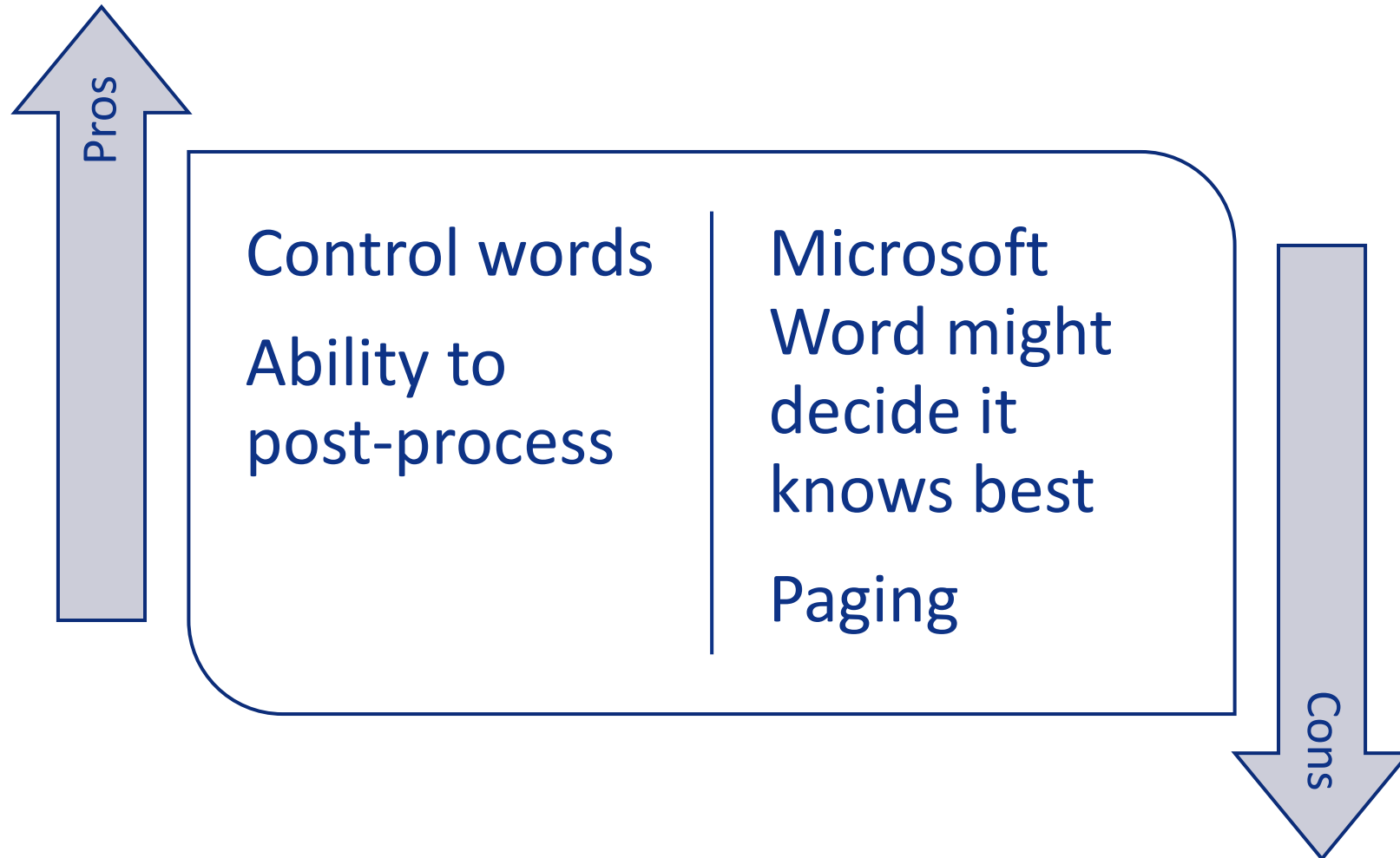
# Style Overrides Workaround

```
proc report data=sashelp.class;  
  define name /  
    style(header)={borderbottomcolor=green};  
  compute name;  
    if name='Alfred' then  
      call define(_col_,'style',  
        'style=[bordertopcolor=green]');  
    endcomp;  
run;
```



Name
Alfred

# RTF



# Control Words

ODS RTF supports the Rich Text Format Specification

- Hundreds of control words are available (search “rtf control words”)
- Adds additional formatting control beyond the SAS<sup>®</sup> style attributes

# ODS RTF Control Words Example

```
proc report nowd data=test;
  define x / "Hanging indent"
    style(column)={cellwidth=2in
    protectspecialchars=off
    pretext=' \pnhang\fi-220\li220 ' };
  define y / "Left Indent"
    style(column)={cellwidth=2in
    protectspecialchars=off
    pretext=' \li220 ' };
run;
```

Hanging indent	Left Indent
A very long text string for which we will demonstrate a HANGING indent in the RTF output file.	A very long text string for which we will demonstrate a LEFT indent in the RTF output file.

<https://support.sas.com/kb/42/377.htm>

# Post-process

Open a .rtf file in a text editor

```
}}{\stylesheet{\widctlpar\adjustright\fs20\cgrid\snext0  
Normal;}}{\*\cs10\additive Default Paragraph Font;}
```

```
}}{\info{\title V9.2 SAS System Output}{\author SAS Version 9.2}{\operator  
SAS Version  
9.2}}{\createm\yr2011\mo2\dy13\hr14\min31\sec56}}
```

```
\widowctrl\ftnbj\aenddoc\formshade\viewkind1\viewscale100\pgbrdrhead\pg  
brdrfoot\fet0\paperw12240\paperh15840\margl360\marginr360\margt360\margin  
b360
```

```
\sectd\linex0\endnhere\headery720\footery360\marginl360\marginr360\ma  
rgtsxn360\marginbsxn360
```

```
{\header\pard\plain\qc{  
}}
```

# Post-process

You can change anything about the rtf file that you want – as long as you know what you are doing!

- Change fonts
- Remove blank lines
- Combining multiple rtf files into one file

Most common reason to post-process is to control page numbering

# Microsoft Word/Paging

Common paging issues:

- a new grouping starts near the bottom of the page
- a grouping with many rows starts near the top of the page
- very long groupings

Re-pagination of ODS RTF Outputs to Automate Page Breaks and Minimize Splits Across Pages

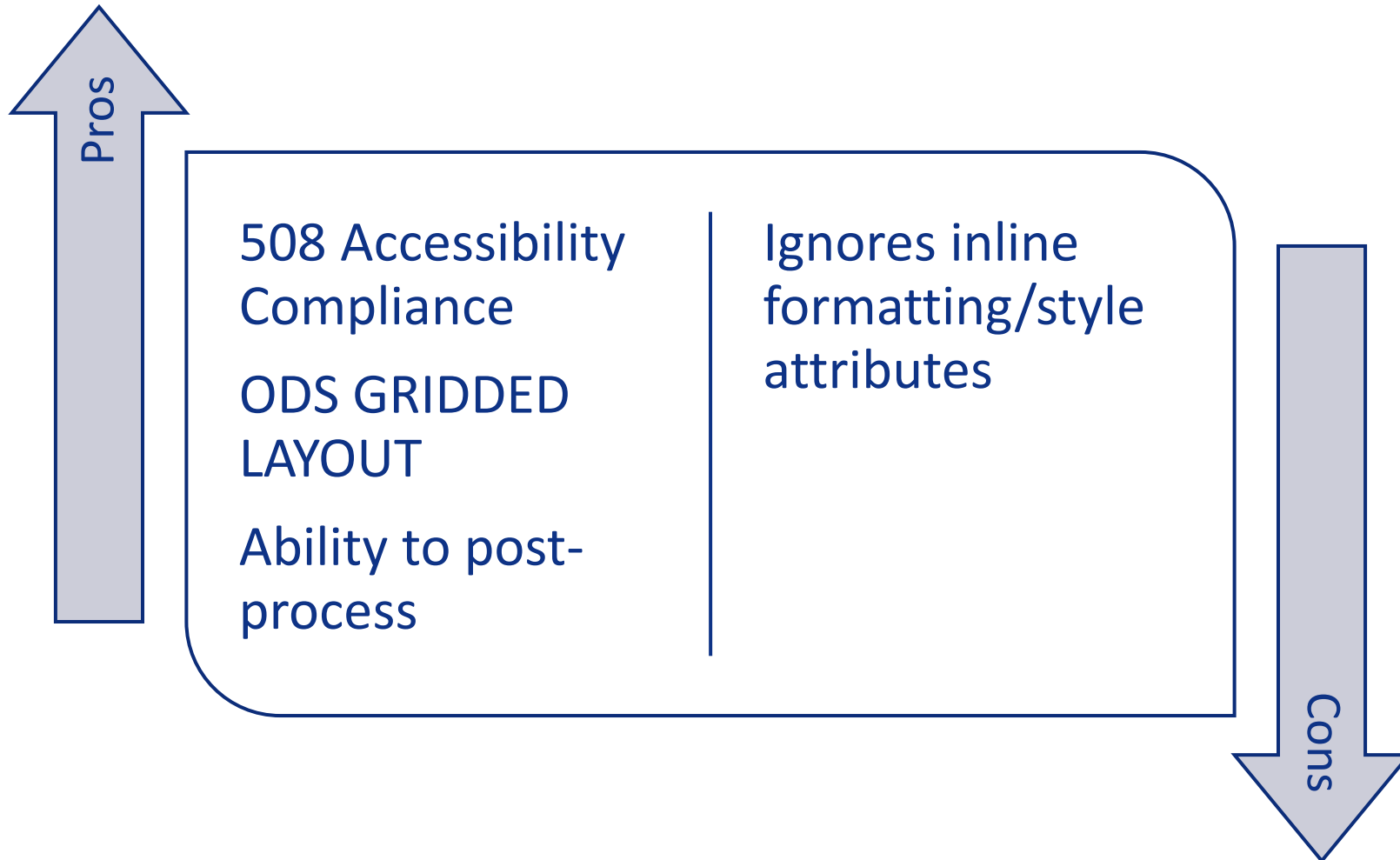
# Microsoft Word/Paging Workaround

## Strategies

- When using PROC REPORT, use group/order variables and the PAGE option
- Count observations and wrapped lines in DATA step then force page breaks as needed
- Post-process
- VB Macros



# HTML5



# ODS HTML5 Statement Options

ODS HTML5 has tagging and other accessibility attributes

- `ACCESSIBLE_GRAPH`

Add accessibility metadata to graphs that are created by ODS Graphics
- `HEADTEXT`

Specifies markup tags to place between the `< HEAD>` and `< /HEAD>` tags in all of the output files.

# ODS HTML5 Accessibility Resources

## Overview of Creating Accessible Output

[https://go.documentation.sas.com/doc/en/pgmsascdc/v\\_037/odsacoutput/p06mb5me6004k4n1r9sr42e9bdha.htm](https://go.documentation.sas.com/doc/en/pgmsascdc/v_037/odsacoutput/p06mb5me6004k4n1r9sr42e9bdha.htm)

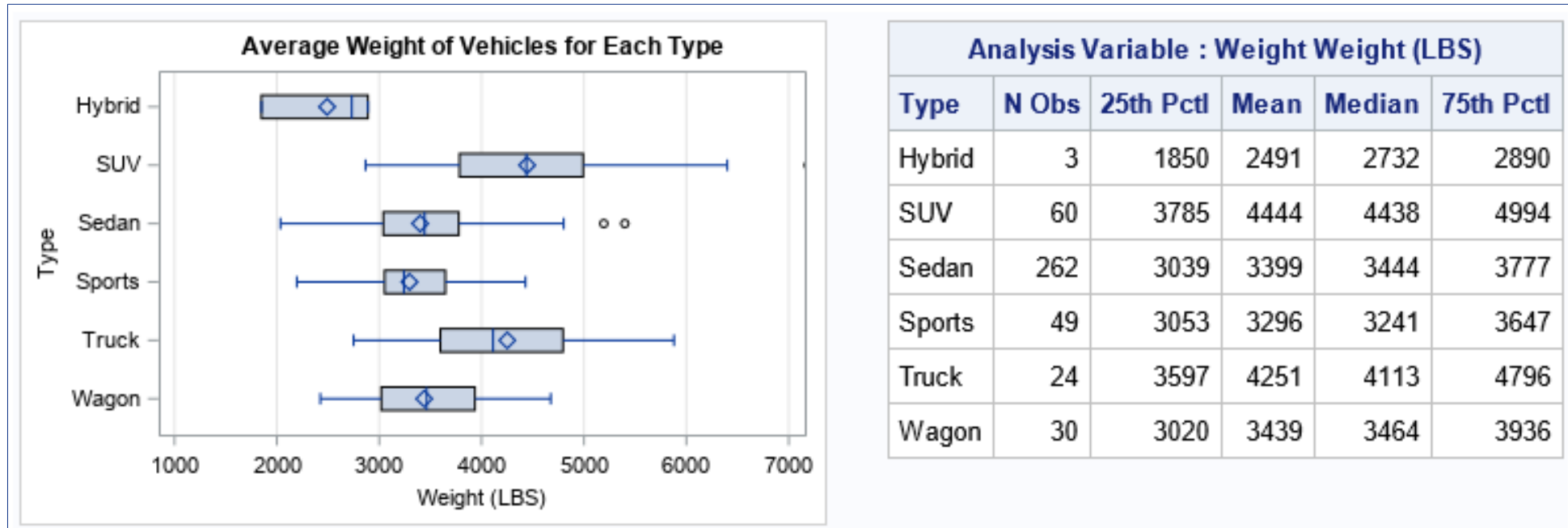
- Guidelines
- Tools
- Examples
- Lots of links to papers with examples!

# ODS HMTL and ODS Layout

Use LAYOUT GRIDDED - Enables you to arrange output dynamically in a two-dimensional grid structure.

Gridded layout for dynamically sized regions can accommodate dynamic data, can span more than one page, and allows for easier alignment.

# ODS HTML LAYOUT Example



[Use ODS to arrange graphs in a panel - The DO Loop \(sas.com\)](https://sas.com)

# Inline Formatting

```
ods escapechar="^";  
proc report data=sashelp.shoes;  
  column region  
  ('^S={background=lightgreen}All Products'  
   sales);  
  define region / group;  
run;
```

# Inline Formatting

	All Products
Region	Total Sales
Africa	\$2,342,588
Asia	\$460,231
Canada	\$4,255,712
Central America/Caribbean	\$3,657,753
Eastern Europe	\$2,394,940
Middle East	\$5,631,779
Pacific	\$2,296,794
South America	\$2,434,783
United States	\$5,503,986
Western Europe	\$4,873,000

# Inline Formatting Workaround

```
data shoes;  
set sashelp.shoes;  
  dummy='All Products';  
run;
```

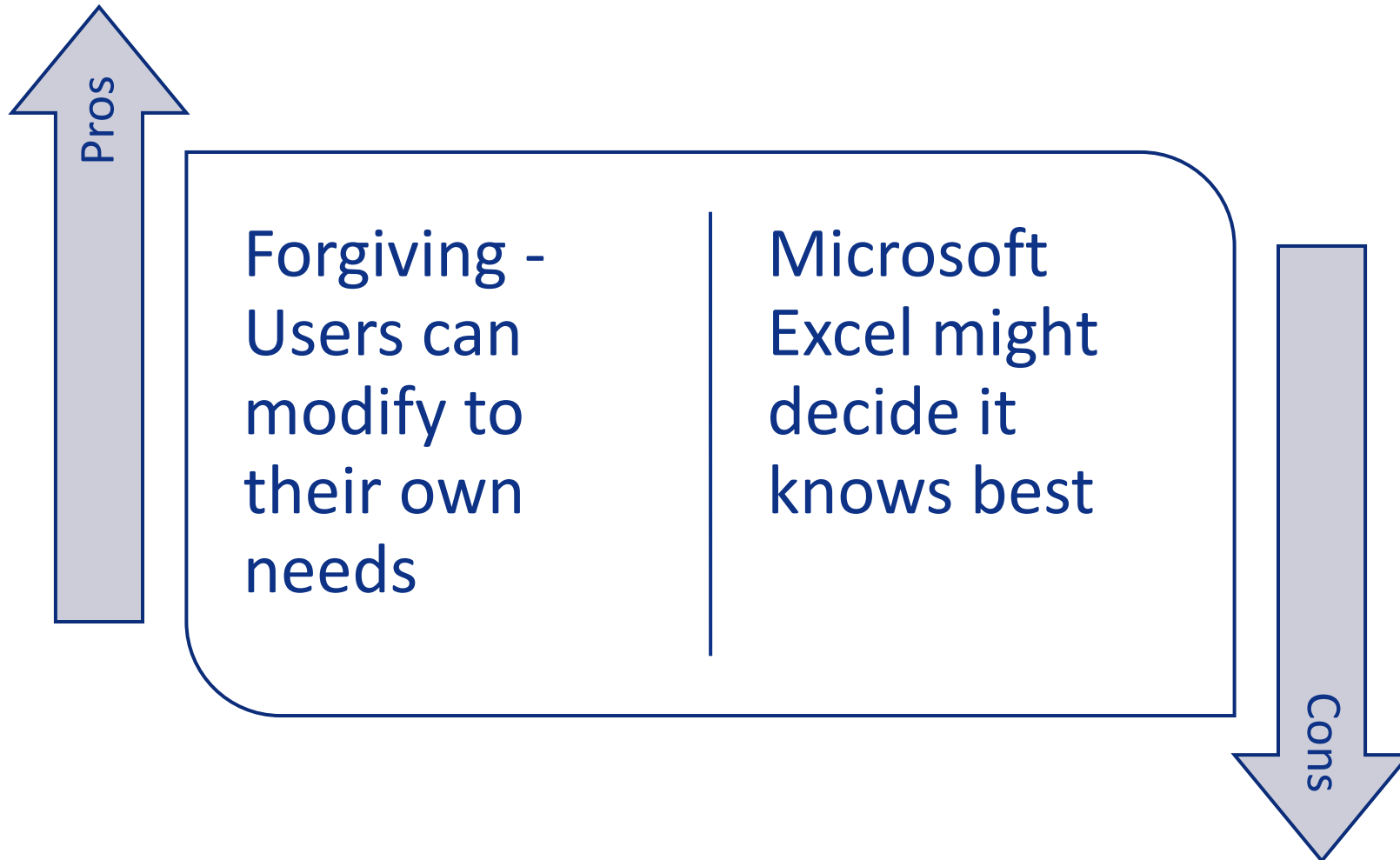
```
proc report data=shoes;  
  column region dummy,sales;  
  define region / group;  
  define dummy / across ''  
    style=[background=lightgreen];  
run;
```



# Inline Formatting Workaround

	All Products
Region	Total Sales
Africa	\$2,342,588
Asia	\$460,231
Canada	\$4,255,712
Central America/Caribbean	\$3,657,753
Eastern Europe	\$2,394,940
Middle East	\$5,631,779
Pacific	\$2,296,794
South America	\$2,434,783
United States	\$5,503,986
Western Europe	\$4,873,000

# Excel



# Modifications

- Filters
- Formulas
- Colors
- Borders
- Pivot Tables

# Excel Formatting

The ODS Excel destination and the Microsoft Excel application use the Excel **General** format for all numbers that do not have an Excel format applied.

- Leading zeros are omitted when displaying values in the spreadsheet
- Numbers greater than 11 digits might be displayed in scientific notation
- Numbers greater than 15 digits are padded with zeros
- Characters variables that contain commas or other punctuation get stripped

[Formatting your Microsoft Excel output using ODS Excel - SAS Users](#)

# Formatting Example

```
data class;  
set sashelp.class;  
    id = '001';  
run;  
ods excel file='BASUG.xlsx';  
proc print data=class;  
run;  
ods excel close;
```

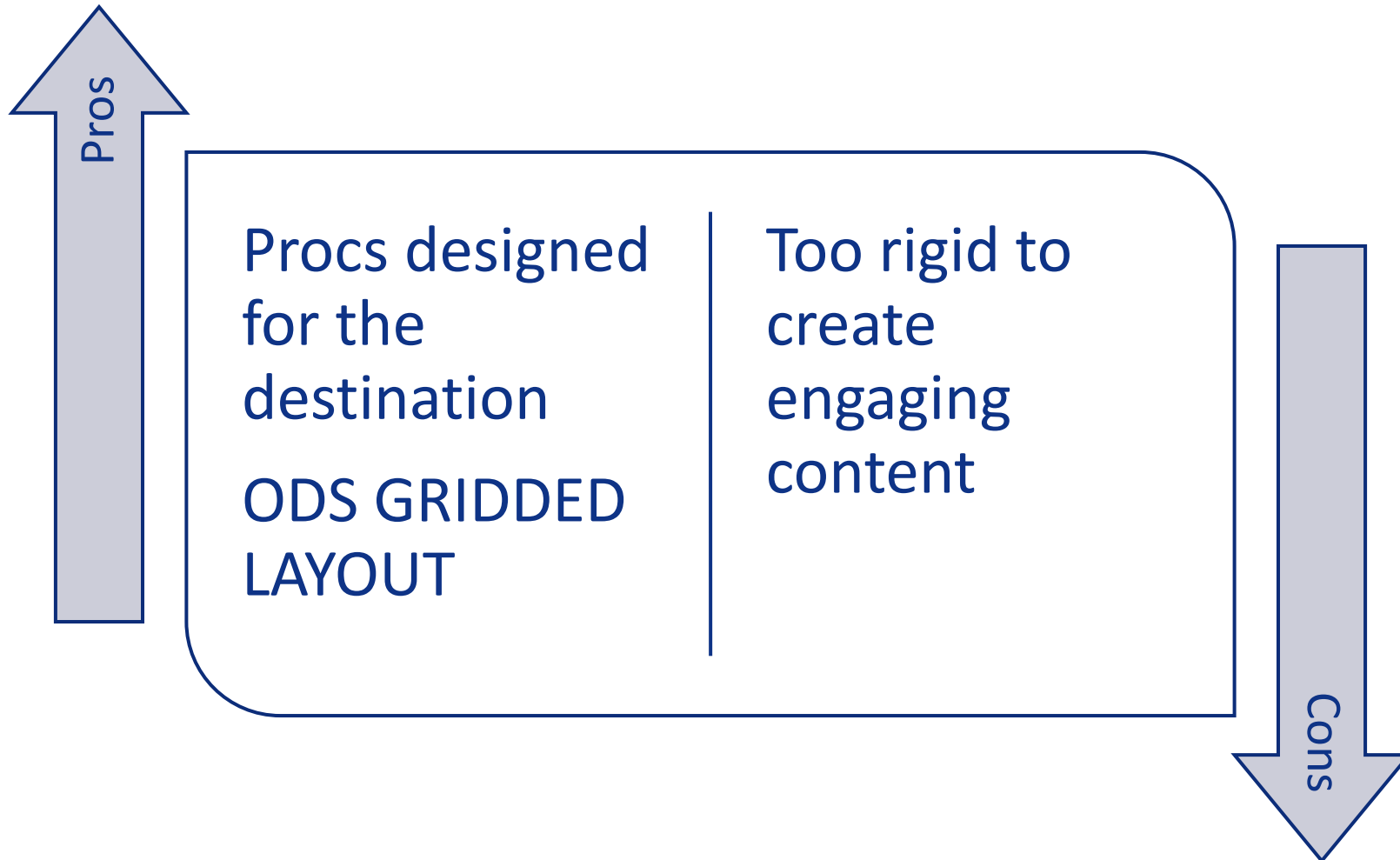
	A	B	C	D	E	F	G
1	Obs	Name	Sex	Age	Height	Weight	id
2	1	Alfred	M	14	69.0	112.5	1
3	2	Alice	F	13	56.5	84.0	1
4	3	Barbara	F	13	65.3	98.0	1
5	4	Carol	F	14	62.8	102.5	1
6	5	Henry	M	14	63.5	102.5	1
7	6	James	M	12	57.3	83.0	1
8	7	Jane	F	12	59.8	84.5	1
9	8	Janet	F	15	62.5	112.5	1
10	9	Jeffrey	M	13	62.5	84.0	1
11	10	John	M	12	59.0	99.5	1
12	11	Joyce	F	11	51.3	50.5	1
13	12	Judy	F	14	64.3	90.0	1
14	13	Louise	F	12	56.3	77.0	1
15	14	Mary	F	15	66.5	112.0	1
16	15	Philip	M	16	72.0	150.0	1
17	16	Robert	M	12	64.8	128.0	1
18	17	Ronald	M	15	67.0	133.0	1
19	18	Thomas	M	11	57.5	85.0	1
20	19	William	M	15	66.5	112.0	1

# Formatting Example

```
data class;  
set sashelp.class;  
    id = '001';  
run;  
ods excel file='BASUG.xlsx';  
proc print data=class;  
    format id $3.;  
run;  
ods excel close;
```

	A	B	C	D	E	F	G
1	Obs	Name	Sex	Age	Height	Weight	id
2	1	Alfred	M	14	69.0	112.5	001
3	2	Alice	F	13	56.5	84.0	001
4	3	Barbara	F	13	65.3	98.0	001
5	4	Carol	F	14	62.8	102.5	001
6	5	Henry	M	14	63.5	102.5	001
7	6	James	M	12	57.3	83.0	001
8	7	Jane	F	12	59.8	84.5	001
9	8	Janet	F	15	62.5	112.5	001
10	9	Jeffrey	M	13	62.5	84.0	001
11	10	John	M	12	59.0	99.5	001
12	11	Joyce	F	11	51.3	50.5	001
13	12	Judy	F	14	64.3	90.0	001
14	13	Louise	F	12	56.3	77.0	001
15	14	Mary	F	15	66.5	112.0	001
16	15	Philip	M	16	72.0	150.0	001
17	16	Robert	M	12	64.8	128.0	001
18	17	Ronald	M	15	67.0	133.0	001
19	18	Thomas	M	11	57.5	85.0	001
20	19	William	M	15	66.5	112.0	001

# PowerPoint



# Procedures

- ODSLIST  
Create bulleted lists
- ODSTEXT  
Customized tabular output
- ODSTABLE  
Create lists and paragraphs



# Gridded Layout

ODS LAYOUT GRIDDED statements  
just like PDF and HTML

Predefined layouts

- TitleSlide
- TitleAndContent
- TwoContent

# Rigidity

- The destination will discard the page elements that don't fit
- Cannot have margins less than .25in
- Triggering new slide
- Style templates must be based on two SAS-supplied templates

# Questions?